

# Mental Health Issues in Juvenile Law

September 13-15, 2023

School of Government, Chapel Hill, NC

## Wednesday, September 13

- 9:00 a.m.**      **Check-in**
- 9:15 a.m.**      **Welcome and Overview of Goals of the Course**  
Sara DePasquale, UNC School of Government  
Jacqui Greene, UNC School of Government
- 9:30 a.m.**      **Demystifying North Carolina’s Mental Health System [1.0 CJE]**  
Mark Botts, UNC School of Government
- 10:30 a.m.**      **Break**
- 10:45 a.m.**      **Common Mental Health Disorders in Children and Youth [1.5 CJE]**  
Aysenil Belger, UNC Department of Psychiatry
- 12:15 p.m.**      **Lunch**
- 1:15 p.m.**      **Evidence Based Interventions and Treatments [1.5 CJE]**  
Mellicent Blythe, NC Child Treatment Program  
Nikki Croteau-Johnson, NC Child Treatment Program
- 2:45 p.m.**      **Break**
- 3:00 p.m.**      **There is No Bed...Now What? [1.5 CJE]**  
Sonja Frison, NC Division of Juvenile Justice  
Sharon Bell, NC Department of Health and Human Services  
Amy Eaton, NC Department of Health and Human Services
- 4:30 p.m.**      **Adjourn**

## Thursday, September 14

- 9:00 a.m.**      **Reflections from Day 1 [0.25 CJE]**
- 9:15 a.m.**      **Sharing Confidential Information [0.75 CJE]**  
Jacqui Greene and Sara DePasquale, UNC School of Government
- 10:00 a.m.**      **Break**

- 10:15 a.m. Involuntary Commitment Procedure for Minors Who Lack Capacity to Proceed [0.75 CJE]**  
Mark Botts, UNC School of Government
- 11:00 a.m. GAIN, CCAs, YASI, trauma assessments...what does it all mean? [1.0 CJE]**  
Candice Moore, NC Division of Juvenile Justice  
Peter Kuhns, NC Division of Juvenile Justice  
Kelly Graves, The Kellin Foundation
- 12:00 p.m. Lunch**
- 1:00 p.m. Voices from the Behavioral Health Field [1.5 CJE]**  
Panel: Mark Botts – Moderator, UNC School of Government  
Kelly Graves, The Kellin Foundation  
Eric Johnson, Alliance Behavioral Healthcare  
Billy West, Daymark Recovery Services
- 2:30 p.m. Break**
- 2:45 p.m. Medicaid Eligibility and Services for Children [0.75 CJE]**  
Sarah Somers, National Health Law Program
- 3:30 p.m. Judicial Review of Minor’s Voluntary Admission [1.0 CJE]**  
Michelle Duprey, Esq., Council for Children’s Rights
- 4:30 p.m. Adjourn**

## **Friday, September 15**

- 9:00 a.m. Debrief Day 2 [0.25 CJE]**
- 9:15 a.m. Children with Mental Health Issues in Abuse, Neglect, or Dependency Actions: Court Considerations from Start to Finish [1.25 CJE]**  
Sara DePasquale, UNC School of Government
- 10:30 a.m. Break**
- 10:30 a.m. Mental Health and Delinquency Matters: Capacity to Proceed [1.5 CJE]**  
Jacqui Greene, UNC School of Government  
Cindy Cottle, Clinical and Forensic Psychologist
- 12:00 p.m. Lunch**
- 12:45 p.m. Mental Health and Delinquency Matters: CCAs, Care Review Teams, and Addressing Parent Needs [1.25 CJE]**  
Jacqui Greene, UNC School of Government  
Candice Moore, NC Division of Juvenile Justice
- 2:00 p.m. Break**
- 2:15 p.m. What Mental Health Services are Available Through Delinquency Dispositional Alternatives? [1.0 CJE]**  
Candice W. Moore, NC Division of Juvenile Justice  
Peter Kuhns, NC Division of Juvenile Justice

**3:15 p.m.      Course debrief**

**3:30 p.m.      Adjourn**

This program will have 16.75 hours of instruction, all of which will qualify for general continuing judicial education credit under Rule II.C of Continuing Judicial Education.

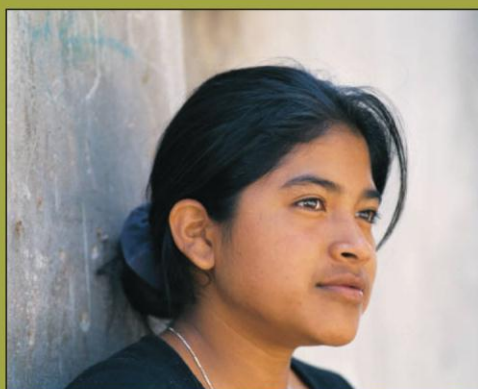
+ Advanced Certification in Child Welfare 16.75 total hours.

+ Advanced Certification in Juvenile Justice 16.75 total hours.

# **Mental Health Disorders**

## Juvenile Justice Resource Series

# Transition Age Youth With Mental Health Challenges in the Juvenile Justice System



**Transition Age Youth With Mental Health Challenges in the Juvenile Justice System**

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September 2013

### **About the Technical Assistance Partnership for Child and Family Mental Health**

The Technical Assistance Partnership for Child and Family Mental Health (TA Partnership) provides technical assistance to system of care communities that are currently funded to operate the Comprehensive Community Mental Health Services for Children and Their Families Program. The mission of the TA Partnership is "helping communities build systems of care to meet the mental health needs of children, youth, and families."

This technical assistance center operates under contract from the Federal Child, Adolescent and Family Branch, Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services.

The TA Partnership is a collaboration between two mission-driven organizations:

- American Institutes for Research—committed to improving the lives of families and communities through the translation of research into best practice and policy, and
- The National Federation of Families for Children's Mental Health—dedicated to effective family leadership and advocacy to improve the quality of life of children with mental health needs and their families.

The TA Partnership includes family members and professionals with extensive practice experience employed by either American Institutes for Research or the National Federation of Families for Children's Mental Health. Through this partnership, we model the family-professional relationships that are essential to our work. For more information on the TA Partnership, visit the Web site at <http://www.tapartnership.org>.

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## Foreword

Each year, more than 2 million children, youth, and young adults formally come into contact with the juvenile justice system, while millions more are at risk of involvement with the system for myriad reasons (Puzzanchera, 2009; Puzzanchera & Kang, 2010). Of those children, youth, and young adults, a large number (65–70 percent) have at least one diagnosable mental health need, and 20–25 percent have serious emotional issues (Shufelt & Coccozza, 2006; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002). System of care communities focusing on meeting the mental health and related needs of this population through comprehensive community-based services and supports have the opportunity to not only develop an understanding around the unique challenges this population presents, but also to decide how best to overcome those challenges through planned and thoughtful programs, strong interagency collaboration, and sustained funding.

The Technical Assistance Partnership for Child and Family Mental Health (TA Partnership) recognizes the many challenges system of care communities face in working to better meet the needs of all of the children, youth, and young adults they serve. In an effort to help these communities meet the unique needs of young people involved or at risk of involvement with the juvenile justice system, the TA Partnership is releasing a resource series focused on this population. The TA Partnership has contracted with the National Center for Mental Health and Juvenile Justice (NCMHJJ) and other experts in the field to produce this resource series. Each brief examines a unique aspect of serving this population, from policy to practice, within system of care communities.

We hope that this publication will support the planning and implementation of effective services, policies, and practices that improve outcomes for young adults of transition age who are involved in or at risk of involvement with the juvenile justice system as well as their families.

## **Transition Age Youth With Mental Health Challenges in the Juvenile Justice System**

*Kimberly, now 18 years old, grew up in a poor neighborhood and experienced a lot of family conflict as a child. She was placed in foster care as a teenager because of allegations that her mother was physically abusive. After her foster parents discovered that Kimberly was involved in prostitution and also had stolen money from the foster family, they reported her to the police. Due to these charges, Kimberly has been involved with the juvenile justice system for the past two years. Because of her “problem teen” status, her caseworker was unable to find a foster family to place her with, and none of her own family members were willing to take her back in their homes after she was on probation. No other child welfare placements were available, so Kimberly was placed in a group home for delinquent girls, where she had a rough time adjusting to the placement. She told her probation officer that she was having trouble sleeping and having disturbing thoughts about an incident that had happened to her in one of her foster placements. When her probation officer pressed her for details, Kimberly disclosed that she had been sexually assaulted when she was out on the streets. Fortunately, her probation officer recognized that Kimberly was having symptoms related to her trauma history and helped her to schedule an appointment at a local mental health clinic. The probation officer also made sure Kimberly made it to her intake appointment. Unfortunately, after the assessment, the therapist discovered that Kimberly could not be seen at the clinic because it did not accept Medicaid. The probation officer helped Kimberly find another clinic in the community that would take her insurance, but her records from the first clinic were not transferred in time for her first appointment. Kimberly had to complete another intake and was frustrated that she had to tell her story to another therapist. Her therapist had a large caseload of adult patients and could schedule Kimberly for an appointment only every other week; Kimberly felt that her therapist did not really “get” what her life was like. When Kimberly started therapy, it became clear to her therapist that she needed a medication evaluation, but the next available appointment was not for two months. By then, Kimberly had dropped out of care. Kimberly missed three appointments in a row, and when her therapist tried to reach her, Kimberly’s prepaid cell phone had been*

*turned off. Due to the clinic's "no-show" policy, Kimberly's case was closed, and she was not allowed to return to the clinic.*

*Kimberly continued struggling with her group home placement. She was not getting along with her peers, and she wanted a more independent living situation. At 18, she felt she was too old to be living in a placement. She would leave the group home for days, staying with friends and wandering the streets. Kimberly's child welfare social worker found some information on a program to help former foster care children find and pay for housing. The one stipulation was that Kimberly would have to participate in supervision through child welfare until her 21st birthday. The supervision included random drug testing and a group-based skills development program. Kimberly wanted nothing to do with this type of supervision. She turned down the opportunity to participate in this program and stayed in the group home, waiting to age out of the child welfare system and leave.*

*Kimberly's social worker remained concerned about her transition from the group home to independent living because Kimberly had never had a job and didn't finish high school. Kimberly would not be able to afford housing without a job, so the social worker talked her into using the local vocational rehabilitation services in her community. The social worker told Kimberly that she could get a paid internship right away if she was willing to use their services. Unfortunately, the vocational rehabilitation center couldn't offer Kimberly an appointment until six weeks later. By the time her appointment came up, she had been moved to a new group home in the next town and was no longer eligible for the services where her appointment had been scheduled. Her social worker secured an appointment at the vocational rehabilitation center in Kimberly's new town, but she had to go to the back of the waiting list.*

Kimberly's experience represents an all-too-common occurrence for young people with mental health problems in the juvenile justice system. The current system for rehabilitation often fails to address or even presents barriers to meeting the multiple needs of such youth. This is compounded by the multiple transitions in life roles that occur during this important developmental period. The purpose of this paper is to provide an overview for mental health practitioners, juvenile justice professionals, and policymakers whose work

brings them in contact with transition age youth with significant mental health needs in the juvenile justice system. Topics reviewed include normative developmental processes during the transition age, difficulties faced by transition age youth with mental health problems in the juvenile justice system, policies and programs that have been shown to help with transition for these youth, and additional suggestions for best practice and policy.

## **Overview**

The term *transition age youth* refers to individuals aged 16 to 25 years. For the purposes of this review, we focus on ages 16 to 21, as this is the period during which transition age youth are likely to be involved with the juvenile justice system. Also for our purposes, our definition of mental health problems includes diagnosable mental health disorders exclusive of developmental disorders and mental health diagnoses due to a physical health problem. Substance use disorders will not be included in this definition but will be discussed as a common co-occurring condition. The most common mental health disorders among youth in the juvenile justice system are disruptive behavior disorders (e.g., attention deficit hyperactivity disorder, conduct disorder), anxiety disorders (e.g., posttraumatic stress disorder, generalized anxiety disorder), and mood disorders (e.g., major depression, bipolar disorder) (Skowrya & Coccozza, 2007). However, there is an important distinction between disruptive behavior disorders and other mental health problems for transition age youth. A disruptive behavior disorder diagnosis allows minors to access services in the child mental health system, but adults presenting solely with a disruptive behavior disorder are explicitly denied coverage in the adult mental health system (Davis & Koroloff, 2006). Thus, transition age youth with primarily behavioral disorders are often in the position of losing access to mental health services as they age out of child systems. Because this is an important problem for justice-involved transition age youth, differentiation between disruptive behavior and other disorders will be made throughout this review.

## **Development During the Transition to Adulthood**

The transition from adolescence to adulthood represents a unique developmental period, with significant changes in educational, vocational, and relational roles and expectations in the face of reduced family influence and changing social networks (Arnett, 2000). This transitional period presents challenges for even the most well-adjusted youth as they navigate new roles in educational, vocational, and relationship domains. This is the time when many youth make long-term decisions about careers and families and move from their family of origin to more independent living situations. In fact, the capacity to make decisions for oneself is a critical skill to develop during this stage of life. Further, aspects of executive

functioning—including good judgment and decision making in the face of peer influence and the ability to pursue goals in the face of emotional distractions—also mature through this social interplay and critically influence behavior and future decision making. The normative transitions that occur during this age include the completion of schooling or vocational training, obtaining and maintaining gainful employment, contributing to household income, developing a social network outside of one’s family, and becoming a productive citizen. Success in these domains is determined by a complex interplay between youth, their families and neighborhoods, and available opportunities.

### **Potential Pitfalls of the Transition Age**

The importance of this developmental period lies not only in the important tasks that are accomplished but also in the risk for substantial impediments. For example, the transition age is when onset of mental health problems peaks, and the vast majority of mental health disorders have onset by the early 20s (Kessler et al., 2005; Kim-Cohen et al., 2003; Newman et al., 1996; Substance Abuse and Mental Health Services Administration [SAMHSA], 2012). Epidemiological studies have shown an increase in mental health problems beginning in middle adolescence and peaking in late adolescence and early adulthood, with past-year prevalence rates of 29 percent to 40 percent between the ages of 18 and 25, when substance use disorders were included (Newman et al., 1996; SAMHSA, 2012). Rates of serious mental illness, defined as a diagnosable mental health problem that results in significant functional impairment, are less common but still are more prevalent during the transition age (7.7 percent) than at any other developmental period (SAMHSA, 2012). At the same time, utilization of mental health services declines sharply during the transition age, presumably due to the multiple barriers to care that occur during this period, including loss of health coverage and the transition from child to adult service systems (Pottick, Bilder, Vander Stoep, Warner, & Alvarez, 2008).

This transition age also has the highest rates of onset of problematic substance use and substance use disorders (i.e., abuse, dependence) (Chassin, Flora, & King, 2004; Delucchi, Matzger, & Weisner, 2008; SAMSHA, 2009). A large majority (90 percent) of young adults reported having used alcohol in their lifetime, and 61 percent reported lifetime illicit drug

use (SAMSHA, 2008). Prevalence of substance use disorders follows a similar pattern, with the past-year prevalence of 9 percent among youth between the ages of 12 and 17, increasing to 21 percent among youth aged 18 to 25 years (SAMSHA, 2005). Criminal behavior tends to peak between the ages of 15 and 19 (Farrington, 2005), although there is evidence that this peak occurs later for youth with mental health problems (i.e., between 18 and 20) (Davis, Banks, Fisher, Gershenson, & Grudzinskas, 2007). Further, the rise in criminal activity is compounded by the transition into adulthood, as the justice system no longer views such behavior with a juvenile lens, and the youth may face criminal rather than juvenile delinquency charges. For youth who struggle during the transition to adulthood, having multiple problems is the rule rather than the exception (Osgood, Foster, & Courtney, 2010), as youth who develop one of these problems are at substantial risk for developing additional related difficulties.

Substantial adversity during this developmental period has the capacity to delay or derail the achievement of normative transitions, with the potential for setbacks associated with long-term negative outcomes. Thus, youth struggling with mental health problems and juvenile justice involvement are at a marked disadvantage compared with their peers as they enter the transitional age, a developmental period that typically necessitates substantial resources even under the best circumstances. Further, youth at the highest risk for experiencing these types of setbacks are those from disadvantaged psychosocial backgrounds who already have experienced multiple lifetime adversities (Chung, Little, & Steinberg, 2005). Specifically, these youth have accumulated disadvantage that often includes poverty, poor relationships with parents and other family members, school failure and/or dropout, negative peer groups, and the lack of adult role models. These histories of disadvantage often do not provide the resources necessary to overcome the substantial challenges faced by multiproblem transition age youth.

There is also compelling evidence that the brain, particularly as it relates to executive functioning, is not yet fully developed during adolescence and the transition to adulthood (Albert & Steinberg, 2011). Anatomical studies show that the prefrontal cortex and its links to other brain regions, including the amygdala and striatum in the limbic system, continue to develop through early adulthood (Casey, Galvan, & Hare, 2005; Yurgelun-Todd, 2007).

Adolescents and transition age youth show deficits in areas of executive functioning, including impulse control, planning, and decision making, compared with adults (Eshel, Nelson, Blair, Pine, & Ernst, 2007; Somerville & Casey, 2010). Indeed, tasks that require behavioral control over responses have a developmental brain maturation trajectory that continues until the early 30s (Hare et al., 2008; Liston et al., 2006). This continued brain development partially explains the challenges that many transition age youth face in making effective decisions, controlling impulsive behavior, and engaging in the long-term planning needed for success across all life domains.

### ***Mental Health Problems and Juvenile Justice Involvement During the Transition Age***

Transition age youth with mental health problems are at increased risk for involvement in the justice system compared with their peers (Davis et al., 2007; Grisso, 2004). Further, they represent an important and complex group in the juvenile justice system as they face both the developmental challenges of this period and present with substantial barriers to a successful transition to adulthood. They almost always experience multiple problems that can complicate both rehabilitation and the successful transition to adulthood. Thus, they have the capacity to incur significant costs to themselves, their families, the justice system, and their communities.

### **Juveniles in the Justice System**

The very definition of *juvenile* varies by state, meaning that youth in many states remain in the juvenile justice system well into the transition age while youth in other states are transferred to the adult justice system. First, there is variability across states in the upper age of jurisdiction in the juvenile court—that is, the age at which an individual engaging in a law-violating behavior would be processed in the juvenile versus adult court system. As Figure 1 shows, the large majority of states consider crimes committed through the age of 17 as juvenile offenses. A few states have an upper age of 16, and New York and North Carolina process only crimes committed through the age of 15 in the juvenile system. There also is variability across states in the age at which juvenile justice system involvement is terminated. As presented in Table 1, only a few states' juvenile justice systems end their involvement



with youth when they turn 18. It is far more common for youth to remain under juvenile jurisdiction through the age of 20, with some states allowing for extension up to age 24 or to the full term of the disposition order. Thus, simply living in a different location can dramatically impact how a youth's behavior is addressed.

Views of young people involved in the justice system also have changed substantially over the past few decades. Separation of the justice system into juvenile and adult courts began at the state level in the late 1800s (Commission on Behavioral and Social Sciences and Education, 2001). This movement was based on the recognition that juveniles were developmentally distinct from adults and, thus, should be held to different standards regarding criminal behavior. In addition, juvenile justice was seen as an opportunity to rehabilitate youth rather than solely punish them for criminal behavior. However, during the peak of violent criminal behaviors among youth in the early 1990s, there was a public call for a more punitive approach, with the hope that more severe consequences would lead to decreased recidivism. Unfortunately, this movement has served to suppress rehabilitative approaches for juveniles and has increased the number of youth transferred to the adult justice system. These changes likely compound the barriers to effective services for youth with mental health concerns. Further, transferring youth from the juvenile to adult justice system can lead to poor outcomes for youth, including increased likelihood of arrest for future crimes (Centers for Disease Control and Prevention [CDC], 2007; Schubert et al., 2010). Currently, the juvenile justice system is struggling to find a balance between punishing delinquent acts and providing rehabilitative services in the best interest of the youth (for a review, see Weiss, 2013).

### **Transition Age Youth in the Juvenile Justice System**

Transition age youth involved with the juvenile justice system are examples of “the perfect storm” of the potential perils of this developmental period. First, mental health problems are quite common in this group; however, it should be noted that due to a paucity of research on this age group, the majority of what is known about the prevalence of mental health problems comes from studies of adolescents (i.e., 13- to 17-year-old youth). One study of youth entering nonresidential juvenile justice settings (e.g., probation) estimated

that 45 percent of boys and 50 percent of girls meet diagnostic criteria for at least one mental health disorder (Wasserman, McReynolds, Ko, Katz, & Carpenter, 2005), and studies of residential juvenile justice facilities have shown higher rates, between 65 percent and 70 percent (Shufelt & Coccozza, 2006; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002). Further, even when behavioral disorders (e.g., substance use, conduct disorders) were not considered, 45.5 percent of youth in residential justice settings met criteria for a mental health disorder (Shufelt & Coccozza, 2006).

Similar to non-justice-involved youth, comorbidity rates are high for justice-involved youth, with an estimated 79 percent of youth with one mental health disorder also meeting diagnostic criteria for at least one other disorder, and more than 60 percent meeting criteria for a substance use disorder (Shufelt & Coccozza, 2006). Often, co-occurring conditions predict worse outcomes; for example, youth with co-occurring behavioral problems (e.g., substance use, conduct disorder) and emotional problems (e.g., anxiety, depression) are at elevated risk for recidivism (Cottle, Lee, & Heibrun, 2001; Hoeve, McReynolds, & Wasserman, 2013) and committing violent offenses during young adulthood (Copeland, Miller-Johnson, Keeler, Angold, & Costello, 2007). Given these high rates of mental health and substance use disorders, juvenile justice programs are responsible for a large proportion of youth who have mental health needs, highlighting the importance of effective management and treatment by this system (Coccozza & Skowyra, 2000).

Transition age youth with justice involvement and a mental health disorder often face other roadblocks to the successful negotiation of the transition age period. For instance, youth in the justice system often come from economically disadvantaged, single-parent households (Foster & Gifford, 2005). Successful transitions to adulthood increasingly depend on financial and other material support from families well beyond adolescence (Settersten, Furstenberg, & Rumbaut, 2008), an advantage that many justice-involved youth do not have. In addition, these youth show high rates of learning disabilities as well as a history of school failure. As a group, justice-involved youth tend to have intellectual functioning in the low-average to average range, and many show academic deficits in reading, math, and written and oral language, either due to learning disabilities or lack of educational engagement

(Foley, 2001). In one large study of juvenile offenders ages 10 to 20 in long-term custody settings, almost 20 percent had a specific learning disability, and youth with elevated mental health symptoms were even more likely to have a learning disability (Cruise, Evans, & Pickens, 2011). Justice-involved youth also have high rates of involvement with the child welfare system. More than 60 percent of transition age youth considered “serious offenders” in juvenile detention had a history of child welfare involvement due to child maltreatment (Langrehr, 2011). In another study, 58 percent of youth up to age 19 with mental health problems in the justice system had a family member who was the focus of a child protective services investigation (Sullivan, Veysey, Hamilton, & Grillo, 2007). Overall, youth with a substantiated history of maltreatment have approximately 50 percent more contacts with the juvenile justice system compared with youth without such a history, and approximately 16 percent of youth placed in foster care come into contact with the juvenile justice system (Ryan & Testa, 2005). Rates of juvenile delinquency are even higher among youth placed in group home settings as part of their involvement with child welfare (Ryan, Marshall, Herz, & Hernandez, 2008). Thus, most justice-involved youth with mental health problems have greatly compromised development and lack the “natural” supports for transitioning to adulthood. To facilitate successful adult functioning and reduce the likelihood of recidivism, the juvenile justice system should not only provide mental health treatment but also assess and provide supports for youth’s impending adulthood.

### **Incarcerated Transition Age Youth and Reentry**

Currently, there is substantial variability in outcomes for youth involved in the juvenile justice system. Among youth processed and adjudicated delinquent by the juvenile justice system in 2009, 27 percent were placed in residential settings, 60 percent were placed on probation, and 13 percent received other sanctions (Knoll & Sickmund, 2012). Thus, the majority of youth involved in the justice system are not incarcerated. However, the incarcerated youth make up a significant minority of the juvenile justice population. Many of the estimated 200,000 juveniles and young adults ages 24 and under returning from incarceration each year (Mears & Travis, 2004) will face reentry during their transition to adulthood. For the most part, reentry programs have been developed and studied with adult populations; thus, little is known about their effectiveness with transition age youth

(Farrington, Loeber, & Howell, 2012). Further, the reentry problems faced by transition age youth with mental health problems are likely to be even greater than those seen in adult populations. First, youth often lack the education and skills necessary to find gainful employment. In fact, one study found that only 31 percent of youth were engaged in either school or work 12 months after their release from juvenile correctional facilities (Bullis, Yovanoff, Mueller, & Havel, 2002). This may be due to the low likelihood of having obtained a high school diploma or GED and the lack of opportunity to gain relevant work experiences because of time spent in a locked facility. The situation is compounded by the fact that, upon reentry, these young adults often return to their former neighborhoods and rejoin peer groups that foster criminal behaviors. Incarceration prevents opportunity to develop positive peer groups, which, coupled with the lack of prosocial activities available upon reentry, makes the return to the youth's previous way of life more likely. Further, such youth often lack positive adult role models to guide them through the transition period from detention back into their neighborhoods (Steinberg, Chung, & Little, 2004).

Following reentry, transition age youth display low rates of engagement with community-based services such as mental health treatment and vocational rehabilitation. In one study, only 35 percent of juvenile offenders had been engaged in such services during the six months following reentry (Chung, Schubert, & Mulvey, 2007). Barriers to services include lack of sufficient health care coverage, inability to navigate multiple systems, and, for some youth, lack of service providers in their communities. Further, transition age youth often qualify only for adult-oriented care that is not well suited to meet the developmental needs of youth. Finally, upon reentry, transition age youth often face both the perception and reality of having "fallen behind" their same-age peers in terms of employment, education, and family roles, which can lead to hopelessness about their ability to catch up in these domains.

### **Successful Transitions from Adolescence to Adulthood for Justice-Involved Youth**

Although transition age youth involved in the juvenile justice system are at a great disadvantage compared with their non-system-involved peers, the long-term goals for successful adulthood remain the same. Successful transitions involve some combination of

academic achievement (ranging from attainment of a high school diploma/GED to an associate degree, four-year college degree, or graduate degree); development of vocational skills and acquisition of gainful employment; establishment of stable romantic, peer, and familial relationships; and formation of a sense of self tied to being a productive member of families, neighborhoods, and society. However, the immediate goals for justice-involved youth with mental health problems are often different from many of their peers, with a focus on reducing recidivism, accessing mental health and substance use treatment, obtaining a stable housing situation, and completing justice system requirements. The overarching goal of the systems involved with these youth should be to facilitate the completion of these crucial immediate goals while providing access to resources that will allow for success in overarching goals, including those related to education, vocation, and healthy relationships.

### ***Critical Issues Facing Justice-Involved Transition Age Youth With Mental Health Problems***

Transition age youth face a myriad of potential issues with access to services, as they must deal with child-oriented systems, adults systems, and the connection, or lack of, between the two. Involvement with multiple systems is the rule rather than the exception for youth in the juvenile justice system, particularly those with mental health problems. For example, at least one in five youth involved in community-based mental health systems also have juvenile justice involvement (Cauffman, Scholle, Mulvey, & Kelleher, 2005; Rosenblatt, Rosenblatt, & Biggs, 2000; Vander Stoep, Evens, & Taub, 1997). Justice-involved transition age youth are often involved with child welfare, mental health treatment, vocational rehabilitation, substance use treatment, the housing authority, and various educational systems, among others. Although the availability of the various services provided by these systems may be seen as advantageous, the interplay between such systems is often counterproductive and can actually prevent youth from having their needs met. In some cases, services do exist in the community, but youth fail to qualify (e.g., they lack the proper health care coverage; they are too young or too old). At other times, appropriate services are completely lacking in the youth's community. As illustrated by Kimberly's case, navigating these separate systems can be incredibly challenging for a young person, particularly those who lack family support and are experiencing multiple psychosocial problems.

## System Involvement

Involvement in a number of these systems is common among all ages involved in the juvenile justice system, but transition age youth also must begin to navigate new systems.

Relevant systems include the following:

- **Child Welfare.** Youth in the justice system often have current or historical involvement with child welfare due to a history of maltreatment or neglect and, in most severe cases, removal from their family of origin and placement with a foster family or in a group home (Malmgren & Meisel, 2004).
- **Special Education.** Youth receive these services, including individualized education programs (IEPs) and alternative school placements, because of learning disabilities, cognitive delays, and/or emotional/behavioral problems that affect their ability to learn. Youth with justice involvement are also at risk for school-related sanctions, including expulsion, due to behavioral problems. These youth are at particularly high risk for school failure, dropout, and lack of access to quality educational experiences.
- **Mental Health Services.** During adolescence, youth with mental health and behavioral problems are often involved with child mental health systems. At age 18, youth may become ineligible for continued care, as behavioral disorders are often not a qualifying diagnosis for adult mental health systems. Adult systems have more stringent qualifying criteria for care, requiring a more severe and debilitating diagnosis than is necessary in the child system. Transition age youth also sometimes face a change or loss in their health care coverage upon reaching an adult age, which can be an additional barrier to care. Even with the pending changes to managed care stemming from the Affordable Care Act (ACA), there will continue to be age-related changes in health care coverage that will affect transition age youth. Although state agencies are required to do outreach to reduce barriers to continuity in coverage for young people, these efforts have not yet been demonstrated to be effective. In fact, such programs aimed at adults with mental health problems have not been successful at ensuring continuity in health care coverage (Capoccia, Croze, Cohen, & O'Brien, 2013); thus, it remains to be seen whether ACA changes will benefit transition age youth with mental health problems. Finally, adult mental health

providers rarely have specialized training on transition age youth. Therapists' high caseloads make it all but impossible to target the unique and high-demand needs of justice-involved transition age youth. Similarly, after youth reach age 18, privacy law protections change in a way that is both helpful to them in protecting their health information and potentially harmful; specifically, adult therapists often fail to engage transition age youth's family members in mental health treatment despite their key role in the youth's well-being (Osgood et al., 2010).

- **Vocational Rehabilitation.** Goals of vocational rehabilitation include creating individualized employment plans; boosting job readiness through education and on-the-job training; and assisting with job seeking, applications, and retention. While all state vocational rehabilitation agencies provide some transition support services, there is wide disparity in intensity, quality, and efficacy. Youth with juvenile justice histories present additional challenges, as they often lack the basic skills necessary to maintain employment, including time management, communicating with authority figures, and professionalism. Many have no past workplace experience, and their interactions with authority figures have been punitive rather than professional. Also, due to high demand for services in many communities, there can be long waiting lists for vocational rehabilitation services as well as inflexible policies regarding appointment attendance that can alienate transition age youth.
- **Independent Housing.** Given barriers to successful employment and self-sufficiency, accessing independent housing is difficult. Public housing applications often cannot be submitted by youth under age 18, and the wait for housing can take multiple years. Further, youth who recidivate and receive a felony conviction can be denied public housing permanently. Although not as common for adjudicated juveniles, some housing authorities have the ability to deny public housing on the basis of disqualifying offenses committed by any family members, including juvenile offenders (Henning, 2004). This can mean that youth are either no longer permitted to live with their families or that their families are no longer able to live in public housing.

### **Services for Detained and Incarcerated Youth**

The lack of access to mental health care among detained and incarcerated youth is well documented. Although this group could be considered a “captive audience” for the delivery of such services, the juvenile justice system is currently not well equipped to provide effective mental health treatment to the large numbers of youth who require it (Steinberg et al., 2004; U. S. Department of Justice, 2005). In fact, a large-scale study found that only 15.4 percent of youth with a major mental health problem received mental health treatment while detained (Teplin, Abram, McClelland, Washburn, & Pikus, 2005). Family involvement in mental health interventions, a factor that is likely to be key factor in successful treatment, is rarely available to incarcerated youth. This likely limits both treatment effectiveness as well as maintenance of gains past the time of incarceration, as the youth return home to their families. In addition, many mental health treatments in correctional facilities are delivered in a group format, which by definition means aggregating delinquent peers, a strategy shown to have an iatrogenic effect on group members due to “deviance training” or the learning of new delinquent behaviors from more deviant peers (Dishion, McCord, & Poulin, 1999). Further, there is often a lack of continuity of care for youth with mental health problems as they transition to treatment providers in the community. After their release, youth face the same barriers to mental health treatment faced by their peers on probation. Thus, although incarcerated youth often are screened for mental health problems (Pajer, Kelleher, Gupta, Rolls, & Gardner, 2007), most enter adulthood without having had access to effective mental health interventions.

### **Interplay Between Multiple Systems**

A potentially wide array of services is available to justice-involved transition age youth with mental health problems. However, as noted, these services often are not well suited to meet this group’s needs. In addition, interacting with multiple systems can be overwhelming to youth, particularly because of the lack of seamless interplay between the systems (Davis, Green, & Hoffman, 2009) and youth’s lack of knowledge about systems with which they previously were not required to interact (e.g., vocational rehabilitation). In addition, there is often a lack of communication between systems, sometimes even between child and adult arms of the same system (e.g., child and adult mental health) (Osgood et al., 2010). This means that goal setting and interventions across agencies can be at odds with



one another. In one study of the role of interagency collaboration between child welfare and juvenile justice, two factors predicted successful coordination of mental health services: (1) having a single agency held accountable for the youth's well-being (i.e., either child welfare or juvenile justice) and (2) interagency sharing of administrative data (Chuang & Wells, 2010). Thus, effective coordination of care and agency accountability are necessary to ensure that youth do not "fall through the cracks." Furthermore, transition age youth are often simply unable to take full advantage of such services because of a variety of practical barriers, including lack of transportation, service systems that are not located in close vicinity of one another, and lack of familial support necessary to follow through on multiple appointments and responsibilities.

### ***Effective Policies and Practices for Youth With Mental Health Problems***

*Garrett, age 20, is on probation with juvenile justice because of a long history of drug possession charges and probation violations. At age 17, he was diagnosed with bipolar disorder after several episodes of mania during which he took his mother's car, ran away from home, and went on drug and alcohol binges. Since his diagnosis, he has received mental health services from a therapist and psychiatrist housed under one roof at Garrett's local child mental health center. Luckily for Garrett, this center has recently started a young adult program that helps youth transition from the child to adult mental health systems, and his therapist has some expertise with Garrett's age group. Garrett's symptoms have been stabilized through a combination of medication management and counseling. He sometimes misses his appointments; although the clinic does not provide home-based services per se, his therapist has the flexibility to meet with Garrett in his home on occasion, and this has helped him to stick with treatment. In addition, the therapist recognizes the importance of Garrett's relationship with his mother, with whom he lives, and includes her in Garrett's treatment.*

*Recently, Garrett had a slip-up and took too many pills when he was hanging out with his friends. During this binge, Garrett stole one of his mother's rings and sold it at a pawn shop for money to buy drugs. Garrett wound up in the hospital because his friends were worried that he might have overdosed. Garrett swore that it was accidental and that he just lost track of how many pills he had taken. This incident scared and angered Garrett's mother.*

*This wasn't the first time that Garrett had ended up in the hospital, and she felt hopeless about her ability to help him. She decided that she didn't want to "enable" Garrett anymore and that she was going to cut him off from all financial support, including her health insurance. She also no longer wanted him in her home. The hospital released Garrett to a friend who offered to let him stay at his place for a while. Fortunately, Garrett's therapist got involved and begged his mother to continue his insurance so that he could continue receiving medication and therapy. Garrett's mother agreed that this would be important for Garrett's safety and continued to provide his health insurance, but no other support.*

*Garrett spent a significant amount of his adolescence in a juvenile correctional facility and had fallen behind in his education. He wanted a job in the medical field as a nurse or a lab technician, but he had not finished high school. Garrett's probation officer and therapist worked together to try to get him re-enrolled in his local high school, but Garrett wasn't comfortable returning because he was so much older than the other kids. The probation officer then got Garrett enrolled in an adult education program. Garrett didn't like this program either, as he reported it was "full of people who didn't look like him." He also struggled to keep his school materials organized and complete all of his work because he kept moving from one friend's house to the next.*

*Because of Garrett's bipolar diagnosis, the probation officer knew Garrett would be eligible for vocational rehabilitation services, so the officer arranged an intake appointment. Unfortunately, when the meeting occurred, Garrett was reluctant to admit that he had a mental health condition and answered questions in ways that made him ineligible for services. Garrett's probation officer continued to be persistent. He set Garrett up with a program that paid justice-involved transition age youth minimum wage when they spent hours volunteering at select sites. The probation officer ensured that Garrett got a volunteer slot at a hospital that would provide him with some experience in the medical field. The monetary incentive and work experience were enticing to Garrett, and he was able to build some job experience and get a work reference for his resume. The job also filled his free time and limited his opportunity to spend time with his friends, some of whom continued to get in trouble with the law. Although Garrett no longer had much contact with his mother, the probation officer helped him reconnect with a former teacher whom Garrett had admired.*

*This teacher became a mentor to Garrett, helped him complete some job applications, and provided some advice about his work behavior. The work program, coupled with Garrett's positive relationship with an adult mentor, continued access to appropriate mental health care, and a persistent and dedicated probation officer, set Garrett up for success in terms of finding a job and becoming a productive adult.*

Garrett is another example of a youth facing serious roadblocks to a successful transition to adulthood, including a long history of justice involvement and significant mental health problems. For youth such as Garrett, multiple factors need to be addressed, including housing, mental health care, and education. In his case, Garrett was lucky to have mental health and juvenile justice providers who had knowledge about community resources, experience with transition age youth, and the resources to work together to meet his needs. The majority of justice-involved youth are not as fortunate. Even under the best circumstances, this fragmented system of services can fail transition age youth, and such youth have the capacity to fall through the cracks because of inappropriate services (in Garrett's case, traditional high school and adult education), failure to qualify for services (unwillingness to disclose mental health condition), and lack of family support, among other barriers. There have been some recent efforts to improve coordination of services, but much more needs to be done. In the next sections of this paper, we review what is known about best practices for justice-involved transition age youth with mental health problems and provide suggestions for further development. Although there are few specific policies focused on transition needs of youth in the juvenile justice system with or without mental health problems (Hoffman, Heflinger, Athay, & Davis, 2009), policies that may impact this group are highlighted.

### ***Evidence-Based and Promising Practices and Policies***

Unfortunately, there is very little information on evidence-based practices specifically for justice-involved transition age youth with mental health problems. Most of what we know is extrapolated from studies with adult or adolescent justice-involved populations or from studies of mental health treatments in the general population. These approaches may work differently for justice-involved transition age youth with mental health problems, given

the multiple complicating factors that must be addressed. Further, more research attention is needed on treatment of mental health problems in justice-involved populations of all ages. For example, a variety of treatments have been well validated to target delinquency among justice-involved adolescents (e.g., Multisystemic Therapy, Functional Family Therapy; for review, see Henggeler & Sheidow, 2012), but far fewer treatments are specifically designed for transition age youth or to address mental health problems among justice-involved youth from either age group. Thus, we will summarize what is known that may be applicable to transition age youth while identifying areas in need of further investigation and development.

### **Multisystemic Therapy**

Multisystemic Therapy (MST) is a well-established, intensive, community-based treatment for delinquent behavior among justice-involved adolescents (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 2009). Two adaptations of MST are relevant to this review. First, MST was adapted for justice-involved transition age youth with serious mental health concerns (i.e., Multisystemic Therapy for Emerging Adults [MST-EA]). MST-EA integrates MST principles, evidence-based mental health treatments, and an on-staff psychiatrist for medication monitoring. In addition, MST-EA therapists target concerns relevant to transition age youth (e.g., educational/vocational goals, independent housing). A pilot study found reduced recidivism and mental health symptoms and effective engagement in school, work, or both (Sheidow, McCart, & Davis, 2012), but additional research is needed. Second, Family Integrated Transitions (FIT) is a MST adaptation for youth with co-occurring mental health and substance use disorders transitioning back home from incarceration (Trupin, Kerns, Walker, DeRoberts, & Stewart, 2011). FIT combines MST, dialectical behavior therapy, parent training, and motivational enhancement implemented two to three months prior to release through four to six months after release. A pilot study found reductions in felony (but not overall) recidivism among 12- to 19-year-old youth (Trupin et al., 2011). However, FIT was not designed for transition age youth, rather for justice-involved adolescents with mental health problems who are living with their parents.

### **Foster Care**

Several policies and programs related to foster care are relevant for justice-involved transition age youth. The first is the John H. Chafee Foster Care Independent Living Program, which was expanded under the Foster Care Independence Act (FCIA) of 1999 to provide aid to youth up to age 21 to promote successful transition to independent living. Funds can be used for support services, including housing; educational, vocational training; and mental health treatment (Foster & Gifford, 2005). Thus, youth-serving professionals should be aware of how to access these funds in their states. It should be noted, however, that states have had difficulty providing comprehensive and well-coordinated services under this program because of limitations in available federal funds (Collins, 2004). Second, Multidimensional Treatment Foster Care (MTFC) is home-based family treatment developed for youth involved with child welfare as an alternative to group homes and residential settings (Chamberlain, 2003). MTFC utilizes specialized foster homes where caregivers are well trained and supported to handle delinquent behaviors, as well as coordination of care for individual and family therapy, educational programming, skills training for youth, and psychiatric care if needed. MTFC has shown effectiveness in reducing delinquent behaviors, justice system contacts, substance use, and teen pregnancy with adolescent populations (up to age 17) (Chamberlain, Leve, & DeGarmo, 2007; Leve, Chamberlain, Smith, & Harold, 2012; Smith, Chamberlain, & Eddy, 2010). MTFC has not been evaluated with transition age youth. However, given the extension of foster care services through the transition age, MTFC may prove to be useful for this group.

### **Wraparound Services**

Wraparound services use a system of care philosophy, emphasizing the importance of maintaining youth in the least restrictive environment through intensive coordination of multiple services (Bruns et al., 2004). The Connections program in Washington state is one of the most rigorously studied wraparound programs for youth with mental health problems (Pullman et al., 2006). Each family is assigned to a team of professionals, including a mental health care coordinator, probation counselor, family assistance specialist (for emotional support, practical assistance), and a juvenile services associate (for mentoring, aiding with completion of the treatment plan). Youth in this program were less likely to recidivate in general and have a felony offense in particular, and they served less detention time than

comparison youth (Pullman et al., 2006). Other similar programs also have shown promising findings for reducing recidivism (Anderson, Wright, Kooreman, Mohr, & Russell, 2003; Kamradt, 2000), though one program produced positive effects on educational outcomes and police contacts but not on arrests or incarceration (Carney & Buttell, 2003). Interestingly, evaluations of these programs have not focused on mental health outcomes. Further, there have not been evaluations of wraparound services specifically for transition age youth.

### **Diversification Programs**

Similarly, there has been research on a multitude of diversion programs for juvenile offenders, though not specifically for transition age youth (for a review, see Chapin & Griffin, 2005). Diversion programs provide alternatives to formal justice system sanctions, typically for first-time offenders, and often provide treatment in lieu of punishment. A recent meta-analysis failed to find a link between these programs for general juvenile justice system populations and a significant reduction in recidivism, even among diversion programs specifically for mental health needs (Schwalbe, Gearing, MacKenzie, Brewer, & Ibrahim, 2012). However, evidence-based interventions for adolescent delinquent behaviors, such as MST and Functional Family Therapy, were rarely included as part of the programs' diversion plans; when they were included, results were promising. Thus, diversion programs may be an effective tool when evidence-based treatments are available in the surrounding communities. These findings highlight the need to develop and disseminate effective treatments that can serve as viable diversion options specifically for transition age youth. Furthermore, diversion programs can effectively reduce the amount of time spent in locked settings, a known contributor to developmental delays in this age group (Chung et al., 2005). For these reasons, diversion programs tailored to meet the needs of transition age youth with mental health problems should be developed and examined as alternatives to formal sanctions.

### **Reentry and Aftercare Programs**

A variety of reentry and aftercare programs have been developed for justice-involved youth, with a few designed specifically for transition age youth. Such programs are initiated either during the transition from incarceration to the community or soon after reentry, and

they aim to reduce recidivism through provision and coordination of services. In a meta-analysis of such programs for justice-involved adolescents and young adults (but not specifically youth with mental health needs), a small but positive effect on recidivism was identified (James, Stams, Asscher, De Roo, & van der Laan, 2013). Interestingly, results suggested a particular benefit for older youth compared with younger youth. Two of the reviewed programs were designed specifically for transition age youth. The Boston Reentry Initiative (BRI) involved individualized transition plans (e.g., acquisition of housing and employment, continuation of mental health treatment) as well as frequent contact with a mentor for ensuring program success (Braga, Piehl, & Hureau, 2009). BRI lowered re-arrest rates among young adults (18 to 32) with violent criminal histories. The second program, Lifeskills'95, also incorporated developmentally appropriate services, including job training and educational resources, skills training, and substance use services delivered through weekly meetings (Josi & Sechrest, 1999). Lifeskills'95 was superior to usual services on measures of recidivism, employment, substance abuse, and family relationships among youth aged 16 to more than 22. Although promising, these programs have not been tested within the juvenile justice system or specifically with youth with mental health needs.

A promising reintegration program that has been evaluated for adolescents is Multidimensional Family Therapy–Detention to Community (MDFT-DTC) (Liddle, Dakof, Henderson, & Rowe, 2011). MDFT is a family-based intervention originally designed for treatment of adolescent substance use (Little, Dakof, & Diamond, 1992). The DTC adaptation extended the MDFT model to justice-involved youth with substance abuse and related emotional or behavioral disorders. In a pilot study, MDFT-DTC showed promising results in terms of feasibility, implementation, and treatment engagement and retention (Little et al., 2011). It should be noted, however, that MDFT-DTC's family focus may preclude it from being effective for transition age youth, particularly those with strained or nonexistent relationships with parents.

### **Coordination of Care Programs**

Given the wide array of services that youth must navigate, improving coordination of care and linkage to services is important. Although coordination of care is often included as

part of reentry and aftercare programs following incarceration, surprisingly few programs provide coordination services to justice-involved youth who are sentenced to probation. However, one such program, Project Connect, aims to link juvenile probationers with mental health and substance use services (Wasserman et al., 2009). Features include cooperative agreements between probation and mental health, facilitated mental health referrals, systematic mental health screening, and training for probation officers. In a sample of young probationers (mean age 14), this program successfully increased access to mental health services (Wasserman et al., 2009). Although it has been studied only with adolescents, Project Connect serves as an example of how to increase interagency collaboration, an outcome that is sorely needed for transition age youth.

### ***Domain-Specific Services***

In addition to programs developed specifically to meet the needs of justice-involved youth, there are some effective programs developed within specific domains relevant to youth with mental health needs. It is likely that none of these interventions alone will be sufficient to ensure a successful transition to adulthood for justice-involved youth, and coordination and individualization of such services will be needed to ensure effectiveness. However, they represent what could be the building blocks of successful programming for justice-involved transition age youth.

### **Mental Health Treatment**

Few mental health treatments have been adapted specifically for transition age or justice-involved youth. A review of evidence-based treatments for behavioral and mental health problems for justice-involved youth has been completed by Sukhodolsky and Ruchkin (2006). As they note, very little is known about the effectiveness of evidence-based mental health treatments in justice settings, and such treatments are rarely available to justice-involved youth. Although this may reflect barriers to disseminating evidence-based treatments in general, the justice system presents unique challenges, including treatment of youth with multiple problems (e.g., delinquent behaviors, substance use) often not addressed in treatment for single disorders.



By definition, justice-involved youth with mental health problems have multiple problems, and the provision of an evidence-based treatment designed for single disorders is unlikely to be sufficient in ensuring a successful transition to adulthood. The Comprehensive Community Mental Health Services (CCMHS) for Children and Their Families Program, administered by the Substance Abuse and Mental Health Services Administration (SAMHSA) and the U.S. Department of Health and Human Services, aims to address this issue among youth (up to age 21) with mental health problems (SAMHSA, 2010). CCMHS's goal is to coordinate systems of care for youth with mental health problems. In a large-scale evaluation, CCMHS improved functional impairment, school performance, mental health service utilization, arrest rates, and delinquent behaviors (SAMHSA, 2010). Importantly, 57 percent of these youth had conduct problems or delinquency, lending support for CCMHS's potential effectiveness for justice-involved youth. Evaluations of communities implementing CCMHS have shown increased availability of evidence-based mental health services and improved service delivery systems. Thus, CCMHS is a viable community-level intervention that could increase access to effective mental health care for youth.

SAMHSA also has funded demonstration programs focused on transition age youth. In 2002, the Partnerships for Youth Transition program funded five sites to develop transition support systems for youth (up to age 24) with serious emotional disturbance. Participants in this cross-site evaluation showed moderate improvement in employment and education outcomes, but mixed results for justice system involvement and substance use (Haber, Karpur, Deschenes, & Clark, 2008). Another program, the Emerging Adult Initiative, emphasized greater system change and policy work and funded seven sites in 2009. Because this program is still underway, outcomes are not yet known, but a preliminary report suggests positive results (SAMHSA, 2013). As the goal of these grants is to improve system coordination for this age group, including connections to adult services, these may develop into resources for transition age youth with mental health needs in the juvenile justice system.

### **Substance Use Treatment**

Substance abuse is the most common co-occurring problem in this population, and there are a handful of substance use treatments with a strong evidence base for adolescents and for adults. These include family-based treatments, contingency management, motivational interviewing, and cognitive behavioral approaches (Kaminer & Burlison, 1999; Martino, Carroll, O'Malley, & Rounsaville, 2000; Steinberg, Ziedonis, Krejci, & Brandon, 2004; Waldron & Kaminer, 2004; for review, see Waldron & Turner, 2008). Less is known about the effectiveness of these treatments for transition age youth, particularly those with co-occurring mental health problems (Sheidow, McCart, Zajac, & Davis, 2012). For example, although family involvement has been shown to be an important predictor of positive treatment outcomes in adolescent samples, it is less clear how to involve families in developmentally appropriate ways for transition age youth. Further, among youth with co-morbid mental health problems, an integrated approach to mental health and substance use treatment is recommended.

### **Educational and Vocational Supports**

The Individuals with Disabilities Education Act (IDEA) has important implications for youth with special education needs. IDEA-mandated individualized education programming requires transition planning for higher education and employment, including goal-setting; assessment; and services related to postsecondary school education, employment, and independent living skills. Further, special education services can continue for youth through age 21 who are seeking a diploma. However, transitional services are not consistently and effectively implemented and can be poorly suited for youth who qualify for special education for emotional or behavioral disorders (Geneen & Powers, 2006; Wagner & Davis, 2006).

Although there are no evidence-based interventions to support postsecondary education for transition age youth with psychiatric disabilities (Rogers, Kash-MacDonald, & Maru, 2010), some programs have been developed to support secondary education. For example, Check and Connect aims to increase students' educational engagement through systematic monitoring of academic performance; building of individualized problem-solving skills; and provision of a trained mentor who partners with the family, school, and community. In a pilot study, Check and Connect reduced dropout and improved school

performance of secondary students with emotional disturbance (Sinclair, Christensen, & Thurlow, 2005). It is currently undergoing testing in a larger clinical trial. The Jump On Board for Success (JOBS) program provides developmentally tailored wraparound services (VanDenBerg & Grealish, 1996) focused on career development. JOBS specialists coordinate wraparound care and supported employment for youth aged 16 to 22 with serious emotional disturbance who are served in the children's system or adult corrections (Clark, Pschorr, Wells, Curtis, & Tighe, 2004). Participants increased engagement in school and/or competitive employment from 23 percent at baseline to 96 percent at graduation (Clark et al., 2004). Finally, Individualized Placement and Support (IPS) is an evidence-based employment intervention for adults with mental illness. Across four studies, individuals receiving IPS had almost double the employment rate and about three times the number of weeks with employment compared with controls (Bond, Drake, & Becker, 2012). There were some caveats, however. Young adults in IPS were not employed for most weeks, and the average number of weekly work hours was still fewer than 20. Thus, although IPS is more effective than usual services, outcomes were well below a desirable amount of work.

Another resource, *Guideposts for Success*, is an evidence-informed handbook developed by the National Collaborative on Workforce and Disability for Youth (2005) to provide guidance on support services for transition of youth with disabilities from school to work. The guideposts are developmentally appropriate for transition age youth, including work-based experiences, youth empowerment, family involvement, system linkages, and Social Security Administration waivers and benefits counseling. In a multisite evaluation of *Guideposts for Success*, youth in programs that delivered more hours of employment services had significantly more work hours and higher wages than control groups. However, there were no significant differences between participants of *Guideposts for Success* and the control group at the one site that targeted youth with serious emotional disturbances (Wittenburg, Mann, & Thompkins, 2013), highlighting the need for additional research.

Currently, the National Institute on Disability and Rehabilitation Research (NIDRR) funds two research and training centers relevant to justice-involved transition age youth: one focuses on educational and vocational supports for transition age youth with serious mental health concerns (<http://labs.umassmed.edu/transitionsRTC/>), and the other is focused

broadly on interventions to promote successful transitions to adulthood for youth with mental health problems (<http://www.pathwaysrtc.pdx.edu/>). These federal initiatives are an acknowledgement of the importance of research on and services for transition age youth with mental health problems. Furthermore, these centers have developed and begun to evaluate interventions for this age group (e.g., MST-EA described previously). Currently being evaluated, the Thresholds Young Adult Program is a transitional living program for youth aged 16 to 21 that provides educational, vocational, case management, and mental health services while encouraging independent living skills (Transitions RTC, 2012). This model is augmented by peer mentors, same-age support persons who provide guidance and support related to vocational activities. The Better Futures Program focuses on coordination of care across multiple systems through the use of individualized coaching, peer support, and connection to community resources to support postsecondary education among transition age youth with serious mental health conditions in foster care (Pathways RTC, 2013). An evaluation of this program is underway.

### **Health Care**

For many youth, the justice system provides their first access to much-needed health care (Golzari, Hunt, & Anoshiravani, 2006; Rogers, Pumariega, Atkins, & Cuffe, 2006). Further, transition age youth are at particular risk for insufficient health care coverage. Thus, medical care is an additional consideration in the maze of service needs for justice-involved youth. This is particularly important because this population has high rates of risky sexual behaviors, which in turn increases risk for sexually transmitted infections (STIs). In fact, transition age youth have the highest rates of new HIV diagnoses, the worst treatment engagement and retention, and the poorest adherence to medication regimens (Braithwaite et al., 2005; MacDonell, Naar-King, Murphy, Parsons, & Harper, 2010; Metsch et al., 2008). Young adults with chronic health conditions not only must negotiate the transition to adulthood but also frequently must face significant transitions in care as they become less dependent on their parents' involvement, shift from pediatric to adult care settings, and face the loss of health care coverage (MacDonell et al., 2010).

Physical health resources for incarcerated youth are different from those for justice-involved youth in the community. Many youth who have Medicaid coverage prior to incarceration are unenrolled upon arriving at the facility. This can be problematic, as re-enrolling is a difficult process in some states. Incarcerated youth also present with significant health needs, including chronic medical conditions and high rates of STIs (Bradley & Kalfs, 2003; Feinstein et al., 1998; Mertz, Voigt, Hutchins, & Levine, 2002). The large majority of juvenile correctional facilities provide health screenings at admission and access to psychotropic medication management within the facility (Pajer et al., 2007). Reentry planning is needed to ensure continuation of medical treatments and access to health care upon leaving the facility.

### **Housing and Transportation**

Obtaining and maintaining independent housing poses a significant challenge for many transition age youth. Justice-involved youth often have not had the opportunity to develop independent living skills and lack the family support that many of their non-justice-involved peers receive during this transition. For low-income youth, housing subsidies are in short supply and have long waiting lists. One solution is for juvenile justice or mental health agencies to develop collaborations with public housing agencies to allow rapid access to housing options and assistance (Koyanagi & Alfano, 2013). Transportation barriers are similar to those for housing. Systems that justice-involved youth must access require that youth are mobile and can attend multiple weekly appointments. There is no guarantee that service providers are located in close proximity to one another. Youth often lack the financial resources to have independent transportation and must rely instead on family members, friends, or public transportation. This barrier is even more pronounced in rural areas where distances between service providers can be great, and public transportation is not available. There are currently no known programs or policies addressing these important problems.

### **Pregnancy and Parenting**

High rates of risky sexual behaviors also put justice-involved females at risk for pregnancy and early parenthood. In a study of female adolescents (ages 13–17) involved in both the juvenile justice and child welfare systems, between 22 percent and 30 percent

reported a pregnancy during their lifetime (Kerr, Leve, & Chamberlain, 2009). This number undoubtedly increases as youth reach transition age, with a larger number of young women becoming parents. Researchers have recognized the need for gender-specific programming in the juvenile justice system to address needs related to pregnancy and parenting (Bloom, Owen, Deschenes, & Rosenbaum, 2002), but evidence-based programs are not currently available.

For youth with a mental health diagnosis, parenting can be an overwhelming task, and intensive services are often necessary to ensure support for the youth and her child. One such program is the Nurse-Family Partnership (NFP), an evidence-based home visitation program that provides services during and following pregnancy for low-income, first-time mothers (for a review, see Olds, 2006). NFP has been shown to improve both the mother's care of her child and her own well-being, generates significant reductions in subsequent pregnancies, and generates greater vocational success. More recently, an augmentation of NFP for mothers with mental health problems (i.e., depression, partner violence) has been developed but has not yet been evaluated (Boris et al., 2006). Although NFP has not been evaluated with justice-involved mothers, it has the potential to be a helpful tool in the arsenal of programs for this group.

### ***Policy and Practice Recommendations***

Justice-involved youth with mental health problems are at a serious disadvantage as they navigate the transition from adolescence to adulthood, a period that can be challenging even without the significant barriers faced by this group. Current policies and programs are not sufficient in addressing the needs of these youth and, in some cases, put them at greater risk for continued mental health problems, recidivism, and a failure to transition to productive adult roles. Thus, substantial reform is necessary to ensure the success of such youth. As suggested by others, an overarching recommendation is that federal policies, including IDEA and the Chaffee Act, are fully implemented in the juvenile justice system (see Gagnon & Richards, 2008; Koyanagi & Alfano, 2013). Most of the policies relevant to juvenile justice are at the state rather than federal level; however, two federal programs provide funding that can be used by juvenile justice programs: federal block grants and Title V Local

Community Prevention Incentive Grants. Federal block grants currently only fund programs for youth up to age 18, precluding their use for transition age youth in juvenile justice systems beyond age 18. It is strongly recommended that federal block grants, as well as other federal policies that set upper age limits of 18 for “child” programs, extend the upper age limit minimally to age 21, and ideally to age 25. The Title V Local Community Prevention Incentive Grants program is not age restrictive but is highly competitive, making it difficult for many local programs to secure this funding.

Clearly, additional funding streams must be identified in order to support programs for this age group, and federal policies affecting this population must be fully implemented. In addition, this section of our review offers nine suggestions for policies to promote systemic reform of the multiple systems currently serving this complex group of youth.

### **Recommendation 1. Rehabilitation Versus Punishment**

There is a continued need to encourage a rehabilitative, rather than punitive, approach in the juvenile justice system in general and, further, to extend this approach to transition age youth. The abrupt change from rehabilitation to punishment on or around the 18th birthday is arbitrary and has not been effective at deterring future crime. Policymakers are encouraged to extend programs for juvenile justice to cover the full range of the transition to adulthood (through age 25), as youth in this age group are likely to be developmentally more similar to adolescents than adults. In addition, specific policies should be made for the young adults in this age group; it is recommended that these policies take a rehabilitative approach similar to the juvenile justice system while incorporating age-appropriate supports, including educational supports, and vocational supports, and mental and substance use treatment.

Several states have implemented specific programs for youth between mid-adolescence to young adulthood within their criminal justice systems. The following are two such examples:

- In South Carolina, the Department of Corrections has established a Division of Young Offender Services to comply with the South Carolina Youthful Offender Act. Youth

under age 25 are eligible for Young Offender programs, which take a rehabilitative approach and allow for less severe sentencing compared with adult criminal justice system processing. Such programs offer access to specialized intensive probation officers who aid in coordination of care, mental health and substance use services, and educational/vocational supports. Although this program encompasses many of the policy recommendations related to this age group, it is fairly new and evaluations are needed to determine its efficacy. Additional information can be found online (<http://www.doc.sc.gov/pubweb/programs/young.jsp>).

- In 2009, Colorado expanded its Department of Corrections' Youthful Offender System (YOS) to include 18- and 19-year-olds. The YOS program had formerly been for youth ages 14–17 who had been sentenced as adults. Program components include annual staff training on issues specific to this age group, mental health services, and specific programming for female youth. A recent evaluation of this program has found high completion and encouraging recidivism rates (Colorado Department of Public Safety, 2012).

## **Recommendation 2. Mandatory Transition Planning in the Juvenile Justice System**

Transition planning should be a required element for youth ages 16 or older who are involved in the juvenile justice system. The majority of these youth will require some specialized supports as they transition to adulthood. Transition planning is already a requirement for youth who receive special education services and those in foster care (through the Fostering Connections Act), and the educational and child welfare systems have models for how to implement such planning. These plans should include provisions for smooth transitions from child to adult systems of care (e.g., mental health) and also assess and plan for needs in key areas crucial to success in adulthood (e.g., education, vocation, community participation). It is recommended that these plans be integrated with any transition plans already in place for youth in foster care and/or special education services, and that stakeholders from key community agencies (e.g., mental health, child welfare, vocational rehabilitation, school districts) have input in transition planning. Specifically, coordination with other relevant systems should be attained through memoranda of



understanding (MOUs) to achieve the commitment needed for ensuring services that prevent recidivism and promote young-adult functioning.

Policies should be developed requiring transition planning for the juvenile justice system that is modeled on the requirements set forth in the IDEA but with more frequent review and updating of the plan. IDEA is comprehensive, as it requires annual updates, involvement of the family, transition goal setting as youth leave the school system, and linkages to the programs that will help them continue with those goals. It also requires participation of the state agencies that will implement the plan after youth leave high school. A potential area of concern is how to link youth effectively with community services and how to ensure that these agencies are held responsible for the youth's care. One compelling example of how to coordinate care between service systems can be found in an annual report from the U.S. Government Accountability Office (2008) in regards to transition planning for young adults with serious mental illness.

### **Recommendation 3. Coordination of Care Across Service Systems**

There is a clear need for improvements in collaboration and coordination of care among the many service systems involved with transition age youth with mental health problems in the juvenile justice system. Adult service systems, including adult mental health and vocational rehabilitation, must be included. Policies aimed at improving coordination of care should hold agencies accountable for youth outcomes related to the services they are provided, so as to ensure youth do not fall through the cracks and are meeting the goals of each system. The most pervasively practiced model of coordination of care for youth with mental health conditions is the wraparound approach described above, though not all wraparound teams place such emphasis on the juvenile justice population and its needs. Policies that support full implementation of wraparound, extend wraparound to age 21, and require relevant agency involvement in the oversight of the wraparound team and presence on the local wraparound committee should facilitate care coordination. A practice model for coordination of care is Project Connect, also described above, though this program would need careful modification to meet the needs of transition age youth.

The Los Angeles County Department of Mental Health (LACDMH) implements a program that presents another example of coordinating services between juvenile justice and mental health systems. LACDMH provides a range of mental health and supportive services for transition age youth ages 16 to 25 with serious mental health problems and identifies youth aging out of the juvenile justice system as a priority population. In addition to mental health treatment, services include system navigation teams of mental health and housing specialists who guide youth through the various human services systems, as well as supports related to housing, juvenile justice aftercare, and drop-in centers where youth can access peer support and vocational/educational services. It has not been examined empirically, but more information can be found online ([http://dmh.lacounty.gov/wps/portal/dmh/our\\_services](http://dmh.lacounty.gov/wps/portal/dmh/our_services)).

Tennessee's Department of Children's Services (DCS) developed a practice model to coordinate care across the juvenile justice and child welfare systems that aimed to unify the competing perspectives and philosophies of these youth-serving systems in the state while balancing community safety issues with youth development and welfare (see Altschuler, Stangler, Berkley, & Burton, 2009 for more details). For juvenile-justice-involved youth, the results of this model were an increased focus on family-centered practices and increased coordination of care. Although this policy change has not been formally evaluated, it stands as a model for integration of two systems relevant to justice-involved transition age youth.

A care coordination policy example is the state of Connecticut, which has a consolidated child agency (containing juvenile justice, child welfare, and child mental health systems) and has developed a MOU that describes the process of linking young people receiving services in the children's system to adult mental health services. This MOU defines the application process that young people must follow to request adult mental health services, designating financial responsibilities for services identified in the transition plan. It also requires the children's system to designate a transition coordinator for each youth and to identify youth populations who do not meet adult services criteria but who still may receive services through the adult system's Young Adult Services Division, which serves 18- to 25-year-olds (<http://www.ct.gov/dmhas/cwp/view.asp?q=334784>).

Whenever possible, service systems should be condensed either under one roof or in close physical vicinity to one another. Transition age youth face many barriers to receiving services and, given the multiple systems with which they come into contact, increasing the convenience of attending appointments can go a long way toward improving engagement with services. An alternative to this is allowing service providers the flexibility to meet with youth in the youth's home or community.

#### **Recommendation 4. Availability of Evidence-Based Mental Health Treatments and High-Quality Services**

One commonly cited barrier to offering evidence-based mental health treatment is lack of health care coverage, although there are expectations that the ACA will address this problem. Many provisions in the ACA should increase availability of coverage for young adults in general. However, there also are reasons to be skeptical about the effectiveness of such reforms, at least for transition age youth with substantial mental health morbidity. Each step of preventing disenrollment or obtaining alternative health care coverage requires individuals to engage in the application process, which may be a substantial barrier for this group. Indeed, studies of health care reform in Massachusetts have found increased enrollment for young adults in Medicaid and through health care exchanges (Gettens, Mitra, Henry, & Himmelstein, 2011; Long, Yemane, & Stockley, 2010) but worse enrollment among adults with behavioral health problems (Capoccia et al., 2013). Thus, the effects of ACA on access to health care coverage should be closely monitored among vulnerable youth such as those we focus on here; if compromised, efforts should be made to improve access to care for this group.

Improving access to and coordination of care and linkage to services are important but will only be effective if high-quality mental health services are available in the community with which to link youth. Local mental health agencies should train providers to work with transition age youth, and, when possible, specialized caseworkers and mental health providers should be available for this age group.

#### **Recommendation 5. Training for Professionals Who Work With Transition Age Youth**

Professionals who work with transition age youth with mental health problems must be trained on the specific needs of this population. This is true for juvenile justice, mental health, and vocational rehabilitation systems. Services provided by adult or child systems of care often are not appropriately tailored to meet the unique needs of this age group. When there is a large enough pool of justice-involved transition age youth in a given area to sustain it, it also is recommended that there be a specialized group of probation officers who are trained to work with transition age youth and who are knowledgeable about the age-specific services available for youth in the surrounding areas.

We are unaware of training opportunities specifically for those working with justice-involved transition age youth with mental health problems; however, there are various training sources that focus on this age group's mental health needs, disabilities, or foster care. The Transitions RTC (<http://labs.umassmed.edu/transitionsRTC/index.htm>) and the Pathways RTC (<http://www.pathwaysrtc.pdx.edu/>), two rehabilitation research and training centers, offer a variety of training materials and technical assistance on the service needs of transition age youth with mental health problems. In addition, some state or local departments of mental health have developed training resources for professionals working with transition age youth, as follows:

- The Youth and Family Training Institute was formed to assist Pennsylvania's Department of Public Welfare's Office of Mental Health and Substance Abuse Services Children's Bureau (<http://www.dpw.state.pa.us/>) in bringing High Fidelity Wraparound to the Commonwealth (<http://www.yftipa.org/>). This institute offers training for professionals in preparing youth for the transition to adulthood.
- As part of its Mental Health Services Act, California developed a plan to address workforce training deficits in, among other topics, transition age youth (<http://oshpd.ca.gov/LawsRegs/MHSAWETFiveYearPlan.pdf>).
- The National Collaborative on Workforce and Disability offers a variety of workforce training opportunities (<http://www.ncwd-youth.info/professional-development>) and provides a library of resources on the transition process that can orient staff to the issues facing this age group.

- Finally, the Jim Casey Youth Opportunities Initiative (<http://jimcaseyyouth.org/browse-resources/practice-tools>) provides numerous reports related to the transition to adulthood for youth in foster care.

### **Recommendation 6. Additional Research and Program Development**

Additional research and program development focused on mental health treatments and transition services is needed specifically for transition age youth in juvenile justice settings. Current programs for adolescents and adults can be used if carefully adapted for this age group, but thorough evaluations of the efficacy of such programs are sorely needed. Transition age youth have specific needs related to the transition to adulthood that are unique to this developmental period.

### **Recommendation 7. Assessment of a Wider Range of Transition-Related Outcomes**

The majority of existing programs have primarily focused on outcomes related to recidivism and have neglected other important outcomes for this group, including mental health and vocational/educational outcomes. Assessments of these outcomes further into adulthood also are needed. Without examining adult outcomes (i.e., up to five years after aging out of the juvenile justice system), it is unclear whether programming is actually working. Related to Recommendation 3, coordinating with other systems to assess outcomes important to those systems (mental health, education) will help share the burden of these evaluations while helping to hold individual agencies accountable for their priority aims. The development of MOUs with other state agencies can help assess these further into adulthood.

### **Recommendation 8. Smaller Caseloads**

The high caseloads seen across the multiple systems serving transition age youth preclude the individualized intensive services often required for justice-involved youth with mental health problems. This problem can be seen among mental health providers, juvenile justice probation officers, child welfare case managers, and vocational rehabilitation providers. Without an increase in the time allocation for these complex cases, it will be difficult for youth to receive the level of service they require.

**Recommendation 9. Promotion of Appropriate Involvement of Families**

As youth transition to adulthood, they often require the support of their family; however, family involvement is likely to decrease as youth progress through this developmental period. The aim should be to move youth progressively into “the driver’s seat” while encouraging support from family members. This is likely to be a helpful framework across all systems, including juvenile justice, mental health, vocational rehabilitation, and child welfare.

***Conclusion***

Youth with both juvenile justice involvement and mental health problems are a vulnerable group, particularly during the transition from adolescence to adulthood. The multiple problems faced by such youth present barriers to meeting the normative developmental milestones of this age, including vocational and educational success, development of stable relationships, and maturation into productive adults. Current policies and practices in the juvenile justice system are not well suited to meeting the multiple needs of these youth and, at times, can exacerbate existing problems. However, given the high prevalence of youth with mental health problems involved with the juvenile justice system, providers and policymakers have the opportunity to impact a large number of vulnerable youth through the implementation of effective programming in this system.

Substantial changes in the juvenile justice and mental health systems will be required to ensure successful transitions to adulthood for this group. An overarching theme of this review is the need for developmentally appropriate policies and interventions. An effective approach will take into account factors that differentiate this age group from both adolescents (e.g., less family involvement, greater focus on developing vocational and independent living skills) and adults (e.g., continued brain development, transitions between systems of care). At the same time, effective coordination of the various systems that transition age youth must navigate is key to overcoming barriers to the access of such services, and providers must be well versed in the specific needs of transition age youth. Although policies and programs that support the principles discussed in this review are currently rare, initiatives have been developed and implemented that target some aspects of

this problem in various jurisdictions. It is our hope that the discussion and examples provided here can serve as a springboard for continued policy and program development for transition age youth with mental health problems in the juvenile justice system.

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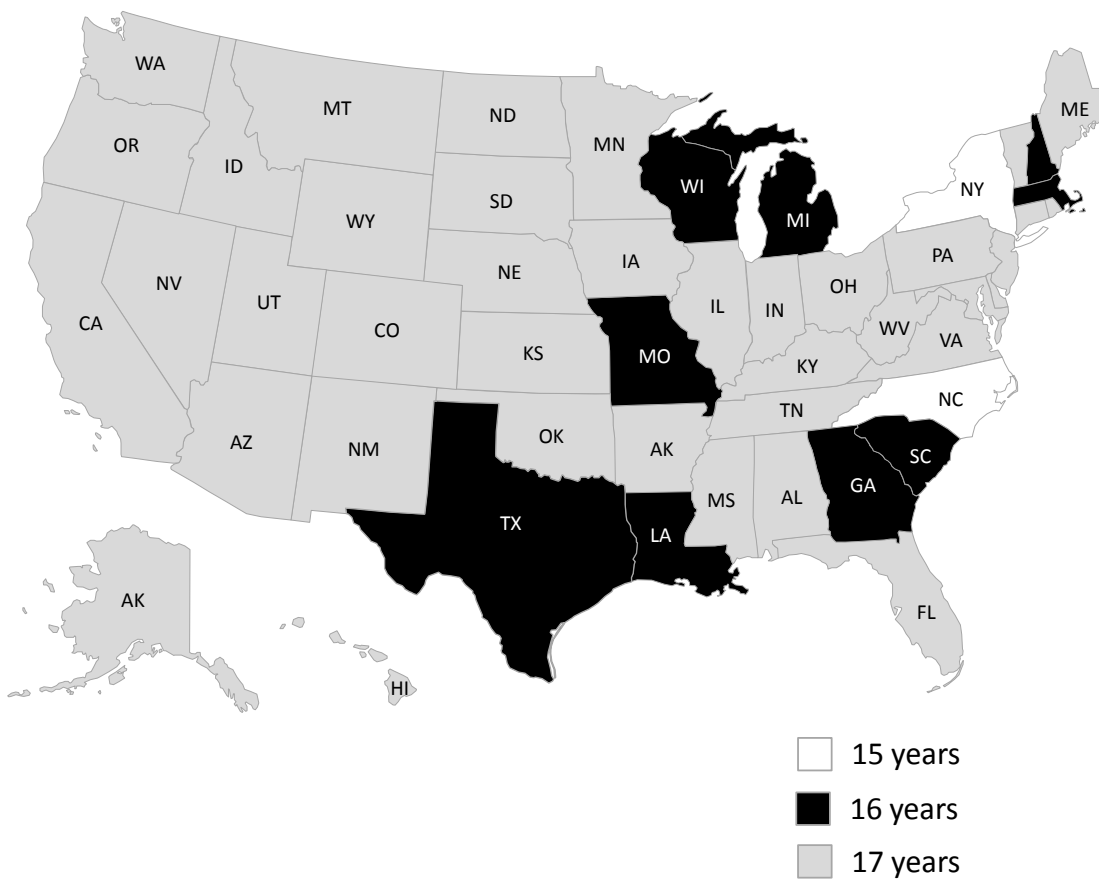
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**Figure 1. Upper Age of Original Juvenile Court Jurisdiction, 2013**



Source: Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U.S. Department of Justice. (2012). *Statistical Briefing Book*. Retrieved from [http://www.ojjdp.gov/ojstatbb/structure\\_process/qa04101.asp?qaDate=2011](http://www.ojjdp.gov/ojstatbb/structure_process/qa04101.asp?qaDate=2011)

**Table 1. Extended Age of Juvenile Court Jurisdiction, 2011 (OJJDP, 2012)**

State	Through Age 18	Through Age 19	Through Age 20	Through Age 21	Through Age 22	Through Age 24	Full term of disposition order
Alabama			X				
Alaska	X						
Arizona*			X				
Arkansas			X				
California						X	
Colorado							X
Connecticut			X				
Delaware			X				
District of Columbia			X				
Florida				X			
Georgia			X				
Hawaii							X
Idaho			X				
Illinois			X				
Indiana			X				
Iowa	X						
Kansas					X		
Kentucky	X						
Louisiana			X				
Maine			X				
Maryland			X				
Massachusetts			X				
Michigan			X				
Minnesota			X				
Mississippi		X					
Missouri			X				
Montana						X	
Nebraska	X						
Nevada**			X				
New Hampshire			X				
New Jersey							X
New Mexico			X				
New York			X				
North Carolina			X				
North Dakota			X				
Ohio			X				
Oklahoma	X						
Oregon						X	
Pennsylvania			X				
Rhode Island	X						
South Carolina			X				
South Dakota			X				
Tennessee							X
Texas	X						
Utah			X				
Vermont				X			
Virginia			X				
Washington			X				
West Virginia			X				



Wisconsin  
Wyoming

x

x

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Source: Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U.S. Department of Justice. (2011). *Statistical Briefing Book*. Retrieved from [http://www.ojjdp.gov/ojstatbb/structure\\_process/qa04106.asp?qaDate=2011](http://www.ojjdp.gov/ojstatbb/structure_process/qa04106.asp?qaDate=2011). Released on December 17, 2012.



# Mental Health in Young Detainees Predicts Perpetration of and Desistance From Serious, Violent and Chronic Offending

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Mental health problems are common among young offenders but their role in predicting criminal recidivism is still not clear. Early identification and treatment of young offenders at risk of serious, violent, and chronic (SVC) offending is of major importance to increase their chances to develop into a healthy and non-criminal future and protect society from further crime. In the present study, we assessed mental health among 106 young offenders while incarcerated and analyzed their criminal careers up to 15 years after release. We found high rates of mental health issues, especially externalizing problems, but also concerning illegal substance and alcohol use patterns as well as personality disorders. Rule-breaking behavior and internalizing problems were negatively related to incarceration time until study assessment, but withdrawal and internalizing problems were positively associated with remaining time to release. Whereas, SVC status before assessment and after release were not statistically dependent, mental health issues predicted perpetration of and desistance from SVC offending after release. Alarming alcohol use appeared to be of specific importance in this regard. Findings indicate that young offenders at risk of future SVC offending may benefit from mental health treatment with specific focus on problematic alcohol consumption to prevent ongoing crime perpetration.

**Keywords:** psychiatric, disorder, juvenile offending, recidivism, incarceration, detention, delinquency

## INTRODUCTION

Two major aims of forensic psychiatry and psychology are (1) to assess and treat mental health issues in people at risk of criminal behavior and (2) to identify risk and protective factors that increase or reduce the risk of further delinquency. These aims become of specific importance when working with criminal adolescents or young adults because effective intervention may increase their chances to develop into a healthy adulthood desisting from future crime.

Mental health issues are common among young offenders. International studies have reported rates of psychiatric problems of up to 93% among young offenders, including externalizing—i.e.,

conduct disorder, oppositional defiant disorder, attention deficit hyperactivity disorder (ADHD)—but also internalizing (i.e., mood disorders, anxiety) problems, substance use disorders, and personality disorders (1–12). Rates differed with regard to the setting young people were assessed in, e.g., community-based treatment settings vs. incarceration, with the latter usually showing higher frequencies of mental health issues. However, it has been criticized that it often remains unclear to what extent mental health problems have existed before and thus may have led to criminal behavior, and to what extent placement circumstances may have influenced mental health [e.g., (1)].

There is a vast amount of research that has examined the predictive value of mental health problems in young offender samples with respect to future crime. In a recent meta-analysis including data of 5,737 juveniles, Wibbelink et al. (2) found small to moderate predictive effects of externalizing but not internalizing problems on criminal recidivism. Other studies reported similar results. Higher rates of criminal recidivism were found in young offenders with ADHD (3–5), conduct disorder (6), oppositional defiant disorder (7) as well as substance use disorders (8) and personality disorders [especially DSM Cluster B disorders (10)]. However, findings remain inconsistent across studies due to differences in definitions and assessment of mental health issues (e.g., self-reported vs. clinician-administered), recidivism (e.g., reconviction vs. reincarceration, self-reported vs. officially recorded), and crime concepts (e.g., in terms of severity and type of criminal acts). For example, mental health may relate differently to criminal recidivism when differentiating violent from non-violent crime. Bessler et al. (8), for instance, found that young offenders' mental health problems and substance use disorders in particular, were associated with risk of violent but not general (non-violent) criminal re-offending. Plattner et al. (10) concluded that substance use disorders were predictive of future non-violent, drug-related crime, but problematic alcohol use in particular was associated with violent criminal recidivism. Conversely, Mulder et al. (11) found a negative predictive relationship of psychopathology on violent reoffending. In addition, conclusive empirical evidence is lacking due to different follow-up periods among studies [e.g., adolescence vs. adulthood (11)].

However, considering differences in follow-up periods is of specific importance as delinquency has been claimed to be a common phenomenon during adolescence indicating that young people with repeated crime only during this developmental period may not be as burdened by mental health problems as those who continue criminal behaviors until adulthood (2, 12). A well-known perspective on young peoples' courses of delinquency is Moffitt's developmental taxonomy on adolescent-limited and life-course-persistent antisocial behavior (13): According to this theory, most juveniles may engage in (non-pathological) antisocial behavior during "a contemporary maturity gap" (p. 674) but desist from crime after this period, whereas a smaller proportion showing early conduct problems and higher psychosocial burden continues repeated and more severe (pathological) criminal behaviors beyond adolescence. Moffitt (14) recently described evidence from 25 years of research on this taxonomy and emphasized that more research

is needed, e.g., concerning associations of delinquent pathways with mental health.

Considering the developmental courses of delinquency as well as the potential individual and societal consequences, it appears of major importance to identify those young offenders who are at risk of serious, violent, and chronic (SVC) offending. SVC offenders have been suggested to be a rather small group but "responsible for a disproportionate amount of serious crime" (15). Following a cohort of more than 27,000 individuals over 16 years, Kempf-Leonard et al. (16) found that among young offenders with serious, violent, and chronic delinquency, those who had shown a combination of these three crime characteristics had the highest rates of adult crime perpetration. Baglivio et al. (17) examined the prevalence as well as risk and protective factors of SVC offending among more than 363,000 juveniles referred to the juvenile justice system in the US over a 5-year period. They reported a proportion of SVC offenders of 8.9%, with SVC status defined as having shown a history of four or more official referrals with at least one felony offense against a person or a weapon/firearm charge. Compared to non-SVC offenders, SVC offenders were younger at first referral and had more risk but less protective factors regarding criminal recidivism after 1 year follow-up. Although SVC offenders showed higher scores on history of mental health problems, current mental health did not differ between SVC and non-SVC offenders. Current substance use predicted future SVC rearrest. Among more than 64,000 young delinquents, Perez et al. (18) stated a proportion of 16.66% SVC offenders (defined as having committed three or more serious felony offenses with at least one violent offense) and found that a predictive effect of adverse childhood experiences (ACEs) on SVC offending was partially mediated by maladaptive personality traits (e.g., impulsivity) and adolescent problem behavior, including substance use and mental health problems.

In summary, the scientific foundation on the relations of mental health and SVC offending among young delinquents is still scarce. More long-term investigations are needed to shed light into the dynamics of mental health and other risk and protective factors with perpetration of and desistance from SVC offending in order to identify those young people at risk of continuous, severe crime involvement. Further empirical evidence may serve to elaborate adequate treatment and prevention approaches to increase young offenders' chances to develop into a healthy, crime-free adulthood and, thus, also contribute to the protection of society.

Considering abovementioned findings but also limitations of previous research, the present study aimed at examining the course of SVC offending among young detainees up to 15 years after release from incarceration and respective associations with mental health. We hypothesized that compared to SVC desisters, SVC offenders would show higher rates of mental health issues, especially externalizing problems. Baseline SVC status was suggested to be positively associated with future SVC status. We also expected that current externalizing problems, substance use problems and cluster B personality disorders would increase the risk of being a future SVC offender.

## MATERIALS AND METHODS

### Procedure and Sample

Study procedures were described in detail in previous studies of our research group (5, 19–21). In short, baseline assessment took place at the Ottweiler Juvenile Detention Center in Saarland, Germany, between 2001 and 2002. In Germany, individuals cannot be legally arrested before they reach the criminal responsibility age of 14 years, and juvenile law is usually applied to offenders up to the age of 18 to 21 years. In Saarland, according to the enforcement plan of the state, juvenile sentences and pre-trial detention of male adolescents and young adults, who are under 21 years of age at time of the offense, are carried out in the Ottweiler Juvenile Detention Center. At the time of baseline data collection, of the  $N = 170$  detainees who were initially asked to participate in the study,  $n = 41$  (24.12%) refused to sign the informed consent form or had insufficient knowledge of the German language. Thus, after being informed about the study procedures and giving written consent (when detainees were younger than 18 years old, their legal caregivers provided informed consent), a total of 129 young male offenders were included in the study. At baseline, data on young offenders' biography, criminal history, and mental health were assessed by self-rating questionnaires and clinician-administered interviews conducted by trained psychologists and psychiatrists. In order to examine the young offenders' long-term criminal careers, we obtained official criminal records including any convictions in 2016, up to 15 years after release. In Germany, criminal records consist of convictions only, so they do not provide information about criminal charges. Of the initially 129 included young offenders,  $n = 21$  could not be included in the follow up, as no criminal records were provided by justice authorities. Two more participants had to be excluded after combining the data sets (1 died, 1 could not be assigned). Subsequently, full follow-up information was available for 106 of the former 129 participants (5). Thus, we only considered their baseline and follow-up data for the present study. All participants had completely answered all included questionnaires. Thus, there were no missing data. Study procedures had been approved by the ethics committee of the medical chamber of Saarland, Germany.

Participants had been incarcerated at baseline assessment for the following index offenses: bodily harm ( $n = 30$ , 28.3%), sexual offending ( $n = 2$ , 1.9%), property related offenses ( $n = 38$ , 35.8%), narcotics related offenses ( $n = 12$ , 11.3%), homicide ( $n = 4$ , 3.8%), and arson ( $n = 1$ , 0.9%). On average, they were 18.33 years old when conducting the index offenses ( $SD = 1.77$ , range = 14–23 years). At baseline assessment, participants were 15–28 years old ( $M = 19.52$ ,  $SD = 2.10$ ). About half of the sample showed low educational levels (none or auxiliary school graduation compared to secondary school graduation or high school diploma;  $n = 56$ , 52.8%). For their index offense, participants had been incarcerated for 10.50 months on average at the time baseline assessment took place ( $SD = 9.72$  months, range = 0.27–42.77 months) and they had to face a mean of 13.51 more months until release ( $SD = 13.52$  months, range = 0–60.5 months). In total, young offenders had reported a mean

life-time incarceration of 28.99 months ( $SD = 24.98$  months, range = 0.27–147.53 months), with 58.5% being incarcerated one to 6 times before the index incarceration ( $M = 1.33$ ,  $SD = 1.26$ ). Only 25.5% ( $n = 27$ ) had never been convicted before, whereas 74.5% ( $n = 79$ ) reported at least one prior conviction, with  $n = 26$  participants having been convicted once,  $n = 21$  twice, and  $n = 32$  at least three times before ( $M = 2.55$ ,  $SD = 4.29$ , range = 0–30). Half of the sample (50.0%) had committed a violent offense before the index offense with one to 14 previous convictions for a violent offense ( $M = 1.75$ ,  $SD = 2.72$ ). Moreover, 48.1% of the participants had committed any delinquent acts even before reaching age of criminal responsibility.

Since we aimed at focusing on young offenders engaging in and desisting from SVC crime, we defined SVC offenders as proposed by previous research (18, 22): All participants who had been convicted at least 3 times before the index incarceration in which at least one of these convictions was based on a violent crime were considered SVC-pre offenders (others: non-SVC-pre offenders). All participants who were convicted at least 3 times after release from the index incarceration with at least one conviction for a violent crime were considered SVC-post offenders. All other offenders not reaching this threshold were considered SVC-post desisters.

### Measures

#### Mental Health

Young offenders' mental health was assessed using the Youth Self-Report (YSR)/Young Adult Self-Report (YASR) (23–26), which have been considered as the most widely used self-report scales for psychological/behavioral problems in young people [e.g., (27)]. A total of 112 (YSR) and 119 items (YASR)—each of them being scored from 0 (not true) to 2 (very true or often true)—can be assigned to 8 syndrome scales that build up to two higher-order problem scales: (1) the internalizing problem scale (“anxious/depressed,” “withdrawn,” “somatic complaints”), and (2) the externalizing problem scale (“aggressive behavior,” “rule-breaking behavior”). The syndrome scales “social problems,” “thought problems,” and “attention problems” are not assigned to any higher-order problem scale but are included in the total problem score. Raw values were transformed into standardized T-scores. Cut-offs indicating clinical significance of reported syndrome and problem scores are provided by the YSR/YASR manuals.

#### Substance Use

Young offenders' substance use was assessed in terms of alcohol and illegal drug consumption. Alcohol drinking behavior (frequency) and subsequent problems were examined by the German 10 item version of the Alcohol Use Disorders Identification Test [AUDIT (28–30)]. According to a participant's self-ratings, items can be scores from 0 to 4 points. A score of at least 8 points indicates alarming drinking habits. Illegal drug use was asked by means of the Structured Clinical Interview for DSM-IV [SCID-I (31)], which determines drug related problems in terms of dependence and abuse according to the DSM-IV criteria.

**TABLE 1** | Differences between SVC-pre offenders and non-SVC-pre offenders.

	SVC-pre (N = 35)			non-SVC-pre (N = 71)			<i>T</i> ( <i>df</i> )	<i>p</i>	<i>d</i>	$\chi^2(1)$	Cramer's <i>V</i>	AR
	<i>M</i>	<i>SD</i>	<i>n</i> (%)	<i>M</i>	<i>SD</i>	<i>n</i> (%)						
<b>Covariates</b>												
Age at the index offense	18.52	1.67		18.23	1.83		−0.73 (86)	0.470	−0.16			
Age at baseline assessment	19.80	3.37		19.38	1.96		−0.97 (104)	0.336	−0.20			
<b>Delinquency</b>												
Number of previous convictions	<b>4.63</b>	<b>5.97</b>		<b>1.52</b>	<b>2.67</b>		<b>−2.94</b> <b>(40.83)</b>	<b>0.003</b>	<b>−0.77</b>			
Number of previous incarcerations	<b>1.75</b>	<b>1.48</b>		<b>1.12</b>	<b>1.09</b>		<b>−2.26</b> <b>(84)</b>	<b>0.026</b>	<b>−0.52</b>			
Delinquent behavior before criminal responsibility			20 (57.1)			31 (43.7)		0.191		1.71	0.127	1.3
Lower educational level			22 (62.9)			34 (47.9)		0.147		2.11	0.141	1.5
Follow-up (months)	158.83	11.52		155.90	15.24		0.88 (77)	0.384	−0.21			
Any future conviction			31 (88.6)			58 (81.7)		0.364		0.82	0.088	0.9
Number of future convictions	40.71	103.60		13.61	17.06		−1.54 (34.91)	0.067	−0.45			
Future violent offenses			26 (74.3)			41 (57.7)		0.097		2.76	0.161	1.7
Number of future violent crimes	4.03	5.24		2.42	3.29		−1.66 (47.66)	0.052	−0.40			
Future incarcerations			<b>31</b> <b>(88.6)</b>			<b>49</b> <b>(69.0)</b>		<b>0.028</b>		<b>4.84</b>	<b>0.214</b>	<b>2.2</b>
Number of future incarcerations	<b>4.46</b>	<b>3.07</b>		<b>3.04</b>	<b>3.05</b>		<b>2.24</b> <b>(104)</b>	<b>0.027</b>	<b>−0.46</b>			
<b>Mental health</b>												
<i>Y(A)SR clinical cut-off exceeded</i>												
Social withdrawal			1 (2.9)			3 (4.2)		0.729		0.12	0.034	0.3
Somatic complaints			4 (11.4)			9 (12.7)		0.854		0.03	0.018	0.2
Anxious/depressed			4 (11.4)			7 (9.9)		0.802		0.06	0.024	0.0
Social problems			3 (8.6)			2 (2.8)		0.189		1.73	0.128	1.3
Thought problems			12 (34.3)			16 (22.5)		0.197		1.67	0.125	1.3
Attention problems			3 (8.6)			9 (12.7)		0.531		0.39	0.061	0.6
Rule-breaking behavior			19 (54.3)			31 (43.7)		0.303		1.06	0.100	1.0
Aggressive behavior			6 (17.1)			12 (16.9)		0.975		0.00	0.003	0.0
Internalizing problems			6 (17.1)			17 (23.9)		0.424		0.64	0.078	0.8
Externalizing problems			24 (68.6)			44 (62.0)		0.505		0.44	0.065	0.7
Total problem score			15 (42.9)			35 (49.3)		0.532		0.39	0.061	0.6
<i>SCID-I illegal drug use</i>			27 (77.1)			46 (64.8)		0.196		1.67	0.125	1.3
<i>AUDIT ≥ 8</i>			25 (71.4)			40 (56.3)		0.134		2.25	0.146	1.5
<i>IPDE personality disorder</i>												
Any			15 (42.9)			32 (45.1)		0.829		0.05	0.021	0.2
Cluster B			15 (42.9)			27 (38.0)		0.633		3.23	0.046	0.5
Anti-social			9 (25.7)			22 (31.0)		0.575		0.32	0.055	0.6
Emotionally-unstable			10 (28.6)			17 (23.9)		0.601		0.26	0.050	0.5
Paranoid			2 (5.7)			5 (7.0%)		0.796		0.07	0.025	0.3
Schizoid			0 (0.0)			6 (8.5)		0.077		3.14	0.172	1.8
Histrionic			0 (0.0)			1 (1.4)		0.481		0.50	0.069	0.7

(Continued)

TABLE 1 | Continued

	SVC-pre (N = 35)			non-SVC-pre (N = 71)			<i>T</i> ( <i>df</i> )	<i>p</i>	<i>d</i>	$\chi^2(1)$	Cramer's <i>V</i>	AR
	<i>M</i>	<i>SD</i>	<i>n</i> (%)	<i>M</i>	<i>SD</i>	<i>n</i> (%)						
Obsessive			0 (0.0)			1 (1.4)		0.481		0.50	0.069	0.7
Anxious			0 (0.0)			1 (1.4)		0.481		0.50	0.069	0.7
Dependent			0 (0.0)			2 (2.8)		0.316		1.01	0.097	1.0

Significant differences ( $p \leq 0.05$ ) are in bold.

## Personality Disorders

Personality disorders were assessed using to the ICD-10 international personality disorder examination [IPDE (32)], a semi-structured interview to consider personality disorders according to ICD-10 criteria as absent, probable or definite. For the present study, we used a binary coding with 1 (= probable/definite) and 0 (= no personality disorder).

## Criminal Careers

As mentioned above, young offenders' criminal careers were analyzed using their official criminal records provided by the German Federal Office of Justice. Records were obtained in 2016, allowing a mean follow-up period of up to 15 years after release from the index incarceration ( $M = 156.90$  months,  $SD = 14.07$  months, range = 110.50–176.00 months). In Germany, criminal records contain information on any criminal conviction and incarceration but not criminal charges. For the present study, we were interested in whether or not participants had been convicted for any crime or violent crime in particular, and whether or not they had been incarcerated before and after release from the index incarceration.

## Statistical Analyses

Statistical analyses were performed in IBM SPSS Statistics Version 28 for Windows. Distributional differences among groups were analyzed by Chi<sup>2</sup>-tests, (M) ANOVAS, and t-tests. For the Chi<sup>2</sup>-tests, we considered the effect size Cramer's *V*, which portrays the strength of the association between two dichotomous variables. A Cramer's *V* larger than 0.25 is usually considered very strong, larger than 0.15 strong, larger than 0.10 moderate, and below 0.10 weak or very weak (33). Moreover, adjusted residuals (AR) indicate significant deviations from expected cell distributions with  $AR \leq -2.0$  or  $AR \geq 2.0$ . Partial  $\eta^2$  is a common effect size measure used in (M) ANOVA which reflects the proportion of variance associated with each main and interaction effect in the sample. It ranges from 0 and 1 and can be interpreted by using a rule of thumb (34), whereas a partial  $\eta^2$  of .01 is considered as a small effect, of .06 a medium effect, and >0.14 a large effect. Further, Cohen's *d* was used as measure of effect size to indicate standardized differences between two means, whereby a Cohen's *d* of 0.01 is defined as very small, of 0.20 as small, of 0.50 as medium, of 0.80 as large, of 1.20 as very large and 2.0 as huge. Effect sizes bigger than 1 means that the difference between the two means is larger than one standard deviation, larger than 2 means larger the two standard deviations

and so forth. Associations among variables (e.g., mental health and duration of incarceration) were examined by Pearson *r* correlations, which can vary between  $-1$ , a perfect negative correlation, to  $+1$ , a perfect positive correlation. According to Cohen (35, 36), this effect size is considered small if *r* varies around 0.1, medium around 0.3 and large if  $r > 0.5$ . Predictive effects of mental health, substance use, personality disorder, and covariates on SVC-post status were analyzed by (multiple) binary regression models. Odds Ratios (OR) quantify the strength of the associations between indicator variable and outcome status, with  $OR = 1$  indicating equal odds to belong to either SVC-post desister or offender group,  $OR > 1$  indicating increased chance of belonging to the SVC-post desister group, and  $OR < 1$  indicating increased risk of belonging to the SVC-post offender group. Considering the abovementioned assumptions about increasing age being protective against criminal risk (17), we first analyzed the predictive effect of the covariate age on SVC-post offender status. Further, the predictive effect of the examined variables that were to be found to distinguish between SVC-post offenders and SVC-post desisters were analyzed under statistical control of age.

## RESULTS

### SVC Status

Based on the abovementioned criteria, 33.0% of the sample ( $n = 35$ ) were SVC-pre offenders and 57.5% ( $n = 61$ ) SVC-post offenders. Twenty-four SVC-pre offenders also became SVC-post offenders (68.8%), whereas 37 (52.1%) of the SVC-post offenders had not been SVC-pre offenders. Eleven (31.2%) of the SVC-pre offenders did not become SVC-post offenders and 34 (47.9%) young offenders did not hold any SVC status before and after incarceration, thus representing a total of 45 (42.5%) SVC-post desisters. SVC status until and after index incarceration was not significantly associated,  $\chi^2(1) = 2.60$ ,  $p = 0.107$ ,  $AR = 1.6$ .

Compared to non-SVC-pre offenders, SVC-pre offenders had higher numbers of previous convictions and incarcerations (see **Table 1**). SVC-post offenders differed from SVC-post desisters in terms of a younger age at the index offense and age at baseline assessment as well as by having lower educational levels and by having shown delinquent behavior before criminal responsibility more often (see **Table 2**).

### Criminal Recidivism

As shown in **Table 2**, follow-up periods did not differ significantly between SVC-post offenders and SVC-post desisters. However,

**TABLE 2** | Differences between SVC-post offenders and SVC-post desisters.

	SVC-post (N = 61)			SVC-post desisters (N = 45)			T (df)	p	d	$\chi^2(1)$	Cramer's V	AR
	M	SD	n (%)	M	SD	n (%)						
<b>Covariates</b>												
Age at the index offense	18.06	1.89		18.93	1.30		2.47 (70.87)	0.035	0.50			
Age at baseline assessment	19.13	1.88		20.04	2.29		2.25 (104)	0.026	0.44			
<b>Delinquency</b>												
Number of previous convictions	2.59	3.95		2.49	4.77		-0.12 (104)	0.905	-0.02			
Number of previous incarcerations	1.35	1.31		1.31	1.16		-0.14 (84)	0.887	-0.03			
Delinquent behavior before criminal responsibility			35 (57.4)			16 (35.6)		0.026		4.94	0.216	2.2
Lower educational level			39 (63.9)			17 (37.8)		0.008		7.11	0.259	2.7
Follow-up (months)	155.95	14.58		158.96	12.24		0.88 (77)	0.380	0.21			
Any future conviction			61 (100)			28 (62.2)		<0.001		27.45	0.509	5.2
Number of future convictions	35.33	79.00		5.24	10.24		-2.94 (62.75)	0.004	-0.50			
Future violent offenses			61 (100)			6 (9.0)		<0.001		83.64	0.888	9.1
Number of future violent crimes	5.02	4.34		0.16	0.42		-8.68 (61.55)	<0.001	1.47			
Future incarcerations			60 (98.4)			20 (44.4)		<0.001		40.67	0.619	6.4
Number of future incarcerations	5.07	2.72		1.40	2.27		-7.55 (102.34)	<0.001	-1.44			
<b>Mental health</b>												
<i>Y(A)SR clinical cut-off exceeded</i>												
Social withdrawal			4 (6.6)			0 (0.0)		0.080		3.07	0.170	1.8
Somatic complaints			8 (13.1)			5 (11.1)		0.756		0.10	0.030	0.3
Anxious/depressed			8 (13.1)			3 (6.7)		0.282		1.16	0.105	1.1
Social problems			4 (6.6)			1 (2.2)		0.298		1.08	0.101	1.0
Thought problems			18 (29.5)			10 (22.2)		0.400		0.71	0.082	0.8
Attention problems			9 (14.8)			3 (6.7)		0.194		1.69	0.126	1.3
Rule-breaking behavior			33 (54.1)			17 (37.8)		0.096		2.77	0.162	1.7
Aggressive behavior			10 (16.4)			8 (17.8)		0.851		0.04	0.018	0.2
Internalizing problems			18 (29.5)			5 (11.1)		0.023		5.16	0.221	2.3
Externalizing problems			43 (70.5)			25 (55.6)		0.113		2.51	0.154	1.6
Total problem score			33 (54.1)			17 (37.8)		0.096		2.77	0.162	1.7
SCID-I illegal drug use			46 (75.4)			27 (60.0)		0.090		2.87	0.164	1.7
AUDIT $\geq 8$			45 (73.8)			20 (44.4)		0.002		9.39	0.298	3.1
<i>IPDE personality disorder</i>												
Any			32 (52.5)			15 (33.3)		0.050		3.84	0.190	2.0
Cluster B			30 (49.2)			12 (26.7)		0.019		5.49	0.228	2.3
Anti-social			21 (34.4)			10 (22.2)		0.172		1.86	0.133	1.4
Emotionally-instable			18 (29.5)			9 (20.0)		0.267		1.23	0.108	1.1
Paranoid			3 (4.9)			4 (8.9)		0.416		0.66	0.079	0.8
Schizoid			4 (6.6)			2 (4.4)		0.642		0.22	0.045	0.5
Histrionic			1 (1.6)			0 (0.0)		0.388		0.75	0.084	0.9
Obsessive			1 (1.6)			0 (0.0)		0.388		0.75	0.084	0.9

(Continued)

TABLE 2 | Continued

	SVC-post (N = 61)			SVC-post desisters (N = 45)			T (df)	p	d	$\chi^2(1)$	Cramer's V	AR
	M	SD	n (%)	M	SD	n (%)						
Anxious			1 (1.6)			0 (0.0)		0.388		0.75	0.084	0.9
Dependent			1 (1.6)			1 (2.2)		0.827		0.05	0.021	0.2

Significant differences ( $p \leq 0.05$ ) are in bold.

not only were SVC-post offenders more likely to show any further conviction, but they also had higher numbers of future convictions. Similar patterns were found concerning future violent offenses and future incarcerations.

## Mental Health, Substance Use, and Personality Disorders

T-scores (boxplots) on YSR/YASR scales for the total sample and dependent on SVC offender status are displayed in **Figure 1**. Overall, young offenders' scores fell close or into the borderline/clinical ranges as proposed by the YSR/YASR manuals. Scores on the anxious/depressed scale ( $r = -0.260$ ,  $p = 0.007$ ), the rule-breaking behavior scale ( $r = -0.208$ ,  $p = 0.033$ ), and the internalizing problems scale ( $r = -0.193$ ,  $p = 0.048$ ) were negatively associated with index incarceration time until study assessment. However, scores on withdrawn ( $r = 0.299$ ,  $p = 0.007$ ) and internalizing problems ( $r = 0.244$ ,  $p = 0.030$ ) were positively associated with remaining time to release. Although no significant differences emerged between SVC-pre and non-SVC-pre offenders, SVC-post offenders showed significantly higher scores than SVC-post desisters regarding attention problems,  $F(1, 104) = 5.05$ ,  $p = 0.027$ , partial  $\eta^2 = 0.05$ , and total problems,  $F(1, 104) = 4.41$ ,  $p = 0.038$ , partial  $\eta^2 = 0.04$ .

**Figure 2** as well as **Tables 1, 2** show the percentages of participants exceeding clinical cut-offs on the YSR/YASR scales, AUDIT, and SCID-I substance use problems. SVC-post offenders more often exceeded clinical cut-offs regarding internalizing problems and alarming alcohol use compared to SVC-post desisters (see **Table 2**). When summing up clinically relevant problem scales (min. = 0, max. = 10), more than 75% of the total sample showed at least a sum score of 2 ( $M = 2.63$ ,  $SD = 1.73$ , range = 0–8). No differences emerged between SVC-pre and non-SVC-pre offenders, whereas SVC-post offenders ( $M = 3.03$ ,  $SD = 1.71$ ) showed higher burden than SVC-post desisters ( $M = 2.09$ ,  $SD = 1.63$ ),  $t(104) = 2.86$ ,  $p = 0.005$ ,  $d = -0.56$ .

Personality disorders were probable/definite in 44.3% ( $n = 47$ ) of the total sample, with cluster B personality disorders being most prevalent ( $n = 42$ , 39.6%). Antisocial personality disorder was found in 29.2% ( $n = 31$ ) and emotionally unstable personality disorder in 25.5% ( $n = 27$ ) of the participants. Further personality disorders found in the present sample were paranoid ( $n = 7$ , 6.6%), schizoid ( $n = 6$ , 5.7%), dependent ( $n = 2$ , 1.9%), histrionic, obsessive, and anxious (each  $n = 1$ , 0.9%) personality disorder. Whereas most of the young offenders were not probable of having a personality disorder ( $n = 59$ , 55.7%), more than one

fourth was assigned to one ( $n = 28$ , 26.4%), 13 (12.3%) two, and 6 (17.0%) to more than three personality disorders ( $M = 0.72$ ,  $SD = 1.02$ , range = 0–5). No differences emerged between SVC-pre and non-SVC-pre offenders in the distribution of personality disorders (see **Table 1**). However, SVC-post offenders more often showed any - especially cluster B - personality disorder compared to SVC-post desisters (see **Table 2**).

## Prediction of SVC Desistance

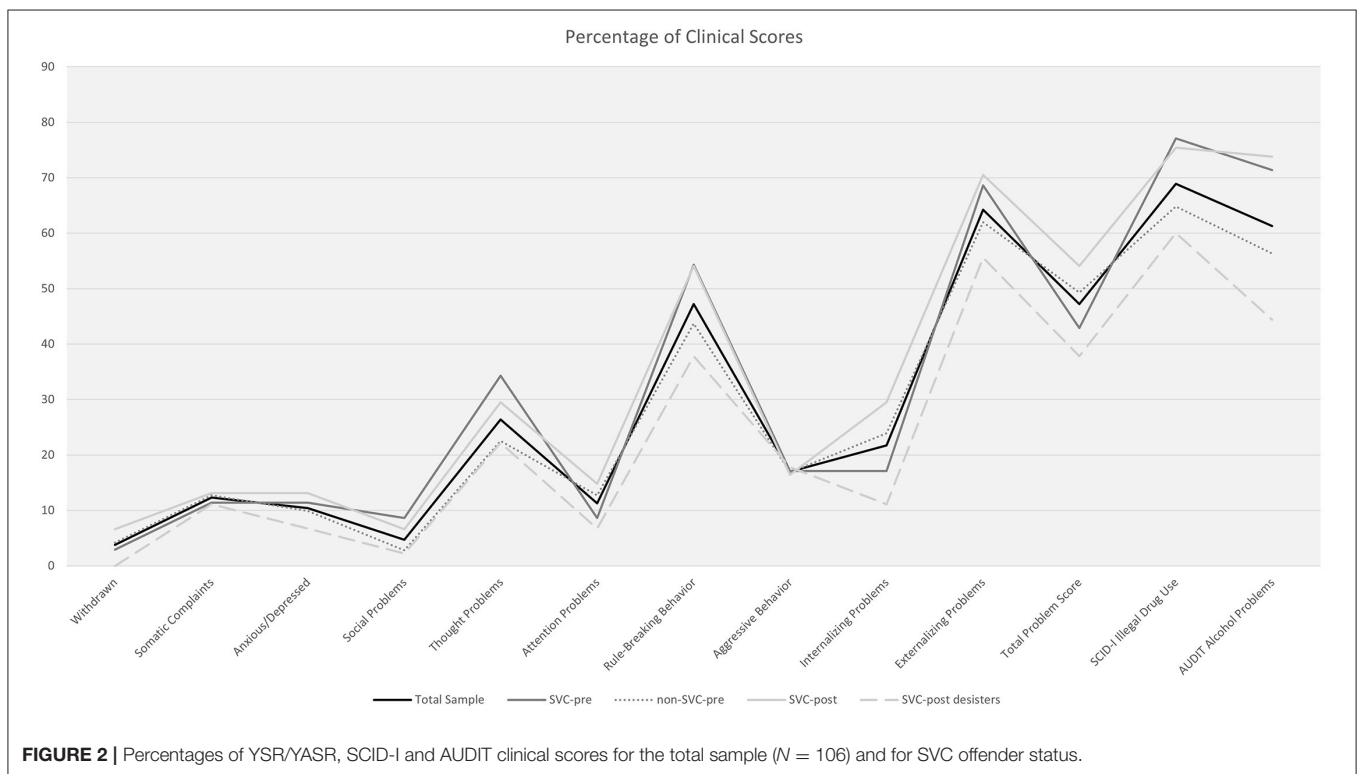
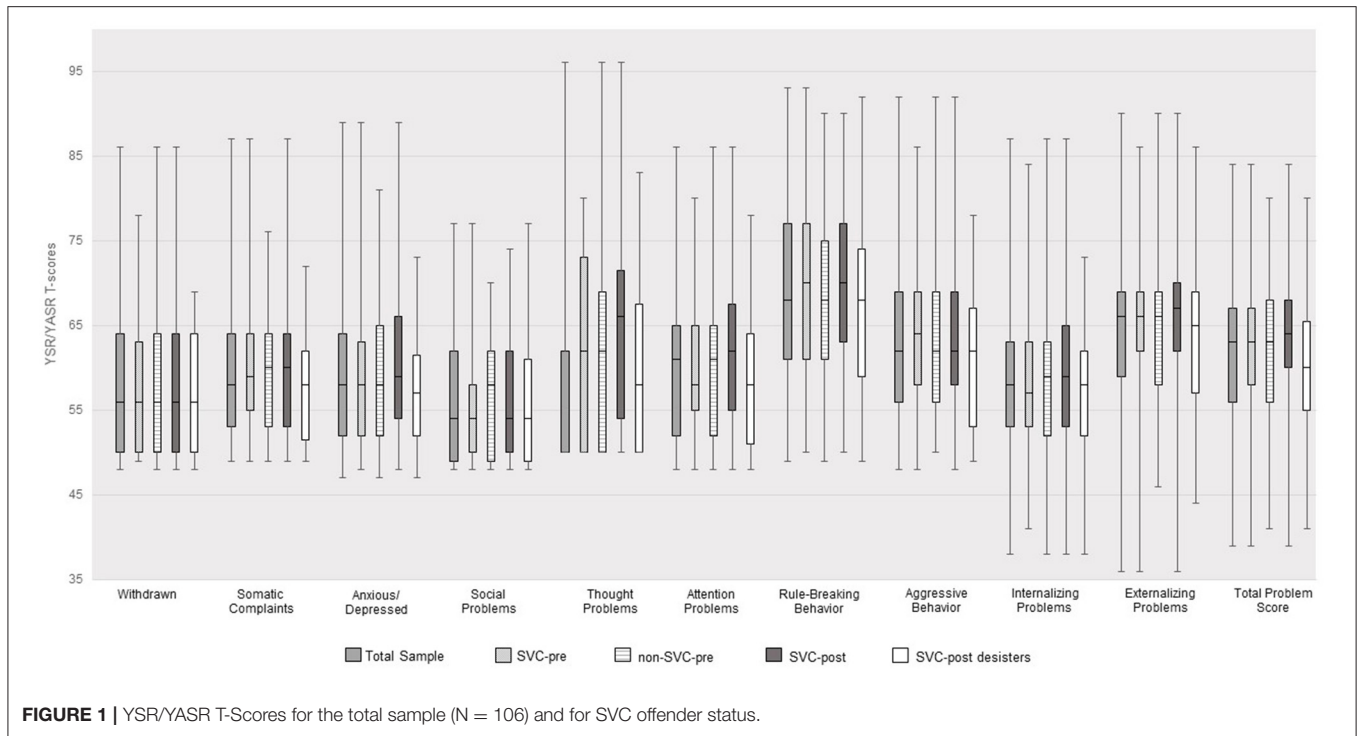
With regard to abovementioned assumptions about reduced criminal risk with increasing age (13), we first analyzed the predictive effect of the covariate age on SVC-post offender status. The binary regression model indicated that increasing age was positively associated with the chance of being a SVC-post desister ( $OR = 1.25$ , 95% $CI = 1.02$ – $1.53$ ,  $p = 0.032$ ). Second, we analyzed single predictive effects of those variables that had been found to distinguish between SVC-post offenders and SVC-post desisters under statistical control of age. As shown in **Table 3**, lower educational level, clinically relevant mental health problems, alarming alcohol use, higher number of personality disorders and, especially, presence of cluster B personality disorder were negatively associated with the chance of SVC desistance. Third, when all these predictors were considered simultaneously, only alcohol use remained significantly associated with SVC-post offender status ( $OR = 0.36$ , 95% $CI = 0.13$ – $0.96$ ,  $p = 0.042$ ).

## DISCUSSION

Mental health problems are common among young offender samples but their role in predicting criminal recidivism is still not clear. Early identification and treatment of young offenders at risk of SVC offending is of major importance to increase their chances to develop into a healthy and non-criminal future and protect society from further crime. The present study aimed at contributing to and expanding the current knowledge on the dynamics of mental health and SVC offending by examining mental health status and long-term courses of delinquency in a high-risk sample of young detainees.

Consistent with previous research [e.g., (1)], we found a high prevalence of mental health issues in the present sample, especially in terms of externalizing problems. Internalizing behaviors including problems with anxiety and depression as well as rule-breaking behaviors appeared to be higher with shorter incarceration time until assessment, whereas social withdrawal and internalizing problems increased with longer time remaining





until release. Although effects were rather small, they might reflect a particular dependency of mental health issues on incarceration time, especially at the beginning when young offenders need to adapt to the circumstances of incarceration,

but also when facing rather long-lasting imprisonment. Whereas the initial phase of incarceration may thus be associated with feelings of loneliness, fear and uncertainty on the one hand and rule-breaking, oppositional behavior on the other hand,

extended imprisonment may evoke thoughts and feelings of hopelessness and pointlessness in young offenders (37). These findings emphasize the need of an adequate monitoring of young detainees' mental health not only at the beginning but over the course of incarceration, especially in those facing long-term imprisonment.

One third of our sample met the criteria of being a SVC offender until assessment but more than half of the young offenders were identified as SVC offenders after release. Compared to previous studies (17, 18), SVC offending prevalence was rather high, which may be due to the fact that we focused on a high-risk incarcerated sample instead of somewhat broader and more heterogeneous juvenile justice samples. Although about 68% of the young offenders who identified as SVC offenders before assessment also showed SVC offending after release, SVC-status before assessment and after release were not significantly associated. This finding is not consistent with our initial hypothesis but suggests that also young offenders with a history of severe offending may still be able to desist from SVC offending. On the other hand, more than half of the SVC-post offenders had not shown SVC offending before, highlighting the need of effective early identification to reduce young people's risk of engaging in serious, violent, chronic delinquent careers.

Early identification is challenging due to the multifactorial etiology of criminal behavior. In the present study, differences between young people with SVC offending before assessment and those without were only found in terms of their prior criminal involvement, with SVC-pre offenders showing higher rates of previous convictions and incarcerations, which was expected based on the definition of SVC offending. More interestingly, no differences emerged regarding mental health. However, young offenders without SVC offending after release differed from those with SVC-post offending in several ways. First, SVC desisters were less likely to have shown early involvement in crime (i.e., delinquency before the age of criminal responsibility) and held higher academic qualifications. These findings corroborate previous research that pointed to more disadvantageous social conditions in young individuals engaging in continuous and severe criminal conduct (17). Early onset of criminal behavior and low academic achievement may both display indicators for deficient social integration and control early in life, thus highlighting the need to implement adequate support offers, e.g., in terms of youth welfare measures or family-based treatment approaches such as multisystemic therapy (38). Regarding mental health, SVC desisters reported fewer mental health problems in general and especially fewer externalizing behaviors, attention problems, alarming alcohol use, and personality disorders (cluster B personality disorders in particular). Statistically controlling for the influence of age, higher level of school education, less mental health issues as well as absence of alarming alcohol use and absence of cluster-B personality disorders predicted desistance from SVC offending in univariate analyses, although solely alcohol consumption remained a significant predictor in multiple regression. These findings are in line with previous research stating that criminal recidivism in young offenders is associated with mental health issues, substance use problems, and cluster-B personality

**TABLE 3 |** Binary regression analyses on SVC-post offender status (single predictors).

Independent variables	SVC-post desistance	
	OR	95% CI
Delinquency before criminal responsibility (cat.)	2.21	0.98–4.96
Low education (cat.)	0.42*	0.18–0.99
YSR attention problems (dim.)	0.96	0.91–1.02
YSR internalizing problems (cat.)	0.36	0.12–1.10
YSR total problem score (dim.)	0.96	0.92–1.01
YSR total problem score (cat.)	0.41*	0.18–0.98
Alcohol problems (cat.)	0.32**	0.14–0.75
Sum of personality disorders (dim.)	0.79*	9.63–1.00
Any personality disorder (cat.)	0.49	0.22–1.10
Cluster B personality disorder (cat.)	0.42*	0.18–0.98

OR, odds ratio; CI, confidence interval; Cat, categorical; dim., dimensional. Analyses controlled for age.

\* $p \leq 0.05$ , \*\* $p \leq 0.01$ .

disorders [e.g., (2, 9, 10)]. Substance use problems were found to be associated with increased risk of violence perpetration and to predict future violent and also SVC offending (8, 17, 39). However, the present results stress that not substance use problems in general may contribute to increased risk of future SVC offending, but alarming alcohol consumption in particular. Similar findings with regard to future violent offending were reported by previous research [e.g., (10)]. Alcohol use problems among young offenders are concerning in different ways. First, research has repeatedly emphasized that alcohol can affect an individual's emotional and behavioral regulation capacity and lower the threshold to engage in aggressive and violent acts. A recent meta-analysis stated a causal relationship between alcohol (but not stimulant drug) intoxication and aggression (40). Parrot and Eckhardt (41) introduced the alcohol-aggression link within  $I^3$  [e.g., (42)] and Alcohol Myopia Theory (43). According to the authors,  $I^3$  theory stresses that behavior is influenced by instigating, impelling, and inhibitory factors. Aggressive behavior may, thus, be probable when self-regulation is inhibited by the influence of alcohol in case a person is provoked and does show traits or attitudes in favor of aggressive (violent) behavior. Alcohol Myopia Theory highlights distorted attention processes due to alcohol influences with focus on short-term situational goals (e.g., lowering frustration) while neglecting long-term (legal) consequences. Second, alcohol is easily accessible, in Germany even legally as early as at the age of 16 years. The availability of and easy access to alcohol may contribute to the development of problematic alcohol use patterns, especially in those young people who suffer from early psychosocial burden and societal problems. Thus, prevention and intervention approaches addressing alcohol use in young people appear beneficial in order to prevent further dysfunctional outcomes, e.g., in terms of continuous criminal careers [e.g., (44)].

The interpretation of the present results requires the consideration of several strengths and limitations. First, we assessed a multitude of indicators for mental health including

internalizing and externalizing problems, personality disorders, and alcohol and other (illegal) substance use problems. We combined both self-rated and clinician-administered measures and relied on well-established instruments. The long-term observation of criminal careers up to 15 years after release from incarceration allowed a more sophisticated insight into pathways of criminal offending beyond adolescence, which is of major importance in light of age-dependent crime prevalence [e.g., (5, 13)]. In the same regard, focus on continuous SVC offending is crucial to identify those young individuals who are in greatest need of prevention and treatment in order to reduce maladaptive personal but also societal consequences. On the other hand, the present sample represented a high-risk sample of young detainees, thus generalization to and implication for somewhat more heterogeneous juvenile offender samples is limited. Moreover, although sample size appeared satisfactory for long-term forensic examination, it was still rather small compared to general population studies. Because our sample size was predetermined by data availability, we did not perform a priori power calculations. However, post-hoc power analyses have been criticized as well (45). Yet, we conducted sensitivity analyses in G\*Power Version 3.1.9.7 (46) that indicated, for example, that group differences between post-SVC offenders and desisters would have required at least an effect of  $d = 0.55$  to be detected with a power of .80. Thus, the limited sample size (and statistical power) available in the present study may bear the risk of leaving some more subtle effects undetected due to statistical insignificance. Similarly, future research may benefit from examining female offenders, too, because gender influences have been discussed both in the dynamics between mental health and criminal recidivism as well as in the field of SVC offending (2, 16, 47). Second, although self-reports of mental health issues have been used in offender samples before, there is a risk of biased estimates due to under- or over-reporting [e.g., (27)]. Besides, there could be a possible bias in the self-rating instruments, as participants could have answered in a socially desirable manner, which is common in different settings, however, especially in offender samples. Likewise, despite the common scientific procedure in forensic psychology and psychiatry research of relying on officially registered crime, not all offenses may come to the attention of law enforcement agencies. Eventually, the consideration of other influencing factors underlying the effects of mental health on criminal behavior was beyond the scope of the present study. For instance, a vast amount of research has focused on ACEs as potential exploratory factors in the context of mental health and adolescent and adult (SVC)

criminal behavior (9, 18, 22, 27, 48). More research is needed to broaden the knowledge on the associations between maladaptive developmental factors including mental health and perpetration but also desistance from criminal behavior in order to derive early and effective prevention and treatment approaches aimed at reducing young people's risk of engaging in continuous (SVC) criminal careers and, thus, support their development into a healthy, non-delinquent future.

## DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because of the specific confidentiality of the assessed clinical and forensic information. Scientists wishing to use them for non-commercial purposes are kindly asked to contact the present authors in order to frame individual agreements. Requests to access the datasets should be directed to [steffen.barra@uks.eu](mailto:steffen.barra@uks.eu).

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Committee of the Medical Chamber of Saarland, Saarbrücken, Germany. Written informed consent to participate in this study was provided by the participants themselves in case they were at least 18 years old at time of assessment or participants' legal guardian when younger.

## AUTHOR CONTRIBUTIONS

SB, WR, DT, and MR: conceptualization. SB and WR: methodology and data curation. SB: formal analysis, writing—original draft preparation, and visualization. WR, MR, and PR-J: investigation. WR and MR: resources and project administration. SB, WR, DT, PR-J, and PH: writing—review and editing. All authors have read and agreed to the published version of the manuscript.

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**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Article

# Adverse Childhood Experiences, Personality, and Crime: Distinct Associations among a High-Risk Sample of Institutionalized Youth

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**Abstract:** Despite high rates of adverse childhood experiences (ACEs) and personality-related disturbances among delinquent juveniles, associations among ACEs, youth personality, and juvenile crime involvement are still unclear. High-risk samples of institutionalized youth are in specific need of a comprehensive assessment of ACEs and personality features in order to broaden the current knowledge on the occurrence and persistence of juvenile crime and to derive implications for prevention and intervention. We examined a heterogeneous high-risk sample of 342 adolescents (35.1% females, 64.9% males) aged between 12 and 18 years ( $M = 15.74$ ,  $SD = 1.61$  years) living in child-welfare or juvenile justice institutions regarding cumulative ACEs, psychopathic traits, temperament, and clinical personality disorder ratings, and criminal involvement before and up to 10 years after assessment. We found considerable rates of ACEs, although cumulative ACEs did not predict future crime. Latent Profile Analysis based on dimensional measures of psychopathy, temperament, and personality disorders derived six distinct personality profiles, which were differently related to ACEs, personality disturbances, clinical psychopathology, and future delinquency. A socially difficult personality profile was associated with increased risk of future crime, whereas avoidant personality traits appeared protective. Findings indicate that the role of ACEs in the prediction of juvenile delinquency is still not sufficiently clear and that relying on single personality traits alone is insufficient in the explanation of juvenile crime.

**Keywords:** adverse childhood experiences; trauma; personality; psychopathy; temperament; personality disorder; psychopathology; delinquency; reoffending; child welfare; residential care



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## 1. Introduction

Adolescence displays a developmental period in which delinquent behaviors are most common, with some young people showing persistent crime involvement until adulthood [1]. Prior studies have investigated a wide variety of influencing factors in order to explain what contributes to young people's first and repeated criminal conduct. Despite situational factors that enhance a juvenile's risk to commit criminal behaviors, research has claimed that juvenile crime may be partly explainable by psychosocial burden including

adverse childhood experiences (ACEs) as well as maladaptive personality development, especially in those youth who show continuous criminal careers.

ACEs are common among young offenders and have been linked to increased risk of (repeated) juvenile crime involvement, especially when several ACEs occur in an cumulative manner [2–6]. Several theoretical models have been proposed to explain the associations of ACEs with criminal behavior, e.g., the General Aggression Model (GAM) [7] or General Strain Theory [8], which include both external (social) and internal (emotional and cognitive) processes. However, neither theory may yet sufficiently explain the ACE–delinquency link. Although GAM, for example, also stressed that an aggressive personality increases the risk of perpetrating aggressive behavior, most theoretical models about ACEs and crime have not yet included individual personality features. However, increasing rates of ACEs were found to influence maladaptive personality development [9–13], and certain aspects of adolescent personality appear to be associated with an elevated risk of crime perpetration. As such, psychopathic traits have often been investigated in the context of criminal behavior. The construct of psychopathy consisting of affective (e.g., lack of guilt and empathy, shallow affect), interpersonal (e.g., grandiosity and manipulativeness), and behavioral (e.g., impulsivity and irresponsibility) personality features was found important to assess in seriously offending adults [14]. Furthermore, Salekin and Frick [15] highlighted the development of psychopathic features in children and adolescents to explain behavioral problems. Coles et al. [16] reported elevated psychopathic and paranoid traits in incarcerated male adolescents between the ages of 13–18 years. DeLisi et al. [17] found that psychopathic traits were related to criminal onset in young delinquents. In their meta-analysis of 53 studies, Asscher et al. [18] concluded that (recidivistic) criminal activities could be predicted by psychopathy within the transitional period between middle childhood and adolescence and, thus, that psychopathic traits should be screened for as early as possible to prevent (continuous) crime involvement.

Although a vast number of studies have focused on psychopathy as highly relevant personality feature in the context of crime, others have pointed to the need to evaluate further personality characteristics, too. As such, temperament has recently gained more scientific attention as a potentially relevant personality construct related to juvenile crime. In their temperament-based theory of crime, DeLisi and Vaughn [19] define temperament as the individual ability to regulate emotions and behaviors, especially when interacting with others. They state that conduct problems or maladaptive social (criminal) behavior may result from deficient self-regulation skills and negative emotionality. Ljubin-Golub et al. [20] underlined the role of temperament in terms of sensation seeking for rather minor juvenile delinquency, but not violent crime.

Furthermore, Tackett et al. [11] point to an increased risk of future violence and crime related to the Diagnostic and Statistical Manual of Mental Disorders' (DSM) Cluster A and B, but not Cluster C personality disorders in adolescence. Sevecke et al. [21] found that—compared to clinically referred adolescents, delinquent juveniles showed higher rates of DSM Cluster B personality disorders, especially narcissistic and antisocial personality disorders. Whereas paranoid, narcissistic, and antisocial personality disorders were most prevalent among young male offenders, females reported higher rates of borderline personality disorder. Krischer et al. [22] did also find higher rates of personality disorders, but also elevated scores on psychopathic traits, in criminal compared to non-criminal youth. They discussed a specific criminal personality profile characterized by dissocial behaviors with particularly high scores on conduct problems and stimulus seeking. The authors further concluded that delinquency was related to affective lability, callousness, and impulsivity and, thus, recommended to consider both general (non-pathological) and maladaptive (pathological) personality features.

The associations among ACEs, youth personality, and juvenile crime involvement are yet unclear. Farina et al. [23] detected significant predictive effects of increasing degrees of ACEs on psychopathic traits among male and female institutionalized juvenile offenders. Examining a sample of detained and non-detained adolescent males and females, Krischer

and Sevecke [24] found associations between physical and emotional ACEs and psychopathy in detained boys, whereas findings for girls were inconclusive. Perez et al. [25] stated that cumulative ACEs were associated with severe and chronic crime in adolescents, but that this association was mediated by maladaptive personality traits such as impulsivity and aggression. Implementing path analysis on data of male adolescents, DeLisi et al. [26] concluded that psychopathy partially mediated associations between ACEs and juvenile delinquency and fully mediated associations between ACEs and proactive overt aggression. Moreover, testing the abovementioned temperament-based theory of crime by DeLisi and Vaughn [19], DeLisi et al. [27] found that temperament was more strongly associated with delinquency than ACEs and psychopathic traits in juvenile offenders.

Overall, research on the role of ACEs and personality traits in the development and maintenance of juvenile criminal behaviors is limited, and existing findings are rather inconclusive. Most studies rely on either small or only justice-involved samples, which impedes the generalizability of implications to adolescents who have not yet engaged in criminal behaviors, although respective knowledge would be highly valuable for early crime prevention. Especially, adolescents in child welfare institutions or residential placement can be described as high-risk samples in the context of ACEs, personality-related and psychopathological disturbances, and criminal conduct. Garcia et al. [28], for example, reported high rates of ACEs among young people within the child welfare system. Zettler et al. [29] found that ACEs increased the risk of juvenile residential placement. In their systemic review, Kvamme et al. [30] emphasized high rates of ACEs, clinical psychopathology, and future delinquency among young people leaving residential placement (mostly forensic institutions). Baglivio et al. [31] stated that cumulative ACEs had no direct effects on criminal recidivism in delinquent adolescents placed in juvenile justice residential care, but were indirectly associated with future crime through child welfare involvement. Although a number of studies addressed ACEs in child welfare settings (e.g., [28,32]), it remains unclear how ACEs and personality features relate to future criminal behaviors in institutionalized youth.

Furthermore, studies have often examined single types of ACEs (e.g., physical and emotional abuse) and single personality traits (e.g., psychopathy, temperament, or personality disorders) separately instead of taking their co-existence into account by implementing a more holistic approach to examine the question of whether and how different ACEs and aspects of personality (both non-pathological and pathological) influence juvenile crime involvement, either distinctively or in combination. In recent years, research has tried to take the co-occurrence of ACEs among high-risk youth samples into account not only by creating cumulative ACE scores, but also by implementing person-centered approaches such as Latent Class Analysis (LCA) (e.g., [4,33]). Others have investigated patterns of criminal behaviors by LCA or profiles of psychiatric disturbances among delinquent youth by Latent Profile Analysis (LPA) and examined their relations to cumulative ACEs [34,35]. Moreover, a growing number of studies has analyzed specific personality profiles using LPA in samples of justice-involved youth based on rather general personality traits [36] or psychopathy [37]. However, to the best of our knowledge, no study has yet considered both non-pathological and pathological personality traits simultaneously in order to empirically derive specific personality profiles among high-risk youth samples. By the simultaneous use of various personality measures, specific adaptive and maladaptive personality profiles may be assessed in adolescent high-risk samples. Hicks and colleagues [38] discuss the advantages and shortcoming of both person-centered and variable-centered approaches in the examination of personality traits, whereas variable-centered approaches are considered useful to describe single personality constructs and their associations with other constructs or outcomes across or between individuals. Person-centered approaches allow for the consideration of the co-existence and interdependence of different personality constructs within an individual. Thus, they not only serve to disentangle the heterogeneity of personality traits among populations by empirically deriving homogeneous subgroups based on specific personality patterns, but they are also beneficial to gain a more sophisticated



knowledge on etiological and phenotypic features of personality and their associations to certain outcomes over and above the reliance on single dimensional traits. Hicks et al. stress that both approaches should be considered complementary to gain a deeper understanding of human personality [38].

Moreover, previous studies have mostly examined cross-sectional associations between ACEs, personality, and crime (e.g., by comparing delinquent with non-delinquent samples) instead of longitudinal relations on how ACEs and personality may predict future delinquency in high-risk samples of both delinquent and non-delinquent adolescents. The latter is, however, of specific importance to inspire early treatment and prevent the occurrence and continuation of young people's criminal behaviors.

Thus, we implemented a more comprehensive approach in the present study to answer the question of whether and how ACEs and different aspects of youth personality (both non-pathological and pathological in terms of psychopathic traits, temperament, and personality disorders) influence future crime involvement in a heterogeneous high-risk sample of institutionalized male and female adolescents placed under civil and penal law, or voluntarily, with and without prior criminal conduct.

We aimed at considering a broad, integrative conceptualization of youth personality by implementing the person-centered approach of LPA to empirically derive personality profiles based on dimensional measures of psychopathy, temperament, and DSM personality disorders. Furthermore, we followed the claim by Hicks and colleagues [38] and additionally conducted variable-centered analyses. With respect to previous findings suggesting that ACEs seldomly appear in isolation (especially in high-risk youth samples), we included a cumulative ACE score. Based on previous research, we expected to find (1) high rates of ACEs and psychopathological burden among a high-risk sample of institutionalized youth, (2) distinct personality profiles with at least one highly disturbed profile and one rather inconspicuous profile, and (3) higher rates of ACEs in highly disturbed personality profiles. Due to the ambiguity of research related to the predictive effects of ACEs and personality features on future criminal behavior, we examined respective associations in an exploratory manner. In addition to personality profiles, we further tested dimensional measures of personality as predictors of future crime involvement.

## 2. Materials and Methods

### 2.1. Study Design

Data was obtained from the longitudinal "Swiss Study for Clarification and Goal-Attainment in Child Welfare and Juvenile-Justice Institutions" (German: Modellversuch Abklärung und Zielerreichung in stationären Massnahmen; MAZ., [39]). The MAZ. study was conducted between 2007 and 2012 with the primary aim of describing mental health and offending behavior of children and adolescents in child welfare and residential care/juvenile justice institutions. Respective institutions accredited by the Swiss Federal Ministry of Justice were invited to participate, of which 64 institutions (35%) agreed to take part. These 64 institutions served as representation for the different types of Swiss youth institutions, e.g., regarding size, schooling, treatment options, and residing children and adolescents (see also [40]). Juveniles who had been living for at least 1 month in one of these 64 institutions with sufficient language skills in German, French, or Italian as well as sufficient intelligence scores ( $IQ > 70$ ) were eligible for participation. Prior to participation, the juveniles as well as their legal guardians and social caseworkers received oral and written information about the study and were asked to give their informed consent. Participants then completed computer-assisted self-report questionnaires regarding mental health, psychosocial problems, ACEs, and personality traits. In addition, a social caseworker was selected for each participant to answer similar questionnaires related to that participant. The selected caseworkers were required to know the participant for at least 1 month and to confirm that they felt confident to validly answer the questionnaires. Additionally, participants were assessed for mental and personality disorders as well as ACEs using semi-structured clinical interviews. The assessment was conducted by trained

psychologists and research assistants. The study procedure was approved by the Ethics Committees on Research Involving Humans at the University of Basel and the University of Lausanne (Switzerland) and by the Institutional Review Board at the University of Ulm (Germany).

## 2.2. Participants

Overall, 592 children and adolescents aged 6–26 years ( $M = 16.3$  years) participated in the MAZ. study at baseline. As the primary aim of the current study was to investigate distinct personality profiles based on psychopathic traits, temperament, and measures of DSM personality disorders, and their associations with ACEs and (future) crime involvement, only participants with complete information on the below-mentioned assessment instruments for ACEs and personality traits were included in the present analyses. Taking into account the age limits for usage of some of these instruments (i.e., YPI, JTCI), participants younger than 12 years or older than 18 years were excluded. Data on crime involvement was available for all these participants. The final sample included 342 participants (35.1% female) with a mean age of 15.74 years ( $SD = 1.61$ , range = 12–18). Most of them were of Swiss nationality (85.7%), and 23.2% came from families with low socio-economic status (SES). Most of the participants (58.2%) were placed under civil law, whereas 17.3% were placed under penal law, and 18.1% were placed voluntarily. Female and male participants did not differ concerning age, nationality, or SES. However, differences emerged regarding the reasons for placement, with proportionally more female participants being placed under civil law (female: 72.6%, male: 52.5%, adjusted residuals ( $AR$ ) = 3.6) and more male participants being placed under penal law (female: 6.8%, male: 23.5%,  $AR = 3.8$ ),  $\chi^2(5) = 20.07$ ,  $p \leq 0.001$ .) Excluded participants were somewhat older than included participants ( $M = 16.58$  years,  $SD = 3.60$ ),  $T(514) = 6.89$ ,  $p \leq 0.001$ , were more often placed under penal law (36.0%,  $AR = 5.0$ ), and less often placed under civil law (45.7%,  $AR = -3.3$ ) than included participants,  $\chi^2(5) = 28.86$ ,  $p \leq 0.001$ . Distributions of sex,  $\chi^2(1) = 3.33$ ,  $p = 0.068$ , nationality,  $\chi^2(1) = 0.68$ ,  $p = 0.410$ , or low SES,  $\chi^2(1) = 0.14$ ,  $p = 0.705$  did not differ.

## 2.3. Measurements

### 2.3.1. ACEs

ACEs were assessed using the Essen Trauma-Inventory for Children and Adolescents (ETI-CA; [41]). Participants were given a list of 15 potentially traumatic experiences (i.e., natural disaster; severe accident, fire or explosion; severe illness; violent assault by stranger; violent assault by family member/acquaintance; death of a caregiver; imprisonment; sexual abuse by stranger (before age 18); sexual abuse by stranger (since age 18); sexual abuse by family member/acquaintance (before age 18); sexual abuse by family member/acquaintance (since age 18); war experience; torture; emotional/physical neglect; others), and were asked if they had ever experienced any of these situations personally, as a witness, or both. We used a cumulative ACE measure (ETI sum score) for the current study. The ETI-CA developers reported good to very good reliability scores (Cronbach's  $\alpha = 0.80$ – $0.94$ ; [41]). In the present sample, the ETI sum score showed acceptable internal consistency (Cronbach's  $\alpha = 0.70$ ).

### 2.3.2. Psychopathic Traits

Psychopathic traits were assessed with the Youth Psychopathic Traits Inventory (YPI; [42]). The YPI is a 50-item self-report questionnaire for adolescents aged 12–18 years, designed to assess psychopathic traits on 10 subscales combined into three core dimensions, namely the grandiose-manipulative dimension (i.e., dishonest charm, grandiosity, lying, and manipulation subscales), the callous-unemotional dimension (i.e., callousness, lack of emotion, and remorselessness subscales), as well as the impulsive-irresponsible dimension (i.e., impulsivity, thrill-seeking, and irresponsibility subscales). Each item is rated on a 4-point Likert scale (1 = does not apply at all, 2 = does not apply well, 3 = applies fairly well, 4 = applies very well), with higher scores reflecting increased levels of psychopathic traits.

Internal consistency of the YPI subscales was proven to be good to excellent, (Cronbach's  $\alpha = 0.66$ – $0.93$ ; [42]). In the present sample, the YPI sum score showed excellent internal consistency (Cronbach's  $\alpha = 0.92$ ).

### 2.3.3. Temperament

Temperament was assessed using the JTTCI-12-18-R [43]. The JTTCI is a self-administered questionnaire for children and adolescents aged 12–18 years based on the biopsychosocial model by Cloninger [44]. The four temperament scales included in this study measure (1) novelty seeking (explorative behavior, impulsive decision making, speed and intensity of an emotional reaction, active avoidance of frustration, and tendencies to exceed rules in the course of it), (2) harm avoidance (passive-avoidant tendencies such as anxiety, shyness, pessimistic worries, and fatigue), (3) reward dependence (spontaneous sensitivity and warmth as well as maintaining stable social relationships), and (4) persistence (readiness for hard work, ambition, perseverance, and perfectionism). All scales were based on cumulative sum scores of 13–18 items that were rated on a five-point rating scale (0 = not true to 4 = very true). The retest reliability was about 0.68 and internal consistency varied between 0.79 and 0.85 in the original validation sample [43]. In the present sample, internal consistency ranged from Cronbach's  $\alpha = 0.74$ – $0.80$ .

### 2.3.4. Personality Disorder Traits

Personality disorder (PD) traits were assessed with the Structured Clinical Interview for DSM-IV-TR Axis II Personality Disorders (SCID-II; e.g., [45]). The SCID-II is a semi-structured interview designed to yield PD diagnoses based on the DSM-IV and DSM-IV-TR (i.e., paranoid, schizoid, schizotypal, histrionic, borderline, antisocial, narcissistic, avoidant, dependent, obsessive-compulsive, depressive, passive-aggressive PDs). First, a screening questionnaire was administered by the participants with 134 items, which are rated on a 3-point Likert scale (1 = absent, 2 = subthreshold, 3 = threshold). Dimensional scores are provided by summing the scores from each individual item for each separate PD category. Second, categorical diagnoses were provided according to the specific diagnostic thresholds of PDs by trained clinicians. Interrater reliability for dimensional diagnoses varies from 0.90 to 0.98 (interclass correlation), and internal consistency (Cronbach's  $\alpha$ ) ranges from 0.71 to 0.94 [45]. For the present study, we used self-rated, dimensional PD traits for main analyses and categorical, clinician-administered PD diagnoses for descriptive purpose. We combined single PD categories into DSM-Clusters: Cluster A (paranoid, schizoid, schizotypal; Cronbach's  $\alpha = 0.93$ ), Cluster B (histrionic, borderline, antisocial, narcissistic; Cronbach's  $\alpha = 0.93$ ), Cluster C (avoidant, dependent, obsessive-compulsive; Cronbach's  $\alpha = 0.89$ ), and others (depressive, passive-aggressive; Cronbach's  $\alpha = 0.87$ ).

### 2.3.5. Psychiatric Disorders

Psychiatric disorders were assessed with the Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Version (K-SADS-PL; [46]). The K-SADS-PL is a semi-structured clinical interview that provides a reliable and valid measurement of current and lifetime DSM-IV diagnoses (i.e., affective disorders, anxiety disorders, psychotic disorders, behavioral disorders, substance abuse, eating disorders, and tic disorders) in children and adolescents aged 6–18 years. Individual responses are rated on a 4-point Likert scale (0 = no information available, 1 = absent, 2 = subthreshold, 3 = threshold). Interrater agreement in scoring screens and diagnoses is high, and test-retest reliability (Cohen's  $\kappa$ ) ranges between 0.77 and 1.00 for current and/or lifetime diagnoses of major depression, any bipolar, generalized anxiety, conduct, and oppositional defiant disorders, as well as between 0.63 and 0.67 for current diagnoses of posttraumatic stress disorder (PTSD) and attention-deficit hyperactivity disorder (ADHD) [46].

### 2.3.6. Delinquency

Data on participants' officially recorded criminal convictions was obtained from the Swiss Federal Ministry of Statistics until the end of 2017, up to 10 years after the initial assessment of the study (observation period of 6–10 years after assessment,  $M = 8.47$  years,  $SD = 1.10$  years). For the present study, we included both convictions before (prior delinquency) and after assessment (future delinquency) with regard to the following categories: any delinquency, violent delinquency (e.g., bodily harm/mayhem, homicides), and non-violent delinquency (e.g., theft, drug related crime).

### 2.3.7. Sociodemographic Characteristics

Sociodemographic information on age, sex, nationality, and SES was collected using a computer-based questionnaire. Youth whose parents both (or one in case of missing information on the other) were out of work or unskilled workers as categorized by the International Standard Classification of Occupations (ISCO-08) guidelines [47] were considered to come from families with low SES.

## 2.4. Statistical Analyses

Data were analyzed in IBM SPSS version 28.0 (IBM Corp, Armonk, NY, USA) for Windows and in R [48]. We conducted LPA using the tidyLPA package in R [49] to empirically derive youth personality profiles based on z-transformed YPI sum scores, JTCI temperament scales' sum scores (novelty seeking, harm avoidance, reward dependence, and persistence) and sum scores on the four DSM personality disorder Clusters A, B, C, and others assessed by SCID-II self-ratings. Models with one to nine latent profiles were compared regarding best data fit. Balance of model fit and parsimony increases with decreasing fit indices. Several fit indices were considered to identify the best fitting model. First, the Akaike Information Criterion [50] and the Bayesian Information Criterion [51] were considered. Second, we applied a hierarchical analytical process provided by the tidyLPA command in R [52] that additionally considered the Approximate Weight of Evidence Criterion [53], Classification Likelihood Criterion [54], and Kullback Information Criterion [55]. We also conducted Bootstrapped parametric Likelihood Ratio Tests (BLRT; [56]) with significant results indicating that a k-class model fits the data better than a (k-1)-class model. Individual assignment to latent profiles was conducted under consideration of the highest affiliation probability based on maximum likelihood estimations. Differences among distinct personality profiles regarding ACEs, psychiatric disorders, prior delinquency, and sociodemographic characteristics were examined by parametric and non-parametric analyses, e.g.,  $\chi^2$ -statistics, ANOVAs, and MANOVAs with post-hoc Bonferroni or Games–Howell tests. Predictive associations of ACEs and personality profiles/traits with future delinquency were tested by univariate and multivariate binary logistic regression analyses. The global level of significance was set to be at least  $p \leq 0.05$ .

## 3. Results

### 3.1. Prevalence of ACEs, Personality Traits, Psychopathology, and Crime

Appendix A (Table A1) displays the distribution of the abovementioned variables of interest in the total sample. More than 82% of the sample reported at least one ACE, and more than half of the juveniles had experienced at least three different ACEs. Clinician-administered personality disorders were present in more than 20% of the sample, with half of them showing combined/unspecified personality disorders followed by Cluster B disorders. More than 82% of the sample showed at least one psychiatric disorder (based on K-SADS-PL), about one quarter of the sample at last three. Among psychiatric disorders, conduct disorders were most commonly reported, followed by affective disorders and ADHD. About one third of the sample had been convicted for any criminal behavior before as well as after the assessment. Non-violent offenses were reported more frequently than violent offenses (cumulative percentages exceed 100 as some youth showed both violent and non-violent offending).

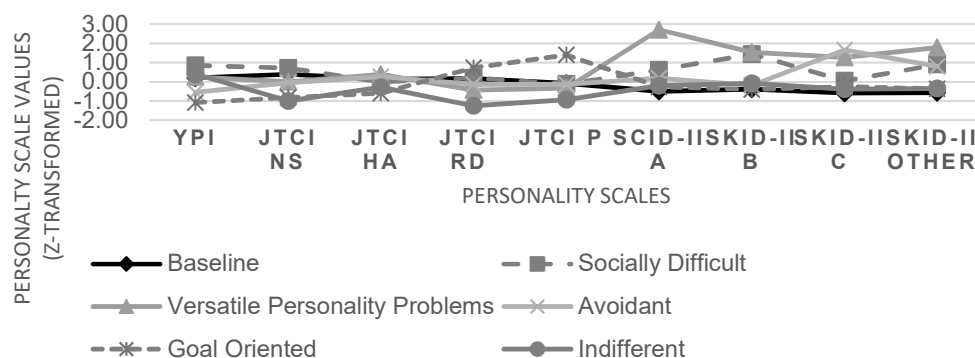
### 3.2. LPA on Dimensional Personality Traits

Table 1 displays the results of model comparisons based on AIC, BIC, and BLRT. The AIC favored the eight-profile solution, the BIC pointed to the six-profile solution. The BLRT indicated that gradually increasing profile numbers were associated with better data fit until the eight-profile model, whereas a nine-profile solution did not significantly fit the data better than an eight-profile model. Finally, the hierarchical analytical process provided by the tidyLPA command in R [52] favored a six-profile model. In addition, the six derived personality profiles were easily interpretable. Individual assignment of participants to latent profiles was sufficiently clear (entropy = 0.82; [57]). Thus, we chose the six-profile model for further analyses. Figure 1 displays the six distinct profiles (based on standardized z-values) that we labeled (1) baseline ( $n = 144, 42.1\%$ ), (2) socially difficult (highest YPI sum score, high on novelty seeking and SCID-II Cluster B scores;  $n = 37, 10.8\%$ ), (3) versatile personality problems (high on each SCID-II scale;  $n = 23, 6.7\%$ ), (4) avoidant (high on SCID-II Cluster C scores;  $n = 50, 14.6\%$ ), (5) goal oriented (low on clinical personality problems, high on reward dependence and persistence;  $n = 49, 14.3\%$ ), and (6) indifferent (low on clinical personality problems; low on novelty seeking, reward dependence, and persistence;  $n = 39, 11.4\%$ ).

**Table 1.** Model parameters of latent profile analyses based on psychopathy, temperament, and personality disorder ratings. ( $N = 342$ ).

Model	AIC	BIC	BLRT (p)	Entropy
1 Class	21,993.40	22,062.42	-	1.00
2 Class	21,593.79	21,701.17	0.01	0.90
3 Class	21,518.13	21,663.85	0.01	0.77
4 Class	21,424.73	21,668.80	0.01	0.74
5 Class	21,343.48	21,565.89	0.01	0.79
6 Class	21,235.22	21,495.99	0.01	0.82
7 Class	21,227.77	21,526.89	0.02	0.79
8 Class	21,203.84	21,541.30	0.01	0.82
9 Class	21,216.64	21,532.45	0.91	0.76

Note. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; BLRT = Bootstrapped Likelihood Ratio Test.



**Figure 1.** LPA six-profile model based on YPI, JT CI temperament scales, and dimensional SCID-II cluster ratings (z-transformed).

### 3.3. Differences among LPA Personality Profiles

Table 2 displays the distribution of the main variables of interest in the six distinct personality profiles (for more details, see Appendix A, Table A1). Although no differences among LPA profiles emerged concerning cumulative ACEs (ETI sum score), youth from the baseline profile were more likely to have experienced no ACEs, and youth from the baseline and the goal-oriented profiles were less likely to have experienced more than three ACEs compared to the other profiles. Youth from the versatile personality problems profile were most likely to have experienced more than three ACEs. Clinician-administered

personality disorders were more likely to be diagnosed in youth of the socially difficult, the versatile personality problems, and the avoidant profiles. Specifically, Cluster A diagnoses were most common in the socially difficult profile, Cluster C diagnoses in the avoidant profile, and others in the versatile personality problems profile. Personality disorder diagnoses were rarely present among youth of the baseline and the goal-oriented profiles. The versatile personality problems profile showed the highest rate of DSM clinical disorders. Differences among profiles were specifically found, e.g., for externalizing disorders (ADHD and conduct disorders most prevalent in the socially difficult profile) and internalizing disorders (affective and anxiety disorders most prevalent in the versatile personality problems and avoidant profiles). Any criminal behavior before assessment was most common in the versatile personality problems profile, whereas prior non-violent delinquency was most prevalent in the socially difficult profile. No differences emerged concerning violent delinquency before assessment. Future general and non-violent crime (after assessment) was most common in youth of the socially difficult profile. The avoidant profile showed the lowest crime rates. Regarding covariates, male adolescents were overrepresented in the socially difficult profile and underrepresented in the avoidant profile. Whereas the indifferent profile had the highest proportion of youth of Swiss nationality and low SES; Swiss youths were underrepresented in the goal-oriented profile.

### *3.4. Predictive Effects of ACEs and Personality Profiles on Future Crime*

In order to examine predictive effects of ACEs and personality profiles on future general, violent, and non-violent delinquency, we performed several binary logistic regression analyses (see Table 3). First, we calculated univariate models with the ETI sum score (Model 1a) and the distinct LPA personality profiles (Model 1b; the baseline profile served as reference group). Second, we considered both ETI sum scores and personality profiles conjointly (Model 2). Third, we added prior general delinquency and the covariates age, sex, Swiss nationality, and low SES (Model 3). The ETI sum score did not predict future delinquency, in neither univariate nor multivariate models. Affiliation to the avoidant profile predicted desistance from future general and non-violent crime, whereas youth from the socially difficult profile were more likely to get involved in future general and non-violent crime even under control of the effects of ACEs, prior delinquency, and sociodemographic covariates. Prior delinquency and male sex increased the likelihood of future general, violent, and non-violent delinquency. No other predictors emerged for future violent crime involvement.

### *3.5. Predictive Effects of ACEs and Dimensional Personality Variables on Future Crime*

In addition, we conducted equivalent analyses with the dimensional personality variables (see Table 4). First, we calculated univariate models with the ETI sum score (Model 1a) and each dimensional personality variable (Model 1b). Second, we considered both ETI sum scores and all dimensional personality variables conjointly (Model 2). Third, we added prior general delinquency and the covariates age, sex, Swiss nationality, and low SES (Model 3). Again, the ETI sum score did not predict future delinquency. In univariate analyses, the YPI sum score as well as the JTCI novelty seeking and SCID-II Cluster B scores were positively related to future general, violent, and non-violent crime, whereas SCID-II Cluster C scores were negatively associated with future general and non-violent crime. However, when all dimensional personality variables and ACEs were conjointly considered under control of the effects of prior delinquency and sociodemographic covariates (Model 3), only the positive predictive effects of SCID-II Cluster B scores on future general and violent offending and the negative predictive effects of SCID-II Cluster C scores on future general and non-violent offending remained significant. Again, prior delinquency and male sex increased the likelihood of future general, violent, and non-violent delinquency.

**Table 2.** Main variables of interest in the six distinct personality profiles.

Variables of Interest	Baseline ( <i>n</i> = 144)	Socially Difficult ( <i>n</i> = 37)	Versatile Personality Problems ( <i>n</i> = 23)	Avoidant ( <i>n</i> = 50)	Goal Oriented ( <i>n</i> = 49)	Indifferent ( <i>n</i> = 39)	<i>F</i> (5, 336)
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	
<b>ACEs</b>							
ETI sum	2.73 <sup>a</sup> (2.52)	4.00 <sup>a,b</sup> (2.21)	5.78 <sup>b</sup> (2.47)	3.32 <sup>a</sup> (2.44)	2.65 <sup>a</sup> (2.54)	3.64 <sup>a</sup> (2.76)	7.36 <sup>***</sup>
<b>Personality (dim.)</b>							
YPI sum	115.31 <sup>a</sup> (19.40)	129.73 <sup>b</sup> (21.01)	116.43 <sup>a</sup> (20.74)	98.44 <sup>c</sup> (18.64)	86.27 <sup>c</sup> (13.85)	119.41 <sup>a</sup> (16.23)	33.16 <sup>***</sup>
JTCI novelty seeking	33.34 <sup>a</sup> (7.76)	36.27 <sup>a</sup> (8.96)	29.74 <sup>a</sup> (8.44)	29.26 <sup>a</sup> (8.77)	22.10 <sup>b</sup> (6.22)	20.38 <sup>b</sup> (9.28)	33.33 <sup>***</sup>
JTCI harm avoidance	24.69 <sup>a</sup> (8.20)	23.43 <sup>a,b</sup> (7.69)	26.74 <sup>a</sup> (6.78)	25.84 <sup>a</sup> (8.30)	18.59 <sup>b</sup> (9.00)	21.26 <sup>a,b</sup> (7.37)	6.37 <sup>***</sup>
JTCI reward dependence	38.68 <sup>a</sup> (8.54)	38.97 <sup>a,b,c</sup> (6.81)	32.96 <sup>b</sup> (7.75)	35.78 <sup>a,b</sup> (9.42)	44.16 <sup>c</sup> (8.33)	25.18 <sup>d</sup> (5.02)	27.28 <sup>***</sup>
JTCI persistence	29.42 <sup>a</sup> (7.12)	29.08 <sup>a</sup> (6.29)	27.22 <sup>a,b</sup> (5.08)	28.92 <sup>a</sup> (8.66)	42.41 <sup>c</sup> (6.26)	21.92 <sup>b</sup> (5.65)	43.65 <sup>***</sup>
SCID-II Cluster A (dim.)	24.46 <sup>a</sup> (2.64)	31.43 <sup>b</sup> (4.62)	44.30 <sup>c</sup> (5.11)	28.70 <sup>b,d</sup> (4.50)	25.90 <sup>a</sup> (3.47)	26.28 <sup>a,d</sup> (3.78)	130.65 <sup>***</sup>
SCID-II Cluster B (dim.)	38.78 <sup>a</sup> (5.93)	56.68 <sup>b</sup> (9.89)	57.65 <sup>b</sup> (11.04)	40.74 <sup>a</sup> (7.47)	38.63 <sup>a</sup> (5.44)	41.77 <sup>a</sup> (7.17)	60.53 <sup>***</sup>
SCID-II Cluster C (dim.)	25.07 <sup>a</sup> (2.92)	29.00 <sup>b</sup> (4.23)	36.48 <sup>c</sup> (4.00)	38.84 <sup>c</sup> (4.33)	27.18 <sup>b</sup> (3.29)	26.38 <sup>a,b</sup> (3.15)	146.06 <sup>***</sup>
SCID-II other (dim.)	15.64 <sup>a</sup> (2.05)	22.32 <sup>b</sup> (3.98)	26.39 <sup>c</sup> (4.27)	21.86 <sup>b</sup> (3.94)	16.57 <sup>a</sup> (3.18)	16.59 <sup>a</sup> (2.89)	86.08 <sup>***</sup>
<b>Psychopathology</b>							
K-SADS-PL sum	1.60 (1.20) <sup>a</sup>	2.22 (1.11) <sup>a,b</sup>	2.70 (1.69) <sup>b</sup>	1.74 (1.23) <sup>a</sup>	1.57 (1.06) <sup>a</sup>	1.67 (1.61) <sup>a</sup>	4.16 <sup>***</sup>

Table 2. Cont.

Variables of Interest	Baseline (n = 144)		Socially Difficult (n = 37)		Versatile Personality Problems (n = 23)		Avoidant (n = 50)		Goal Oriented (n = 49)		Indifferent (n = 39)		$\chi^2(5)$
	n (%)	AR	n (%)	AR	n (%)	AR	n (%)	AR	n (%)	AR	n (%)	AR	
<b>Personality disorders (cat.)</b>													
SCID-II no PD	134 (49.5)	5.5	21 (7.8)	−3.5	5 (1.5)	−7.0	30 (11.1)	−3.6	47 (17.4)	3.1	33 (12.2)	0.9	93.54 ***
SCID-II Cluster A (cat.)	1 (16.7)	−1.3	4 (66.7)	4.4	0 (0.0)	−0.7	1 (16.7)	0.1	0 (0.0)	−1.0	0 (0.0)	−0.9	20.55 ***
SCID-II Cluster B (cat.)	7 (41.2)	−0.1	4 (23.5)	1.7	1 (5.9)	−0.1	1 (5.9)	−1.0	1 (5.9)	−1.0	3 (17.6)	0.8	5.13
SCID-II Cluster C (cat.)	0 (0.0)	−2.6	0 (0.0)	−1.1	0 (0.0)	−0.8	9 (100.0)	7.3	0 (0.0)	−1.2	0 (0.0)	−1.1	53.98 ***
SCID-II other (cat.)	2 (5.0)	−5.1	8 (20.0)	2.0	17 (42.5)	9.6	9 (22.5)	1.5	1 (2.5)	−2.3	3 (7.5)	−0.8	111.50 ***
<b>Prior delinquency</b>													
Any	55 (49.5)	1.9	14 (12.6)	0.7	13 (11.7)	2.6	3 (2.7)	−4.3	12 (10.8)	−1.3	14 (12.6)	0.5	26.32 ***
Violent	9 (34.6)	−0.8	4 (15.4)	0.8	4 (15.4)	1.8	1 (3.8)	−1.6	3 (11.5)	−0.4	5 (19.2)	1.3	7.95
Non-Violent	55 (52.4)	2.6	14 (13.3)	1.0	11 (10.5)	1.8	2 (1.9)	−4.4	12 (11.4)	−1.0	11 (10.5)	−0.4	25.61 ***
<b>Future delinquency</b>													
Any	53 (48.2)	1.6	20 (18.2)	3.0	9 (8.2)	0.7	4 (3.6)	−4.0	12 (10.9)	−1.2	12 (10.9)	−0.2	24.80 ***
Violent	20 (54.1)	1.6	7 (18.9)	1.7	4 (10.8)	1.1	0 (0.0)	−2.7	3 (8.1)	−1.1	3 (8.1)	−0.7	12.53 *
Non-Violent	48 (47.5)	1.3	19 (18.8)	3.1	8 (7.9)	0.6	4 (4.0)	−3.6	10 (9.9)	−1.5	12 (11.9)	0.2	22.90 ***

Note. N = 342. dim = dimensional, cat = categorical, PD = personality disorder. AR adjusted residuals. Significant deviations from expected distribution with  $AR \leq -2.0$  or  $AR \geq 2.0$ . Groups with the same subscripts (a, b, c, and d) did not significantly differ from each other. \*  $p \leq 0.05$ , \*\*\*  $p \leq 0.001$ .



**Table 3.** Binary logistic regression analyses on future delinquency with ACEs, personality profiles, and covariates.

Model	Independent Variables	Future Delinquency					
		Any		Violent		Non-Violent	
		OR	95%–CI	OR	95%–CI	OR	95%–CI
Model 1a	ETI sum	0.96	0.88–1.05	0.99	0.86–1.12	0.99	0.91–1.08
Model 1b	Socially Difficult	2.00	0.94–4.23	1.43	0.55–3.70	2.09	0.99–4.45
	Versatile Personality	1.16	0.46–2.92	1.27	0.39–4.14	1.13	0.44–2.89
	Problems	0.08 ***	0.02–0.34	0.00	0.00–0.00	0.09 ***	0.02–0.40
	Avoidant	0.58	0.27–1.21	0.39	0.11–1.37	0.54	0.24–1.17
	Goal Oriented	0.77	0.35–1.71	0.35	0.08–1.56	0.91	0.41–2.02
Model 2	Indifferent	2.15 *	1.00–4.62	1.46	0.55–3.84	2.15 *	1.00–4.62
	Socially Difficult	1.38	0.53–3.64	1.33	0.38–4.67	1.21	0.45–3.23
	Versatile Personality	0.08 ***	0.02–0.35	0.00	0.00–0.00	0.09 ***	0.02–0.40
	Problems	0.57	0.27–1.20	0.39	0.11–1.37	0.53	0.24–1.17
	Avoidant	0.82	0.37–1.84	0.35	0.08–1.60	0.93	0.42–2.08
Model 3	Goal Oriented	0.94	0.85–1.04	0.98	0.85–1.14	0.98	0.88–1.08
	Indifferent	2.40 *	1.02–5.62	1.48	0.54–4.06	2.45 *	1.04–5.74
	Socially Difficult	1.20	0.41–3.50	1.31	0.35–4.87	1.05	0.35–3.11
	Versatile Personality	0.16 *	0.04–0.70	0.00	0.00–0.00	0.19 *	0.04–0.84
	Problems	0.65	0.28–1.051	0.43	0.11–1.62	0.60	0.25–1.45
	Avoidant	1.00	0.41–2.45	0.41	0.09–1.93	1.24	0.50–3.06
	Goal Oriented	0.95	0.84–1.06	0.99	0.84–1.15	0.99	0.88–1.11
	Indifferent	3.63 ***	1.98–6.67	2.79 **	1.22–6.38	3.50 ***	1.89–6.48
	ETI sum	0.90	0.75–1.08	0.83	0.64–1.08	0.90	0.75–1.09
	Prior general delinquency	0.22 ***	0.11–0.45	0.33 *	0.11–0.98	0.21 ***	0.10–0.43
Age	0.86	0.92–1.92	0.80	0.29–2.19	0.72	0.86–0.38	
Sex (males = 0, females = 1)	0.72	0.38–1.40	0.80	0.33–1.98	0.63	0.32–1.25	
Swiss nationality							
Low SES							

Note. Reference group: Baseline profile. OR = odds ratio; CI = confidence interval. \*  $p \leq 0.05$ , \*\*  $p \leq 0.01$ , \*\*\*  $p \leq 0.001$ .

**Table 4.** Binary logistic regression analyses on future delinquency with ACEs, dimensional personality variables, and covariates.

Model	Independent Variables	Future Delinquency					
		Any		Violent		Non-Violent	
		OR	95%–CI	OR	95%–CI	OR	95%–CI
Model 1a	ETI sum	0.96	0.88–1.05	0.99	0.86–1.12	0.99	0.91–1.08
Model 1b	YPI sum	1.03 ***	1.02–1.04	1.03 ***	1.02–1.05	1.02 ***	0.01–1.04
	JTCI novelty seeking	1.03 **	1.01–1.06	1.05 **	1.01–1.09	1.03 *	1.01–1.06
	JTCI harm avoidance	0.99	0.96–1.01	1.00	0.96–1.04	0.98	0.95–1.01
	JTCI reward dependence	0.99	0.97–1.01	1.00	0.97–1.04	0.98	0.96–1.01
	JTCI persistence	0.99	0.97–1.02	0.98	0.94–1.02	0.98	0.96–1.01
	SCID-II Cluster A	1.02	0.98–1.06	1.02	0.97–1.08	1.02	0.99–1.06
	SCID-II Cluster B	1.03 **	1.01–1.06	1.04 **	1.01–1.07	1.03 *	1.01–1.05
	SCID-II Cluster C	0.93 ***	0.89–0.97	0.95	0.89–1.01	0.93 ***	0.89–0.97
Model 2	SCID-II other	0.98	0.94–1.03	0.98	0.90–1.06	0.98	0.93–1.04
	YPI sum	1.02 **	1.01–1.03	1.02 *	1.00–1.04	1.02 *	1.00–1.03
	JTCI novelty seeking	1.02	0.99–1.05	1.04	1.00–1.09	1.03	0.99–1.06
	JTCI harm avoidance	0.99	0.96–1.02	1.01	0.97–1.06	0.99	0.95–1.02
	JTCI reward dependence	0.99	0.96–1.02	1.01	0.97–1.06	0.98	0.95–1.01
	JTCI persistence	1.01	0.97–1.04	0.99	0.94–1.04	1.00	0.97–1.04
	SCID-II Cluster A	1.07 *	1.01–1.13	1.05	0.97–1.14	1.08 *	1.02–1.14
	SCID-II Cluster B	1.04	1.00–1.07	1.04	0.99–1.08	1.02	0.99–1.06
	SCID-II Cluster C	0.89 ***	0.83–0.95	0.94	0.86–1.04	0.89 ***	0.83–0.95
SCID-II other	0.98	0.90–1.06	0.94	0.84–1.06	0.98	0.90–1.06	
ETI sum	0.90	0.80–1.00	0.91	0.77–1.08	0.94	0.84–1.05	

Table 4. Cont.

Model	Independent Variables	Future Delinquency					
		Any		Violent		Non-Violent	
		OR	95%–CI	OR	95%–CI	OR	95%–CI
Model 3	YPI sum	1.01	1.00–1.03	1.02	1.00–1.04	1.01	0.99–1.02
	JTCI novelty seeking	1.02	0.99–1.06	1.04	1.00–1.09	1.03	0.99–1.06
	JTCI harm avoidance	1.00	0.97–1.04	1.02	0.97–1.07	1.00	0.96–1.03
	JTCI reward dependence	0.99	0.95–1.02	1.02	0.97–1.07	0.98	0.94–1.01
	JTCI persistence	1.00	0.97–1.04	0.99	0.94–1.04	1.00	0.96–1.04
	SCID-II Cluster A	1.02	0.95–1.08	1.03	0.94–1.12	1.03	0.96–1.09
	SCID-II Cluster B	1.05 *	1.01–1.09	1.05	1.00–1.10	1.04	1.00–1.08
	SCID-II Cluster C	0.90 **	0.84–0.97	0.97	0.88–1.07	0.90 **	0.84–0.97
	SCID-II other	1.00	0.92–1.10	0.93	0.82–1.06	1.00	0.91–1.10
	ETI sum	0.91	0.81–1.03	0.93	0.79–1.11	0.96	0.85–1.08
	Prior Delinquency	3.52 ***	1.90–6.54	3.06 *	1.29–7.23	3.26 ***	1.74–6.08
	Age	0.88	0.72–1.06	0.73 *	0.54–0.99	0.89	0.73–1.09
	Sex (males = 0, females = 1)	0.21***	0.10–0.45	0.28 *	0.08–0.93	0.20 ***	0.09–0.44
	Nationality	0.81	0.35–1.88	0.61	0.21–1.79	0.79	0.33–1.85
	Low SES	0.77	0.39–1.52	0.87	0.34–2.23	0.66	0.33–1.32

Note. OR = odds ratio; CI = confidence interval. \*  $p \leq 0.05$ , \*\*  $p \leq 0.01$ , \*\*\*  $p \leq 0.001$ .

#### 4. Discussion

The present study extends the knowledge on the associations between ACEs, juvenile personality, and crime by investigating the respective effects in a relatively large, heterogeneous high-risk sample of male and female adolescents living in child-welfare or residential care/juvenile justice institutions. By implementing a comprehensive approach considering cumulative ACEs and personality profiles instead of single ACEs and personality traits alone, the current results may inspire future research as well as prevention and intervention practice aiming at reducing the risk of (repeated) juvenile crime involvement.

##### 4.1. Prevalence of ACEs, Personality Traits, Psychopathological Disturbances, and Crime

As expected, we found high rates of ACEs in the present sample, with more than 82% of the juveniles reporting at least one, and more than half of them reporting at least three different ACEs. Prevalence rates in the present sample were comparable to and even slightly exceeded rates found in delinquent and non-delinquent institutionalized youth in previous studies (e.g., [5,28]). This might be because our sample was somewhat more heterogeneous, e.g., with respect to crime involvement (about one third of the juveniles had been convicted before and one third after the assessment) than samples in previous studies, and that measures of ACEs differed among studies. Personality disturbances in terms of categorical personality disorders were found in one fifth of the sample. Prevalence of psychopathology was also high in the present sample with more than 82% showing at least one psychiatric diagnosis, most frequently conduct disorders, affective disorders, and ADHD. Both findings underline previous research pointing to high rates of maladaptive personality traits and psychopathology among high-risk youth (e.g., [5,21,22]). Thus, our findings emphasize that high-risk, institutionalized youth display a highly burdened population with respect to ACEs, personality-related, and psychopathological disturbances.

##### 4.2. Personality Profiles

The current findings suggest that valid profiles can be derived based on the simultaneous consideration of non-pathological and pathological personality features. Previous studies have identified personality profiles based on psychopathy measures only (e.g., [37,58]), but a more holistic approach including different features of personality (including psychopathic traits, temperament, and measures of personality disorders) may lead to a more profound understanding of youth burdened by ACEs and at risk of (future) delinquency. Based on dimensional, self-reported measures of psychopathy, temperament, and personality disorders, we did not only find two profiles representing high and

low personality-related disturbances, but empirically derived six distinct personality profiles among our high-risk youth sample. Although a great proportion of youth showed rather inconspicuous personality traits, most of the sample could be assigned to divergent personality profiles.

#### 4.2.1. Baseline Profile

About 42.1% of the sample were assigned to the baseline profile with rather inconspicuous values across all assessed personality variables. Males were overrepresented in this profile compared to females. Juveniles of the baseline profile were seldom burdened with multiple ACEs, clinician-administered personality disorders, and affective disorders. However, almost half of the adolescents with previous and future delinquency belonged to the baseline profile. These youths may represent juveniles with an occurrence of criminal behavior that is rather typical for adolescence but unrelated to ACEs, personality, or psychopathology [1].

#### 4.2.2. Socially Difficult Profile

With comparatively high scores on psychopathy, novelty seeking, and SCID-II Cluster B traits, 10.8% of the sample were assigned to the socially difficult personality profile. Rates of ACEs were high, and clinical personality disorders (especially Cluster A) and externalizing psychiatric diagnoses (i.e., conduct disorders, ADHD) were more common in this profile than in others, whereas sex distribution was balanced. Moreover, although not overrepresented among youth with prior delinquency, juveniles of the socially difficult profile showed high rates of future (non-violent) crime. Class assignment to the socially difficult profile remained a significant predictor of future general and non-violent delinquency in multivariate models. The socially difficult personality profile found in the present study appears comparable to the criminal personality profile and the personality traits associated with delinquency in the study by Krischer et al. [22], with high scores on conduct problems (i.e., conduct disorders), sensation seeking (i.e., novelty seeking), affective lability (i.e., SCID-II Cluster B traits), impulsivity (i.e., ADHD), and callousness (i.e., psychopathy).

#### 4.2.3. Versatile Personality Problems Profile

A small proportion of the sample (6.7%) was assigned to the versatile personality problems profile, which showed high levels on all dimensional SCID-II personality disorder scales. Juveniles from this profile appeared to be most burdened with high ACE rates and DSM clinical diagnoses (especially affective disorders). Also, clinician-administered DSM-IV personality disorders were most commonly diagnosed in this profile, especially with regard to unspecified/combined personality disorders. Although the proportion of juveniles from this profile was relatively high among those who had been convicted for any previous crime, assignment to the versatile personality problems profile was not predictive of future crime involvement. Thus, juveniles from this profile may represent a highly burdened subgroup among institutionalized youth with significant need for treatment, which, however, may rather focus on clinical than forensic (crime-related) aspects.

#### 4.2.4. Avoidant Profile

With high values on dimensional SCID-II Cluster C ratings but rather inconspicuous scores on other personality traits, 14.6% of the sample were assigned to the avoidant personality profile. Females and youth of Swiss nationality were overrepresented in this profile. Clinician-administered DSM Cluster C personality disorders were comparatively common, whereas psychiatric disorders in terms of substance use disorders and conduct disorders were relatively rare. The number of ACEs did not stand out compared to the total sample. Most strikingly, juveniles from the avoidant personality profile were clearly underrepresented among those with prior and future delinquent behaviors; moreover, assignment to the avoidant profile had a protective effect regarding future offending even in multivariate models. These findings are in line with previous research stating that

Cluster C personality disorders were not related to increased risk of future crime [11]. This may be since youth with avoidant personality traits could rather avoid or step away from situations that elicit the risk of criminal conduct or violent escalation.

#### 4.2.5. Goal-Oriented Profile

Juveniles with rather inconspicuous scores on maladaptive personality traits but high values on reward dependence and persistence were assigned to the goal-oriented personality profile (14.3%). Compared to other profiles, adolescents without Swiss nationality and low SES were overrepresented in this profile. Goal-oriented youth were seldomly burdened by ACEs, clinician-administered personality disorders, or psychiatric disorders, and showed no specifics in terms of prior or future delinquency. This finding contributes to research assuming that crime may rather be committed by burdened adolescents (e.g., [8]). Moreover, although reward dependence per se may reflect a rather ambiguous trait as it may also enhance the risk of criminal conduct (e.g., [59]), a pattern of high reward dependence and high persistence may, conversely, be rather functional for goal achievement and, thus, prevent frustration and subsequent crime.

#### 4.2.6. Indifferent Profile

Finally, about 11.4% of the sample showing inconspicuous scores on clinical personality scales and low novelty seeking, reward dependence, and persistence were assigned to the indifferent personality profile. Juveniles of this profile were comparatively often from families with low SES and Swiss nationality. No specific patterns emerged concerning ACEs, clinician-administered personality disorders, psychiatric disorders, and delinquency. Thus, juveniles of this profile showed low psychosocial burden despite coming from low SES backgrounds. It may be that the indifferent personality traits led juveniles to rather engage in resignation regarding maladaptive outcomes. Equally, although often discussed in relation to crime, low SES may not enhance the risk of criminal behavior per se but rather in combination with other risk factors (e.g., [60]).

#### 4.3. Prediction of Future Crime by ACEs and Personality

Our data suggests that ACEs had no effect on risk of future crime, neither in univariate nor multivariate models. This result contradicts previous findings that emphasized the role of ACEs in the prediction of repeated juvenile crime involvement (e.g., [61]), yet contributes to research that did not find respective associations [62]. We might have failed to detect previously mentioned predictive effects due to several reasons. First, as mentioned above, our measure of ACEs was somewhat different and broader than measures used in previous studies. Second, the overall high prevalence rates of ACEs in the current high-risk sample of juveniles with and without previous offenses may have affected the results. Third, although serving as convenient way to consider the co-existence of multiple types of ACEs, a cumulative ACE score has also been criticized because it cannot account for the effects of specific patterns of ACEs (e.g., [4,63]). Fourth, compared to studies that emphasized the ACE-delinquency link in juvenile justice samples, only about one third of our high-risk sample had been convicted of criminal behavior before and after the assessment. Thus, future delinquency in the present study was not entirely equivalent to re-offending reported in studies on criminal youth but also included future first time offending. Fifth, the sole reliance on official crime data (convictions) may have led to potential underreporting of crime. Furthermore, delinquency may only be one way to deal with psychosocial burden. Despite the elevated ACE prevalence in our high-risk sample, a vast proportion of the juveniles examined in the present study may have been affected differently by ACEs, e.g., holding a higher risk of developing mental disturbances rather than engaging in future crime.

Regarding youth personality, two profiles turned out to be of major relevance in the prediction of future delinquency. On the one hand, avoidant personality traits appeared to be protective of crime involvement in general, whereas socially difficult personality traits

increased the risk of (future) general and non-violent delinquency, even when controlled for ACEs, sociodemographic covariates, and prior delinquency. Thus, juveniles with patterns of socially difficult personality features (i.e., psychopathy, novelty seeking, and SCID-II Cluster B traits) display a subgroup at specific risk of future delinquency among the high-risk sample of institutionalized youth. Interestingly, when considered by variable-centered analyses, psychopathic features and novelty seeking, were, in contrast to SCID-II Cluster B and C traits, only associated with future delinquency in univariate, but not multivariate analyses. This finding is contrary to previous research indicating that temperament was more strongly associated with delinquency than ACEs and psychopathic traits [27]. Similar to criticism regarding the assessment of ACEs (e.g., [4]), research on adolescent personality may also benefit from considering empirically derived profiles in addition to variable-centered approaches.

Apart from ACEs and personality, male sex and prior delinquency proved to be consistent predictors of future crime involvement, contributing to previous research (e.g., [27]) and implementation, as especially male juveniles and those who have been criminally involved in their pasts need special attention regarding prevention and treatment.

#### 4.4. Strengths and Limitations

The present study offers several considerable strengths but also some qualifications that need to be considered when interpreting our results and extracting implications. First, we were able to examine a high-risk sample of juveniles living in child welfare and juvenile justice institutions. The sample consisted of both male and female juveniles as well as previously delinquent and non-delinquent youth. Both self-rating and clinician-administered data were assessed, and we derived crime data from official state databases covering a follow-up period up to 10 years. By implementing LPA, personality profiles were empirically defined by bottom-up instead of theoretical top-down approaches. However, self-ratings as well as clinician-administered ratings are not without subjective bias, and the sole reliance on official crime data (convictions) may have led to potential underreporting of crime. Moreover, future research may gain deeper insights into the given topic by implementing mixed-methods studies that consider both quantitative and qualitative data. The number of juveniles in some of the personality profiles was rather small, reducing statistical power, limiting generalizability to other (especially community) youth samples, and, moreover, impeding the investigation of further relevant aspects such as sex differences. As mentioned above, considering ACEs by a cumulative score may have disguised more subtle effects of distinct ACE patterns; yet, examining the single and shared impact of unique ACEs and specified ACE patterns was beyond the scope of the present study. Additionally, we were not able to further investigate the potential effects of psychiatric diagnoses, which were quite common in our sample, although externalizing disorders, in particular, were found to enhance the risk of (repeated) criminal conduct (e.g., [64,65]). Furthermore, it is not clear whether psychiatric disturbances were present before placement or have developed during placement. Finally, some more restrictions related to the design of the underlying MAZ. study apply, too (e.g., regarding placement trajectory; see [40]).

## 5. Conclusions

Based on data from a relatively large, heterogeneous high-risk sample of male and female adolescents living in child-welfare and residential care/juvenile justice institutions, we found that cumulative ACEs did not predict future crime involvement. However, distinct personality profiles emerged based on measures of psychopathy, temperament, and personality disorders, which differed regarding ACEs, personality disturbances, clinical psychopathology, and future delinquency. A socially difficult personality profile was associated with increased risk of future crime, whereas avoidant personality traits appeared rather protective. Findings indicate that the role of ACEs in the prediction of juvenile delinquency is still not sufficiently clear and that relying on single personality traits alone may be insufficient in the explanation of juvenile crime. A comprehensive but individualized



Table A1. Cont.

	Total Sample (N = 342)	Baseline (n = 144)	Socially Difficult (n = 37)	Versatile Personality Problems (n = 23)	Avoidant (n = 50)	Goal Oriented (n = 49)	Indifferent (n = 39)							
YPI sum	110.78 (22.48)	115.31 <sup>a</sup> (19.40)	129.73 <sup>b</sup> (21.01)	116.43 <sup>a</sup> (20.74)	98.44 <sup>c</sup> (18.64)	86.27 <sup>c</sup> (13.85)	119.41 <sup>a</sup> (16.23)	33.16 ***						
JTCI novelty seeking	29.73 (9.28)	33.34 <sup>a</sup> (7.76)	36.27 <sup>a</sup> (8.96)	29.74 <sup>a</sup> (8.44)	29.26 <sup>a</sup> (8.77)	22.10 <sup>b</sup> (6.22)	20.38 <sup>b</sup> (9.28)	33.33 ***						
JTCI harm avoidance	23.59 (8.42)	24.69 <sup>a</sup> (8.20)	23.43 <sup>a,b</sup> (7.69)	26.74 <sup>a</sup> (6.78)	25.84 <sup>a</sup> (8.30)	18.59 <sup>b</sup> (9.00)	21.26 <sup>a,b</sup> (7.37)	6.37 ***						
JTCI reward dependence	37.15 (9.54)	38.68 <sup>a</sup> (8.54)	38.97 <sup>a,b,c</sup> (6.81)	32.96 <sup>b</sup> (7.75)	35.78 <sup>a,b</sup> (9.42)	44.16 <sup>c</sup> (8.33)	25.18 <sup>d</sup> (5.02)	27.28 ***						
JTCI persistence	30.17 (8.80)	29.42 <sup>a</sup> (7.12)	29.08 <sup>a</sup> (6.29)	27.22 <sup>a,b</sup> (5.08)	28.92 <sup>a</sup> (8.66)	42.41 <sup>c</sup> (6.26)	21.92 <sup>b</sup> (5.65)	43.65 ***						
SCID-II Cluster A (dim.)	27.58 (6.20)	24.46 <sup>a</sup> (2.64)	31.43 <sup>b</sup> (4.62)	44.30 <sup>c</sup> (5.11)	28.70 <sup>b,d</sup> (4.50)	25.90 <sup>a</sup> (3.47)	26.28 <sup>a,d</sup> (3.78)	130.65 ***						
SCID-II Cluster B (dim.)	42.59 (6.12)	38.78 <sup>a</sup> (5.93)	56.68 <sup>b</sup> (9.89)	57.65 <sup>b</sup> (11.04)	40.74 <sup>a</sup> (7.47)	38.63 <sup>a</sup> (5.44)	41.77 <sup>a</sup> (7.17)	60.53 ***						
SCID-II Cluster C (dim.)	28.73 (6.12)	25.07 <sup>a</sup> (2.92)	29.00 <sup>b</sup> (4.23)	36.48 <sup>c</sup> (4.00)	38.84 <sup>c</sup> (4.33)	27.18 <sup>b</sup> (3.29)	26.38 <sup>a,b</sup> (3.15)	146.06 ***						
SCID-II other (dim.)	18.24 (4.58)	15.64 <sup>a</sup> (2.05)	22.32 <sup>b</sup> (3.98)	26.39 <sup>c</sup> (4.27)	21.86 <sup>b</sup> (3.94)	16.57 <sup>a</sup> (3.18)	16.59 <sup>a</sup> (2.89)	86.08 ***						
	<i>n</i> (%)	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	$\chi^2$ (5)
SCID-II no PD	270 (78.9)	134 (49.5)	5.5	21 (7.8)	-3.5	5 (1.5)	-7.0	30 (11.1)	-3.6	47 (17.4)	3.1	33 (12.2)	0.9	93.54 ***
SCID-II Cluster A (cat.)	6 (1.8)	1 (16.7)	-1.3	4 (66.7)	4.4	0 (0.0)	-0.7	1 (16.7)	0.1	0 (0.0)	-1.0	0 (0.0)	-0.09	20.55 ***
SCID-II Cluster B (cat.)	17 (5.9)	7 (41.2)	-0.1	4 (23.5)	1.7	1 (5.9)	-0.1	1 (5.9)	-1.0	1 (5.9)	-1.0	3 (17.6)	0.8	5.13
SCID-II Cluster C (cat.)	9 (2.6)	0 (0.0)	-2.6	0 (0.0)	-1.1	0 (0.0)	-0.8	9 (100.0)	7.3	0 (0.0)	-1.2	0 (0.0)	-1.1	53.98 ***
SCID-II other (cat.)	40 (11.7)	2 (5.0)	-5.1	8 (20.0)	2.0	17 (42.5)	9.6	9 (22.5)	1.5	1 (2.5)	-2.3	3 (7.5)	-0.8	111.50 ***
<b>Psychopathology</b>	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>F</i> (5, 336)
K-SADS-PL sum	1.77 (1.30)	1.60 (1.20) <sup>a</sup>		2.22 (1.11) <sub>a,b</sub>		2.70 (1.69) <sub>b</sub>		1.74 (1.23) <sub>a</sub>		1.57 (1.06) <sub>a</sub>		1.67 (1.61) <sub>a</sub>		4.16***
	<i>n</i> (%)	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	$\chi^2$ (5)
K-SADS-PL sum = 0	60 (17.3)	28 (46.7)	0.8	2 (3.3)	-2.1	2 (3.3)	-1.2	7 (11.7)	-0.7	9 (15.0)	0.2	12 (20.0)	2.3	10.55
K-SADS-PL sum = 1	92 (26.9)	41 (0.6)	0.6	7 (7.6)	-1.2	4 (4.3)	-1.1	18 (19.6)	1.6	13 (14.1)	-0.1	9 (9.8)	-0.6	4.84
K-SADS-PL sum = 2	105 (30.7)	48 (45.7)	0.9	14 (13.3)	1.0	6 (5.7)	-0.5	12 (11.4)	-1.1	19 (18.1)	1.3	6 (5.7)	-2.2	8.44
K-SADS-PL sum ≥ 3	85 (25.1)	27 (31.8)	2.2	14 (16.5)	1.9	11 (12.9)	2.6	13 (15.3)	0.2	8 (9.4)	-1.5	12 (14.1)	0.9	15.39 **
K-SADS-PL substance use	98 (28.7)	48 (49.0)	1.6	13 (14.3)	1.3	11 (11.2)	2.1	5 (5.1)	-3.2	9 (9.2)	-1.8	11 (11.2)	0.1	18.31 **
K-SADS-PL schizophrenic	3 (0.9)	2 (66.7)	0.9	0 (0.0)	-0.6	1 (33.3)	1.8	0 (0.0)	-0.7	0 (0.0)	-0.7	0 (0.0)	-0.6	5.12
K-SADS-PL affective	105 (30.7)	28 (26.7)	-3.9	9 (8.6)	-0.9	15 (14.3)	3.7	24 (22.9)	2.8	19 (18.1)	1.3	10 (9.5)	-0.6	30.51***
K-SADS-PL anxiety	55 (16.1)	17 (30.9)	-1.8	4 (7.3)	-0.9	9 (16.4)	3.1	14 (25.5)	2.4	5 (9.1)	-1.2	6 (10.9)	0.0	18.06 **
K-SADS-PL obsessive-compulsive	7 (2.0)	1 (14.3)	-1.5	2 (28.6)	1.5	0 (0.0)	-0.7	1 (14.3)	0.0	2 (28.6)	1.1	1 (14.3)	0.3	4.91
K-SADS-PL traumatic	74 (21.6)	27 (36.5)	-1.1	10 (13.5)	0.8	9 (12.2)	2.1	13 (17.6)	0.8	8 (10.8)	-1.0	7 (9.5)	-0.5	6.91
K-SADS-PL dissociative	1 (0.3)	0 (0.0)	-0.9	0 (0.0)	-0.4	1 (100.0)	3.7	0 (0.0)	-0.4	0 (0.0)	-0.4	0 (0.0)	-0.4	13.78 *
K-SADS-PL somatic	1 (0.3)	0 (0.0)	-0.9	0 (0.0)	-0.4	0 (0.0)	-0.3	1 (100.0)	2.4	0 (0.0)	-0.4	0 (0.0)	-0.4	5.80
K-SADS-PL eating	4 (1.2)	1 (25.0)	-0.7	0 (0.0)	-0.7	0 (0.0)	-0.5	0 (0.0)	-0.8	2 (50.0)	2.0	1 (25.0)	0.9	5.87
K-SADS-PL ADHD	86 (25.1)	32 (37.2)	-1.1	19 (22.1)	3.8	4 (4.7)	-0.9	11 (12.8)	-0.6	13 (15.1)	0.2	7 (8.1)	-1.0	15.79 **
K-SADS-PL conduct	125 (36.5)	58 (46.4)	1.2	21 (16.8)	2.7	9 (7.2)	0.2	9 (7.2)	-3.0	12 (9.6)	-1.9	16 (12.8)	0.9	18.69 **
K-SADS-PL other	45 (13.2)	17 (37.8)	-0.6	3 (6.7)	-1.0	3 (6.7)	0.0	9 (20.0)	1.1	7 (15.6)	0.2	6 (13.3)	0.6	2.39
<b>Prior delinquency</b>	<i>n</i> (%)	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	$\chi^2$ (5)
Any	111 (32.5)	55 (49.5)	1.9	14 (12.6)	0.7	13 (11.7)	2.6	3 (2.7)	-4.3	12 (10.8)	-1.3	14 (12.6)	0.5	26.32 ***
Violent	26 (7.6)	9 (34.6)	-0.8	4 (15.4)	0.8	4 (15.4)	1.8	1 (3.8)	-1.6	3 (11.5)	-0.4	5 (19.2)	1.3	7.95
Non-Violent	105 (30.7)	55 (52.4)	2.6	14 (13.3)	1.0	11 (10.5)	1.8	2 (1.9)	-4.4	12 (11.4)	-1.0	11 (10.5)	-0.4	25.61 ***
<b>Future delinquency</b>	<i>n</i> (%)	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	<i>n</i> (%)	<i>AR</i>	$\chi^2$ (5)
Any	110 (32.2)	53 (48.2)	1.6	20 (18.2)	3.0	9 (8.2)	0.7	4 (3.6)	-4.0	12 (10.9)	-1.2	12 (10.9)	-0.2	24.80 ***
Violent	37 (10.8)	20 (54.1)	1.6	7 (18.9)	1.7	4 (10.8)	1.1	0 (0.0)	-2.7	3 (8.1)	-1.1	3 (8.1)	-0.7	12.53 *
Non-Violent	101 (29.5)	48 (47.5)	1.3	19 (18.8)	3.1	8 (7.9)	0.6	4 (4.0)	-3.6	10 (9.9)	-1.5	12 (11.9)	0.2	22.90 ***
<b>Sociodemographics</b>	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>M</i> ( <i>SD</i> )		<i>F</i> (5, 99.56)

Table A1. Cont.

	Total Sample (N = 342)	Baseline (n = 144)		Socially Difficult (n = 37)		Versatile Personality Problems (n = 23)		Avoidant (n = 50)		Goal Oriented (n = 49)		Indifferent (n = 39)		
	n (%)	n (%)	AR	n (%)	AR	n (%)	AR	n (%)	AR	n (%)	AR	n (%)	AR	$\chi^2$ (5)
Age	15.74 (1.61)	15.75 (1.46)		16.00 (1.55)		16.50 (1.73)		15.19 (1.97)		15.95 (1.74)		15.49 (1.74)		2.16
Female	120 (35.1)	42 (35.0)	−2.0	9 (7.5)	−1.5	8 (6.7)	0.0	28 (23.3)	3.4	18 (15.0)	0.3	15 (12.5)	0.5	13.95 *
Male	222 (64.9)	102 (45.9)	2.0	28 (12.6)	1.5	15 (6.8)	0.0	22 (9.9)	−3.4	31 (14.0)	−0.3	24 (10.8)	−0.5	13.95 *
Swiss Nationality	293 (85.7)	125 (42.7)	0.5	29 (9.9)	−1.3	21 (7.2)	0.8	49 (16.7)	2.7	30 (10.2)	−5.3	39 (13.3)	2.7	38.92 ***
Low SES	79 (23.2)	30 (38.0)	−0.9	10 (12.7)	0.5	6 (7.6)	0.3	9 (11.4)	−0.8	6 (7.6)	−2.1	18 (22.8)	3.9	18.25 **

Note. N = 342. dim = dimensional, cat = categorical, PD = personality disorder. AR adjusted residuals. Significant deviations from expected distribution with  $AR \leq -2.0$  or  $AR \geq 2.0$ . Groups with the same subscripts (a, b, c, d) did not significantly differ from each other. \*  $p \leq 0.05$ , \*\*  $p \leq 0.01$ , \*\*\*  $p \leq 0.001$ .

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# An Updated Systematic Review and Meta-regression Analysis: Mental Disorders Among Adolescents in Juvenile Detention and Correctional Facilities

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**Objective:** To synthesize evidence on the prevalence of mental disorders in adolescents in juvenile detention and correctional facilities and examine sources of heterogeneity between studies.

**Method:** Electronic databases and relevant reference lists were searched to identify surveys published from January 1966 to October 2019 that reported on the prevalence of mental disorders in unselected populations of detained adolescents. Data on the prevalence of a range of mental disorders (psychotic illnesses, major depression, attention-deficit/hyperactivity disorder [ADHD], conduct disorder, and posttraumatic stress disorder [PTSD]) along with predetermined study characteristics were extracted from the eligible studies. Analyses were reported separately for male and female adolescents, and findings were synthesized using random-effects models. Potential sources of heterogeneity were examined by meta-regression and subgroup analyses.

**Results:** Forty-seven studies from 19 countries comprising 28,033 male and 4,754 female adolescents were identified. The mean age of adolescents assessed was 16 years (range, 10–19 years). In male adolescents, 2.7% (95% CI 2.0%–3.4%) had a diagnosis of psychotic illness; 10.1% (95% CI 8.1%–12.2%) major depression; 17.3% (95% CI 13.9%–20.7%) ADHD; 61.7% (95% CI 55.4%–67.9%) conduct disorder; and 8.6% (95% CI 6.4%–10.7%) PTSD. In female adolescents, 2.9% (95% CI 2.4%–3.5%) had a psychotic illness; 25.8% (95% CI 20.3%–31.3%) major depression; 17.5% (95% CI 12.1%–22.9%) ADHD; 59.0% (95% CI 44.9%–73.1%) conduct disorder; and 18.2% (95% CI 13.1%–23.2%) PTSD. Meta-regression found higher prevalences of ADHD and conduct disorder in investigations published after 2006. Female adolescents had higher prevalences of major depression and PTSD than male adolescents.

**Conclusion:** Consideration should be given to reviewing whether health care services in juvenile detention can address these levels of psychiatric morbidity.

**Key words:** criminal justice, detention, mental disorders, PTSD, systematic review

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**A**dolescents account for approximately 5% of the custodial population in Western countries, and on any given day in the United States, 53,000 young people are detained in various correctional facilities.<sup>1</sup> Psychiatric disorders are known to be prevalent in juvenile offenders.<sup>2</sup> Furthermore, a number of studies indicate that psychiatric disorders in this population are linked to a wide range of negative outcomes, including elevated risk of repeat offenses,<sup>3,4</sup> poor prognosis of mental health problems, high rates of substance misuse,<sup>5,6</sup> increased likelihood to experience or perpetrate violence in intimate relationships, and psychosocial difficulties in adulthood.<sup>7</sup>

A previous systematic review and meta-analysis synthesized evidence up to 2006 on the prevalence of mental disorders in detained adolescents. The findings

highlighted considerable mental health needs.<sup>8</sup> Since then, a significant body of new primary research has been published. However, recent systematic reviews have been limited by their scope (eg, by including only English-language reports or not searching the gray literature), a lack of quantitative methods (including heterogeneity analyses), and the use of inconsistent time frames for psychiatric diagnoses (eg, in past month, past year, and lifetime).<sup>9–11</sup> This article presents an updated systematic review and meta-analysis on the prevalence of mental disorders in detained adolescents, including posttraumatic stress disorder (PTSD),<sup>12</sup> which has become increasingly researched in this population over the last decade. The findings should inform service provision, planning, and future research.

**METHOD**

**Protocol and Registration**

We conducted this systematic review following the Preferred Reporting Items for Systematic Review and Meta-Analyses<sup>13</sup> and the Meta-analysis of Observational Studies in Epidemiology guidelines (see Table S1, available online).<sup>14</sup> The study protocol was also registered with the PROSPERO International Prospective Register of Systematic Reviews (CRD42019117111).

**Search Strategy**

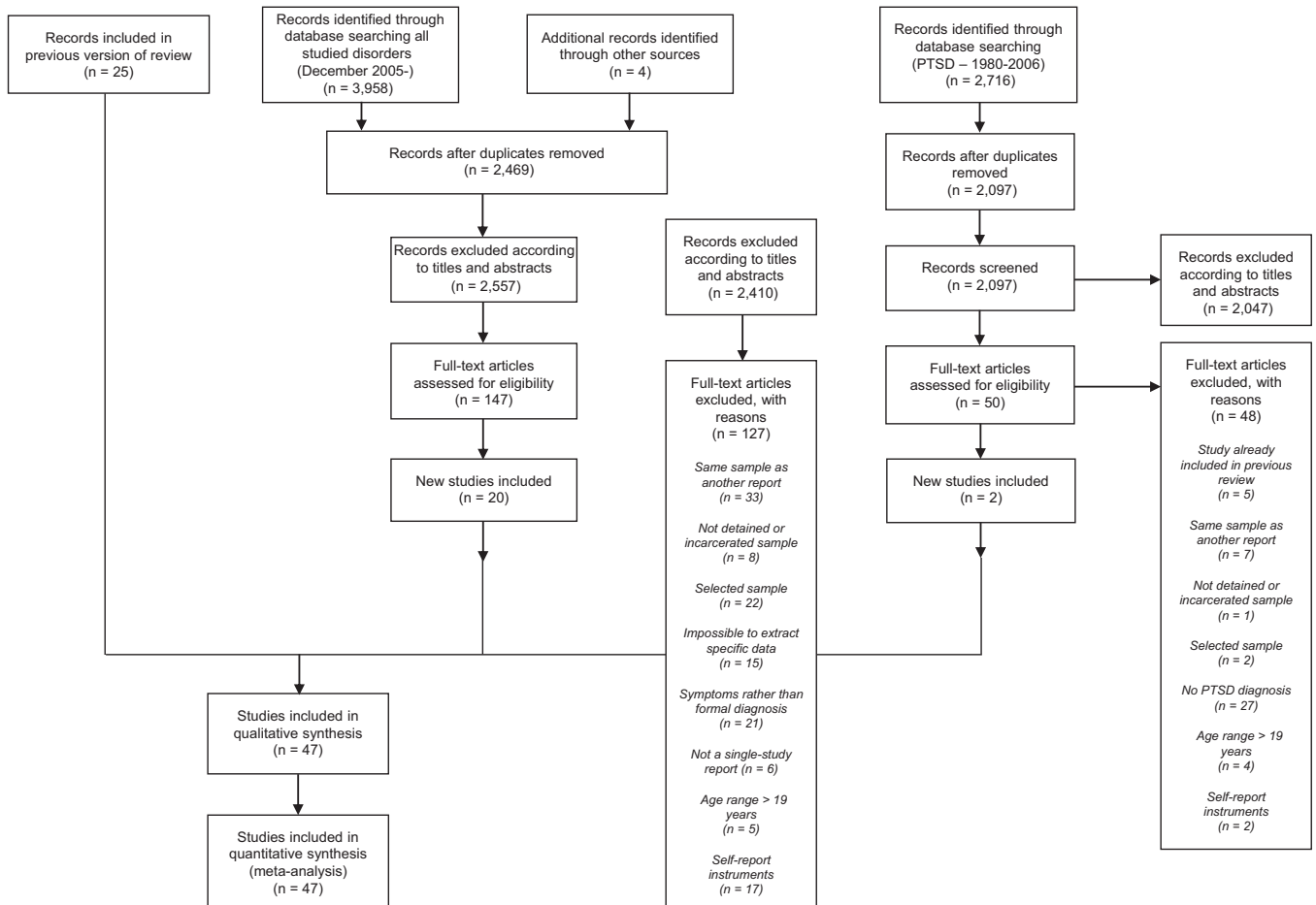
We identified studies published between January 1966 and October 2019 reporting the prevalence of mental disorders in adolescents aged between 10 and 19 years in juvenile detention and correctional facilities. For the period January 1966 to May 2006, the methods were described in a previous review conducted by two of the authors (S.F. and N.L.).<sup>8</sup> For this update, we searched the following electronic databases: EMBASE, PsycINFO, Medline, US

National Criminal Justice Reference System Abstract Database, Global Health, and Google Scholar. Our search strategy featured terms related to adolescents (juvenile\*, adol\*, young\*, youth\*, boy\*, or girl\*) and custody (prison\*, jail\*, incarcerat\*, custod\*, imprison\*, or detain\*), which was identical to the previous review. For psychotic illnesses, major depression, attention-deficit/hyperactivity disorder (ADHD), and conduct disorder, new search dates ranged from December 2005 to October 2019. However, for PTSD, searches began in January 1980 to coincide with the addition of this disorder to *DSM-III*.<sup>15</sup> Reference lists were hand-searched. No language restriction was set, and non-English surveys were translated (Figure 1).

**Study Eligibility**

We included studies reporting diagnoses of psychotic illnesses, major depression, ADHD, conduct disorder, and PTSD among adolescents in juvenile detention and correctional facilities based on clinical examination or

**FIGURE 1** Flow Diagram Detailing the Search Strategy for the Updated Systematic Review (1966–2019)



Note: PTSD = posttraumatic stress disorder.

interviews conducted with semistructured diagnostic instruments.<sup>16</sup> We defined adolescence from the age of 10 to 19 years,<sup>17</sup> comparable with the previous review and consistent with research.<sup>18</sup> We excluded studies that did not report the prevalence rates of mental disorders separately for male and female adolescents (with the exception of samples including <10% girls), surveys featuring enriched or selected samples of juveniles in custody, and studies that employed exclusively self-report instruments to diagnose individuals (but did include the Diagnostic Interview Schedule for Children [DISC], as it was typically administered in a semistructured way). Furthermore, included studies reported current prevalence of psychotic illnesses, major depression, ADHD, and PTSD or lifetime prevalence of conduct disorder that adhered to international classifications (*ICD* and *DSM*). Thus, one study<sup>19</sup> was partially excluded because the prevalences of psychotic illnesses, major depression, and ADHD were reported for the past year rather than the past 6 months. Another reason to include PTSD was correspondence from the original review that recommended its inclusion to expand the clinical scope.<sup>20</sup> For psychosis, we excluded one small study<sup>21</sup> (n = 173) owing to being an outlier (11.0%).

#### Data Extraction

One reviewer (G.B.) extracted data from the newly identified studies according to the protocol used in the previous review. In the case of any uncertainty in data extraction, R.Y. and S.F. were consulted. Gender-specific information was collected in regard to prespecified characteristics: geographic location, year of interview, sampling method (consecutive admissions, total population, random, stratified random, or some combination thereof), participation rate, number of interviewed adolescents, diagnostic instrument and criteria (*ICD* or *DSM*), type of interviewer (psychiatrist versus other), proportion of individuals diagnosed with each disorder, mean age and age range, mean duration of incarceration at the interview, and proportion with violent offenses.<sup>8</sup> Authors of primary studies were contacted when further information was required (Table 1).

#### Quality Assessment

Study quality was assessed in the included surveys using a modified version of the Newcastle-Ottawa Scale, which appraises sample representativeness and size, participation rate, statistical quality, and ascertainment of diagnosis.<sup>22,23</sup> We employed the same version of the checklist used in a recent study of the prevalence of PTSD in prisoners.<sup>24</sup> The potential total score ranged from 0 to 6 points. Studies with a score of 0 to 2 points were considered low quality, studies

with scores of 3 to 4 points were considered medium quality, and studies with scores of 5 to 6 points were high quality (see Supplement 1 and Table S2, available online).

#### Data Analysis

A random-effects meta-analysis was conducted to calculate pooled prevalence of each disorder, given that heterogeneity among studies was high.<sup>25</sup> We aggregated smaller studies, for which the sample size was <100 individuals. For these small studies, prevalences reported in the text were from the nonaggregated data, whereas the figures were generated using results from the aggregated data. The Poisson distribution was used to obtain 95% confidence intervals when events were rare.<sup>26</sup> Two studies<sup>27,28</sup> for which the prevalence of psychotic illnesses was zero were imputed according to standard methods (ie, confidence intervals were calculated using “3” as the numerator and the real population size as the denominator).<sup>29</sup> We reported the  $I^2$  statistic and Cochran's  $Q$  to indicate the degree of heterogeneity between studies. In line with guidelines, heterogeneity was considered to be low when  $I^2$  ranged from 0 to 40%; moderate, from 30% to 60%; substantial, from 50% to 90%; and considerable, from 75% to 100%.<sup>30</sup> We conducted subgroup and meta-regression analyses to explore source of heterogeneity on a range of study characteristics: year of publication ( $\leq 2006$  versus  $> 2006$ ), gender (male versus female), mean age (both as a continuous and as a dichotomous variable;  $\leq 15$  or  $> 15$  years), sample size (both as a continuous and as a dichotomous variable;  $\leq 250$  versus  $> 250$  adolescents), study origin (United States versus elsewhere), instrument (*DISC* versus other instruments), diagnostic criteria (*ICD* versus *DSM*), interviewer (psychiatrist versus nonpsychiatrist), sampling strategy (stratified/nonstratified random versus consecutive/complete) and study quality score (both as a continuous and as a dichotomous variable; high-quality studies versus low- and medium-quality studies)). We first conducted univariate meta-regression, followed by multivariable analysis including factors that reached statistical significance (set at  $p < .05$ ) in the univariate models. To test group differences, subgroup analyses were conducted on all dichotomous variables. All analyses were performed using STATA statistical software package, version 13.0 using `metan` and `metareg` commands.<sup>31</sup>

## RESULTS

We identified 47 studies (46 different samples) from 19 different countries. Through our updated search, we found 22 new surveys.<sup>12,19,21,27,32–49</sup> We combined them with the 25 surveys identified in the previous review.<sup>28,50–73</sup> Two studies<sup>12,69</sup> were based on the same sample, which provided

**TABLE 1** Extracted Information From Included Samples, 1966–2019

Study	Country	Population	Type of custody	Sampling strategy	Proportion not consenting	Total number interviewed	Instrument	Diagnostic criteria	Diagnoses reported	Mean age (Years)	Age range (Years)	Interviewer	Time detained before interview	Proportion committed violent offenses
Bolton, 1976 <sup>52</sup>	USA	Juvenile detention center	Not further specified	Stratified random	Not provided	502 boys 149 girls	Semistructured interview	DSM-II	PI	16	16–17	Layperson	4 days	Not provided
Chiles et al., 1980 <sup>53</sup>	USA	Juvenile detention center	Correctional	Consecutive (psychotic individuals excluded)	0%	94 boys 26 girls	Clinical	Research criteria of depression	MD	Not provided	13–15	Nonpsychiatrist	Up to 2 days	Not provided
Kashani et al., 1980 <sup>60</sup>	USA	Detention center	Evaluation and detention	Consecutive	Not provided	71 boys 29 girls	Clinical	DSM-III	MD	15	11–17	Psychiatrist	Mean 7 days	6%
Hollander and Turner, 1985 <sup>59</sup>	USA	Convicted juvenile delinquents	Correctional	Consecutive	8%	185 boys	Clinical	DSM-III	PI ADHD	15	12–18	Staff psychologist and psychiatrist	Not provided	38%
Duclos et al., 1998 <sup>57</sup>	USA	Detention center	Not further specified	Consecutive	25%	86 boys 64 girls	DISC-2.3	DSM-III-R	MD ADHD CD PTSD	15	12–18	Nonpsychiatrist	Not provided	Not provided
Shelton, 1998 <sup>68</sup>	USA	Detention facilities	Committal and detention facilities	Complete sample	8%	252 boys 60 girls	DISC	DSM-III	PI	16	12–18	Nonpsychiatrist	Not provided	Not provided
Ulzen et al., 1998 <sup>70</sup>	Canada	Detainees	Secure custodial facilities	Not provided	7%	38 boys 11 girls	DICA-R	DSM-III-R	MD ADHD CD PTSD	15	13–17	Research assistant	Not provided	Not provided
Atkins et al., 1999 <sup>51</sup>	USA	Central detention facility	Not further specified	Simple random	17%	71 boys 4 girls	DISC-2.3	DSM-III-R	ADHD CD	15	13–17	Social workers, nurses, medical students	Up to 6 months	Not provided
Lader et al., 2000 <sup>62</sup>	UK	Detainees	Local prison secure juvenile facility (Young Offender's Institution)	Stratified random	2%	314 detainee and 169 sentenced boys 107 detained/sentenced girls	SCAN Clinical	DSM-IV ICD-10 (MD)	PI MD Mania BP	Not provided	16–20	Psychiatrist	Modal categories 0–2 months, 6–11 months, and 0–2 months	19%
Nicol et al., 2000 <sup>64</sup>	UK	Detainees	Secure juvenile facility (Young Offender's Institution)	Stratified random	Not provided	51 juveniles (estimate >90% boys)	K-SADS-E	DSM-III-R	PI MD	Not provided	13–17	Psychiatrist and nonpsychiatrist	Not provided	35%
Pliszka et al., 2000 <sup>66</sup>	USA	Juvenile detention center	Not further specified	Consecutive	0%	45 boys 5 girls	DISC-2.3	DSM-III-R	MD ADHD CD Mania BP	15	11–17	Nonpsychiatrist	Up to 4 days	Not provided

(continued)

TABLE 1 Continued

Study	Country	Population	Type of custody	Sampling strategy	Proportion not consenting	Total number interviewed	Instrument	Diagnostic criteria	Diagnoses reported	Mean age (Years)	Age range (Years)	Interviewer	Time detained before interview	Proportion committed violent offenses
Robertson and Husain, 2001 <sup>28</sup>	USA	Detention centers	Secure detention	Simple random	Not provided	168 boys 79 girls	APS JDI	DSM-IV	PI MD ADHD CD Mania	15	11–18	Mental health worker (nonpsychiatrist)	Mean 10.2 days	17% boys, 18% girls (self-report)
Dimond and Misch, 2002 <sup>55</sup>	UK	Remand detainees	Secure juvenile facility (Young Offender's Institution)	Consecutive	5%	19 boys	K-SADS-P	DSM-IV	PI MD CD BP	Not provided	15–16	Psychiatrist	Not provided	42%
Oliván Gonzalvo, 2002 <sup>65</sup>	Spain	Juvenile detention center	Correctional	Consecutive	0%	35 girls	Clinical	DSM-IV	PI MD ADHD	15	14–17	Psychiatrist	Up to a few days	Not provided
Ruchkin et al., 2002 <sup>67</sup>	Russia	Juvenile detention center	Correctional	Complete sample	2%	370 boys	K-SADS-PL	DSM-IV	MD ADHD CD	16	14–19	Psychiatrist	Not provided	49%
Teplin et al., 2002 <sup>69</sup>	USA	Detainees in correctional facilities	Pretrial detention center	Stratified random	4%	1,172 boys 657 girls	DISC-2.3	DSM-III-R	PI MD ADHD CD Mania	15	10–18	Trained interviewer (Master's in psychology or associated field)	Up to 2 days	Not provided
Waite and Neff, 2002 <sup>72</sup>	USA	Juvenile detention center	Not further specified	Consecutive	0%	9,629 boys 1,190 girls	Clinical	DSM-IV	PI ADHD CD	16	11–18	Clinical psychologist	Up to a few days	18% (boys), 19% (girls)
Wasserman et al., 2002 <sup>73</sup>	USA	Reception for juvenile delinquents	Assessment before correctional placement	Simple random	3%	292 boys	Voice DISC-IV	DSM-IV	MD ADHD CD Mania PTSD	17	Not provided	Layperson	Mean 18.7 days	36%
Gosden et al., 2003 <sup>58</sup>	Denmark	Detainees	Prison and secure social services facility	Consecutive	21%	100 boys	SCAN	ICD-10 DSM-IV (ADHD)	PI MD ADHD CD	17	15–17	Psychiatrist	Mean 11 days	86%
Abram et al., 2004 <sup>12</sup>	USA	Detainees in correctional facilities	Short-term detention	Stratified random	3%	532 boys 366 girls	DISC-IV	DSM-IV	PTSD	15	10–18	Trained interviewer (Master's in psychology or associated field)	Up to 2 days	Not provided
Dixon et al., 2004 <sup>56</sup>	Australia	Juvenile detention center	For serious girl offenders	Consecutive	5%	100 girls	K-SADS-PL	DSM-IV	PI MD ADHD CD PTSD	16	13–19	Clinical psychologist	Not provided	71%

(continued)

**TABLE 1** Continued

Study	Country	Population	Type of custody	Sampling strategy	Proportion not consenting	Total number interviewed	Instrument	Diagnostic criteria	Diagnoses reported	Mean age (Years)	Age range (Years)	Interviewer	Time detained before interview	Proportion committed violent offenses
Lederman <i>et al.</i> , 2004 <sup>63</sup>	USA	Juvenile detention	Before trial or long-term placement	Consecutive	27%	493 girls	DISC	DSM-IV	MD ADHD CD	15	10–17	Nonpsychiatrist	Up to 5 days	54%
Vreugdenhil <i>et al.</i> , 2004 <sup>71</sup>	Netherlands	6 national detention centers	Not further specified	Consecutive	21%	204 boys	DISC-IV (DISC-2.3 for PI)	DSM-IV DSM-III-R (PI)	PI ADHD CD	16	12–18	Nonpsychiatrist	Mean 4 months	72%
Yoshinaga <i>et al.</i> , 2004 <sup>48</sup>	Japan	Juvenile Classification Home	Short-term detention	Consecutive	0%	40 boys 8 girls	CAPS	DSM-IV	PTSD	17	14–19	Psychiatrist	Up to 4 weeks	Not provided
Abrantes <i>et al.</i> , 2005 <sup>50</sup>	USA	2 juvenile detention centers	Not further specified	Consecutive	Not provided	218 boys 34 girls	PADDI	DSM-IV	PI MD CD Mania PTSD	16	13–18	Staff (nonpsychiatrist)	Not provided	27% (self-report)
Kuo <i>et al.</i> , 2005 <sup>61</sup>	USA	Juvenile detention center	Secure placement	Consecutive	31%	36 boys 14 girls	Voice-DISC	DSM-IV	MD	Not provided	13–17	Nonpsychiatrist	Median 4 days	Not provided
Chitsabesan <i>et al.</i> , 2006 <sup>54</sup>	UK	Detainees	Secure juvenile facility (Young Offender's Institution)	Stratified random	7%	118 boys 33 girls	SNASA	DSM-IV	PI MD ADHD	16	13–18	Psychiatrist	Mean 4 months	Not provided
Hamerlynck <i>et al.</i> , 2007 <sup>39</sup>	Netherlands	Detainees	3 juvenile justice institutions	Complete sample	7%	212 girls	K-SADS-P-L	DSM-IV	CD	16	12–19	Not provided	Up to 1 month	Not provided
Colins <i>et al.</i> , 2009 <sup>19</sup>	Belgium	Detainees	3 youth detention centers	Simple random	15%	245 boys	DISC-IV	DSM-IV	CD PTSD	16	12–17	Trained interviewer (researcher and university students)	Between 3 days and 3 weeks	12%
Indig <i>et al.</i> , 2011 <sup>41</sup>	Australia	Young people held in custody	8 juvenile detention centers and 1 juvenile correctional center	Simple random	5%	245 boys 39 girls	K-SADS-P-L	DSM-IV	PI MD ADHD CD PTSD	17	13–19	Trained juvenile justice psychologist	Not provided	Not reported for <19 years
Köhler <i>et al.</i> , 2009 <sup>43</sup>	Germany	Prisoners on remand or in penal detention	Juvenile prison	Complete sample	7%	38 boys	SCID (German version)	DSM-IV	PI MD CD PTSD	Not provided	<18	Psychologist	Not provided	75% (not specific to <19 years)

(continued)



TABLE 1 Continued

Study	Country	Population	Type of custody	Sampling strategy	Proportion not consenting	Total number interviewed	Instrument	Diagnostic criteria	Diagnoses reported	Mean age (Years)	Age range (Years)	Interviewer	Time detained before interview	Proportion committed violent offenses
Sørland and Kjelsberg, 2009 <sup>46</sup>	Norway	Prisoners	Not further specified	Complete sample	5%	40 boys	K-SADS (Norwegian version)	ICD-10	MD CD	18	15–19	Researcher	60% during first 5 days of custody, 85% during first 18 days (range, 25–240 days)	Not provided
Karnik et al., 2010 <sup>42</sup>	USA	Detainees	Department of Corrections and Rehabilitation, Division of Juvenile Justice	Consecutive	1%	650 boys 140 girls	SCID (PI, MD, PTSD) DICA (ADHD) SIDP-IV (CD)	DSM-IV	PI MD ADHD CD PTSD	17	<16	Not provided	After 9 months	36%
Gretton and Clift, 2011 <sup>37</sup>	Canada	Incarcerated youth	Provincial youth custody centers	Complete sample	Not provided	119 boys 54 girls	DISC-IV	DSM-IV	PI MD ADHD CD PTSD	16	13–18 (girls) 12–19 (boys)	Trained interviewer with advanced degrees in psychology	Not provided	83% (boys) 74% (girls)
Mitchell and Shaw, 2011 <sup>27</sup>	UK	Remand and sentenced boys	Young Offender's Institution	Simple random	7%	115 boys	K-SADS	DSM-IV	PI MD ADHD PTSD	17	15–17	Researcher with significant level of clinical experience	24 hours minimum	53%
Ghanizadeh et al., 2012 <sup>36</sup>	Iran	Incarcerated boys	Prison	Not provided	0%	100 boys	K-SADS (Farsi version)	DSM-IV	PI MD ADHD CD PTSD	17	12–19	Researcher	Not provided	83%
Harzke et al., 2012 <sup>40</sup>	USA	Youth entrants	Youth commission facilities	Complete sample	Not provided	10,469 boys 1,134 girls	Guided interview structure based on DSM-IV	DSM-IV	PI MD ADHD CD	Not provided	<19	Psychiatrists, clinical psychologists, associate psychologists, physicians, physician assistants, nurses	Up to 30 days	Assault (52.1%), sexual offenses (6.6%), murder/manslaughter (3.1%) <sup>a</sup>
Zhou et al., 2012 <sup>47</sup>	China	Detainees	2 youth detention centers	Complete sample	9%	232 boys	K-SADS-PL	DSM-IV	MD DP ADHD CD	17	15–17	Psychiatrist	Not provided	73%
Lennox et al., 2013 <sup>44</sup>	UK	Adolescent offenders	Young Offender's Institution	Consecutive	3%	219 boys	K-SADS	DSM-IV	PI MD PTSD	17	15–18	Not provided	0–26 days	72%
Aida et al., 2014 <sup>34</sup>	Malaysia	Detainees	5 prisons that are designated centers for	Simple random	0%	105 juveniles (estimate >90% boys)	MINI-KID	DSM-IV ICD-10	PI MD	17	14–17	Psychiatrist	Not provided	38%

(continued)

TABLE 1 Continued

Study	Country	Population	Type of custody juvenile offenders	Sampling strategy	Proportion not consenting	Total number interviewed	Instrument	Diagnostic criteria	Diagnoses reported	Mean age (Years)	Age range (Years)	Interviewer	Time detained before interview	Proportion committed violent offenses
Guebert and Olver, 2014 <sup>38</sup>	Canada	Adolescents adjudicated under Youth Criminal Justice Act or former Young Offenders Act)	Not further specified	Not provided	Not provided	109 boys 77 girls	Diagnostic interview	DSM-IV or DSM-IV-TR	ADHD CD MD ADHD CD	16	Not provided	Pediatric psychiatrist, registered (usually doctoral level) psychologist	Not provided	83% (boys), 74% (girls)
Aebi et al., 2015 <sup>33</sup>	Austria	Male juvenile detainees	County jail	Consecutive	3%	259 boys	MINI-KID	DSM-IV ICD-10	ADHD PTSD	17	14–19	Psychiatry resident	Up to 4 days	8.5%
Dória et al., 2015 <sup>35</sup>	Brazil	Incarcerated boys	Socio-education center	Simple random	Not provided	69 boys	K-SADS-PL (Brazilian version)	DSM-IV	MD ADHD CD	16	12–16	Trained interviewer	15–30 days	Not provided
Lindblad et al., 2015 <sup>45</sup>	Russia	Incarcerated delinquents	Juvenile correctional center	Consecutive	2%	370 boys	K-SADS-PL	DSM-IV	PI ADHD CD PTSD	16	14–19	Child psychiatrist	Not provided	49%
Aebi et al., 2016 <sup>32</sup>	Switzerland	Detainees	Juvenile detention center	Consecutive	2%	158 boys	MINI-KID	DSM-IV ICD-10	ADHD CD PTSD	17	13–19	Psychiatrist, forensic psychologist	Not provided	63.9%
Kim et al., 2017 <sup>21</sup>	South Korea	Juvenile detainees	Male juvenile detention center	Consecutive	0%	173 boys	MINI K-SADS-PL (Korean version)	DSM-IV ICD-10	PI MD ADHD CD PTSD	18	15–19	Clinical psychologist	Not provided	60%
Schorr et al., 2019 <sup>49</sup>	Brazil	Juvenile offenders in temporary custody	Provisional detention center	Consecutive	0%	74 boys	Clinical	DSM-IV	CD	Not provided	15–17	Psychiatrist	Not provided	24% committed homicide offenses

**Note:** ADHD = attention-deficit/hyperactivity disorder; APS = Adolescent Psychopathology Scale; BP = bipolar disorder; CD = conduct disorder; DICA = Diagnostic Interview for Children and Adolescents (R = Revised); DISC = Diagnostic Interview Schedule for Children; JDI = Juvenile Detention Interview; K-SADS = Schedule for Affective Disorders and Schizophrenia for School Aged Children (P = Present, L = Lifetime, E = Epidemiologic); MD = major depression; MINI = Mini-International Neuropsychiatric Interview (KID = for Children and Adolescents); PADDI = Practical Adolescent Dual Diagnostic Interview; PI = psychotic illnesses; PTSD = posttraumatic stress disorder; SCAN = Schedules for Clinical Assessment in Neuropsychiatry; SCID = Structured Clinical Interview for DSM-IV Axis I, II and Personality; SIDP = Structured Interview for DSM-IV Personality; SNASA = Salford Needs Assessment Schedule for Adolescents.  
<sup>a</sup>Percentages do not add up to 100%.

data for different outcomes. The 47 studies included a total of 32,787 adolescents (28,033 male and 4,754 female [15%]) with mean age of 16 years (range, 10–19 years). Of studies, 18 were from the United States ( $n = 28,018$ , [86%])<sup>12,28,40,42,50–53,57,59–61,63,66,68,69,72,73</sup>; six were from the United Kingdom ( $n = 1,145$ )<sup>27,44,54,55,62,64</sup>; three were from Canada ( $n = 408$ )<sup>37,38,70</sup>; two each were from Australia ( $n = 384$ )<sup>41,56</sup> Brazil ( $n = 143$ )<sup>35,49</sup> Russia ( $n = 740$ )<sup>45,67</sup> and the Netherlands ( $n = 416$ )<sup>39,71</sup>; and one each was from Austria ( $n = 259$ )<sup>33</sup> Belgium ( $n = 245$ )<sup>19</sup> China ( $n = 232$ )<sup>47</sup> Denmark ( $n = 100$ )<sup>58</sup> Germany ( $n = 38$ )<sup>43</sup> Iran ( $n = 100$ )<sup>36</sup> Japan ( $n = 48$ )<sup>48</sup> Malaysia ( $n = 105$ )<sup>34</sup> Norway ( $n = 40$ )<sup>46</sup> South Korea ( $n = 173$ )<sup>21</sup> Spain ( $n = 35$ )<sup>65</sup> and Switzerland ( $n = 158$ )<sup>32</sup>. These surveys were conducted using a range of sampling strategies, including consecutive recruitment of participants ( $n = 14,768$ )<sup>21,32,33,42,44,45,48–50,53,55–61,63,65,66,71,72</sup> stratified random sampling ( $n = 3,272$ )<sup>12,52,54,62,64,69</sup> simple random sampling ( $n = 1,432$ )<sup>19,27,28,34,35,41,51,73</sup> and complete sampling ( $n = 12,980$ )<sup>37,39,40,43,46,47,67,68</sup>. Three studies ( $n = 335$ ) did not report on their sampling method.<sup>36,38,70</sup> Response rates were reported in 38 studies,<sup>12,19,21,27,32–34,36,39,41–49,51,53–59,61–63,65–73</sup> and only seven of them ( $n = 1,317$ ) reported rates  $\leq 75\%$ .<sup>19,51,57,58,61,63,71</sup> Interviews were conducted using the following instruments: 12 used the Diagnostic Interview Schedule for Children and Adolescents,<sup>12,19,37,51,57,61,63,66,68,69,71,73</sup> and 14 used the Schedule for Affective Disorders for School-Age Children, Present, Lifetime or Epidemiologic Version,<sup>21,27,35,36,39,41,44–47,55,56,64,67</sup> while the other surveys employed the Diagnostic Interview for Children and Adolescents,<sup>42,70</sup> the Research Diagnostic Criteria for Depression,<sup>53</sup> the Adolescent Psychopathology Scale and Juvenile Detention Interview,<sup>28</sup> the Practical Adolescent Dual Diagnostic Interview,<sup>50</sup> the Salford Needs Assessment Schedule for Adolescents,<sup>54</sup> the Mini-International Neuropsychiatric Interview for Children and Adolescents,<sup>32–34</sup> the Structured Clinical Interview for DSM-IV Axis I, II and Personality,<sup>42,43</sup> the Clinician-Administered PTSD Scale from DSM-IV,<sup>48</sup> or a semi-structured interview.<sup>52</sup> Most reported diagnoses were assigned using *DSM* criteria. However, one study provided *ICD-10* diagnoses,<sup>46</sup> while others combined both *DSM* and *ICD-10* diagnoses.<sup>21,32–34,58,62</sup> The diagnostic interviews were mostly conducted by psychiatrists,<sup>33,34,41,45,47–49,54,55,58,60,62,65,67</sup> clinical psychologists,<sup>21,43,56,72</sup> researchers and research assistants,<sup>27,36,46,70</sup> or teams with diverse backgrounds.<sup>19,28,32,35,37,38,40,50,51,59,64</sup> Most studies reported the types of offenses, and in accordance with

previous research,<sup>74</sup> we calculated the proportion of adolescents who committed violent offenses, which ranged from 6.0%<sup>60</sup> to 86.0%.<sup>58</sup> Figure 2 presents gender-specific prevalence estimates.

### Psychotic Illnesses

Prevalence of psychotic illness was reported in 21 studies, comprising 27,801 adolescents.<sup>21,27,28,36,37,40–44,52,54,56,58,59,64,65,68,69,72,73</sup> Overall, 683 of 24,261 male adolescents were diagnosed with a current psychotic disorder (random-effects pooled prevalence 2.7%; 95% CI 2.0%–3.4%) (Figure 2a). There was substantial heterogeneity between surveys ( $\chi^2_{17} = 71$ ,  $p < .001$ ;  $I^2 = 76\%$ ). Among female adolescents, 105 of 3,540 individuals were diagnosed with a current psychotic disorder (random-effects pooled prevalence 2.9%; 95% CI 2.4%–3.5%). Heterogeneity between studies was low ( $\chi^2_{10} = 5$ ,  $p = .916$ ;  $I^2 = 0\%$ ). We found no associations between study characteristics and prevalence estimates in meta-regression.

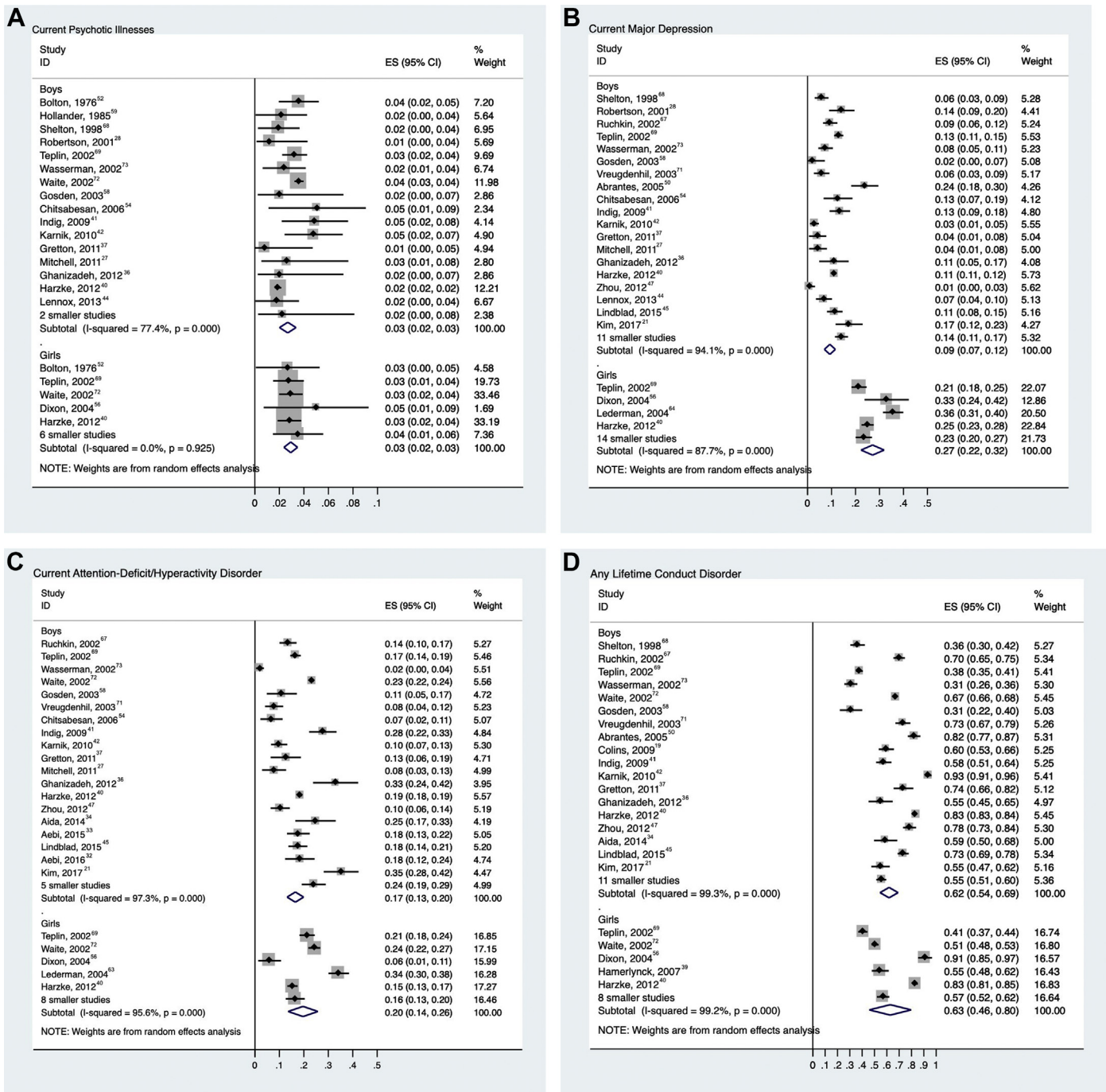
### Major Depression

We identified 33 studies on major depression in 18,861 adolescents.<sup>19,21,27,28,35–38,40–47,50,53,54,56–58,60,61,63–71,73</sup> Overall, 1,753 of 15,881 male adolescents (random-effects pooled prevalence 10.1%; 95% CI 8.1%–12.2%) (Figure 2b) and 774 of 2,980 female adolescents (25.8%; 95% CI 20.3%–31.3%) had a current major depression episode. There was considerable heterogeneity among both male ( $\chi^2_{29} = 339$ ,  $p < .001$ ;  $I^2 = 91\%$ ) and female ( $\chi^2_{17} = 159$ ,  $p < .001$ ;  $I^2 = 89\%$ ) samples. Meta-regression suggested that both gender and study quality were associated with heterogeneity among studies. Male adolescents ( $\beta = -.14$ ,  $SE = .032$ ;  $p < .001$ ) and studies with higher quality scores ( $\beta = -.08$ ,  $SE = .036$ ;  $p = .040$ ) reported lower prevalence.

### ADHD

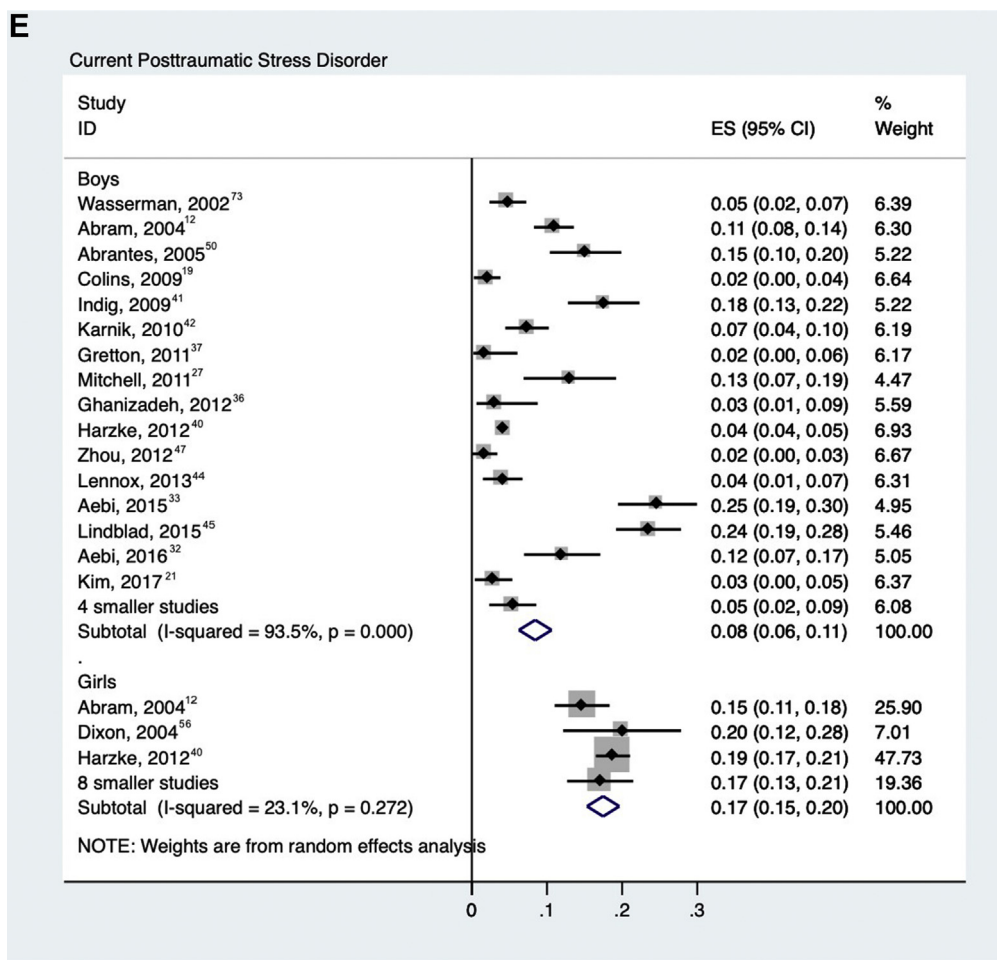
We identified 27 articles<sup>21,27,33–38,40–42,45,47,54,56–58,63,65–67,69–73</sup> reporting on ADHD among 28,749 juveniles in custody. Overall, 4,951 of 24,824 male adolescents (random-effects pooled prevalence 17.3%; 95% CI 13.9%–20.7%) (Figure 2c) and 836 of 3,925 female adolescents were diagnosed with current ADHD (17.5%; 95% CI 12.1%–22.9%). Heterogeneity was high for male ( $\chi^2_{23} = 824$ ,  $p < .001$ ;  $I^2 = 97\%$ ) and female ( $\chi^2_{12} = 179$ ,  $p < .001$ ;  $I^2 = 93\%$ ) samples. Meta-regression found that heterogeneity was partly explained by the publication year (studies published after 2006 reporting a higher prevalence:  $\beta = .08$ ,  $SE = .04$ ;  $p = .03$ ). In subgroup analyses, the pooled estimate of prevalence of studies published after 2006 was 20.4% (95% CI 17.4%–23.3%) compared with 13.6% (95% CI 8.4%–18.7%) before 2006.

**FIGURE 2** Prevalence of Specific Mental Disorders Among Incarcerated Male and Female Adolescents



Note: Error bars represent 95% CIs of prevalence. Smaller studies (n < 100) were aggregated. Subtotal is pooled prevalence estimate based on random effects models. ES = prevalence estimate.

**FIGURE 2** Continued



**Conduct Disorder**

We identified 31 studies on conduct disorder in 28,846 juveniles.<sup>19,21,34–43,45–47,49–51,55–58,62,66–73</sup> Overall, 18,042 of 25,184 male adolescents (random-effects pooled prevalence 61.7%; 95% CI 55.4%–67.9%) (Figure 2d) and 2,226 of 3,662 female adolescents (59.0%; 95% CI 44.9%–73.1%) had a diagnosis of any lifetime conduct disorder. Considerable heterogeneity was observed in male ( $\chi^2_{28} = 2,664, p < .001; I^2 = 99\%$ ) and female ( $\chi^2_{12} = 1,127, p < .001; I^2 = 99\%$ ) samples.

In meta-regression, studies published after 2006 ( $\beta = .19, SE = .07; p = .006$ ) and studies with older participants ( $\beta = .12, SE = .05; p = .013$ ) had higher prevalences. We also found lower prevalences of conduct disorder where the DISC was used ( $\beta = -.22, SE = .07; p = .004$ ). None of these variables remained significant in multivariable meta-regression.

**PTSD**

Twenty-one studies reported on PTSD<sup>12,19,21,27,32,33,36,37,40–45,47,48,50,56,57,70,73</sup> in 16,136

detained adolescents. Among 14,260 male adolescents, 832 (random-effects pooled prevalence 8.6%; 95% CI 6.4%–10.7%) were diagnosed with current PTSD (Figure 2e), and 334 of 1,876 female adolescents (18.2%; 95% CI 13.1%–23.2%) were diagnosed with current PTSD with substantial heterogeneity in male ( $\chi^2_{19} = 250, p < .001; I^2 = 92\%$ ) and female ( $\chi^2_9 = 41, p < .001; I^2 = 78\%$ ) samples. Gender was the only factor associated with heterogeneity in meta-regression (male adolescents had a lower prevalence:  $\beta = -.10, SE = .04; p = .01$ ).

**Heterogeneity Analyses**

Table 2 presents the results from the meta-regression analyses assessing sample characteristics as possible sources of heterogeneity between studies. Influence analysis, which was performed by omitting one study at a time, reported no effect. Egger's regression test showed publication bias in surveys reporting prevalence of conduct disorder ( $t = -4.98, p = .03$ ) and PTSD ( $t = 2.32, p = .02$ ), both in male adolescents (see Figures S1–S5, available online).

**TABLE 2** Univariate Meta-regression Analyses Examining Possible Sources of Between-Study Heterogeneity Among Adolescents in Juvenile Detention

Variable	Psychotic Illnesses			Major Depression			ADHD			Conduct Disorder			PTSD		
	$\beta$	SE	P	$\beta$	SE	P	$\beta$	SE	P	$\beta$	SE	P	$\beta$	SE	P
Year of publication: $\leq 2006$ vs $> 2006$	-.005	.004	.22	-.072	.037	.06	.081	.035	.028*	.194	.066	.005*	-.029	.039	.47
Gender: male vs female	-.004	.005	.42	-.144	.032	<.001*	.002	.040	.96	.028	.079	.72	-.102	.037	.01*
Mean age (continuous)	-.003	.004	.53	-.033	.024	.18	.003	.027	.91	.124	.047	.01	-.014	.027	.60
Mean age: $\leq 15$ vs $> 15$ years	-.005	.007	.46	-.048	.073	.52	-.022	.079	.79	.182	.163	.27	-.007	.050	.89
Study size (continuous)	.000	.000	.97	.000	.000	.69	.000	.000	.65	.000	.000	.38	.000	.000	.44
Study size: $\leq 250$ vs $> 250$ adolescents	.005	.005	.26	-.022	.045	.63	.002	.040	.96	-.001	.082	.99	.031	.038	.43
Study origin: USA vs elsewhere	.003	.005	.52	.044	.037	.25	-.029	.039	.46	-.094	.073	.21	-.016	.038	.67
Instrument: DISC vs other	-.005	.005	.33	-.051	.040	.21	-.057	.041	.17	-.218	.071	.004*	-.071	.038	.07
Diagnostic criteria: ICD vs DSM	.006	.005	.20	.034	.074	.64	.008	.080	.92	-.123	.122	.32	-.050	.053	.36
Interviewer: psychiatrist vs nonpsychiatrist	-.006	.005	.19	-.050	.042	.25	-.012	.041	.78	.118	.073	.11	-.004	.045	.93
Sampling strategy: stratified/nonstratified vs consecutive/complete	-.003	.005	.53	-.021	.040	.60	-.010	.042	.81	.099	.080	.22	-.030	.039	.45
Study quality (continuous)	.003	.002	.17	-.029	.013	.04*	.007	.018	.71	.048	.033	.16	-.004	.017	.81
Study quality: high-quality studies vs low- and medium-quality studies	.007	.004	.12	-.756	.036	.04*	-.013	.041	.76	.044	.073	.55	-.003	.039	.93

Note: ADHD = attention-deficit/hyperactivity disorder; DISC = Diagnostic Interview Schedule for Children; PTSD = posttraumatic stress disorder. \* p < .05.

**DISCUSSION**

In this updated systematic review of the prevalence of mental disorders among adolescents in juvenile detention and correctional facilities, we identified 47 studies with 32,787 adolescents from 19 different countries. We doubled the number of primary studies compared with a 2008 systematic review.<sup>8</sup> Moreover, we broadened our scope of search by adding a new psychiatric diagnosis (PTSD) and more carefully analyzed heterogeneity. The prevalence estimates confirm high levels of mental disorders in detained adolescents. The two commonest treatable disorders in male adolescents were depression (present in about 1 in 10) and ADHD (prevalent in 1 in 5). In female adolescents, approximately one in four had depression, and one in five had PTSD. We found higher prevalences of depression and PTSD in girls in custody compared with boys.

Our review suggests that mental disorders are substantially more common among detained adolescents compared with general population counterparts. Approximately 3% of detained adolescents were diagnosed with a current psychotic illness, a 10-fold increase compared with age-equivalent individuals in the general population.<sup>75,76</sup> Higher prevalences of current major depression were found in both male (10%) and female (26%) adolescents compared with the general adolescent population (5% and 11%, respectively).<sup>77</sup> About 1 out of 5 detained adolescents had ADHD compared to 1 out of 10 adolescents in the general population.<sup>78</sup> Nearly two-thirds of detained adolescents were diagnosed with any lifetime conduct disorder, whereas the estimated lifetime rate of conduct disorder in US adolescents is approximately 10%.<sup>79</sup> In addition, adolescents in detention also had higher rates of PTSD than those in the general population, 9% versus 2% in male adolescents and 18% versus 8% in female adolescents.<sup>80</sup> These differences underscore the large burden of psychiatric morbidity in detained adolescents.

Apart from higher prevalence than the general population, prevalence estimates in adolescent juvenile detention and correctional facilities were also different from those found in adult prison populations. Psychotic illnesses and major depression appear to be more prevalent in adult prisoners than in adolescent custodial populations.<sup>81</sup> However, the prevalence estimates for PTSD are similar in both groups.<sup>24</sup> These comparisons suggest that the mental health needs of detained adolescents could be different from those of adult prisoners and may require separate and specifically targeted programs to meet these needs.

The prevalences for ADHD and conduct disorder are higher than in the previous 2008 review. Regarding ADHD, this upward trend may be specific to detained adolescents, as

ADHD diagnoses in youths in the general population have not increased when standardized diagnostic methods are used.<sup>82</sup> There are two possible explanations for this finding. First, increased prevalence could result from increased awareness of ADHD symptoms among health professionals working in custodial services. That is, the true prevalence of these disorders remains unchanged, but clinicians might be identifying them more accurately. Second, higher prevalence may result from improved identification of adolescents at high risk of reoffending over time. Some individuals with ADHD and conduct disorders who previously might not have been identified may be more likely to be selected for placement in custodial correctional facilities due to improved identification of these disorders.

Another main finding was the higher prevalence of major depression and PTSD in detained female adolescents compared with their male counterparts. These results are consistent with results from adult prison samples<sup>24,81,83</sup> as well as the general population, military personnel, and terror attack survivors.<sup>84–87</sup> However, the explanations for this specific to incarcerated youths are not clear. Criminality in female adolescents may be more strongly associated with internalizing mental disorders than crime in male adolescents, or girls might be more vulnerable to adverse and traumatic experiences related to an antisocial lifestyle either within or outside the detention centers.

Finally, the funnel plot results suggest publication bias in male adolescents toward lower prevalence for conduct disorder and toward higher prevalence for PTSD. This could be due to the increased attention that trauma theory has received as a putative causal mechanism for juvenile criminality. In contrast, a highly prevalent descriptive diagnosis such as conduct disorder might be perceived as less useful for etiologic understanding, treatment planning, and primary prevention regarding juvenile delinquency.

One implication of this updated review is that there is no pressing need for conducting more primary prevalence studies, especially in high-income countries, considering that the evidence base is quite large and with most prevalence estimates remaining stable over time. Hence, future research could move toward treatment and interventions in custodial settings and investigate modifiable risk factors for adverse outcomes within custody such as self-harm and violence that may be associated with mental health problems. Effective treatment will likely improve prognosis and reduce suicidality, violence, and reoffending risk.<sup>88</sup>

Some limitations should be noted. First, owing to discrepancies in how substance use disorder and other mental disorders were classified between studies, it was not possible to reliably examine comorbidity. As adolescents who have comorbid disorders generally present an elevated

criminogenic risk, future research on comorbidity is needed.<sup>45,69,89</sup> Second, there were insufficient data on the type of facilities (pretrial versus sentenced; short-term versus long-term) where youths were detained. Therefore, we could not explore whether this variable was associated with heterogeneity. Future studies should consider reporting this information on juvenile justice facilities. Third, our analyses were solely based on formal diagnoses of mental disorders according to *DSM* and *ICD*, which provide standard ways of communication between mental health professionals. However, we did not report on subthreshold psychiatric symptoms, which future work could examine, as these individuals could benefit from preventive programs. An additional limitation from this review is that the quality appraisal scale was not specifically designed for the purpose of prison prevalence studies, and therefore some of the scoring made assumptions that need further examination (including a lower score for interviews conducted by laypersons using standardized measures versus unstructured clinical interviews conducted by psychiatrists or psychologists, although most of the latter also used standardized tools). Further, there were high levels of between-study heterogeneity. This is expected due to the differences in jurisdictions regarding whom they detain, availability and effectiveness of health care services, and prison environments. Therefore, further work could examine prevalence rates longitudinally in the same individuals to study trends over time. Moreover, we primarily used data from the US general population as a point of comparison for the calculated pooled prevalences because of similar diagnostic instruments, age ranges, and prevalence periods.<sup>77–80</sup> Nevertheless, as worldwide rates differ, including for ADHD between high-income countries, prevalences should be interpreted in relation to national or regional general population prevalences. Finally, it is notable that all included studies were conducted in high- and upper middle-income countries despite the global search. Determining whether new research in other countries is required will need to be balanced by information in this review, local needs, and whether such research can be linked to improved services.

In conclusion, our updated systematic review has reported high rates of treatable mental disorders in detained adolescents. The findings underscore the importance of access to mental health services and effective treatment. Such treatment will likely improve prognosis of this population, almost all of whom will reenter the community, and decrease risk of repeat offending, reducing the substantial social and financial costs related to imprisonment.<sup>90</sup>

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## Biosocial Criminology

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### Introduction

Biological and genetic processes are believed to underlie many of the individual traits associated with persistent criminal conduct. Personality factors, such as neuroicism, mental disorders, and deficiencies in self-regulation have all been associated with biological and genetic functioning. Biological differences between individuals also help to explain why people exposed to similar environments, such as poverty, develop along different trajectories. That is, biology appears to make some individuals susceptible to certain environmental conditions while protecting others. In certain limited instances, biological factors may explain the behaviors of some individuals, such as psychopaths, but in most instances biological processes interact and correlate with environmental conditions. Commonly referred to as "gene X environment interactions" and "gene by environment correlates," these processes highlight the complexity of human development in general, and criminal behavior specifically.

### General Overviews

An overview of biosocial criminology can be found in Beaver 2009. His work contains up-to-date information on the biological and genetic information on twins as well as siblings. These datasets generally contain more individuals than do studies based on twin registry data and they contain a greater mix of genetically related individuals, such as cousins and half-siblings. The Early Childhood Longitudinal Study (ECLS), for example, contains data on siblings, twins, and a host of genetically related individuals. The Northern Finland Birth Cohort study includes data on twins, genetically related individuals, and singletons.

**Beaver, Kevin M. 2009.** *Biosocial criminology: A primer*. Dubuque, IA: Kendall Hunt.

Clear explanation of biological and genetic research findings on criminal behavior. Contains information on research methodology in biosocial criminology.

**Fishbein, Diana, ed. 2000.** *The science, treatment, and prevention of antisocial behaviors: Application to the criminal justice system*. Kingston, NJ: Civic Research Institute.

A compilation of chapters from some of the most published scholars in the field of biosocial criminology. The book is far ranging in its coverage and scientific in its approach.

**Robinson, Matthew B. 2004.** *Why crime? An integrated systems theory of antisocial behavior*. Upper Saddle River, NJ: Pearson/Pentice Hall.

Provides an example of how biological factors can be integrated into a coherent, multilevel explanation of antisocial behavior.

**Rowe, David C. 2001.** *Biology and crime*. Los Angeles: Roxbury.

Written by an early proponent of biological influences on criminal conduct, this book provides an easy-to-understand overview of biological theory and findings as they relate to misconduct.

**Walsh, Anthony. 2002.** *Biosocial criminology: Introduction and integration*. Cincinnati, OH: Anderson.

An overview of research into the biological and genetic factors associated with criminal conduct with a focus on the integration of these factors into contemporary theories of crime.

**Wright, John Paul, Stephen G. Tibbetts, and Leah E. Daigle. 2007.** *Criminals in the making: Criminology across the life course*. Los Angeles: Sage.

Examines the origins of criminal propensity, arguing that criminality emerges from the complex interactions that occur between the brain and the immediate environment. Traces criminality across childhood, adolescence, and adulthood.

### Data Sources

Data on biological and genetic correlates of antisocial behavior come from a variety of sources, from numerous disciplines, and from multiple populations. The data sources can be grouped into three general categories: (1) twin studies, (2) general population samples with genetic and biological markers, and (3) databases.

### Twin Studies

Twin studies are the backbone of behavioral genetic analyses. Minnesota Twin Family Study, Mid-Atlantic Twin Registry, and Colorado Twin Registry allow researchers to estimate genetic and environmental influences on traits and behaviors. Contemporary twin registries extend invaluable information collected on thousands of twins. More recent data have been collected on the children of twins, which contains the classical twin design and gives researchers new ways to study genetic and environmental influences.

### Colorado Twin Registry

A population based registry of twins born in Colorado from 1968 to present. Includes data on cognitive functioning, substance use, reading related skills, and internalizing and externalizing behaviors.

### Mid-Atlantic Twin Registry

A population based registry of twins born in North Carolina, South Carolina, and Virginia. Includes data on physical health, psychiatric disorders, substance use, social behaviors, antisocial behavior, genetic markers, and birth complications.

### Minnesota Twin Family Study

A statewide registry of twins that were born between 1935 and 1955. Additional twins born between 1971 and 1986 have been added to the registry. Includes data on personality, substance use, lifestyle, and social relationships.

### General Population Samples

Other datasets contain "genetically sensitive" data. For example, the National Longitudinal Study of Adolescent Health (Add Health) contains information on twins as well as siblings. These datasets generally contain more individuals than do studies based on twin registry data and they contain a greater mix of genetically related individuals, such as cousins and half-siblings. The Early Childhood Longitudinal Study (ECLS), for example, contains data on siblings, twins, and a host of genetically related individuals. The Northern Finland Birth Cohort study includes data on twins, genetically related individuals, and singletons.

### Early Childhood Longitudinal Study (ECLS)

A nationally representative sample of Kindergarten students assessed first in 1998 and followed through high school. The sample contains a subsample of twins. Data were collected on individual traits, social relationships, and academic progress.

### National Longitudinal Study of Adolescent Health (Add Health)

Nationally representative sample of adolescents that includes genetic markers, biological markers, and a sibling subsample of twins for analysis. Includes data on social relationships, physical and mental health, education, and antisocial behaviors.

### Northern Finland Birth Cohorts

A longitudinal study of two birth cohorts, one born in 1968 and one born in 1986, in Finland. Includes data on genetic polymorphisms, psychiatric disorders, prenatal risks, substance use, social relationships, physical health, and antisocial behavior.

### Databases

There are many different types of data used in biosocial research. Some data come in the form of genetic markers, such as those found in the International HapMap Project, while other data come in the form of traditional survey methodology. The U.S. federal government and its research agencies collect and make available a broad variety of biosocial data on drug abuse (National Institute of Drug Abuse Genetics Consortium) and alcoholism (Collaborative Studies on Genetics of Alcoholism), while the government of New Zealand tracks data related to antisocial behavior (National Centre for Lifecourse Research).

### Collaborative Studies on Genetics of Alcoholism (COGA)

A family-based association study that is funded by the National Institute on Alcohol Abuse and Alcoholism. This project includes genetic and biological data from over twelve thousand individuals who are affected by alcoholism.

### International HapMap Project

An online catalog of genetic data that is collected from researchers in the United States, Canada, the United Kingdom, Japan, China, and Nigeria. This database is intended, among other purposes, to help researchers identify single nucleotide polymorphisms (SNPs) and groups of SNPs that place individuals at risk for physical and mental disorders.

### National Centre for Lifecourse Research

Repository for comprehensive longitudinal datasets from three birth cohorts: Dunedin Multidisciplinary Health and Development Study, the Christchurch Health and Development Study, and the Pacific Islands Families Study. These three datasets include information on physical development, genetic polymorphisms, education and employment, social relationships, antisocial behavior, mental health, family dynamics, and major life transitions (such as graduation and marriage).

### National Institute of Drug Abuse Genetics Consortium

A repository of datasets that are funded by the National Institute of Drug Abuse. These datasets include information on biological and genetic markers that may increase one's susceptibility to drug abuse.

### Behavioral Genetics

Behavioral genetics is a field of scientific study concerned with understanding the degree to which genetic and environmental factors account for variation in complex traits and behaviors. A core finding from this field is that the effects of genes are ubiquitous and account for 50 to 60 percent of the variance in adult criminal conduct. Unique environmental experiences generally account for more variation in complex traits and behaviors than do shared sources of variance. Plomin 1990 provides an easy-to-read introduction to behavioral genetic influences on development and behavior. Rutter 2006 presents the results of his analysis of 720 families, highlighting genetic and social influences on adolescent development and psychopathology. Analyzing data from the Virginia Twin Registry, Kendler and Prescott 2006 presents findings on the association between genetic and environmental influences on an array of outcomes, including major internalizing and externalizing disorders. Excellent scholarly articles employing behavioral genetic designs can be found in the journal *Behavioral Genetics*.

### Behavioral Genetics

A journal dedicated to behavioral genetic analyses of complex human traits and behaviors.

**Kendler, Kenneth S., and Carol A. Prescott. 2006.** *Genes, environment, and psychopathology: Understanding the causes of psychiatric and substance use disorders*. New York: Guilford Press.

Book-length coverage of findings from the Virginia Twins Registry. The book provides compelling evidence of the linkages between genetic and social sources of variance in internalizing and externalizing disorders.

**Plomin, Robert. 1990.** *Nature and nurture: An introduction to human behavioral genetics*. Pacific Grove, CA: Brooks/Cole.

An easy-to-read introduction to the field of behavioral genetics. Examines the methodology underpinning behavioral genetic analyses as well as common behavioral genetic findings.

**Reiss, David, Jenae M. Neiderhiser, E. Mavis Hetherington, and Robert Plomin. 2000.** *The relationship code: Deciphering genetic and social influences on adolescent development*. Cambridge, MA: Harvard University Press.

Reveals the complex interplay between genetic and environmental factors in the creation of problem behaviors as well as stability and change in problem behaviors. One of the largest biosocial studies ever accomplished on adolescent development.

### Molecular Genetics

Outside of criminology a large body of literature has linked differences between individuals at the molecular level to a variety of antisocial behaviors, to substance use, to attention deficit disorder, and to deficits in self-control. Studies have shown that antisocial behavior is a product of multiple genes that simultaneously work together to influence cognition and behavior. Comings et al. 2000 examines the relationship between forty-two genetic variants and attention deficit hyperactivity disorder, oppositional defiant disorder, and conduct disorder. Nymann et al. 2007 investigates whether thirteen genetic variants are related to attention deficit hyperactivity disorder in a Finnish birth cohort. Kreek, et al. 2005 and Uhl 2004 examine the general genetic risk factors for alcohol and drug abuse. It is hypothesized that genetic variants or polymorphisms help shape the structure and functioning of the brain. In turn, brain structures can influence personality development and behavioral expressions of such traits. Buckholtz and Meyer-Lindenberg 2006 provides an in-depth description of the structural and functional brain differences found among individuals who carry a certain variant of the monoamine oxidase A (MAOA) gene, a gene that has been linked to criminal behavior.

**Buckholtz, Joshua W., and Andreas Meyer-Lindenberg. 2006.** *MAOA and the neurogenetic architecture of human aggression. Trends in Neurosciences 31*:120–129.

Individuals who carry the low-activity allele of the MAOA gene may be at risk for retaliatory and aggressive behavior because they have an overactive emotional system coupled with an underactive inhibitory system.

**Comings, David E., Radhika Gade-Andaravolu, Nancy Gonzalez, Shijuan Wu, Donn Muhleman, Heesah Biakie, F. Chiu, E. Wang, K. Fan, and David S. Stubbins. 2000.** *Multivariate analysis of associations of 42 genes in ADHD, ODD, and conduct disorder. Clinical Genetics 58*:31–40.

Genes related to the neurotransmitter systems and hormone/neuropeptide systems are associated with attention deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder. Results suggest that ADHD, ODD, and conduct disorder are polygenic phenotypes.

**Guo, Guang, Michael E. Roettger, and Jean C. Shih. 2007.** *Contributions of the DAT1 and DRD2 genes to serious and violent delinquency among adolescents and young adults. Human Genetics 121*: 125–136.

Variants of the DAT1 and DRD2 gene are associated with higher levels of serious delinquency and violent delinquency.

**Kreek, Gary Jeanne, David A. Nielsen, Eduardo R. Butelman, and K. Steven LaForge. 2005.** *Genetic influences on impulsivity, risk taking, stress reactivity, and vulnerability to drug abuse and addiction. Nature Neuroscience 8*:1450–1457.

Genetic factors may increase the risk of substance abuse because genetic variants may be associated with higher levels of impulsivity and heightened or exaggerated sensitivity to negative stimuli.

**Nymann, Emma S., Matthew N. Ogdle, Anu Loukola, Teppo Varilo, Anja Taanila, Tuula Hurting, Irma K. Mollanen, Sandra K. Loo, James J. McGough, Margy-Rita Järvelin, Susan L. Smalley, Stanley F. Nelson, and Leena Peltonen. 2007.** *ADHD candidate gene study in a population-based birth cohort: Association with DBH and DRD2. Journal Of The American Academy Of Child And Adolescent Psychiatry 46*:1614–1621.

Analyses of data from the Northern Finland Birth Cohort Study found dopamine genes to be associated with clinically levels of Attention Deficit/Hyperactivity Disorder.

**Uhl, George R. 2004.** *Molecular genetics of substance abuse vulnerability: Remarkable recent convergence of genome scan results. Annals Of The New York Academy Of Sciences 1025*:1–13.

A genome-wide scan reveals that fifteen chromosomal regions are associated with substance abuse and addiction. Results suggest that addictive behaviors are polygenic.

### Brain Structure and Function

Persistent criminal behavior has been linked to a number of structural and functional differences between the brains of offenders and the brains of nonoffenders. Structural differences are those that reflect variation in specific areas of the brain, such as the prefrontal cortex. Functional differences refer to the operation of specific structures within the brain. Garrett 2009 provides an easy-to-understand introduction to brain structure and functioning. Raine 1993 examines empirical findings on brain functioning between offenders and nonoffenders, and Rutter 2006 presents the results of his analysis of 720 families, highlighting genetic and social influences on behavioral regulation. Goldberg 2009 argues that higher-order brain functions differentiate individuals and their behaviors. Finlay, Blair, et al. 2005 examines the brain-based research evidence on psychopaths.

**Blair, James, Derek Mitchell, and Karina Blair. 2005.** *The psychopath: Emotion and the brain*. Malden, MA: Blackwell.

A highly detailed account of the research on psychopaths. The book focuses on brain-based differences between criminal psychopaths and normal individuals.

**Garrett, Bob. 2009.** *Brain and behavior: An introduction to biological psychology*. Los Angeles: Sage.

Offers an introduction to brain structure and functioning, as well as information on a host of brain-based factors, such as learning, emotion, memory, and self-control.

**Goldberg, Elkthonon. 2009.** *The new executive brain: Frontal lobes and the civilized mind*. Oxford and New York: Oxford University Press.

Examines the formation and role of the frontal cortex and how disturbances in this region influence behavior.

**Raine, Adrian. 1993.** *The psychopathology of crime: Criminal behavior as a clinical disorder*. San Diego, CA: Academic Press.

A comprehensive account of criminal psychopathology that includes coverage of brain and central nervous system functioning.

### Neurotransmitters

Neurotransmission is a key underlying process of the central nervous system. Alterations in neurotransmission have been linked to mood disorders and to impulse control problems. Nelson and Trainor 2007 and Glickstein 2002 review the empirical research on the association between neurotransmitters and antisocial behavior. Berman and Coccaro 1998 provides a case study of a criminal defendant who experienced dysfunction in his neurotransmission process. The authors also discuss how information on offenders' neurotransmission process may be used in legal proceedings and the types of issues that may arise from using neurological information in court.

**Berman, Mitchell F., and Emil F. Coccaro. 1998.** *Neurobiologic correlates of violence: Relevance to criminal responsibility. Behavioral Sciences And The Law 16*:303–318.

Neurobiological findings are generating the criminal courts of many countries. This article examines certain biosocial findings related to aggression and violence and makes the argument that these findings do not diminish traditional concepts of criminal responsibility.

**Glickstein, Joseph, ed. 2002.** *The neurobiology of criminal behavior*. New York: Springer.

A broad overview of various neurobiological variables linked to aggression and violence.

**Nelson, Randy J., and Brian C. Trainor. 2007.** *Neural mechanisms of aggression. Nature Reviews Neuroscience 8*:536–546.

There are multiple brain structures, neuromodulators, and neurotransmitter systems that underlie reactive or impulsive aggression. This paper examines the role of biological systems in the creation of impulsive violence.

### Addiction

Addiction plays a prominent role in criminal behavior. Research on addiction disorders is heavily rooted in the biological sciences. Contemporary researchers understand that addiction is a function of genetics, physiology, brain functioning, hormones, and neurotransmitters, as well as environmental factors. Zuckerman 1999 describes the diathesis-stress model, which integrates biological, psychological, and environmental risk factors into an explanation of substance use. Goldman, et al. 2006 revises the genetic markers that are relevant to addiction. In addition, the authors describe some of the personality traits and mental disorders that are common to addiction. Uhl, et al. 2004 reviews evidence from genome-wide association studies, which show that addiction is a polygenic disorder where multiple groups of genes work together to influence substance use. Brewer and Potenza 2007 describes the neurotransmitter systems that are related to addiction, and how these systems influence decision making. Volkow, et al. 2004 provides a neurological model that explains how brain structure and functioning change as a result of drug use. In addition, the authors discuss how findings from neurological studies of addiction can inform treatment decisions. The National Institute of Drug Abuse disseminates research that investigates the social and neurobiological components of addiction, as well as research on effective therapeutic interventions that target drug addiction.

**Brewer, Jonathan A., and Marc N. Potenza. 2007.** *The neurobiology and genetics of impulse control disorders: Relationships to drug addiction. Behavioral Neuroscience 75*: 63–75.

This article describes the addiction process and the structural and chemical processes that underlie addiction.

**Goldman, David, Gabor Oroszi, and Francesca Ducci. 2006.** *The genetics of addiction: Uncovering the genes. Nature Reviews Genetics 6*:521–532.

A highly influential article that examines the genetic processes underlying many addictions. The authors focus on reward mechanisms, stress responses, and behavioral control.

### National Institute of Drug Abuse

A branch of the National Institute of Health responsible for research on addiction. This site contains multiple publications and up-to-date reports on addictions research.

**Uhl, George R., Tomas Drgon, Catherine Johnson, Oluwalakin O. Fatunbi, Qing-Rong Liu, Carlo Gottemoeller, Chuan-Yun Li, Karl Blum, and John Crabbe. 2008.** *Higher order addiction molecular Q. Fetuinin. Qing-Rong Liu, Carlo Gottemoeller, Chuan-Yun Li, Karl Blum, and John Crabbe. 2008.* *Biochemical Pharmacology 75*: 98–111.

Addiction is a polygenic disorder that is influenced by neurotransmitter genes, as well as genes that influence other parts of the neurotransmission process (specifically ion channel processes).

**Volkow, Nora D., Joanna S. Fowler, and Gene-Jack Wang. 2004.** *The addicted human brain viewed in the light of imaging studies: Brain circuits and treatment strategies. Neuropharmacology 47*:3–13.

Discusses the reciprocal nature of neurobiology and substance abuse. Neurobiological processes can increase one's risk of abusing drugs or alcohol. Further, substance use can alter neurobiological processes so that the individual is more likely to abuse substances in the future.

**Zuckerman, Marvin. 1999.** *Vulnerability to psychopathology: A biosocial model*. Washington, DC: American Psychological Association.

A review of the diathesis-stress model. The author also applies the diathesis-stress model to anxiety disorders, mood disorders, substance use, pathological gambling, and antisocial personality disorder.

### Gene and Environment Correlations and Interactions

Individual propensities favoring addiction or criminal conduct have strong genetic underpinnings. Even so, many with these propensities do not exhibit problem behaviors. Research indicates that for some propensities to materialize, input from the environment is necessary, but individuals are differentially susceptible to environmental influences. Caspi, et al. 2002 demonstrates that some children who experience abuse, for example, go on to commit crime and to abuse their children, but most do not. Similar findings have documented individual differences in susceptibility to poverty, such as Kim-Cohen, et al. 2004, and to victimization, such as Beaver, et al. 2007. Environmental exposure to risk factors, moreover, is not random. Partly due to their own preferences and experiences, individuals choose certain environments over others. Caspi and Moffitt 2006 argues that psychiatric outcomes, such as externalizing disorders, are best understood when psychiatry and neuroscience work together. Rutter 2006 provides a comprehensive analysis of the research on, and implications of, gene-environment interactions while Datta and Price 2007 examines gene-environment correlations and their role in mental health.

**Beaver, Kevin M., John P. Wright, Matt DeLisi, Leah E. Daigle, Marc L. Swatt, and Chris L. Gibson. 2007.** *Evidence of a gene x environment interaction moderating the volume of gray matter in the brain. International Journal of Offender Therapy and Comparative Criminology 51* (6): 620–645.

This study examines how genes influence who is more and who is less likely to be a victim of a crime.

**Caspi, Avshalom, Joseph McClay, Terrie E. Moffitt, Jonathan Mill, Judy Martin, Ian W. Craig, Alan Taylor, Richie Poulton. 2002.** *Role of genotype in the cycle of violence in maltreated children. Science 297*:851–854.

A now-classic study showing how a MAOA genotype conditions the negative effects associated with child abuse to perpetuate the cycle of violence in specific children.

**Caspi, Avshalom, and Terrie E. Moffitt. 2006.** *Gene-environment interactions in psychiatry: Joining forces with neuroscience. Nature Reviews Neuroscience 7*:583–590.

Examines the usefulness of incorporating findings from neuroscience into a broader understanding of problem behavior and clinical disorders.

**Jaffee, Sara R., and Thomas S. Price. 2007.** *Gene-environment correlations: A review of the evidence and implications for prevention of mental illness. Molecular Psychiatry 12*: 432–442.

A review of the evidence on gene-environment correlations as they relate to mental health and the treatment of mental disorders.

**Kim-Cohen, Julia, Moffitt, Terrie E., Caspi, Avshalom, and Taylor, Alan. 2004.** *Genetic and environmental processes in young children's resilience and vulnerability to socioeconomic deprivation. Child Development 75* (3): 651–668.

Study reveals that genes protect some children from the negative consequences of growing up in poverty. Resilience to negative environmental influences is partially genetic.

**Rutter, Michael. 2006.** *Genes and behavior: Nature-nurture interplay explained*. Malden, MA, and Oxford: Blackwell.

Book-length treatment explaining the research on gene-environment interactions and correlations. Summarizes the complex findings relating to genetic and environmental influences on a range of problem behaviors.

### Biological Insults

Damage to the brain and central nervous system compromises healthy development and may result in behavioral problems. Wright, et al. 2008 found that early lead exposure predicted adult criminal behavior, while Cecil, et al. 2008, using brain imaging technology, found that early lead exposure reduced the volume of gray matter in the brain. Maternal consumption of alcohol during pregnancy has been found in Disney, et al. 2008 to be a robust predictor of later problem behaviors, as has maternal drug use in Bada, et al. 2007. Evidence for maternal smoking is mixed. Maughan, et al. 2004 discusses some studies that indicate that smoking is associated with behavioral problems later in life, and others that show that the effect is genetically modified. Maternal drug use appears to damage the brain of the developing fetus, to cause preterm labor, and to cause low birth weight—all risk factors for future behavioral problems.

**Bada, Henrietta S., Abhik Das, Charles R. Bauer, Seetha Shankaran, Barry Lester, Linda LaGasse, Jane Hammond, Linda L. Wright, and Rosemary Higgins. 2007.** *Impact of prenatal cocaine exposure on child behavior problems through school age. Pediatrics 119* (2): 6348–6359.

Finds that cocaine exposure in utero can have deleterious effects on the developing fetus.

**Cecil, Kim M., Christopher J. Brubaker, Caleb M. Adler, Kim N. Dietrich, Mekbib Alemayehu, John C. Egelhoff, Stephanie Wessel, Ilayaraja Eliangovan, Richard Hornung, Kelly Jarvis, and Bruce P. Lanphier. 2008.** *Decreased brain volume in adults with childhood lead exposure. PLoS Med 5* (5): e1212.

Using functional magnetic resonance imaging (fMRI), this study was the first to document neurological degeneration associated with early-lead ingestion.

**Disney, Elizabeth R., William Iacono, Matthew McGue, Erin Tully, and Lisa Leгранd. 2008.** *Strengthening the case: Prenatal alcohol exposure is associated with increased risk for conduct disorder. Pediatrics 122* (6): e1225–e1230.

A dose-response effect between maternal alcohol use and child conduct disorder was found. Consumption of alcohol, even at low to moderate levels, appears to adversely affect brain growth and function of the developing fetus.

**Maughan, Barbara, Alan Taylor, Avshalom Caspi, and Terrie E. Moffitt. 2004.** *Prenatal smoking and early childhood conduct problems testing genetic and environmental explanations of the association. Archives Of General Psychiatry 61* (8): 836–843.

Maternal smoking predicts childhood conduct disorder. However, much of the effect was accounted for by shared genetic risks. This study highlights how neurotoxins and genes interact to protect some children while placing others at increased risk.

**Wright, John Paul, Kim N. Dietrich, M. Douglas Ris, Richard W. Hornung, Stephanis D. Wessel, Bruce P. Lanphier, Mona Ho, and Mary N. Rao. 2008.** *Association of prenatal and childhood blood lead concentrations with criminal behavior in early adulthood. PLoS Med 5* (5): e161.

This study provides the strongest link to date on the association between early lead exposure and criminal behavior in adulthood.

### Family Socialization Influences

Parents and their children share an environment and genes. Because of this, families are central to tests on genetic and environmental influences on criminal behavior and crime related to offspring. Rowe 1994 was the first to argue that shared genes were more important than parental socialization in the development of offending antisocial behavior. Strongly informed by behavioral genetics, Harris 2003 maintains that parental socialization efforts have no effect on the development of offspring personality and behavior. Almost simultaneously Cohen 1999 made similar arguments. Empirical tests including shared genetic factors and parental socialization efforts including Wright and Beaver 2005 have revealed that some offspring traits are strongly influenced by genes, such as self-control, while Jaffee, et al. 2004 shows that antisocial behaviors appear to be produced by a mix of shared genes and, to a lesser degree, socialization efforts.

**Cohen, David B. 1999.** *Stranger in the nest: Do parents really shape their child's personality, intelligence, or character?* New York: Wiley.

Book-length treatment on why children in the same home vary so much and how these differences affect the type of parenting they receive.

**Harris, Judith Rich. 2009.** *The nurture assumption: Why children turn out the way they do*. New York: Free Press.

A provocative, popular book about why children from the same family turn out to differ than their siblings as adults. Calls into question all theories that point to parental socialization as the determining factor in child development.

**Jaffee, Sara R., Monica Polo-Tomas, Alan Taylor, Avshalom Caspi, Terrie E. Moffitt, and Thomas S. Price. 2004.** *The limits of a diathesis-stress model: Shared genetic effects on corporal punishment but not on physical punishment. Developmental Psychology 40* (6): 1047–1058.

An empirical test of hypotheses derived from Harris's book. Results indicate that some children are exposed to corporal punishment because of shared antisocial tendencies.

**Rowe, David C. 1994.** *The limits of family influence: Genes, experience, and behavior*. New York: Guilford.

Author who first called into question the validity of studies on parental socialization. Laid the groundwork for more extensive and better-specified research.

**Wright, John P., and Kevin M. Beaver. 2005.** *Do parents matter in creating self-control in their children? A genetically informed test of Gottfredson and Hirschi's theory of low self-control. Criminology 43*: 1169–1202.

Study on the origins of low self-control, a strong correlate of criminal behavior. Results revealed that low self-control is highly heritable and is not produced by parental socialization-efforts.

### Sex Differences

Violent behavior is highly concentrated in human and primate males. Males account for the majority of violence across time, across setting, and across culture. A biosocial understanding of male criminal violence involves explicating neurological and hormonal differences between males and females. One of the largest studies on sex differences in antisocial behavior was conducted by Moffitt, et al. 2003, but their work was not able to examine innate differences between males and females. Rhoads 2004 examined the debate concerning innate differences between the sexes. Rhoads argues that these differences should be taken seriously. Blum 1998 and Mor and Jessel 1991 offer insight into brain differences between the sexes and how these differences translate into behavior and motivational differences. A more contemporary treatment of brain-based differences between sexes can be found in Barron-Cohen 2003. Moreover, writing from an evolutionary perspective, Geary 1998 offers one of the most scholarly investigations into sex differences, as does Becker, et al. 2008.

**Barron-Cohen, Simon. 2003.** *The essential difference: The truth about the male and female brain*. New York: Basic Books.

A popular book on the differences between male and female brains. Systematic coverage of contemporary research presented at a level most can understand.

**Becker, Jill, Karen J. Berkley, Nori Geary, Elizabeth Hampson, James P. Herman, and Elizabeth Young. 2008.** *Sex differences in the brain: From genes to behavior*. Oxford and New York: Oxford University Press.

One of the most important collections of writing on sex differences available. Highly technical, this book covers a variety of topics, including sex differences in brain development and functioning, behavior, and internalizing and externalizing disorders.

**Blum, Deborah. 1998.** *Sex on the brain: The biological differences between men and women*. New York: Penguin Books.

A popular account by a self-described feminist newspaper writer examining research evidence on differences between males and females.

**Geary, David. 1998.** *Male, female: The evolution of human sex differences*. Washington DC: American Psychological Association.

A scholarly book that examines sex differences through an evolutionary lens. Invaluable source for relevant science on human sex differences and sex differences between other primates.

**Moffitt, Terrie, Avshalom Caspi, Michael Rutter**

# An Overlapping Systems Conceptual Framework to Evaluate Implementation of a Behavioral Health Intervention for Justice–Involved Youth

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## ABSTRACT

**BACKGROUND:** Nearly 65% of justice–involved youth have a substance use and/or mental health disorder. Although evidence–based practices have been established for adolescents with co–occurring mental health and substance use disorders, these practices are not widely used in juvenile justice agencies due to environmental and organizational complexities.

**METHODS:** Our study builds on Juvenile Justice—Translational Research on Interventions for Adolescents in the Legal System (JJ–TRIALS), a multi–site cooperative research initiative of juvenile justice and partnering behavioral health agencies. We also integrate state and county–level data to support broader assessment of key drivers of implementation success.

**RESULTS:** We present an economics/systems conceptual model describing how the environmental context, systems organization, and economic costs of implementation can affect implementation outcomes. Comparison of intervention condition (Core vs Enhanced) and pre–implementation costs (High vs Low) found differences in insurance reimbursements and types, as well as agency staffing characteristics.

**DISCUSSION:** Implementing new procedures or policies at a systems level must consider implementation outcomes in a broad context. Factors such as population demographics, primary care and behavioral health treatment capacity, unemployment rates, and public funding for treatment and other services are important in determining intervention success and sustainability.

**KEYWORDS:** Health services research, juvenile delinquency, drug misuse, mental health

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## Background

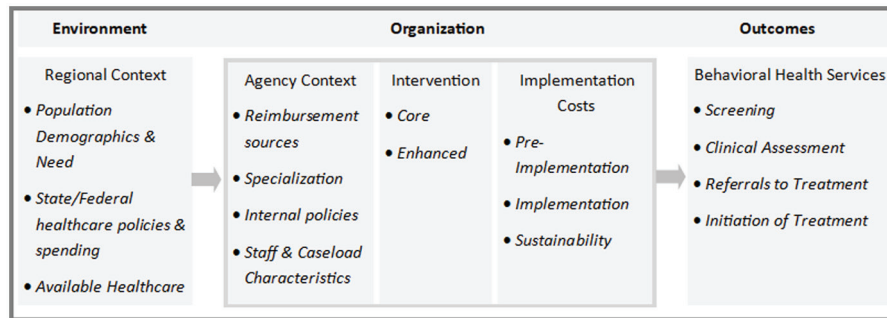
More than half of arrested or detained youth have a behavioral health disorder, encompassing both mental health and substance use disorders (SUDs). Approximately 1 in 5 justice–involved youth (20%) has an SUD.<sup>1</sup> Despite this high prevalence, only 15% to 23% of these youth receive treatment during detention or are linked to behavioral health services upon release.<sup>2,3</sup> There remains a substantial unmet need for SUD treatment and other behavioral health services among justice–involved youth, which can only be addressed through coordinated efforts between juvenile justice and behavioral health agencies to support evidence–based screening, assessment, and referral to services. While mental health and SUD are often addressed by the same service providers, many services are delivered in specialty centers which focus in only one of these two areas.

Implementing evidence–based practices (EBPs) in juvenile justice and behavioral health systems is complicated because key components of the systems—for example, the financing, payment mechanisms, and organizational structure—can

overlap.<sup>4</sup> For example, juvenile justice agencies receive funding from federal and state sources as well as from donor organizations, and each of these funding sources are used to support and pay for different services. Similarly, SUD treatment, and more broadly behavioral health services, has clinical components that can be billed to insurance companies or reimbursed through Medicaid, but also have other components related to behavioral health that are not reimbursed through the same mechanisms.

Although several EBPs have been established for adolescents with SUD, these practices have not been widely adopted in juvenile justice, and their partner behavioral health, agencies.<sup>5</sup> Therefore, even among those justice–involved youth who do receive services, many are likely not receiving evidence–based care. Calling upon these agencies to change current practices requires not only clinical evidence of best practices but also consideration for the organizational, financial, and environmental barriers to these changes.<sup>6–8</sup> Research in this area falls within the discipline of implementation science.





**Figure 1.** Overlapping systems conceptual framework to evaluate implementation of behavioral health interventions in juvenile justice settings. The EPIS model, Andersen's Healthcare Utilization Model, and the Socio-Ecological Model informed how we visualized the impact of the environmental context on organizations and downstream individual outcomes. The EPIS model also informed selection of environmental and organizational variables, including funding, patient need, policies, and staffing characteristics. The Control Knobs Framework informed selection of organizational variables, including financing and policy variables. The COINS model informs how we measured and visualized implementation costs as stratified across implementation stages identified in the SIC model. EPIS indicates Exploration, Preparation, Implementation, Sustainment; COINS, Cost of Implementing New Strategies.

To inform efforts to improve uptake of EBPs in juvenile justice settings, this study was funded as an ancillary study to Juvenile Justice—Translational Research on Interventions for Adolescents in the Legal System (JJ-TRIALS), a multi-site cooperative research initiative funded by the National Institute on Drug Abuse (NIDA). JJ-TRIALS featured 2 randomly assigned implementation interventions, Core and Enhanced, which were focused on improving screening, assessment, and referral to behavioral health services among justice-involved youth with SUDs. To support the evaluation of Core versus Enhanced, we conducted cost analyses to estimate total intervention cost and cost per implementation phase. These efforts provided data on the resources and financial burden of the interventions, but there are many other factors—at agency, county, and state levels—that likely affect implementation success. This article builds on the JJ-TRIALS study design and data elements by integrating primary data from JJ-TRIALS, including detailed implementation costs, with secondary data sources that describe systems-related elements outside of the intervention.

The purpose of this research is to present a more general model for considering implementation that emphasizes the importance of context and setting, using JJ-TRIALS as an example. While most multi-site trials focus on balancing randomization based on population characteristics, our query is that other factors relating to the context (eg, financing, staff load, and reimbursement rates) are stronger policy levers that may link directly to improved implementation.

### Conceptual model

Most of the implementation science literature featuring SUD treatment interventions has focused on efficacy or effectiveness of implementing new technologies (eg, mobile phone applications) in traditional modalities of SUD treatment or primary care. Only a few studies have examined the interplay between unique systems (eg, justice, health, and school), contextual factors (eg, organization characteristics and culture),

environmental factors (eg, sociopolitical and financing), and implementation success.<sup>9–13</sup>

Systems analysis complements implementation research to inform practical questions regarding viability, scalability, and sustainability of adopting new practices in different settings. Only a few studies have examined these concerns—mainly pertaining to the adoption of new technologies in health services delivery,<sup>14,15</sup> or examining EBP implementation barriers in child services sectors, including juvenile justice.<sup>10</sup> To expand this important body of research and promote interagency collaboration among different sectors, additional systems-focused studies are needed to inform stakeholders of what types of investments (eg, personnel, facilities, and data systems) lead to more efficient implementation and better outcomes. Understanding the extent to which resource allocation and barriers to different implementation strategies may vary by agency or setting is also important.

We developed a conceptual model to guide our research (Figure 1). The conceptual model builds on the following theories and frameworks from both implementation science and systems analysis that encompass the multi-level and overlapping nature of the juvenile justice and behavioral health services delivery systems: (1) Exploration, Preparation, Implementation, Sustainment (EPIS); (2) Stages of Implementation Completion (SIC) framework; (3) Andersen's Healthcare Utilization Model; (4) Social-Ecological Model; (5) Control Knobs Framework; and (6) the Cost of Implementing New Strategies (COINS) model. There is naturally a considerable amount of overlap between these frameworks, but also gaps regarding economic analysis, budget impact, and funding/reimbursement mechanisms. Our model both integrates these frameworks and fills these gaps.

The primary framework guiding the main JJ-TRIALS protocol is the EPIS framework developed by Aarons et al.<sup>16</sup> This framework establishes 4 phases of change across and within organizational systems. For each phase, there are measures describing system-level factors (outer context) or within-organization factors (inner context) that can be targeted for

**Table 1.** Foundational frameworks informing overlapping systems and economic analysis of JJ–TRIALS.

SOURCE	FIELD	MODEL NAME	DESCRIPTION AND CONTRIBUTION OF CONCEPTUAL MODEL
Aarons et al <sup>16</sup>	Implementation science	EPIS: Exploration, Preparation, Implementation, Sustainment	Used to design the implementation intervention in JJ–TRIALS and provided a framework for cost analysis by implementation phase.
Chamberlain et al <sup>17</sup>	Implementation science	SIC: Stages of Implementation Completion	Example of implementation costing used to inform cost analysis approach.
Saldana et al <sup>18</sup>	Implementation science	COINS: Cost of Implementing New Strategies	Example of mapping implementation resources onto SIC stages of implementation completion.
Andersen <sup>19</sup>	Health services research	Andersen's Healthcare Utilization Model	Adapted the predisposing, enabling, and need components to environmental and organization categories of conceptual model.
Dahlberg and Krug <sup>23</sup>	Public health	Social–Ecological Model	Utilized overlapping levels and interactions to develop overlapping concept.
Roberts et al <sup>25</sup>	Public health	Control Knobs Framework	Used aspects of key control knobs in a health system (financing, organization, payment, behavior, and regulation) to map to pieces of organization and environment.

Abbreviation: JJ–TRIALS, Juvenile Justice—Translational Research on Interventions for Adolescents in the Legal System.

change based on selected implementation goals. Additional elements from the SIC framework<sup>17</sup> were incorporated to define JJ–TRIALS' 3 implementation phases (Core Support Activities, Experiment, and Post–Experiment) as well as the benchmarks for evaluating agency transitions throughout the implementation process. The COINS model<sup>18</sup> provided us with an example of how to map economic variables to the stages of implementation completion identified in SIC.

Andersen's<sup>19</sup> Healthcare Utilization Model describes how 3 interconnected factors: predisposing, enabling, and need influence utilization of health care services. Predisposing factors relate to individual characteristics such as gender or race/ethnicity that can be associated with higher/lower levels of health care utilization. For example, among justice-involved youth, males are more likely to have a SUD, whereas females are more likely to have major depression. Race and ethnicity also affect the prevalence of SUD among justice-involved youth, with Non-Hispanic white and Hispanic youth having a higher prevalence of SUD than African American youth.<sup>20</sup> Enabling factors are external to the individual (eg, family support or health insurance), which promote access to health care services. Finally, need factors relate to the individual's actual or perceived need for health care services.<sup>21</sup>

The Social–Ecological Model and the Control Knobs Framework provided additional context for the economic/systems conceptual model. The Social–Ecological Model has been promoted as a framework for violence prevention by the US Centers for Disease Control and Prevention (CDC) as well as the World Health Organization (WHO). This model describes how 4 overlapping levels influence violence through an interaction between individual, relationship, community,

and societal factors.<sup>22,23</sup> This model has also been used to explain how SUDs and mental illness mediate the impacts of ecological factors in the commission of violence by youth.<sup>24</sup>

The Control Knobs Framework takes a broader system perspective linking 5 main inputs to the system, also called control knobs, to intermediate indicators of system performance and system outputs. The 5 control knobs are financing, payment, organization, regulation, and behavior. The 3 intermediate indicators of system performance are access, efficiency, and quality. The 3 main outputs to measure the performance of a health system are health outcomes, financial risk protection, and user satisfaction. This framework has been used in countries around the world to understand and analyze how to improve health systems.<sup>25</sup>

Table 1 summarizes each of these models as well as the factors that apply to our conceptual approach. Figure 1 shows our conceptual model which builds on previous models. Our visualization for how environmental context affects organizations and downstream individual outcomes is informed by the EPIS model, Andersen's Healthcare Utilization Model, and the Socio–Ecological model. Selection of environmental and organizational variables to include in our model is also informed by the EPIS model. Relevant variables from the EPIS model that we also included are as follows: funding, patient need, organizational policies, and staffing characteristics. Other organizational variables in our model, including financing and policy variables, are informed by the Control Knobs Framework. Finally, we rely on the COINS model to inform measurement and visualization of implementation costs as stratified across implementation stages identified in the SIC model.

In our model, the 2 left boxes represent environmental inputs and organizational structure which are key drivers of behavioral health service outcomes. *The focus of this article is on identifying key variables in the left boxes and data sources that can be integrated with implementation intervention trials to better control for—or measure directly—the broader context within which a randomized trial occurs.* Inherent to these key inputs are the implementation intervention activities (by phase) and associated costs, which are often not measured alongside the implementation intervention trial. We see this as an urgent gap in the implementation science field, especially considering that demonstrating effectiveness does not mean the intervention is cost effective or fiscally sustainable over time.

*Environmental context.* Systems are by nature multi-level, multi-agency, and multi-stakeholder. A system can be defined broadly—for instance, the global technology system—or narrowly such as the town's public safety workforce. In JJ-TRIALS, the overlapping justice and behavioral health systems are at the county level. Organizational and environmental factors which likely affect the implementation of Core and Enhanced interventions are shown in Figure 1. Environmental factors could include such things as federal or state policies which would stipulate insurance coverage, block grant funding, and age of eligibility for juvenile justice services. Such factors would also directly affect practices surrounding behavioral health services (at the agency or systems-level). For example, state policies such as expansion of Medicaid can create a more robust behavioral health services delivery system while also increasing access to that system<sup>20</sup> for youth exiting the juvenile justice system. Other environmental factors could include regional socio-demographics such as racial segregation, which can affect behavioral health service availability.<sup>26</sup>

*Organizational context.* We also capture how an agency is structured including such factors as organizational culture, practices, and internal policies. Such factors are likely influenced by the greater environmental context and the details of program implementation. Program implementation includes the specific processes and costs associated with staffing and other delivery mechanisms of an organizational program or policy. The implementation of a behavioral health program would clearly affect the utilization of behavioral health services. However, as discussed in previous frameworks, there are also individual youth characteristics which interact with the organizational implementation to affect utilization. For example, multiple studies have found a history of racial disparities in referrals to behavioral health services from the juvenile justice system.<sup>27</sup> In this example, the individual youth characteristic of race interacts with organizational characteristics leading to differential access to treatment within the system.

## Methods

### *JJ-TRIALS data*

JJ-TRIALS recruited 36 juvenile justice agencies in 7 states to participate in the implementation intervention trial, with each agency (or “site”) representing a unique county. Two sites dropped out of the study, leaving a final sample of 34 juvenile justice agencies (34 counties), comprising juvenile probation offices and juvenile drug courts. The JJ-TRIALS protocol featured a cluster randomized design with a 3-wave roll-out. Within each state, participating counties were randomly assigned to Enhanced or Core during their respective wave. The final sample featured 17 Core and 17 Enhanced sites (across all waves) in 7 states. This design has been commonly used in service delivery and implementation research.<sup>28</sup>

The JJ-TRIALS protocol covered 3 implementation phases: Core Support Activities (ie, pre-implementation/pre-randomization), Experiment (examined as early and late experiment phases), and Sustainment (following withdrawal of intervention activities). Under Core Support Activities, all sites received training in data-driven decision-making (DDDM) strategies to guide agencies through the process of implementing EBPs. This phase was conducted over a 6- to 9-month period before randomization to the study conditions Core or Enhanced. DDDM was a process by which key stakeholders within a system or agency collected, analyzed, and interpreted data/information to inform priorities and refine practices.<sup>29</sup> This process entailed selecting a goal (eg, increase referrals to evidence-based treatment) and incorporating a “goal achievement training” plan. While DDDM principles were expected to facilitate change, organizations needed additional support to apply these principles and to make changes that were to be successful and sustainable. The Enhanced arm included all Core Support Activities plus 12 months of active facilitation during the Experiment phase. Active facilitation was provided by an Implementation Facilitator, who worked directly with the juvenile justice agencies and their behavioral health partners to promote better screening, assessment, and linkage to care among youth identified as having a SUD. Knight et al<sup>30</sup> provided a full description of the JJ-TRIALS protocol.

The main outcomes being measured through JJ-TRIALS were defined along the Juvenile Justice Behavioral Health Cascade,<sup>31</sup> inspired by the HIV Care Cascade.<sup>32</sup> The Behavioral Health Cascade tracked unmet substance use treatment needs and gaps in service delivery through 6 activities: screening for SUD, assessment of need for SUD treatment, referral to SUD treatment, SUD treatment initiation, treatment engagement, and participation in continuing care.

JJ-TRIALS provided several key data sources for this study. First, JJ-TRIALS conducted a national survey of juvenile justice agencies and behavioral health providers, which included as part of the national sample all the Core and Enhanced counties within the JJ-TRIAL study, to understand the current state of juvenile justice and behavioral health systems, including the

county-level organizational characteristics, financing, youth case flows, and services provided. Data from the national survey were used to identify organizational variables from juvenile justice agencies and behavioral health partners. The authors conducted supplementary economic analyses to estimate the costs incurred by sites during the pre-implementation phase. The cost analysis measured the activities during the Core Support Activities phase (pre-randomization/pre-implementation) and included time and other resources invested in meetings, calls, travel, and other activities during this period for both Core and Enhanced sites. A manuscript describing all aspects of the implementation intervention cost analysis of JJ-TRIALS is in preparation.<sup>33</sup>

### *Secondary data sources*

Secondary data to capture the spectrum of contextual factors were identified from national data sets, government reports, and other public sources.<sup>34–40</sup> Data extraction was done for relevant years, counties, and states. County-level data were conceptually mapped directly to each Core and Enhanced site (geographic mapping was not conducted). Available data from 2010 to present were extracted to provide historical context for environmental factors when possible.

### *Conceptually mapping variables and identifying databases*

Data included primary data from JJ-TRIALS, cost data from the implementation intervention, and secondary data from public sources. All data were integrated within this study to provide an example of how to apply our proposed conceptual model. Table 2 presents an overview of the categories in our conceptual model, along with specific variables and data sources that conceptually map to each category. The data sources for each variable in Table 2 are listed in the final column.<sup>34–42</sup>

As shown in Table 2, environmental factors comprised population “need indicators” and were grouped into 4 broad categories: demographics, health care utilization, health care spending, and available health care services. Demographic variables included markers of socio-economic status such as unemployment rate, per capita income, and education status, all factors that could affect implementation. Other demographic variables identified included population size, race, county age breakdown, and homelessness. Finally, health insurance status was captured through the percentage of the population eligible for Medicaid and the percentage of the population below 65 years of age without health insurance. Both variables were included in the environmental category to help understand how the broader US health policy, such as the Affordable Care Act, could affect JJ-TRIALS implementation.

Other environmental variables were placed into the health care utilization category. These variables included percentage of children with co-occurring mental health and SUDs, and

psychiatric care utilization. Health care spending encompassed per capita state mental health block grant expenditures and Medicare reimbursement rates. Finally, supply of health care services was measured through the number of primary care medical doctors (MDs), the number of community mental health centers, the number of federally qualified health centers, the number of mental health care facilities, and the number of substance use care facilities. The rate of co-occurring mental health and SUDs was included, both because the rates were not available separately and because co-occurring disorders increased the risk of justice involvement.<sup>43</sup> Existing data on psychiatric care utilization encompassed 2 separate areas which included community mental health inpatient utilization per 1000 and state hospital utilization per 1000.

Organizational factors captured both juvenile justice agencies and their behavioral health partners. Overall, 3 categories were used to describe these factors and include the following: funding, services, and staff/caseload characteristics. Funding variables identified whether juvenile justice agencies and their corresponding behavioral health partner reported receiving reimbursements from various types of health care financing. Financing sources included the following: private health insurance, Children’s Health Insurance Program (CHIP), Medicaid, and shared funding between the agencies. Service variables identify the type of specialty courts, services, trainings, and policies used by the agencies. Staff and caseload characteristics captured staff experience, while caseload characteristics include the average size of staff caseloads.

Pre-implementation costs were measured directly and include the costs to implement Core Support Activities leading up to randomization. Core Support Activities featured in-person trainings and pre-/post-training conference calls. The costs of travel and supplies were also measured. The main component of these costs was staff time and, in some sites, travel to trainings.

### *Analysis strategy*

We conducted basic bivariate analyses to look for differences between Core and Enhanced from a broader context.<sup>44</sup> Data were relatively normally distributed, so *t*-tests of all variables from Table 2 were calculated to compare means between Core and Enhanced sites. Differences in urbanicity were tested via chi-square. We first examined differences between Core and Enhanced sites at the environmental level to test the success of randomization. We then examined differences between Core and Enhanced sites for organizational variables to understand the influence of characteristics within an agency that may influence outcomes. Key environmental and organizational variables that overlapped with broader US health care policy (unemployment rate, income level, Medicaid eligibility, Medicare reimbursement, behavioral health funding, and select staff characteristics) were used to examine how the pre-implementation costs that agencies incur to implement new practices might

**Table 2.** Conceptually mapping variables to model.

LEVEL	CATEGORY	VARIABLE NAME	YEAR	DATA SOURCE
Environmental	Demographics	Unemployment rate	2010–2017	Bureau of Labor Statistics
		Per capita personal income	2010–2016	Bureau of Economic Analysis
		% of population eligible for Medicaid	2010–2012	Area Health Resources Files
		% of population < 65 w/o health insurance	2010–2015	
		Urbanicity	2013	USDA Economic Research Service
		Population size	2010–2017	CDC Compressed Mortality Files (Wonder Database)
		Race and ethnicity		
		Age		
		Education	2011–2017 aggregated	Community Survey 5–year average
		Homeless	2010–2017	Mental Health National Outcome Measures (NOMS) Reports—CMHS Uniform Reporting System
	Health care utilization	Children with co-occurring MH/SUD, state %		
		Psychiatric care utilization		
	Health care spending	Mental health block grants		
		Per capita Medicare reimbursement	2010–2015	Dartmouth Atlas of Health Care
	Available health care services	# MD primary care MDs	2010–2015	Area Health Resources Files
		# Community mental health centers	2010–2016	
		# Federally qualified health centers		
# Mental health care facilities		2019	SAMHSA's Center for Behavioral Health Statistics and Quality	
# Substance use care facilities				
Organizational	BH agency reimbursement sources	Private health insurance (%)	2014–2016	National Site Surveys
		CHIP (%)		
		Medicaid (%)		
	Services	Specialty courts		
		Specialty services		
		Specialized trainings		
		Policies		
	Staff and caseload characteristics	Staff experience	2015–2018	Staff Surveys
		Staff caseload		Monthly Site Check ins
		Staff age		
Youth age				
Implementation		Costs		
Behavioral health services utilization	% Screened		2015–2018	Youth Records (Cascade) summary measures
	% Clinically assessed			
	% Screened or assessed			
	% In need of SU services			
	% Referred to clinical assessment or SU treatment			
	% Initiating SU treatment			

Datasources<sup>34–42</sup>: JJ–TRIALS.

Abbreviations: BH, behavioral health; CDC, Centers for Disease Control and Prevention; CHIP, Children's Health Insurance Program; CMHS, Center for Mental Health Services; JJ–TRIALS, Juvenile Justice—Translational Research on Interventions for Adolescents in the Legal System; MD, medical doctor; MH, mental health; SAMHSA, Substance Abuse and Mental Health Services Administration; SU, substance use; SUD, substance use disorder; USDA, United States Department of Agriculture.



be associated with these variables. To incorporate intervention costs, we stratified sites by high and low pre-implementation costs. These costs included total costs of receiving Core Support activities during the pre-implementation phase. Costs of the experiment phase costs and behavioral health services data are still being collected. We categorized sites by high or low pre-implementation costs, as compared with the mean overall costs. Costs were also stratified by Core and Enhanced categorization for direct comparison.

## Results

As shown in Table 3, there is considerable variation across all sites regarding many environmental and organizational variables, although the bivariate analysis find minimal significant differences ( $p < .05$ ) by Core and Enhanced sites. None of the demographic variables, relating to the environmental component of the conceptual model, have significant differences between Core and Enhanced sites. For example, the unemployment rate is 5.3% on average across all sites, with no significant difference between Core and Enhanced sites. Similarly, the mean per capita income is approximately \$43 000 and on average of 23% of the population across both Core and Enhanced sites are eligible for Medicaid. The percentage of sites that are urban, adjacent urban, or rural also does not vary significantly by intervention type. However, the rate of rural sites is over twice as high in Enhanced sites, as compared with Core sites. There is also no significant difference between Core and Enhanced sites for all other race, age, education variables as well as homelessness. Regarding the health care utilization variables included in the model, there are no significant differences between Core and Enhanced, but Core sites do have (on average) more children with mental health and SUDs (Core 3.5%, Enhanced 3.2%), more primary care physicians (Core 433, Enhanced 385), community mental health centers (Core 1.1, Enhanced 0.6), more federally qualified health centers (Core 9.1, Enhanced 6.8), mental health care facilities (Core 10.7, Enhanced 9.4), and substance use care facilities (Core 17.5, Enhanced 11.9). While not significant, there is a large magnitude in difference of mental health block grant funding by site type (Core \$664 102.30, Enhanced \$1 343 493.00).

Some notable differences between Core and Enhanced sites are evident in looking at reimbursement sources. For example, the number of behavioral health sites that report receiving reimbursements from CHIP and some staffing characteristics vary significantly by Core and Enhanced sites. For example, 68.8% of behavioral health sites in Enhanced sites report that they receive reimbursements from CHIP, whereas 33.3% of behavioral health sites in Core areas report that they receive reimbursements from CHIP. Regarding staff, juvenile justice agencies in Enhanced sites tend to have more experienced staff as well as a higher caseload per staff than juvenile justice staff in Core sites. All other organizational variables are relatively equally distributed for Enhanced and Core sites. However,

there were some notable differences between Core and Enhanced sites in 3 key areas: (1) the percentage of juvenile justice agencies reporting pooled funding with behavioral health agencies (Enhanced 60%, Core 40%), (2) the percentage of juvenile justice agencies reporting no reimbursement for some services (Enhanced 12.5%, Core 0%), and (3) the percentage of behavioral health agencies reporting contracts with juvenile justice agencies (Enhanced 18.8%, Core 38.9%). Core sites have more specialty programs than Enhanced sites. Specialty programs included the following: specialty courts, diversion programs, specialized pre-adjudication school, and re-entry programs. On average, there are about 2 specialized juvenile justice staff trainings per year across both Enhanced and Core counties and they have between 3 and 4 system-level reforms (Table 3). Pre-implementation costs are significantly higher in Enhanced versus Core sites ( $p < .05$ ).

Figure 2 presents variables from Table 3 which differed significantly. Measures are stratified by both intervention type (Core and Enhanced) and pre-implementation costs (high and low). Results that compare intervention type show that the average juvenile justice caseload per staff is higher in Enhanced sites relative to Core sites (caseload in Core = 13.9, caseload in Enhanced = 23.7,  $p < .05$ ). The average years of experience among justice agency staff are also higher in Enhanced sites relative to Core sites (15.5 years in Enhanced, 13.3 years in Core,  $p < .05$ ). In addition, a higher percentage of Enhanced sites receive CHIP reimbursement (Enhanced = 68.8%, Core = 33.3%,  $p < .05$ ). Results for pre-implementation costs show that sites with high pre-implementation costs tend to have significantly less CHIP reimbursements (high = 35.7%, low = 60.0%,  $p < .05$ ) and Medicaid reimbursement (high = 78.6%, low = 95.0%,  $p < .05$ ) as compared with low-cost sites. Regarding staff characteristics, the average behavioral health agency caseload per staff (high = 23.0, low = 7.0,  $p < .05$ ) and mean years of experience for juvenile justice staff was higher in high-cost sites (high = 15.2, low = 13.8,  $p < .05$ ) as compared with low-cost sites.

## Discussion

To our knowledge, this is the first study to link a multi-site randomized trial of EBP implementation interventions with an economics/systems analysis to provide a more nuanced examination of the context in which the trial occurs. Juvenile justice and behavioral health stakeholders will benefit from a detailed description of how to conduct theoretically guided implementation research and use these results as a general model for considering implementation that emphasizes the importance of context and setting to make policy-driven decisions. Given the need for EBPs in behavioral health care, notably for justice-involved youth, this study fills an important gap by describing how factors typically considered outside of the service delivery system can be integrated into an analysis of care delivery, implementation, and sustainability. As previously

**Table 3.** Pre-intervention environmental and organizational variables.

VARIABLES PRE-IMPLEMENTATION			CORE (N = 18)	ENHANCED (N = 16)	
Environmental	Demographics	Unemployment rate	5.3	5.2	
		Per capita personal income	43733.6	42126.6	
		Population eligible for Medicaid (%)	24.2	21.1	
		Population < 65 w/o health insurance (%)	11.5	11.4	
		Population size (#)	614455.8	540454.5	
		Urbanicity	Urban	83.3	75.0
			Adjacent urban	11.1	12.5
			Rural	5.6	12.5
		Race (%)	White	73.9	75.7
			African American	22.5	20.3
			Asian and Pacific Islander	3.1	3.4
			Native American	0.6	0.6
			Hispanic	9.5	14.7
		Age (%)	18 years and below	26.2	27.0
			19–24 years	7.1	8.1
			25–64 years	50.3	51.4
			65 years and above	13.8	13.6
		Education (%)	Less than high school diploma	14.0	14.8
			High school diploma only	29.0	30.4
			Some college or AA degree	29.5	28.3
			Bachelor's or higher	27.5	26.5
			Homeless (%)	3.5	3.3
		Health care	Children with MH/SUD, state (%)	3.5	3.2
			Community MH inpatient utilization per 1000	2.7	2.9
			State hospital utilization per 1000	0.7	0.7
			MH block grant (\$)	664102.3	1343493.0
			Medicare reimbursement (\$)	10312.5	10361.1
Primary care MD's (excluding FQHC) (#)	432.6		384.6		
Community mental health centers (#)	1.1		0.6		
Federally qualified health centers (#)	9.1		6.8		
Mental health care facilities (#)	10.7		9.4		
Substance use care facilities (#)	17.5		11.9		
Organizational	JJ funding	Pooled funding between JJ and BH agencies (%)	20.0	60.0	
		No payment (%)	22.2	12.5	
		Cash (%)	16.7	18.8	
		Private health insurance (%)	22.2	12.5	
		Agency budget (%)	33.3	25.0	

(Continued)

Table 3. (Continued)

VARIABLES PRE-IMPLEMENTATION		CORE (N = 18)	ENHANCED (N = 16)
BH funding	No payment (%)	0.0	12.5
	Cash (%)	72.2	81.3
	Private health insurance (%)	66.7	68.8
	Agency budget (%)	16.7	25.0
	CHIP (%)	33.3	68.8
	Medicaid (%)	88.9	87.5
	Contract with JJ agency (%)	38.9	18.8
Specialty program	Specialty court (%)	100.0	87.5
	Any diversion program (%)	77.8	68.8
	Specialized pre-adjudication school (%)	53.3	42.9
	Graduated sanction program (%)	56.3	66.7
	Re-entry program (%)	37.5	33.3
	Specialized JJ staff trainings (#)	1.63	1.8
	JJ system-level reforms (#)	3.63	3.6
Staff and caseload	Mean JJ experience (years)	13.3	15.5
	Mean BH experience (years)	14.5	13.3
	Mean JJ caseload per staff	13.9	23.7
	Mean BH caseload per staff	16.7	9.7
Implementation	Costs (\$)	9222.0	13 176.0

Data from 2015 or closest available year; urban (rural-urban continuum codes 1-3=1), adjacent urban (codes 4, 6, and 8=2), and rural (codes 5, 7, and 9=3). Abbreviations: AA, associate of arts; BH, behavioral health; CHIP, Children's Health Insurance Program; FQHC, federally qualified health centers; JJ, juvenile justice; MD, medical doctor; MH, mental health; SUD, substance use disorder.  
\* $p < .05$ .

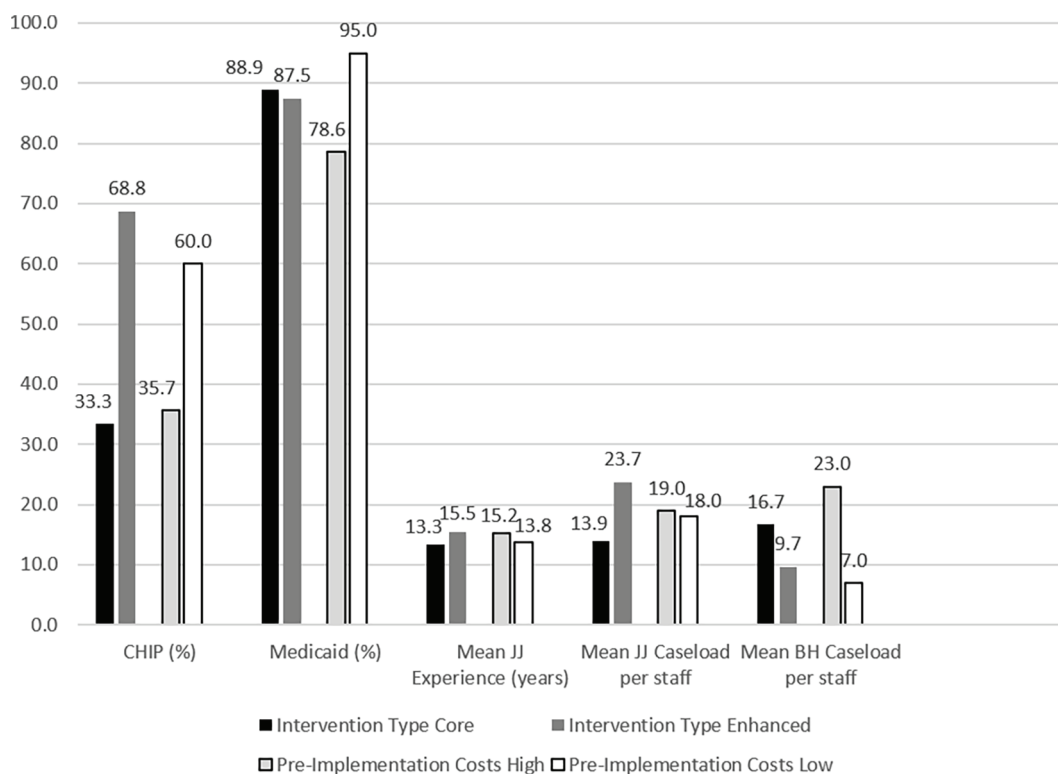
discussed, while justice-involved youth enter the juvenile justice system with high prevalence of behavioral health disorders, they are rarely connected with the services they need.

To better understand the disconnect between juvenile justice and behavioral health systems, this study works from a novel implementation science trial using enhanced facilitation and DDDM to help juvenile justice agencies work more efficiently with their behavioral health partners and engage youth with needed SUD treatment and other services. We have broadly considered the environmental, organizational, implementation costs, and how they affect the utilization of behavioral health services. We have also operationalized social determinants of health, within a juvenile justice context.

In our preliminary analysis comparing sites by intervention condition (Core vs Enhanced) and pre-implementation costs, there were few significant differences, demonstrating a robust randomization through the trial itself. We did, however, find differences in insurance reimbursements and types, as well as agency staffing characteristics. Given the relationship demonstrated in previous research between Medicaid insurance status and health outcomes for justice-involved youth,<sup>45</sup> this is an

important finding that will be explored in future planned analyses. Lower reimbursement rates by both CHIP and Medicaid are also likely linked to the environmental context described in our model. For example, states that have expanded Medicaid through the Affordable Care Act may be more likely to also have lower costs as Medicaid reimbursements will be covering more individuals and more services. Another potential explanation is our observed, but not significant, difference in mental health block grant funding. Since CHIP is funded as a block grant, the higher CHIP funding in Enhanced sites could be a result of the higher amount of mental health block grants that those sites received. If this is true, then it demonstrates how environmental variables in our overlapping framework can affect organizational service implementation within the JJ-TRIALS context.

In addition, while we did not find statistically significant difference in urbanicity, the Enhanced intervention had a rate of rural sites that was over double that of the Core intervention. This has implications for implementation costs, as more rural sites likely face additional costs due to travel distance between agencies and to training centers. Rural sites also likely have less robust existing markets for behavioral health services. Given that these markets



**Figure 2.** Comparison of pre-implementation environmental and organizational variables by intervention type and costs\*. Missing not included in calculations; significant differences, at  $p < .05$  based on standard  $t$ -test, were not found by intervention type for Medicaid (%) or mean BH caseload per staff, or by pre-implementation costs for mean JJ caseload per staff. All other differences were significant. CHIP indicates Children’s Health Insurance Program.

determine the availability of treatment services and staff, this finding also has important implications for service delivery.

Regarding agency staffing characteristics, it is perhaps not surprising that sites with more experienced staff have higher pre-implementation costs. However, future studies which link staffing characteristics with health services outcomes will investigate this relationship further. For example, more expensive, but also more experienced, staff may lead to higher agency efficiency and yield better behavioral health cascade outcomes for youth. Staff caseload at both juvenile justice and behavioral health agencies may also be important in explaining these outcomes. Sites with high pre-implementation costs also have much higher mean behavioral health caseloads per staff. This may be because sites with high costs, stemming from factors they cannot control like Medicaid/CHIP reimbursement rates and staff experience, seek to cut costs in areas that they can control such as caseload size. If this were the case, results would support calls for increased reimbursement for behavioral health services. While examining this relationship was outside the scope of this article, future studies should examine how such contextual factors influence implementation costs and cost effectiveness in meeting goals along the behavioral health cascade and youth outcomes.

The results of the above analysis provide actionable policies and practices that overlap with the environmental and organizational context that can influence the implementation of EBPs.

\*Figure 2 legends were updated with complete names after the paper was first published online.

While the results of this research are descriptive in nature, more powerful models can be developed to causally predict which environmental and organizational factors have the largest impact on outcomes. The outcomes that might be considered include costs, as implementing agencies and providers are continually trying to understand the most efficient way to use funds. Outcomes will also include behavioral health outcomes and utilization, to understand how environmental factors, such as reimbursement rates and Medicaid enrollment and organization factors, such as staff workload, can be changed to improve outcomes for justice-involved youth with SUD.

### Conclusion

The application of our conceptual model to the implementation intervention study in JJ-TRIALS demonstrates the importance of identifying environmental factors outside of the traditional behavioral health care delivery system to evaluate the impact and sustainability of these interventions. This study provides a conceptual overlay of how environmental, organizational, and economic factors affect the downstream delivery of behavioral health services for justice-involved youth. We also build on the previous models to describe how to conceptually map variables in a systems analysis representing different sources of data to our conceptual model. Beyond serving as a foundation for future systems analysis on this topic, this study can also help practitioners identify actionable policy levels to connect justice-involved youth to needed behavioral health services. Future empirical studies will estimate environmental, organizational,

and economic impact on behavioral health services delivery processes and outcomes.

### Authors' Note

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### Author Contributions

DM: Made substantial contributions to 1) manuscript conception and design, 2) acquisition of data, and 3) was involved in revising the manuscript critically for important intellectual content. BFH: Made substantial contributions to 1) manuscript design; 2) acquisition, analysis and interpretation of data and 3) drafted and revised the manuscript. KEM: Made substantial contributions to 1) manuscript conception and design, 2) acquisition of data, and 3) was involved in revising the manuscript critically for important intellectual content. All authors read and approved the final manuscript.

### Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Data collection for JJ-TRIALS was granted Institutional Review Board approval from all 6 research institutions and the coordinating center. This article does not contain any studies with animals performed by any of the authors. Informed consent was obtained from all individual (human) participants included in the study.

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#### Competing interests statement

The authors declare no competing financial interests.

#### DATABASES

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## OPINION

# Gene–environment interactions in psychiatry: joining forces with neuroscience

Avshalom Caspi and Terrie E. Moffitt

Abstract | Gene–environment interaction research in psychiatry is new, and is a natural ally of neuroscience. Mental disorders have known environmental causes, but there is heterogeneity in the response to each causal factor, which gene–environment findings attribute to genetic differences at the DNA sequence level. Such findings come from epidemiology, an ideal branch of science for showing that gene–environment interactions exist in nature and affect a significant fraction of disease cases. The complementary discipline of epidemiology, experimental neuroscience, fuels gene–environment hypotheses and investigates underlying neural mechanisms. This article discusses opportunities and challenges in the collaboration between psychiatry, epidemiology and neuroscience in studying gene–environment interactions.

Gene–environment interactions occur when the effect of exposure to an environmental pathogen on a person's health is conditional on his or her genotype. The first evidence that genotype moderates the capacity of an environmental risk to bring about mental disorders was reported in 2002 (REF. 1). Although mental health research into gene–environment interactions is new, it seems to be gathering momentum. We argue that, to fulfill its potential, gene–environment interaction research must integrate with neuroscience. Moreover, the gene–environment interaction approach brings exciting opportunities for extending the range and power of neuroscience. Here, we examine opportunities for collaboration between experimental neuroscience and research on

gene–environment interactions. Successful collaboration can solve the biggest mystery of human psychopathology: how does an environmental factor, external to the person, get inside the nervous system and alter its elements to generate the symptoms of a disordered mind? Concentrating the considerable resources of neuroscience and gene–environment research on this question will bring discoveries that advance the understanding of mental disorders, and increase the potential to control and prevent them.

#### Psychiatric genetic approaches

The recent history of psychiatric research that has measured genetic differences at the DNA sequence level can be divided into three approaches, each with its own

logic and assumptions. The first approach assumes direct linear relations between genes and behaviour (FIG. 1a). The goal of this approach has been to correlate psychiatric disorders with individual differences in DNA sequence. This has been attempted using both linkage analysis and association analysis, with regard to many psychiatric conditions such as depression<sup>2</sup>, schizophrenia<sup>3</sup> and addiction<sup>4</sup>. Although a few genes have accumulated replicated evidence of association with disorder, replication failures are routine and overall progress has been slow<sup>5</sup>. Because of inconsistent findings, many scientists have despaired of the search for a straightforward association between genotype and diagnosis<sup>6</sup>, that is, for direct main effects.

The second approach has sought to make more progress by replacing the disorder outcomes with intermediate phenotypes, called 'endophenotypes' (FIG. 1b). Endophenotypes are heritable neurophysiological, biochemical, endocrinological, neuroanatomical or neuropsychological constituents of disorders<sup>7</sup>. Endophenotypes are assumed to have simpler genetic underpinnings than disorders themselves. Therefore, this research approach pursues the hypothesis that it will be easier to identify genes associated with endophenotypes than genes associated with their correlated disorders. Although this approach substitutes the psychiatric diagnosis with an intermediate brain measure, it still searches for direct main effects.

The third approach to psychiatric genetics, unlike the first two approaches, seeks to incorporate information about the environment (FIG. 1c). This gene–environment interaction approach differs fundamentally from the 'main-effect approaches', with regard to the assumptions about the causes of psychiatric disorders. Main-effect approaches assume that genes cause disorder, an assumption carried forward from early work that identified single-gene causes of rare Mendelian conditions. By contrast, the gene–environment interaction approach assumes that environmental pathogens cause disorder, and that genes influence susceptibility to pathogens. In contrast to main-effect studies, there is no necessary expectation of a direct gene-to-behaviour association in the absence of the environmental pathogen. The gene–environment interaction approach has grown out of two observations: first, that mental disorders have environmental causes; second, that people show heterogeneity in their response to those causes<sup>8</sup>.

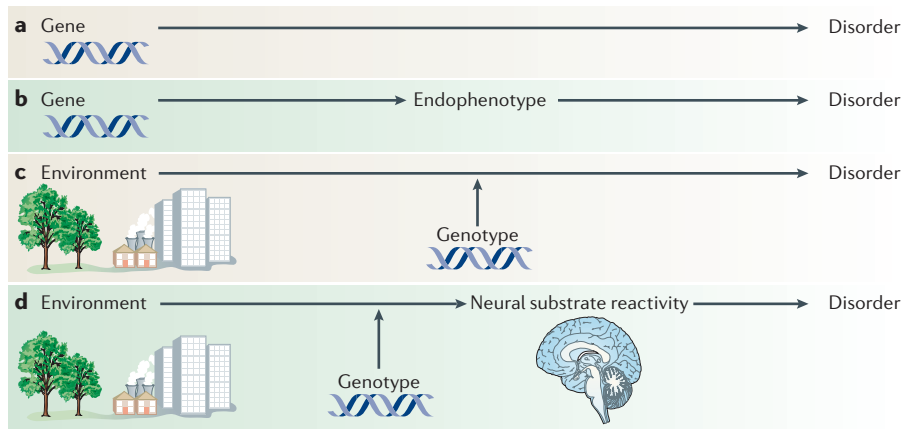


Figure 1 | **Approaches to psychiatric genetics research.** **a** | The gene-to-disorder approach assumes direct linear relations between genes and disorder. **b** | The endophenotype approach replaces the disorder outcomes with intermediate phenotypes. **c** | The gene–environment interaction approach assumes that genes moderate the effect of environmental pathogens on disorder. **d** | Neuroscience complements the latter research by specifying the proximal role of nervous system reactivity in the gene–environment interaction.

**Nature and nurture**

Like other non-communicable diseases that have common prevalence in the population and complex multi-factorial aetiology, most mental disorders have known non-genetic, environmental risk factors (that is, predictors whose causal status is unproven) and/or environmental pathogens (that is, proven causes)<sup>9,10</sup>. Environmental pathogens have been documented for substance-use disorders<sup>11</sup>, antisocial disorders<sup>12</sup>, depression<sup>13</sup>, and even schizophrenia-spectrum disorders<sup>14,15</sup>. The pool of environmental factors is currently more limited for disorders such as autism, Alzheimer’s-type dementia, and attention-deficit hyperactivity disorder (ADHD). Nevertheless, the concordance of monozygotic twins for even these highly heritable disorders is less than perfect, indicating the existence of non-genetic contributing causes. Environmental risk factors for mental disorders discovered to date include (but are not limited to) maternal stress during pregnancy, maternal substance abuse during pregnancy, low birth weight, birth complications, deprivation of normal parental care during infancy, childhood physical maltreatment, childhood neglect, premature parental loss, exposure to family conflict and violence, stressful life events involving loss or threat, substance abuse, toxic exposures and head injury.

These environmental causes are considered to be only contributory because exposure to them does not always generate disorder. Both human and animal studies consistently reveal variability in individuals’ behavioural responses to environmental pathogens. Heterogeneity of response characterizes all known environmental risk factors

for psychopathology, including even the most overwhelming of traumas. Such response heterogeneity is associated with pre-existing individual differences in temperament, personality, cognition and autonomic physiology, all of which are known to be under genetic influence<sup>16</sup>. The hypothesis of genetic moderation implies that differences between individuals, originating in the DNA sequence, bring about differences between individuals in their resilience or vulnerability to the environmental causes of many pathological conditions of the mind and body. This pathogenesis hypothesis is under study in relation not only to mental disorders, but also to cancer<sup>17</sup>, diabetes<sup>18</sup>, and cardiovascular<sup>19</sup>, immune/infectious<sup>20,21</sup> and respiratory<sup>22</sup> diseases.

Gene–environment interaction studies in psychiatry are new, but some of the initial findings are intriguing. Our own studies provided proof of principle of this approach. In the first report of gene–environment interaction in relation to behaviour, we tested the hypothesis that a functional polymorphism in the promoter region of the gene encoding the neurotransmitter-metabolizing enzyme monoamine oxidase A (MAOA) would moderate the effect of child maltreatment in the cycle of violence. Results showed that maltreated children, whose genotype conferred low levels of MAOA expression, more often developed conduct disorder, antisocial personality and adult violent crime than children with a high-activity *MAOA* genotype<sup>1</sup>. In a second study, we proposed that a functional polymorphism in the promoter region of the serotonin transporter (*5-HTT*) gene would moderate the influence

of stressful life events on depression. Individuals with one or two copies of the *5-HTT* ‘short’ allele exhibited more depressive symptoms, diagnosable depression, and suicidality following stressful life events than individuals with two copies of the ‘long’ allele<sup>23</sup>. A third study, by investigating the differential effects of cannabis on its users, demonstrated that gene–environment interactions involve environmental pathogens apart from psycho-social risks. We suggested that a functional polymorphism in the catechol-*O*-methyltransferase (*COMT*) gene would moderate the link between adolescent cannabis use and risk of developing adult psychosis. Cannabis users carrying the *COMT* valine allele were likely to exhibit psychotic symptoms and to develop schizophrenia-spectrum disorder, but cannabis use had no such adverse influence on individuals with two copies of the *COMT* methionine allele<sup>24</sup>. Additional gene–environment findings are emerging. In two studies of ADHD, polymorphisms in the dopamine system interacted with antenatal risk factors (for example, low birth weight and maternal use of alcohol) to predict key symptoms associated with the disorder<sup>25,26</sup>. In another report, polymorphisms in the glucocorticoid receptor-regulating gene *FKBP5* interacted with acute injury to predict psychological dissociation, a key feature of post-traumatic stress syndrome<sup>27</sup>.

The study of gene–environment interactions has been the province of epidemiology, in which genotypes, environmental pathogen exposures and disorder outcomes are studied as they naturally occur in the human population<sup>28</sup>. Genetic epidemiology is ideal for achieving three goals. First, epidemiological studies identify the involvement of hypothesized gene–environment interactions. Second, to increase confidence in the interaction, epidemiological studies incorporate control factors necessary for ruling out alternative explanations. Third, epidemiological studies attest whether an interaction accounts for a non-trivial proportion of the disorder in the human population. However, genetic epidemiology is limited for understanding the biological mechanisms involved in an interaction, and therefore its potential will be better realized when it is integrated with experimental neuroscience. Neuroscience can complement psychiatric genetic epidemiology by specifying the more proximal role of nervous system reactivity in the gene–environment interaction (FIG. 1d). Such information about proximal mechanisms will be essential for developing theory and treatments.

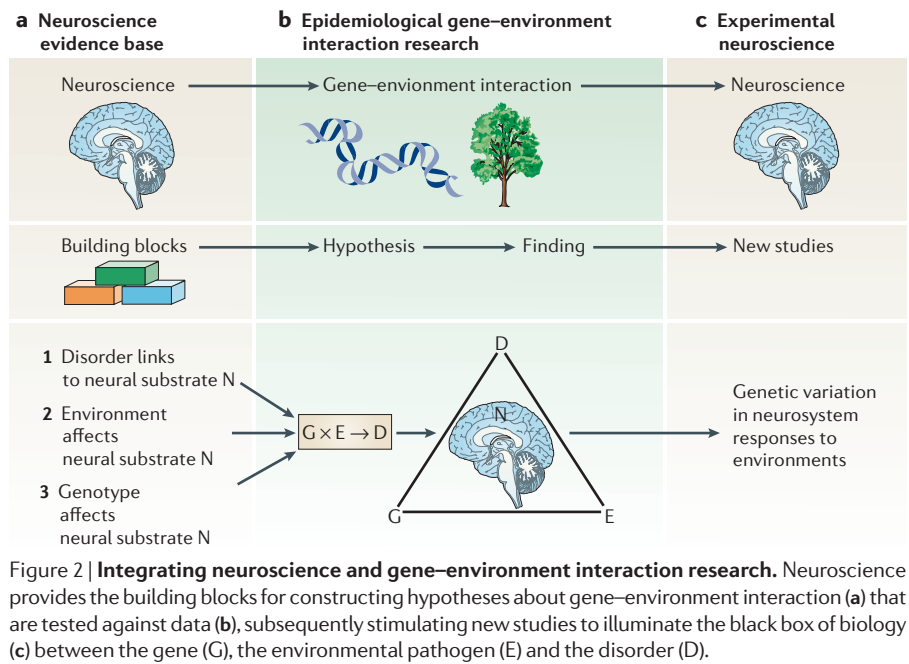


**‘Bootstrapping’ with neuroscience**

The original impetus for conducting each of our epidemiological gene–environment interaction studies came from findings that had been established by neuroscience research. We have subsequently observed that, once a novel gene–environment interaction is reported, a wave of new neuroscience follows. This suggests a mutually beneficial relationship of ‘bootstrapping’ between the two fields (FIG. 2).

In the initial phase of research into gene–environment interactions, neuroscience provides building blocks that are needed to construct a hypothesis (FIG. 2a). The building blocks correspond to the three elements of the triad: the disorder, the environmental pathogen and the genotype. First, evidence is needed about which neural substrate is involved in the disorder. Second, evidence is needed that an environmental cause of the disorder has effects on variables indexing the same neural substrate. Third, evidence is needed that a candidate gene has functional effects on variables indexing that same neural substrate. It is this convergence of environmental and genotypic effects within the same neural substrate that allows for the possibility of gene–environment interactions. At present, such evidence concerning environmental and genotypic effects in relation to neural substrate measures is sparse, and therefore gene–environment interaction hypotheses are likely to be circumstantial at best, and flimsy at worst. But this situation is steadily improving. When we were constructing our hypothesis regarding the genetic moderation of the depressogenic effects of stressful life events<sup>23</sup>, we were aided by direct evidence linking the *5-HTT* candidate gene to individual differences in physiological responsiveness to stress conditions in three different experimental paradigms, including knockout mice<sup>29</sup>, stress-reared rhesus macaques<sup>30</sup> and human functional brain imaging<sup>31</sup>. Such helpful studies are uncommon as yet, but they are emerging.

In the second (epidemiological) phase of research, the new gene–environment interaction hypothesis is tested against data (FIG. 2b). Elsewhere, we have discussed potential pitfalls of gene–environment interaction studies and have outlined strategies to guide this research<sup>8,32</sup>. If the initial data are consistent with the hypothesis, the finding must be replicated to determine whether it is sufficiently reliable to warrant further neuroscience investigations<sup>33</sup>. Most gene–environment interaction findings have emerged too recently to be evaluated according to their replication records.



**Figure 2 | Integrating neuroscience and gene–environment interaction research.** Neuroscience provides the building blocks for constructing hypotheses about gene–environment interaction (a) that are tested against data (b), subsequently stimulating new studies to illuminate the black box of biology (c) between the gene (G), the environmental pathogen (E) and the disorder (D).

However, two of these findings are promising. First, several studies have sought to replicate the interaction between the high- and low-activity *MAOA* genotypes and maltreatment<sup>34–38</sup>; a meta-analysis revealed a significant pooled effect<sup>36</sup>. Second, positive replications of the interaction between *5-HTT*\*long/*5HTT*\*short genotypes and life stress have also appeared<sup>39–47</sup>, along with two failures to replicate<sup>48,49</sup>. It is important to note that useful information can also be gleaned from inconsistencies across study findings. For example, as more studies accumulate it will be possible to evaluate whether the moderating effect of the *5-HTT* genotype on life stress is stronger among females or males, younger adults or older adults, and first-onset or recurrent depression cases.

In the third phase of research, scientific activity comes a full circle, back to neuroscience (FIG. 2c). A new wave of studies is stimulated, each aiming to illuminate the black box of biology between the gene, the environmental pathogen, and the disorder<sup>50</sup> (as illustrated in the triangle in FIG. 2). For example, evidence that variation in the promoter region of the *5-HTT* gene shapes depressogenic responses to life stress has led to more focused neuroscience research on a genetic susceptibility mechanism for stress-related depression<sup>51–54</sup>. Similarly, evidence that a polymorphism in the *MAOA* gene might contribute to the cycle of violence in maltreated children<sup>1</sup> — a hypothesis stimulated by behavioural evidence from mouse knockouts for *MAOA*<sup>55</sup> and functional gene knockouts in humans<sup>56</sup> — has, in turn, stimulated

efforts to probe circuits of emotional arousal in the brain by studying this polymorphism in imaging paradigms<sup>57</sup> (see also BOX 1).

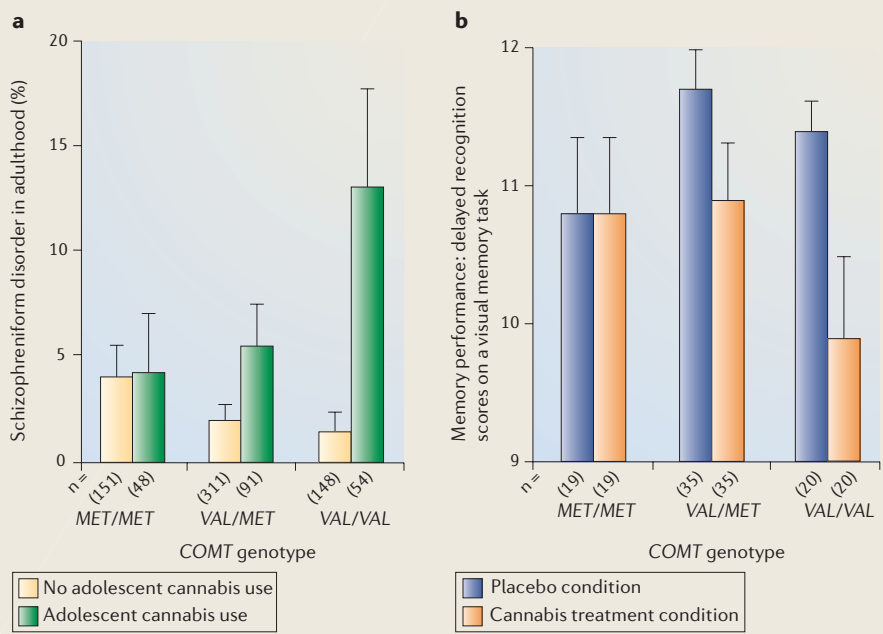
**Enhancing neuroscience**

A replicated finding on gene–environment interactions adds new information, producing a stimulating effect on neuroscience. The result of a reliable gene–environment interaction finding is clear evidence for a pathway of causal neural process connecting the three disparate ‘end points’ that form the triad of gene, environmental pathogen and disorder. The pathway might initially be hidden from scientific view, but knowing three endpoints (instead of two) enhances the likelihood of finding the neurobiological paths that unite them. Candidate genes can add information about where in the body, cell and molecule the environmental pathogen’s effect on disorder occurs.

A replicated finding on gene–environment interactions yields at least three insights. First, the insight that the result of exposure to an environmental pathogen depends on the person’s genotype offers clues about the root beginnings of a causal pathway. Variation in the DNA sequence antedates all other variables in the triad. Therefore, covariation between a measured genotype and a neural substrate variable is useful for making deductions about the position of the neural substrate variable in the causal chain. For example, if a study showed that amygdala activation in response to emotional stimuli was abnormal in depressed subjects, this could indicate either

**Box 1 | How does genotype moderate the psychological effects of cannabis use?**

Evidence from studies around the world shows that cannabis use is a statistical risk factor for the emergence of psychosis, ranging from psychotic symptoms (such as hallucinations and delusions) to clinically significant disorders (such as schizophrenia)<sup>93</sup>. However, most people who use cannabis do not develop psychosis, which suggests that some individuals may be genetically vulnerable to its effects. This hypothesis received initial support from research showing that the association between cannabis use and psychosis outcome is most marked in subjects with an established vulnerability to psychosis<sup>94</sup>. However, the genetic risk involved was not specified. Subsequent research focused on risk measured by individual differences on the catechol-O-methyltransferase (COMT) gene; in particular, a valine allele at codon 158 producing more enzymatic activity and faster breakdown of dopamine than the methionine allele. Both the COMT valine allele<sup>77</sup> and cannabis use<sup>95</sup> have been independently associated with brain endophenotypes for schizophrenia<sup>96,97</sup>. An epidemiological study (see panel a) that traced a longitudinal cohort from prior to the onset of cannabis use (age 11 years), through to the peak risk period of psychosis onset (age 26 years), revealed that individuals with one or more high-activity valine alleles (VAL/MET or VAL/VAL) showed subsequent increased risk of psychotic symptoms and psychosis-spectrum disorder if they used cannabis<sup>24</sup>. Cannabis use had no such adverse influence on individuals with two copies of the methionine allele (MET/MET). But is the quantification of drug exposure information using the self-reports of adolescent subjects sufficiently accurate? Is it possible that valine-allele carriers who use cannabis are unusual in some unmeasured way? And how does the valine allele influence sensitivity to cannabis? These questions have been addressed by researchers in the Netherlands, who used an experimental design to extend the epidemiological finding<sup>98</sup>. In their studies, subjects were tested on two occasions, separated by 1 week, as part of a double-blind, placebo controlled cross-over design. In randomized order, they received either 0 µg or 300 µg -9-tetrahydrocannabinol (the principal component of cannabis) per kilogram bodyweight. Cannabis affected cognition and state psychosis, but this was conditional on COMT genotype. As illustrated in panel b, individuals carrying two copies of the valine allele exhibited more cannabis-induced memory and attention impairments than carriers of the methionine allele, and were the most sensitive to cannabis-induced psychotic experiences. Further research — including the use of both animal and imaging paradigms — is needed to provide a fuller understanding of genetically moderated responses to cannabis<sup>99</sup>.



a causal role for the amygdala in depression, or a consequence of depression on the amygdala. However, if such amygdala activation depends on the subjects' genotype, this suggests that amygdala activation has precedence. Such precedence is not sufficient for causation, but it is necessary.

Second, awareness of gene-environment interactions can help to reveal stronger effects

in neuroscience data. Neuroscience variables are generally responsive to environmental input. If responsiveness is under the influence of hidden genetic variation within a research sample, this unmeasured heterogeneity will dilute findings. Returning to the prior example, amygdala activation to an emotional stimulus can appear positive but weak across all subjects in an experiment, as the result

of unwittingly averaging data from two genotype groups, one of strong responders and another of non-responders. If genetically vulnerable subgroups can be identified for analysis, modest associations may be revealed as stronger than previously thought.

Third, gene-environment interactions might help to solve the perennial riddle of disorder-specific pathophysiology. Most environmental pathogens constitute a nonspecific risk for many disorders. For example, smoking influences cancer, osteoporosis, lung disease, heart disease and fetal growth; child maltreatment influences both aggression and depression; birth complications influence both ADHD and schizophrenia. A potential explanation for why there are different outcomes from one environmental pathogen is that the pathogen is connected to each disorder through a different pathophysiological pathway; there is little research into this, although genes of known functionality may offer clues.

**Furthering gene-environment research**

Psychiatric genetics has earned an ignoble reputation for its methodological problems, but this reputation should not discourage neuroscientists from bringing genetics into their laboratories to study the genetic moderation of environmental pathogens' effects on neural substrates. Many initial reports of gene-to-disorder associations proved to be false positives<sup>5</sup>, prompting the publication of methodological warnings<sup>58-60</sup>. However, most of the methodological problems arise from the fact that genetic epidemiology is an observational discipline that measures genotypes, environmental risk conditions and disorder outcomes as they naturally occur. This observational method involves several compromises to validity, but the same problems do not afflict the experimental method. Therefore, experimental neuroscience paradigms will benefit gene-environment interaction research by addressing some of the methodological concerns that are now plaguing genetic epidemiology, as explained below.

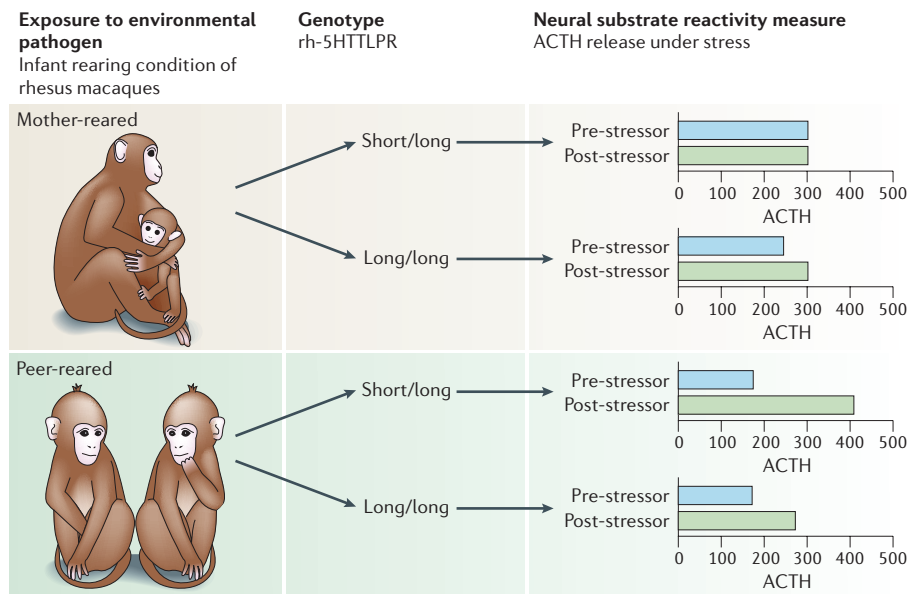
First, there is concern about the need for very large samples in genetics research<sup>61</sup>. In case-control studies, large samples are needed because genetic effects are expected to be very small. In cohort studies, small effects are also a concern, and there is the added need for large samples due to the fact that the environmental exposure and/or the disorder might have a low prevalence in cohorts<sup>33</sup>. By contrast, experimental studies have more control over the group sizes and intensity of environmental stimulus needed

to obtain a detectable effect<sup>62</sup>. Moreover, unlike mental disorders, neural substrate outcome measures (such as emotional arousal or adrenocorticotrophic hormone responses) tend to be quantitatively distributed such that low prevalence is not at issue.

Second, there is concern about gene–environment correlation<sup>63,64</sup>. When genes influence the probability of subjects' exposure to an environmental pathogen, this results in the contamination of measures of environmental exposure with genetic variation, thereby clouding interpretation of the findings. For example, the probability of experiencing certain stressful life events is known to be under partial genetic influence, as is the tendency to expose oneself to environmental pathogens such as cannabis or tobacco. By contrast, experimental random assignment of subjects to the environmental risk condition rules out this type of self-selection. For example, epidemiologists study self-initiated cigarette smoking, while neuroscientists can study participants that are randomly assigned to nicotine exposure.

Third, there is concern about the difficulty of achieving precise and reliable measures of environmental exposure, particularly if the exposure typically occurs over extended periods of the life course<sup>8,65</sup>. For example, it is very difficult to ascertain the frequency, timing and extent of the trauma that is entailed in stressful life events. Likewise, it is notoriously difficult, using survey methods, to measure the amount of active drug that is ingested during recreational cannabis use over many years. Experimental administration of the environmental pathogen or stimulus with standardized dosage and timing rules out this concern.

Fourth, there is concern about the low prior probability of a true association between a disorder and any one among many thousands of genetic polymorphisms<sup>66</sup>. If little or nothing is known prior to a statistical test of association between a gene and behaviour, then this results in a low prior probability of the hoped-for association, and any association uncovered could easily be a chance false positive result. Neuroscience research enhances the prior probability of a candidate gene being associated with disorder by connecting that genotype with brain responsiveness to a known environmental cause of the disorder. Thus, a key contribution from experimental neuroscience is evidence and theory that supports the biological plausibility of genetic hypotheses, which helps to prevent false positives. Consider research in cognate medical fields, where caffeine consumption has been linked to the risk of myocardial



**Figure 3 | Exposure to adverse rearing, genotype and adrenocorticotropin hormone (ACTH) levels.** Influence of exposure to early stress (peer rearing) on subsequent exaggerated responses of the limbic-hypothalamic-pituitary-adrenal axis (LHPA) responses to stress is conditioned by serotonin transporter gene promoter variation (rh-5HTTLPR) in rhesus macaques. When exposed to stress later in life, peer-reared animals with the short/long genotype had higher ACTH levels than animals with the long/long genotype. There were no differences between genotypes among animals reared with their mothers (data from REF. 105).

infarction. Caffeine is metabolized by an enzyme (CYP1A2) in the liver, knowledge that allowed researchers to test (and confirm) the hypothesis that carriers of the slow metabolizer variant of the *CYP1A2* gene are at a heightened risk of myocardial infarction<sup>67</sup>. As researchers learn more about genes, the brain and environmental pathogens, the prior probability of hypotheses will become stronger, and false positive gene findings fewer.

One caveat must be mentioned. Experiments that randomly assign subjects to environmental pathogens will inevitably be limited to using substitutes analogous to the environmental pathogens that cause mental disorders. Real environmental pathogens are not amenable to experimental administration for three reasons: first, ethics prohibit exposing humans to risk; second, animal-model exposures cannot be equated with human exposures; and third, harm from naturally occurring environmental pathogens often accumulates for months or years longer than a laboratory experiment. These shortcomings of experimental gene–environment interaction studies must be acknowledged. However, the shortcomings are diminished where a chain of inference can link experimental findings involving an analogue pathogen to epidemiological findings involving its counterpart natural environmental pathogen.

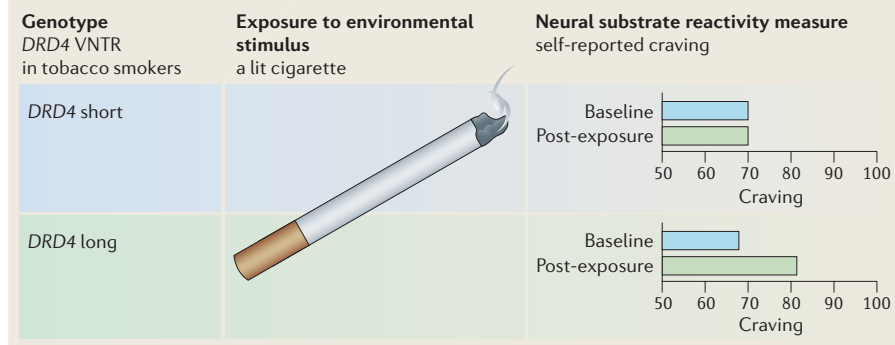
### Towards a nomological network

A nomological network refers to the interlocking system of laws — the predicted pattern of theoretical relationships — which define a construct<sup>68</sup>. A chain of inferences is required to validate the claim that specific gene–environment interactions are surrounded by a nomological network of individual supporting findings. In mental health research, such an emerging nomological network is illustrated by many approaches that are used to understand the role of *5-HTT* gene variation in emotion regulation and emotional disorders<sup>69,70</sup>. We hope that the present article will encourage further collaboration between genetic epidemiology and experimental neuroscience in a joint effort to unravel the complex mechanisms that underlie gene–environment interactions. We envisage six ways forward.

First, animal models of environmental pathogen exposure are needed (FIG. 3). In non-human animals, both genotype and exposure to a pathogen can be manipulated under experimental control<sup>71,72</sup>. Studying non-human subjects is an advantage because they can be assigned to detrimental conditions that are not permitted in human studies (for example, deprivation of maternal rearing). These experiments use different strains, genetically modified animals or animals that have known human-relevant

Box 2 | Bringing genetics into experimental psychopathology

The use of experimental models in behavioural genomics is exemplified by research on substance-use disorders. Rather than search for direct main-effect associations between candidate genes and addiction, this research uses experimental paradigms to identify how genotype moderates subjects' reactions to environmental stimuli (such as to priming doses or drug cues) that are associated with addictive substances. In one experiment, the researchers investigated whether a functional variable number of tandem repeats (VNTR) polymorphism in the D4 dopamine receptor gene (*DRD4*) affected craving after priming doses and drug cues. Participants were tested on two occasions, randomly assigned to receive three alcoholic drinks on the first session and three control drinks on the second session, or the reverse. Individuals carrying the *DRD4* long (L) allele reported a stronger urge to drink in the alcohol condition than in the placebo condition. By contrast, individuals with two short *DRD4* alleles (S) reported no differences in the urge to drink between the two conditions<sup>100</sup>. Next, the investigators manipulated the putative pharmacological mechanism that mediates the effect of *DRD4* on craving. It was suggested that alcohol increases craving through activation at the D4 receptor and that carriers of the *DRD4*\*L allele are especially vulnerable to this effect. Subjects classified as *DRD4*\*L or *DRD4*\*S were administered olanzapine (a D4 antagonist that was proposed to block the ability of alcohol to trigger craving) or cyproheptadine (a control medication) prior to the alcohol-challenge study. Olanzapine was more effective for *DRD4*\*L subjects, helping to narrow the mediating mechanism involved in genetic control of sensitivity to the environment<sup>101,102</sup>. These findings suggest that the *DRD4* polymorphism moderates craving after alcohol consumption, and indicate that *DRD4*\*L individuals may be more susceptible to losing control over drinking. But the *DRD4* polymorphism is not simply a genetic risk for alcohol abuse. Individuals carrying the L allele also experience more craving and arousal after exposure to tobacco smoking cues, whereas *DRD4*\*S individuals do not (data for the panel are from REF. 103). This suggests that *DRD4* may influence the incentive salience of appetitive stimuli more generally, and offers a clue as to why different addictive disorders tend to co-occur in the same individuals<sup>104</sup>.



polymorphisms. The experiments measure responsiveness through various physiological and behavioural phenotypes. We emphasize the value of animal models of environmental pathogen reactivity, rather than animal models of mental disorders. Animal models of mental disorders have been criticized because they cannot represent core cognitive symptoms of human mental disorders<sup>73</sup>. By contrast, animal models of genetic susceptibility to environmental pathogens offer a valuable window for understanding the effects of pathogen exposure on disease processes<sup>74–76</sup>.

Second, studies that compare human genotype groups on their responses to experimentally administered environmental stimuli are needed. In the vanguard of such research is imaging genomics, which compares the responses of genotype groups using functional neuroimaging measures<sup>77–80</sup>. There is untapped potential in other

experimental psychopathology paradigms. We look towards a new wave of investigations asking whether genotype influences humans' responsiveness to emotion-eliciting stimuli, laboratory stress paradigms or other analogue environmental pathogens. These human gene–environment experiments will use neurophysiological, biochemical, endocrinological, neuroanatomical, cognitive, emotional or neuropsychological measures as phenotypes. Likely examples might include peripheral psychophysiological measures such as the electroencephalogram, electrodermal or heart rate reactivity<sup>81–83</sup> and adreno-cortical reactivity<sup>84</sup> (see also BOX 2).

Third, more epidemiological cohort studies should collect neuroscience measurements. Many ongoing cohort studies are now adding DNA to their data collection protocols. These longstanding cohort studies already have prospective longitudinal histories of participants' environ-

mental exposures and mental disorders that make them ideal for gene–environment interaction research, if their participants' genotypes are characterized<sup>8</sup>. New cohort studies of gene–environment interactions are also being planned<sup>85,86</sup>. To the extent that these studies incorporate neuroscience measures of individual differences (for example, neuropsychological tests, heart rate reactivity and immune-system markers), they will create opportunities to integrate experimental and epidemiological findings. Taking neuroscience measurements in large cohorts can be costly and, for functional imaging paradigms, prohibitive. However, with more measures in common, epidemiological findings about genetically moderated environment-to-disorder associations can be integrated with experimental findings about genetically moderated environment-to-brain associations (FIG. 1d).

Fourth, the characterization of subjects' genetic vulnerability as opposed to their resilience needs to move beyond single genetic polymorphisms. New approaches will use information about biological pathways to identify gene systems and study sets of genetic polymorphisms that are active in the pathophysiology of a disorder<sup>87</sup>. For example, in relation to depression, information about the biology of psycho-social stress<sup>88–90</sup> can be used as a first step to characterize a set of genes that define a genotype that is vulnerable as opposed to resilient to stressful life events. Incorporating information about genetic pathways into gene–environment interaction studies will enhance explanatory power, but it will also present unique statistical challenges related to the use of data-mining tools and the pooling of data across different studies<sup>33</sup>.

Fifth, although we have largely focused on testing hypotheses about gene–environment interactions using candidate genes, the gene–environment interaction approach might also aid the identification of new genes that are responsible for vulnerability to a particular disease. Genome-wide scans for new disease genes, like most designs in psychiatric genetics, aim to discover genes that have direct main effects on disease susceptibility<sup>91</sup>. However, this main-effects approach is inefficient for detecting new genes whose effects are conditional on environmental risk. As a result, genes that show no direct connection to disorders in genome-wide scans may nevertheless be connected to disorder through hidden gene–environment interactions. Genome-wide scans might be more powerful if 'gene hunters' recruit samples selected for known exposure to an environmental pathogen for

the disorder they wish to study, and then scan for genetic variants in subjects who have, versus those who have not, developed the disorder<sup>8</sup>. Known environmental pathogens might be profitably exploited as research tools for gene hunting.

Sixth, any serious initiative to understand aetiology and inform prevention, including genetics, must be able to explain fundamental demographic patterns of disorder. The most solid facts we have about most mental disorders are that prevalence and incidence vary according to age and sex. There are two leading contenders for explaining these differences<sup>92</sup>. First, the demographic groups (such as males and females) could be equally vulnerable to causal factors, but differentially exposed to them. Alternatively, the demographic groups could be equally exposed to causal factors, but differentially vulnerable to them. To date, lacking a good empirical handle on biological vulnerability, research has made little progress towards understanding age and sex differences in mental disorders. Gene–environment interaction research, with its focus on hypotheses of environmental exposure and biological vulnerability, is ideally suited to investigate age and sex differences.

Mental disorders have well-documented environmental causes. But why do some people who are exposed to an environmental pathogen develop mental disorders, while others do not? Why do some disorders excessively afflict one sex or one age group? How can two people experiencing the same environmental pathogen later develop very different disorders? How does an environmental pathogen, especially one that is psycho-social in its nature, get under the skin to alter the nervous system and generate mental disorders? All of these important questions are questions about the interaction between diathesis and stress, between host and pathogen and, in essence, between genotype and environment. Neuroscience and gene–environment interaction research are joining forces to look for answers.

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The authors declare no competing financial interests.

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 ADHD

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**Abstract** Adolescence is an exquisitely sensitive period of development during which pathways branch toward success in school and prosocial pursuits or, conversely, toward behavior problems and involvement in high-risk activities and systems, such as juvenile justice (JJ). Adverse childhood experiences (ACEs) such as poverty, family dysfunction, and child maltreatment, have been strongly and repeatedly associated with JJ involvement. A significant body of research from neuroscience has established that ACEs can alter facets of neurodevelopment that undergird self-regulation throughout childhood and adolescence, thereby increasing susceptibility to behaviors that attract attention of the JJ system. Because the ability to intervene prior to system-entrenchment is crucial to disrupting an adverse developmental pathway, we look toward neuroscience to offer insights into how to do so more effectively. In this chapter, evidence is summarized that informs an understanding of how neurodevelopmental pathways may lead to JJ involvement. Because neurodevelopment is malleable in response to both detrimental and positive experiences, there

is potential for well-targeted interventions to normalize brain and cognitive development, especially during sensitive periods of maturation. This discussion is followed by a proposed research agenda to determine how to exploit these critical windows of opportunity to divert youth from persistent antisocial behavior and JJ involvement. Lastly, a review of neuroscience findings regarding the ability of intervention to strengthen brain systems that modulate self-regulation is presented. This research has direct practical significance with potential to be translated into meaningful policy change.

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Keywords

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# Capitalizing on Neuroplasticity Across Development to Redirect Pathways from Juvenile Justice Involvement

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Shannon Chaplo and Diana Fishbein

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**Abstract** Adolescence is an exquisitely sensitive period of development during which pathways branch toward success in school and prosocial pursuits or, conversely, toward behavior problems and involvement in high-risk activities and systems, such as juvenile justice (JJ). Adverse childhood experiences (ACEs) such as poverty, family dysfunction, and child maltreatment, have been strongly and repeatedly associated with JJ involvement. A significant body of research from neuroscience has established that ACEs can alter facets of neurodevelopment that undergird self-regulation throughout childhood and adolescence, thereby increasing

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29 standing of how neurodevelopmental pathways may lead to JJ involvement. Because  
30 neurodevelopment is malleable in response to both detrimental and positive experi-  
31 ences, there is potential for well-targeted interventions to normalize brain and  
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33 discussion is followed by a proposed research agenda to determine how to exploit  
34 these critical windows of opportunity to divert youth from persistent antisocial  
35 behavior and JJ involvement. Lastly, a review of neuroscience findings regarding  
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38 lated into meaningful policy change.

39 **Keywords** ■■■

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## 40 **1 Introduction**

41 Late childhood and early adolescence are considered vulnerable periods during  
42 which trajectories bifurcate toward success in school and prosocial pursuits or,  
43 conversely, toward behavior problems and increasing involvement in high-risk  
44 activities, including delinquency (Burchinal et al. 2008). An extensive body of  
45 research has distinguished between youth who exhibit an adolescent-limited course  
46 versus a lifetime course of delinquency (Moffitt et al. 1996). In large part, the  
47 differences between these groups are related to the prevalence of risk factors (e.g.,  
48 poverty, family dysfunction, child maltreatment) and the relative lack of protective  
49 factors (e.g., healthy parenting, social supports, economic stability) in youth who  
50 assume the life-course path (Moffitt 2006). A significant body of recent knowledge  
51 has been amassed demonstrating the impacts of these factors on neurodevelopment  
52 throughout childhood and adolescence. Because the ability to intervene prior to  
53 system-entrenchment is crucial to disrupting an adverse developmental pathway, we  
54 are compelled to look toward neuroscience to offer insights into how to do so more  
55 effectively.

56 Biobehavioral research in general and neuroscience more specifically have dem-  
57 onstrated the interactive role of neurobiological and social-contextual conditions that  
58 influence these developmental pathways. It is now well known that the brain is  
59 “experience-dependent,” translating to the ability of contextual (e.g., family dynam-  
60 ics, school climate) and experiential (e.g., relationships, adversity) factors to directly  
61 impact brain development and functioning, with implications for adult outcomes  
62 (Teicher et al. 2016). Although this process plays out across childhood and adoles-  
63 cence, the pre- and early adolescent period is of particular interest for two reasons:

(1) during this timeframe, the brain is exquisitely sensitive to environmental experiences (Larsen and Luna 2018) and, intriguingly, (2) earlier childhood exposures commonly manifest in behavioral proclivities once an individual enters adolescence (Ireland et al. 2002; Ryan et al. 2013).

In these respects, studies suggest that experiences have differential effects on social, psychological, and neural processes contingent upon the developmental stage of the child (Andersen 2016; Johnson et al. 2016). For example, exposure to trauma and other adversities have the most deleterious impact on functions that are concurrently developing; however, earlier childhood experiences also predict onset of academic, social, and mental health problems later, such as in adolescence, when affected brain regions that subservise these functions begin to forge connections (Andersen and Teicher 2009; Teicher et al. 2003). Simultaneously, adolescents are becoming increasingly autonomous outside the home and are more susceptible to the influences of their peers (Dishion and Tipsord 2011). These newfound social challenges facing adolescents coincide with complex changes in brain wiring and connectivity taking place throughout this time that have implications for adaptive decision-making and the ability to self-regulate behavior and emotion (Marek et al. 2015).

In this chapter, we begin by presenting the current body of evidence that informs an understanding of how neurodevelopmental pathways may lead to juvenile justice (JJ) involvement. We recognize that youth may attract the attention of the JJ system and be “criminalized” for any number of reasons, and that their involvement is not always due to risky or problematic behaviors, such as associating with delinquent peers, being in the wrong place at the wrong time, or referrals from schools that are underequipped to handle less serious infractions. So, while risk-taking normatively increases during the adolescent years, only a subpopulation of youth engages in recurrent behaviors within the realm of delinquency, including violence, substance abuse, and serious property crimes. Here, we are focused on adolescents who are engaging in recurrent behaviors that are illegal and are likely to result in arrest in the absence of intervention or diversion.

In keeping with this conceptualization, research is reviewed about the numerous ways that adversity can impair particular aspects of neurodevelopment during childhood that can set the stage for poor decision-making, impulsivity, and sensation-seeking in adolescence. Because neurodevelopment is malleable in response to both detrimental and positive experiences, there is potential for well-targeted interventions to normalize brain and cognitive development, especially during sensitive periods of maturation. This discussion is followed by a proposed research agenda to determine how to exploit these critical windows of opportunity to divert youth away from persistent antisocial behavior and JJ involvement. Finally, we review the body of evidence from neuroscience regarding the ability of intervention to strengthen brain systems that modulate self-regulation, which has direct practical significance and potential to be translated into meaningful policy change.

## 106 2 Normative Adolescent Brain Development 107 and Risk-Taking

108 To provide background for discussion of atypical neurodevelopment that increases  
109 the likelihood for JJ involvement, we briefly summarize aspects of typical brain  
110 development and influences from the social environment that help to explain greater  
111 risk-taking that is typical of adolescence. Neurobiological development during  
112 adolescence occurs transitionally rather than as a single snapshot in time (Casey  
113 et al. 2008). The prefrontal cortex (PFC), responsible for executive cognitive  
114 functions (ECF) (e.g., decision-making, impulse control, working memory), is still  
115 under construction. A central function of ECFs is to shield long-term goals from  
116 temptations afforded by short-term benefits that often lead to negative consequences  
117 (Kharitonova and Munakata 2011). Prefrontal “top-down” cognitive regulation over  
118 subcortical regions that modulate emotion is somewhat functionally disconnected  
119 throughout adolescence (Somerville and Casey 2010). This developmental process  
120 translates into the natural bias by adolescents toward acting on emotional stimuli  
121 with relatively less cognitive control. Through both the natural course of develop-  
122 ment and environmental experience, connections between these regions are strength-  
123 ened, providing a mechanism for increasing top-down regulation of emotional brain  
124 systems in adulthood (Tottenham et al. 2011).

125 During the adolescent years, brain circuits involved in processing rewards (e.g.,  
126 ventral striatum) also show rapid maturation (Padmanabhan et al. 2011; Geier et al.  
127 2010; Somerville et al. 2010), having the effect of heightening sensitivity to reward-  
128 ing experiences. This development may play a unique role in normative risk-taking  
129 behaviors that emerge in early to mid-adolescence, but that may be exaggerated in  
130 the subgroup that escalates into more serious delinquency – the life-course path.  
131 Paralleling this normative increase in reward sensitivity is a greater tendency to  
132 sensation/novelty seeking (Steinberg et al. 2008). Further compounding these neu-  
133 rological events are early puberty and erratic hormone levels which may also  
134 contribute to adolescent’s engagement in risky behaviors (Smith et al. 2013).

135 Overall, what we know about the adolescent brain is consistent with the obser-  
136 vation that, though adolescents may physically appear to be as capable as adults of  
137 making sound decisions, key regions of their brains are not fully connected until well  
138 into the 20s (Giedd 2008; Steinberg et al. 2009). This imbalance between social  
139 demands and emergent neurobiological systems during adolescence may lead to  
140 heightened vulnerability to engagement in risky behaviors (e.g., truancy, risky sex,  
141 running away, substance use), under normal conditions (Casey and Jones 2010).  
142 However, the adverse conditions cited above increase vulnerability to more severe  
143 and persistent delinquent behavior, often resulting in JJ involvement. Given the high  
144 rates of childhood exposure to psychosocial trauma reported among adolescents with  
145 delinquency (Kerig et al. 2010) suggests that examining the interplay among trauma  
146 exposure, neurodevelopment impacts, and behavioral outcomes is especially critical.  
147 Furthermore, delineating these relationships has direct implications for the design of  
148 intervention components that target this sensitive period of development with the




potential to redirect youth away from a trajectory toward more serious delinquent behavior or, if already system-involved, avert them from a life-course path.

### 3 The Brain's Experience-Dependence: For Better or for Worse

Taken together, neuroscience has shed light on the interplay between neurobiological and social contextual factors that help to explain why adolescence is typified by a dramatic increase in risky behavior; we now understand that some degree of impulsivity, risk-taking, and sensation-seeking is normative during adolescence (Steinberg 2010). However, a heightened level of risk-taking may extend from social circumstances and experiences that contribute to non-normative neurodevelopmental immaturity or dysfunction. In particular, the experience of toxic stress and trauma places young people at an extreme disadvantage on multiple fronts (Reiss 2013; Sterrett et al. 2014). Children and adolescents exposed to adversity or "toxic stress" – such as maltreatment, poverty, parental addiction, and racism – are at substantial risk for involvement in activities (behaviors) and systems (e.g., JJ, child welfare, mental health), both of which limit their potential to successfully develop into healthy and productive adults. The range of behavioral and mental health (BMH) problems that are often consequent to the experience of toxic stress, including violence, chronic truancy, substance abuse, and property crimes, draw attention of the JJ system. In fact, juvenile offenders in the USA report a very high prevalence and severity of trauma and maltreatment, including the experience of polyvictimization and complex trauma (Dierkhising et al. 2013; Kerig et al. 2010). In a sample of 898 detained youth, 84% had experienced two or more traumas, with a mean average of 14.6 traumas, indicating significantly higher prevalence of trauma among delinquents than in the general community, suggesting that "exposure to trauma is a fact of life for delinquent youth" (Abram et al. 2004, p. 407). Given this confluence of factors, both prevailing opportunities and individual susceptibilities for misbehavior can culminate in more serious delinquency and official police attention.

#### 3.1 For Worse: Adversity's Impact on Neurodevelopment

As neurobiological methods have advanced, studies increasingly demonstrate the negative impact of adversity on neurodevelopment across the lifespan. Though the majority of studies using neuroimaging technologies have not included justice-involved youth, the extant literature provides important clues about the relationship between exposure to adversity, brain development, and poorly regulated behavior that increase risk for JJ involvement.

185 Several meta-analyses and systemic reviews collectively show that stress and  
186 adversity exert negative effects on neurobiological domains and associated areas of  
187 functioning (Berens et al. 2017; Colich et al. 2020; Deighton et al. 2018;  
188 McLaughlin et al. 2019; Teicher  Samson 2016). Psychophysiological indices  
189 of stress-response systems and emotion regulation are the most widely used tool to  
190 examine the association between adversity, brain development, and behavior. Functioning  
191 of the hypothalamic-pituitary-adrenal (HPA) axis is often a focal point for  
192 such investigations. The HPA axis serves the purpose of maintaining homeostasis  
193 and enabling the individual to adapt to different environmental challenges. It performs  
194 this function through the release of “stress hormones” (e.g., cortisol) when  
195 encountering a threatening, fearful, or otherwise emotionally arousing scenario.  
196 When stressful occasions are severe or recurrent, this system can become perturbed,  
197 either acutely or chronically, via the release of large amounts of cortisol and other  
198 stress hormones into the central and peripheral nervous systems. Direct effects of this  
199 cascade of physiological events concentrate in neural structures and pathways  
200 implicated in the stress response and are affected by trauma. Alterations have been  
201 observed in the volume and activation patterns of the hippocampus, corpus  
202 callosum, anterior cingulate cortex (ACC), orbitofrontal cortex (OFC), and dorso-  
203 lateral bilateral prefrontal cortex (DLPFC) (Teicher  Samson 2016; Teicher et al.  
204 2016). Using functional magnetic resonance imaging (fMRI), alterations are also  
205 reported in amygdala activation when viewing faces (Gee et al. 2013; Tottenham  
206 et al. 2011), striatum when anticipating a reward, and changes in sensory pathways  
207 manifested as avoidance symptoms most often seen in Posttraumatic Stress Disorder  
208 (PTSD) (McLaughlin et al. 2019; Teicher et al.  9). Overall, many of the brain  
209 structures and circuits involved are known to play some role in modulating the  
210 ability to regulate emotions, make adaptive decisions, attend to relevant stimuli,  
211 control impulses, and other executive functions.

212 Of relevance to the purposes of this chapter, the timing of environmental expo-  
213 sures in relation to the phase of child/adolescent development shapes how the brain  
214 is impacted. For example, Teicher et al. (2016) have reported that emotional abuse,  
215 physical abuse, and sexual abuse all impact the brain across development, however,  
216 alterations in the structure and function of specific regions and circuits depend on the  
217 timing and duration of those abusive experiences. This timing effect is an important  
218 consideration in that trauma exposure during different time periods in childhood and  
219 adolescence will invariably correspond with sensitive periods of brain development,  
220 with implications for its functional consequences. Neglect and impaired caregiving,  
221 for example, typically occurs between ages 0 and 5, the first critical developmental  
222 period for brain development. Studies show corresponding impacts on speech,  
223 language, and executive functions, such as working memory and inhibitory control  
224 (Nelson III et al. 2019). In adolescence, risk for interpersonal trauma exposures such  
225 as sexual victimization increases. Sexual victimization is especially harmful to  
226 neurodevelopment (Andersen et al. 2008; De Bellis et al. 2011) and, relatedly, is a  
227 potent risk factor for girls’ delinquency (Herrera and McCloskey 2003).

228 Another illustration of the importance of specificity and timing of trauma on  
229 neurodevelopmental functions derives from research demonstrating that threat-based

versus fear-based trauma exposures have differing developmental impacts (McLaughlin et al. 2014). Children with physical abuse and sexual abuse histories (fear-based exposures) show greater deficits in their emotion regulation abilities, whereas children with neglect histories (deprivation-based exposure) show greater deficits in executive cognitive functioning (Sheridan et al. 2020). These findings were further supported by a systematic review of 109 MRI studies (McLaughlin et al. 2019); Children with threat-based exposures showed volume reductions in the amygdala, medial prefrontal cortex, and hippocampus, and increased amygdala activation, whereas children with deprivation exposures did not and instead showed a decreased volume and alterations in the frontoparietal lobes.

A complementary line of research includes studies of the neurocorrelates of PTSD, a theoretically and empirically supported mechanism in the link between trauma exposure and delinquency in both adjudicated and community samples (Kerig et al. 2010). Some of these studies were conducted in response to calls to determine whether there are specific biomarkers for PTSD (Pitman et al. 2012). Though there is no clear answer to this question yet, a rich literature has emerged showing differential neurobiological patterns in individuals with PTSD in comparison with non-PTSD controls. Similar to neurobiological studies that have examined the impact of adversity more broadly, individuals with PTSD tend to show decreased volumes in the hippocampus and ACC, hyperactivity in the amygdala and dorsal ACC, and hypoactivation of the ventral medial PFC (Pitman et al. 2012). In the context of risk for JJ involvement, there is also some burgeoning evidence that these same areas are implicated in aggressive and risk-taking behaviors (see Leibowitz 2014). As a whole, this literature supports that the experiences of adversity and related psychopathology could potentiate youths' engagement in delinquent behaviors.

### 3.2 For Better: Sensitive Developmental Periods for Intervention

The integrity with which the brain develops and supports healthy or maladaptive outcomes depends largely on whether psychosocial experiences are overwhelmingly protective or detrimental. As detailed above, negative or adverse experiences can translate to impairments in the developing child's ability to regulate behavior and emotions (Glaser 2000; McEwen Morrison 2013; Perry 2009). On the brighter side, this high level of "plasticity" means that the brains of adolescents are also sensitive to positive experiences (e.g., parental warmth, positive peer influences, neighborhood supports, school programs) that can bolster cognitive controls, self-regulation, and coping strategies, and help them to navigate their increasingly complex social world (Bradshaw et al. 2012; Stanis and Andersen 2014).

There is a case to be made for intervening in early childhood when there is rapid neurobiological development and proximal influences from the home environment

t1.1 **Table 1** Evidence-based interventions with the potential to impact outcomes associated with delinquency

t1.2	Program (target age)	Age	Psychosocial impacts
t1.3	Family foundations	0–2	Antisocial-aggressive behavior, anxiety, conduct problems, depression, externalizing, internalizing, prosocial with peers
t1.4	Nurse-family partnership	0–2	Child maltreatment, delinquency and criminal behavior, early cognitive development, internalizing, mental health – other, physical health and Well-being, preschool communication/language development, reciprocal parent-child warmth
t1.5	Family check-up (toddler version)	0–2	Conduct problems, externalizing, internalizing, reciprocal parent-child warmth
t1.6	Triple P system	0–11	Child maltreatment, mental health, substance use, externalizing behavior
t1.7	Incredible years – parent	3–11	Antisocial-aggressive behavior, close relationships with parents, conduct problems, depression, externalizing, internalizing, positive social/prosocial behavior
t1.8	Parent management training – oregon model	3–18	Antisocial-aggressive behavior, conduct problems, delinquency and criminal behavior, externalizing, internalizing
t1.9	Parent-child interaction therapy (PCIT)	3–11	Antisocial-aggressive behavior, child maltreatment, conduct problems
t1.10	New beginnings (for children of divorce)	5–18	Antisocial-aggressive behavior, close relationships with parents, externalizing, internalizing, mental health – other, reciprocal parent-child warmth, sexual risk behaviors
t1.11	Multisystemic therapy (for “deep end” teenagers)	12–17	Antisocial-aggressive behavior, academic problems, sexual risk behaviors, conduct problems, family relationships, substance abuse

270 that provide opportunities for parenting and family-based interventions to exert their  
 271 largest effects (Boparai et al. 2018; Luby et al. 2020). For example, targeting  
 272 interventions to children exposed to maltreatment or poverty has potential to miti-  
 273 gate neurodevelopmental impacts associated with psychopathology and behaviors  
 274 that place them at risk for later delinquency and JJ involvement (Fisher 2016; Pardini  
 275 2016). Table 1 delineates evidence-based family interventions across childhood and  
 276 adolescence shown to reduce exposure to adversity and outcomes associated with  
 277 delinquency, including aggressive behaviors, conduct problems, and other forms of  
 278 internalizing and externalizing psychopathology.

279 Unfortunately, very few of these interventions have been subjected to research on  
 280 their ability to alter underlying biological processes. On the other hand, evidence is  
 281 accumulating to suggest it is possible for psychosocial interventions to improve  
 282 neurodevelopmental trajectories and stress physiology in youth. As an illustration,  
 283 Boparai et al. (2018) conducted a scoping review of the ameliorating effects of  
 284 preventive intervention programs on biological processes in youth exposed to  
 285 adversity. Their review of 40 intervention studies demonstrated support for the



notion that interventions can improve biological functions negatively affected by adversity, including positive change in cortisol release, immune functions, brain development, and epigenetic modifications. Studies included youth from the following groups: previously institutionalized youth, foster care youth, and youth in community settings. The types of interventions employed range from individual and family-based to school and community-based, such as Attachment and Biobehavioral Catch-Up, the Bucharest Early Intervention Project, Multidimensional Treatment for Foster Care Preschoolers, and Strong African American Families (derived from the Strengthening Family program). Though many of these interventions target the early to mid-childhood period of development, there are opportunities to intervene in adolescence.

Contrary to popular belief, windows of opportunity to intervene do not wane during adolescence. As described above, the brain undergoes another sensitive period of neurodevelopment (Fuhrmann et al. 2015; Larsen and Luna 2018) that corresponds with pubertal and hormonal changes. The functions and pathways associated with decision-making, emotion regulation, and reward sensitivity are being refined and result in greater complexity and depth of executive functioning. Thus, although the brain's plasticity in adolescence translates to increased vulnerability to adverse environmental exposures, there is also boundless potential for intervention to positively alter its course. Youth who are at particularly high risk for *early* offending are especially important to target as early offending is a strong predictor of continued offending into adulthood (Loeber and Farrington 2011). Although the impact of intervention on biological processes in this group is a topic largely unexplored, it is possible that interventions specifically designed to target underlying mechanisms may exert greater effects in this subgroup, as compared to youth with later onset of delinquency, for a number of reasons: (a) their earlier and more malleable phase of neurodevelopment; (b) intervening prior to system-entrenchment; (c) the high incidence of childhood adversities that exert negative impacts on development; and (d) malleable individual-level characteristics (e.g., preexisting cognitive deficits, psychological problems, impulsivity).

The extant research also supports the "pubertal stress recalibration hypothesis," providing further evidence for adolescence as a critical developmental window for intervention. This hypothesis purports that, for youth who are no longer facing adversity, puberty is a developmental time period in which the HPA axis can recover from early childhood stress (DePasquale et al. 2019). A line of empirical research (Flannery et al. 2017; Gunnar et al. 2019; Quevedo et al. 2012) has found that, in children who grew up in institutionalized settings and then were later adopted prior to puberty, their stress response was blunted (i.e., cortisol levels before, during, and after a stress task) compared to non-adopted children living with their biological parents. However, by the time these children reached the end of puberty, significant differences dissipated between the two groups, suggesting that the stress-response has recalibrated in those adopted youth.

Relatedly, intervention studies are beginning to shed light on how caregiving may ameliorate the effects of poverty on neurodevelopment. One example is a secondary data analysis (Brody et al. 2017) of a randomized clinical trial of the Strong African

331 American Families Program, which included a sample of rural African American  
332 youth and their primary caregivers from ages 11 to 18. In this sample, Brody and  
333 colleagues observed that poverty during childhood was associated with decreased  
334 volume in limbic brain regions including the hippocampus and amygdala in adult-  
335 hood. However, these effects were attenuated for the youth who participated in the  
336 intervention at age 11, suggesting that supportive parenting may protect the brain  
337 from the effects of poverty. Similarly, in a sample of formally institutionalized  
338 youth, Colich et al. (2020) found that adolescents with high-quality caregiving,  
339 compared to those with low-quality caregiving, showed better reward processing  
340 and executive functioning, and that these associations were stronger in the adoles-  
341 cent period than earlier developmental periods. Notably, this study included a range  
342 of caregivers (i.e., biological, adoptive, kinship, etc.) which is promising for  
343 JJ-involved youth who oftentimes do not live with biological caregivers. One  
344 implication of this work is that when intervening within the caregiving environment,  
345 different types of caregivers and settings need to be considered.

346 Collectively, the research cited herein demonstrates that opportunities abound to  
347 prevent delinquency and system involvement for youth, from early in childhood  
348 through adolescence. By targeting risk factors that adversely alter  
349 neurodevelopment, and bolstering protective factors that strengthen resilience, inter-  
350 ventions guided by findings from neuroscience have potential to enhance healthy  
351 youth development and, in turn, improve overall outcomes. Interventions that target  
352 the caregiving environment are particularly critical across development, including  
353 adolescence. However, though adolescence is a highly malleable period and ame-  
354 nable to intervention effects, it is still imperative that we intervene as early as  
355 possible to prevent a cascading developmental trajectory toward adolescent delin-  
356 quency. The evidence suggests that intervention effects are more impactful in early  
357 childhood for adversity-exposed children than during adolescence (Boparai et al.  
358 2018). Such findings highlight the need for systematic delivery of programs and  
359 interventions that specifically target the malleable underpinnings of risky behaviors,  
360 with particular attention to the neurodevelopmental effects of trauma exposure,  
361 poverty, child maltreatment, and other forms of toxic stress (Kim et al. 2015). And  
362 though it is critical that we strive to ameliorate the deleterious consequences of  
363 adversity, greater investments in policies that reduce the exposures in the first place  
364 are sorely needed.

## 365 **4 Proposed Research Agenda**

366 A future research agenda focusing on outstanding etiological and applied questions  
367 in the field promises to enhance our knowledge of the neurodevelopmental trajec-  
368 tories of JJ-involved youth, while also guiding us to more precise prevention and  
369 intervention targets based on the neuroplasticity of the adolescent brain. To date,  
370 very little neuroscience research has been conducted with JJ-involved youth  
371 (Caldwell et al. 2019; Lansing et al. 2016) or youth advancing in that direction, to

shed light on the role of neurodevelopment in phenotypic behaviors they often exhibit and that could become novel targets for intervention. The following subsection highlights findings from descriptive studies that have begun to elucidate biological characteristics of populations at risk for or entrenched in JJ systems involvement, as well as suggestions for some additional lines of etiological research. The second subsection recommends an overall program of research that applies the neural and biomarkers identified by future descriptive and longitudinal studies as a blueprint for intervention studies that target those markers to more precisely and potentially move the proverbial needle.

**4.1 Basic Research: Characterizing Youth at Risk for JJ Involvement**

In general, biobehavioral studies of JJ-involved youth are typically descriptive and either focus on individuals who exhibit conduct problems (e.g., aggression, substance abuse, impulsivity), but are not explicitly JJ involved (Umbach et al. 2015), or include adults with psychopathy (Yang and Raine 2018). Both vantage points are instructive. An exception is an MRI study of life-course-persistent delinquent boys from Lansing et al. (2016). Results showed that the delinquent boys, who also endorsed high rates of traumatic and loss-related adversity, showed neuroanatomical differences in the fronto-temporal regions compared to matched controls. Other types of biologically-based studies of JJ-involved youth implicate dysregulated physiological responses to stressors, deficits in executive functioning and other processes, which provide clues into mechanisms that may underlie persistent delinquency (Johnson et al. 2015; Lin et al. 2021).

Intriguingly, a more extensive line of research has focused on children and adolescents with callous-unemotional (CU) traits as they present a significant risk for substance use disorders, serious delinquency and JJ involvement and adult criminal and psychopathic behavior (Frick et al. 2005). They typically fall into the category of “life-course persistent” delinquency in that the expression of these traits tend to emerge well before puberty and persist into adulthood. Youths with high levels of CU traits are often detected within various other disruptive behavioral disorder diagnostic groupings – such as conduct disorder (CD), oppositional defiant disorder (ODD), and substance use disorder (SUD) – distinguishing themselves by the seriousness and stability of their conduct problems (Pardini et al. 2010). They have also been consistently distinguished by neurobiological, psychophysiological, cognitive, and psychological profiles (Blair et al. 2014). For example, several neuroimaging studies that have compared youth with high vs. low CU traits implicate the aberrations in patterns of activation in the amygdala and its circuitry (Ling et al. 2020; Marsh et al. 2008; Waller et al. 2020). Additional neuroimaging research in this subgroup will be informative with respect to etiological underpinnings that point to biomarkers that may serve as novel targets for intervention. It will be

412 especially important to extend this research to the subgroup of CU youth who  
413 develop these characteristics through the experience of trauma (Craig et al. 2021).

414 Although not heretofore a focus of biologically-based research, another subgroup  
415 of particular interest for future research includes cross-over youth or youth who are  
416 involved in both the child welfare and JJ systems (Herz and Ryan 2008; Herz et al.  
417 2010). Child welfare involvement potentiates a cascade of risk factors that can lead  
418 to delinquency. Children who encounter child welfare systems typically have a  
419 history of ACEs and other traumatic events, including caregiver abuse and neglect,  
420 unstable and chaotic homes, neighborhood disorder, and negative educational expe-  
421 riences (Garcia et al. 2017). These factors alone are known to precipitate conduct  
422 problems that can attract the attention of JJ. For those children who end up in the  
423 child welfare system, the negative impacts are often compounded and can propel the  
424 developmental trajectory toward delinquency and JJ involvement; the two systems  
425 are integrally intertwined for these reasons. Hence, the inclusion of cross-over youth  
426 in a line of research to elucidate dual-system impacts on neurodevelopment and  
427 identify intersections at which intervention can disrupt the child welfare to JJ  
428 pathway would be tremendously informative and would provide evidence-based  
429 strategies to improve outcomes for these youth. The objective would be to establish  
430 ways in which certain child welfare practices interact with histories of adversity to  
431 negatively affect brain development and functioning, leading to poor outcomes such  
432 as JJ, for the express purpose of policy reform.

433 Further exploration at this basic science phase of translation will help to delineate  
434 points during development when pathways diverge, with some youth becoming  
435 increasingly entrenched in risky behaviors and, subsequently, system-involved.  
436 The knowledge gained from these discoveries can subsequently be applied to the  
437 construction of interventions that more precisely strengthen neural structures and  
438 their connections that are damaged by adverse experiences prior to and resulting  
439 from system involvement.

## 440 **4.2 The Next Phase of Translation: Applying Etiological** 441 **Information to Program Development**

442 In general, there remains a great need for research that examines both how and  
443 during what stages of maturation interventions impact neuroplasticity and other  
444 functional indicators of developmental success. At present, even the most efficacious  
445 preventive interventions do not benefit a substantial number of recipients, achieving  
446 only low to modest effect sizes. And while effect sizes may be significant, they are  
447 not indicative of the extent or nature of response variability and, thus, have low  
448 clinical significance. To broaden and strengthen program effects, we must system-  
449 atically apply what we know about the etiological underpinnings of risk behaviors to  
450 the refinement of existing programs by identifying and targeting malleable individ-  
451 ual characteristics and contextual processes that affect behavioral change (Fisher

2016; Hyde et al. 2020). Accordingly, for any given intervention, the investigation of social-contextual and neurodevelopmental factors that moderate and mediate a favorable intervention response (e.g., inhibiting inappropriate behaviors, recognizing and regulating emotions in conflict situations, engaging in positive social behavior, developing healthy relationships) has the potential to provide program developers with information critical to optimizing program design. As these fundamental gaps are filled, interventions can be more precisely tailored to strengthen the neural substrates of adaptive behaviors.

The need for this overall line of research is recommended across all intervention and population types but is perhaps even more pressing for youth at risk of JJ involvement given the serious implications of their behavior for their developmental success, adult outcomes, and public safety. Optimizing intervention effects to prevent eventual JJ involvement has been challenging, at best; thus, elucidating individual differences in response to existing interventions via a transdisciplinary research approach is essential. For example, determining neural markers and other variables (e.g., pubertal onset, early trauma, adolescent social stress, or cannabis/alcohol initiation) that signal more severe outcomes has potential to reveal malleable targets for the next generation of novel interventions (Deas and Brown 2006; Boyce et al. 2021). Subtype analyses (e.g., latent class or latent trajectory analyses) can further inform intervention models that account for neurobiological variation across classes of youth with conduct problems. Determining whether neurobiological mechanisms change commensurate with behavioral improvements in response to intervention will be instructive in designing and more effectively targeting interventions for these very high-risk youth. Interventions guided by this blueprint promise to be vastly more effective than non-specific interventions directed toward a heterogeneous population (Scheepers et al. 2011). And because once in the JJ system, these traits may be exacerbated and neurodevelopmental impacts may be compounded, it is important to conduct such studies prior to system involvement.


Interventions that have been informed by etiological knowledge target components to malleable regulatory processes (Stuss 2011; Tracy and Osipowicz 2011; Venkatakrishnan and Sandrini 2012). Although they have not been directly offered to JJ-involved youth, a brief explication is useful in thinking about approaches aimed at this population. For example, pharmacological or psychosocial therapies designed to stimulate activity of the amygdala and its connections (e.g., akin to deep brain stimulation in depression) (Drevets et al. 2008) and reinforce prefrontal inhibitory controls may normalize cognitive and emotional regulatory deficits often seen in JJ-involved youth. Another intriguing possibility is the potential preventative effect of educating caregivers, educators and policymakers regarding approaches that address differential developmental pathways in these youths. Early enrichment, tactile stimulation, stress reduction, and other environmental enhancements early in life may strengthen prefrontal cognitive controls and enlarge the striatum to reduce novelty-seeking and emotional dysregulation (Glenn and Yang 2012). Warm and responsive parenting may also ameliorate social deficits perhaps through effects on amygdala/prefrontal structure and connectivity (Waller et al. 2016). Current therapeutic inefficiencies arise because intervention methods do not map

497 program components to underlying etiologies (Frick and Moffitt 2010; Moffitt et al.  
498 2008). Targeting program components to subgroups that confer differential vulner-  
499 ability to conduct problems and that likely influence responsivity to a given inter-  
500 vention will substantially improve outcomes.

501 The significance of this work is especially pronounced given that youth often  
502 targeted by interventions are at-risk by virtue of exposure to high levels of adversity  
503 (e.g., poverty, maltreatment, trauma). As discussed above, adversity, stress, and  
504 trauma have been repeatedly associated with altered trajectories of brain develop-  
505 ment, particularly affecting neural network architecture and circuits that undergird  
506 emotion and behavioral self-regulatory skills (Teicher and Samson 2016; McEwen  
507 2009; Perry 2009). Determining whether effective intervention can (1) attenuate  
508 associations between adversity and neurodevelopment, and (2) lead to improved  
509 social functioning and less delinquency would provide strong causal evidence of  
510 these linkages and elucidate more specific targets for intervention. Periods of  
511 heightened sensitivity – for better or for worse – can be better understood by further  
512 accounting for interaction effects between the developmental timing of adversity,  
513 trauma types, and demographic characteristics of youth, on brain development and  
514 functioning.

515 In essence, a research strategy that maps active ingredients of interventions to  
516 evidence-based response to intervention (RTI) strategies is needed. Controlling for  
517 predictive factors previously identified (e.g., trauma exposure and symptoms, social  
518 supports, family dynamics) will enable us to isolate the malleable neural substrates  
519 of differential responsivity to any given intervention. This approach is based on the  
520 premise that the brain ultimately drives behavior and, thus, environmental inputs  
521 (including intervention) should exert their effects via the brain, irrespective of their  
522 origins. Studies of this sort will increase our understanding of the sources of  
523 heterogeneity in response drivers as a means to improve intervention outcomes.  
524 The result of this program of research then becomes a roadmap for future work  
525 exploring mechanisms of intervention effects with the ultimate aim to inform design  
526 of more effective preventive strategies.

## 527 **5 Science Translation to Policy**

528 There are nontrivial policy implications of neuroscience evidence for teenagers at  
529 risk for JJ involvement given that nearly 700,000 youth are arrested in a  e year  
530 and many of these youth formally enter the juvenile justice system (OJJDP 2020).  
531 Moreover, system involvement is itself associated with several negative adolescent  
532 and adult outcomes, including poorer mental health, unemployment, and adult  
533 incarceration (Abram et al. 2009; Carter 2019; Kim et al. 2020). Both the JJ and  
534 child welfare systems have been cited for poor caregiving and suboptimal conditions  
535 in congregate care settings which can add to these youth's list of risk factors and  
536 negative experiences. An all too counterproductive, disjointed, and harmful system  
537 response (e.g., in the child welfare, juvenile justice, behavioral health/substance

abuse and education realms) is to blame, constituting a further assault on young people who typically have already experienced adversity.

It is, thus, imperative that as a society we, first and foremost, address structural policies (e.g., in school systems) that inadvertently lead to negative outcomes (such as Zero Tolerance responsible for the school to prison pipeline) and place children at additional risk. Importantly, we believe the scientific community has a responsibility to work with disadvantaged communities, bringing research methods and findings to bear in developing integrated systems of evidence-based practices to address educational and mental and behavioral health problems. Appropriate research-based solutions need to recognize and actively address the impact of exposure to the chronic stress and trauma stemming from concentrated urban poverty. Structural and systems change that bridges families, schools, community organizations, and researchers –increasing the odds for success in disadvantaged urban youth *prior* to entrenchment of problems – promises to enhance lifelong pathways and fundamentally reduce inequality in at-risk populations (Biglan Embry 2013; Fishbein et al. 2016; United Nations 2020).

Effectuating this change requires a multi-sector systems approach to providing comprehensive, evidence-based, benevolent services shown to improve outcomes. The consensus among experts is that to strengthen resilience and mitigate the impacts of toxic stress on brain development, coordination of care across all child-serving systems – child welfare, foster care, mental health, pediatrics, education, and juvenile justice (in cases where earlier efforts have failed) – is critical. Unfortunately, only a few states and localities have processes in place for communication and coordination across these systems. Building these bridges will ensure that we provide supportive evidence-based services during this timeframe to prevent complicated and serious mental health, developmental, and psychosocial problems from developing. Change at the systems-level has potential to show fairly immediate impacts on the antecedents of school drop-out, aggressive behavior, substance abuse, risky sex, and illegal activities. Such changes would avert more teens from juvenile justice, child welfare, and behavioral health/substance abuse intervention systems and improve their chances for successful lives.

## 6 Summary

In this chapter, we presented an overview of the existing research evidence that supports how various neurodevelopmental pathways may lead to JJ involvement, and how these pathways are especially influenced by the experience of ACES and trauma exposure. Because neurodevelopment is malleable in response to both detrimental and positive experiences, there is potential for well-targeted interventions to normalize brain and cognitive development, especially during sensitive periods of maturation. Here we highlighted not only the importance of intervening during early childhood, but that there is also a window of opportunity for effective intervention during adolescence. More broadly, current and future neuroscience

579 research that includes additional groups of at-risk youth has promising implications  
 580 for wide-scale strategies to strengthen resiliency against adversity via structural  
 581 change models across systems, supported by policies at the federal, state, and local  
 582 levels, with potential for population level benefits.

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# Author Queries

Chapter No.:

Query Refs.	Details Required	Author's response
AU1	Keywords are required. Please provide.	
AU2	Refs. "Steinberg et al. (2010), Teicher et al. (2019), McLaughlin et al. (2014), OJJDP (2020)" are cited in the text but not provided in the reference list. Please provide them in the reference list or delete these citations from the text.	
AU3	References "Ellis et al. (2020), McEwen & Stellar (1993), Scheeringa (2021), Tottenham & Sheridan (2010)" were not cited anywhere in the text. Please provide in text citation or delete the reference from the reference list.	



# Children and Mental Health

## Is This Just a Stage?

From the **NATIONAL INSTITUTE of MENTAL HEALTH**

### Mental Health in Childhood

Raising a child can be challenging. Even under the best circumstances, their behaviors and emotions can change frequently and rapidly. All children are sad, anxious, irritable, or aggressive at times, or they occasionally find it challenging to sit still, pay attention, or interact with others. In most cases, these are just typical developmental phases. However, such behaviors may indicate a more serious problem in some children.

Mental disorders can begin in childhood. Examples include anxiety disorders, attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder, depression and other mood disorders, eating disorders, and post-traumatic stress disorder (PTSD). Without treatment, these mental health conditions can prevent children from reaching their full potential. Many adults who seek mental health treatment reflect on the impact of mental disorders on their childhood and wish they had received help sooner.

### When to Seek Help

How can you tell the difference between challenging behaviors and emotions that are a normal part of growing up and those that are cause for concern? In general, consider seeking help if your child's behavior persists for a few weeks or longer; causes distress for your child or your family; or interferes with your child's functioning at school, at home, or with friends. **If your child's behavior is unsafe, or if your child talks about wanting to hurt themselves or someone else, seek help immediately.**

*Young children* may benefit from an evaluation and treatment if they:

- Have frequent tantrums or are intensely irritable much of the time
- Often talk about fears or worries
- Complain about frequent stomachaches or headaches with no known medical cause
- Are in constant motion and cannot sit quietly (*except* when they are watching videos or playing video games)
- Sleep too much or too little, have frequent nightmares, or seem sleepy during the day
- Are not interested in playing with other children or have difficulty making friends
- Struggle academically or have experienced a recent decline in grades
- Repeat actions or check things many times out of fear that something bad may happen

*Older children and adolescents* may benefit from an evaluation and treatment if they:

- Have lost interest in things that they used to enjoy
- Have low energy
- Sleep too much or too little or seem sleepy throughout the day
- Are spending more and more time alone and avoid social activities with friends or family
- Diet or exercise excessively, or fear gaining weight
- Engage in self-harm behaviors (such as cutting or burning their skin)
- Smoke, drink, or use drugs
- Engage in risky or destructive behavior alone or with friends
- Have thoughts of suicide
- Have periods of highly elevated energy and activity and require much less sleep than usual
- Say that they think someone is trying to control their mind or that they hear things that other people cannot hear

Learn more about warning signs at [www.nimh.nih.gov/children](http://www.nimh.nih.gov/children).

### Get Immediate Help

If you, your child, or someone you know is in immediate distress or is thinking about hurting themselves, call the **National Suicide Prevention Lifeline** toll-free at 1-800-273-TALK (8255) or the toll-free TTY number at 1-800-799-4TTY (4889). You also can text the Crisis Text Line (HELLO to 741741) or go to the **National Suicide Prevention Lifeline** website at <https://suicidepreventionlifeline.org>.

## First Steps for Parents

If you are concerned about your child's mental health, you can start by talking with others who frequently interact with your child. For example, ask their teacher about your child's behavior in school, at daycare, or on the playground.

You can talk with your child's pediatrician or health care provider and describe the child's behavior, as well as what you have observed and learned from talking with others. You also can ask the health care provider for a referral to a mental health professional who has experience and expertise in treating children. (See the section, Choosing a Mental Health Professional, for additional information.)

## Choosing a Mental Health Professional

When looking for a mental health professional for your child, you may want to begin by asking your child's pediatrician for a referral. If you need help identifying a provider in your area, you can call the Substance Abuse and Mental Health Services Administration (SAMHSA) Treatment Referral Helpline at 1-800-662-HELP (4357). You also can search SAMHSA's online Behavioral Health Treatment Services Locator (<https://findtreatment.samhsa.gov>), which lists facilities and programs that provide mental health services. It's especially important to look for a mental health professional with training and experience treating children, particularly your child's specific problems.

Asking questions and providing information to your child's health care provider can improve your child's care. Talking with the health care provider builds trust and leads to better results, quality, safety, and satisfaction. Here are some questions you can ask when meeting with prospective treatment providers:

- Do you use treatment approaches that are supported by research?
- Do you involve parents in the treatment? If so, how are parents involved?
- Will there be "homework" between sessions?
- How will progress be evaluated?
- How soon can we expect to see progress?
- How long should treatment last?

To find ideas for starting the conversation with your health care provider, visit the Agency for Healthcare Research and Quality website ([www.ahrq.gov/questions](http://www.ahrq.gov/questions)) and the National Institute of Mental Health (NIMH) website ([www.nimh.nih.gov/talkingtips](http://www.nimh.nih.gov/talkingtips)). Additional information about finding a qualified mental health professional is available at [www.nimh.nih.gov/findhelp](http://www.nimh.nih.gov/findhelp) and through other organizations listed in the More Information and Resources section of this fact sheet.



## Assessing Your Child's Behavior

An evaluation by a mental health professional can help clarify problems underlying your child's behavior and provide reassurance or recommendations for the next steps. An evaluation offers an opportunity to learn about your child's strengths and weaknesses and to determine which interventions might be most helpful.

A comprehensive evaluation of a child's mental health includes the following:

- An interview with the parents to discuss the child's developmental history, temperament, relationships with friends and family, medical history, interests, abilities, and any prior treatment. It is important for the mental health professional to get a picture of the child's current situation—for example, a recent change in schools, an illness in the family, or another change that affects the child's daily life.
- Information gathering from the child's school, such as standardized tests and reports on behavior, capabilities, and difficulties.
- If needed, an interview with the child and the mental health professional's testing and behavioral observations.

## Treatment Options

The mental health professional will review the evaluation results to help determine if a child's behavior is related to changes or stresses at home or school or if it's the result of a disorder for which they would recommend treatment. Treatment recommendations may include:

- **Psychotherapy ("talk therapy").** There are many different approaches to psychotherapy, including structured psychotherapies directed at specific conditions. For more information about types of psychotherapies, visit the NIMH website at [www.nimh.nih.gov/psychotherapies](http://www.nimh.nih.gov/psychotherapies). Effective psychotherapy for children always includes:

- Parent involvement in the treatment
- Teaching the child skills to practice at home or school (between-session “homework assignments”)
- Measures of progress (such as rating scales and improvements on “homework assignments”) that are tracked over time.
- **Medications.** As with adults, the type of medicines used for children depends on the diagnosis and may include antidepressants, stimulants, mood stabilizers, or other medications. For general information on specific classes of medications, visit [www.nimh.nih.gov/medications](http://www.nimh.nih.gov/medications). Medications are often used in combination with psychotherapy. If multiple health care providers or specialists are involved, treatment information should be shared and coordinated to achieve the best results.
- **Family counseling.** Including family members in treatment can help them to understand how a child’s challenges may affect relationships with parents and siblings.
- **Support for parents.** Individual or group sessions for parents that include training and the opportunity to talk with other parents can provide new strategies for supporting a child and managing difficult behavior in a positive way. The therapist also can coach parents on how to communicate and work with schools on accommodations.

To find information about treatment options for specific disorders, visit the NIMH website at [www.nimh.nih.gov/health](http://www.nimh.nih.gov/health). Researchers continue to explore new treatment options for childhood mental disorders; the Participating in a Research Study for Children section in this fact sheet provides information on participating in clinical research.



## Working With the School

Children who have behavioral or emotional challenges that interfere with success in school may benefit from plans or accommodations provided under laws that prevent discrimination against children with disabilities. Your child’s health care providers can help you communicate with the school.

A first step may be to ask the school whether accommodations such as an individualized education program may be appropriate for your child. Accommodations might include measures such as providing a child with a tape recorder for taking notes, allowing more time for tests, or adjusting seating in the classroom to reduce distraction. There are many sources of information on what schools can and, in some cases, must provide for children who would benefit from accommodations and how parents can request evaluation and services for their child:

- There are Parent Training and Information Centers and Community Parent Resource Centers located throughout the United States. The Center for Parent Information and Resources website ([www.parentcenterhub.org/find-your-center](http://www.parentcenterhub.org/find-your-center)) lists centers in each state.
- The U.S. Department of Education website ([www.ed.gov](http://www.ed.gov)) has detailed information on laws that establish mechanisms for providing children with accommodations tailored to their individual needs and aimed at helping them succeed in school. The Department also has a website on the Individuals with Disabilities Education Act (<https://sites.ed.gov/idea>), and its Office for Civil Rights ([www.ed.gov/about/offices/list/ocr/frontpage/pro-students/disability-pr.html](http://www.ed.gov/about/offices/list/ocr/frontpage/pro-students/disability-pr.html)) has information on other federal laws that prohibit discrimination based on disability in public programs, such as schools.
- Many of the organizations listed in the section, More Information and Resources, also offer information on working with schools as well as more general information on disorders affecting children.



## More Information and Resources

Information on specific disorders is available on the NIMH website ([www.nimh.nih.gov/health](http://www.nimh.nih.gov/health)).

The following organizations and agencies have information on symptoms, treatments, and support for childhood mental disorders. Some offer guidance for working with schools and finding mental health professionals. Participating in voluntary groups can provide an avenue for connecting with other parents dealing with similar issues.

**Please Note:** This resource list is provided for informational purposes only. It is not comprehensive and does not constitute an endorsement by NIMH, the National Institutes of Health (NIH), the U.S. Department of Health and Human Services, or the U.S. government.

- American Academy of Child and Adolescent Psychiatry, Facts For Families Guide ([www.aacap.org/FFF](http://www.aacap.org/FFF))
- Association for Behavioral and Cognitive Therapies ([www.abct.org](http://www.abct.org))
- Centers for Disease Control and Prevention, Children's Mental Health ([www.cdc.gov/childrensmentalhealth](http://www.cdc.gov/childrensmentalhealth))
- Child Mind Institute (<https://childmind.org/topics-a-z>)
- Mental Health America ([www.mhanational.org](http://www.mhanational.org))
- National Alliance on Mental Illness ([www.nami.org](http://www.nami.org))
- National Association of School Psychologists ([www.nasponline.org/resources-and-publications/families-and-educators](http://www.nasponline.org/resources-and-publications/families-and-educators))
- National Federation of Families ([www.ffcmh.org](http://www.ffcmh.org))
- Society of Clinical Child and Adolescent Psychology, Effective Child Therapy (<https://effectivechildtherapy.org>)
- StopBullying.gov ([www.stopbullying.gov](http://www.stopbullying.gov))

## Research on Disorders Affecting Children

NIMH conducts and supports research to help find new and improved ways to diagnose and treat mental disorders that occur in childhood. This research includes studies of risk factors—including those related to genetics, experience, and the environment—which may provide clues to how these disorders develop and how to identify them early.

NIMH also supports efforts to develop and test new interventions, including behavioral, psychotherapeutic, and medication treatments. Researchers are also seeking to determine whether the beneficial effects of treatment in childhood continue into adolescence and adulthood.

## Participating in a Research Study for Children

Children are not little adults, yet they are often given medications and treatments that have been tested only in adults. Research shows that, compared to adults, children respond differently to medications and treatments, both physically and mentally. The way to get the best treatments for children is through research designed specifically for them.

Researchers at NIMH and around the country conduct clinical trials with patients and healthy volunteers. Talk to your health care provider about clinical trials, their benefits and risks, and whether one is right for your child. For more information about clinical research and how to find clinical trials being conducted around the country, visit [www.nimh.nih.gov/clinicaltrials](http://www.nimh.nih.gov/clinicaltrials).

## For More Information

**MedlinePlus (National Library of Medicine)**

<https://medlineplus.gov>  
(En español: <https://medlineplus.gov/spanish>)

**ClinicalTrials.gov**

[www.clinicaltrials.gov](http://www.clinicaltrials.gov)  
(En español: <https://salud.nih.gov/investigacion-clinica>)

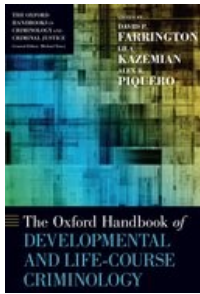
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## The Oxford Handbook of Developmental and Life-Course Criminology

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### CHAPTER

## 17 Biosocial Influences on Offending Across the Life Course



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### Abstract

This chapter presents major biological and biosocial findings in relation to the development of offending. It reviews empirical findings on the association between two psychophysiological factors, heart rate and skin conductance, and offending. The chapter then discusses the heritability of antisocial behavior and the contribution of genetics to the understanding of developmental trajectories, stability, and change in offending. The structural and functional brain abnormalities in antisocial individuals across different age groups are then discussed, along with research on hormones and neurotransmitters. Next, the chapter highlights the applications of neuropsychology in the understanding of offending across the life span and reviews research on pre- and perinatal factors related to later offending. It concludes with potential areas for future research.

**Keywords:** biosocial influences, offending, heart rate, skin conductance, psychophysiological factors, antisocial behavior, genetics, brain abnormalities, neuropsychology

**Subject:** Criminology and Criminal Justice

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SINCE the late 20th century, the field of criminology has become increasingly aware of the contributions of biological sciences. Through longitudinal studies and research on different age groups, the role of biological factors in offending has been examined in a developmental context. Findings document that biological factors are associated with offending across the life span, although the strength of the associations may differ across development and between types of offenders. It is proposed that incorporating such factors into future developmental and life-course research and theories can lead to a better understanding of the etiology of offending.

In this chapter, major biological and biosocial findings in relation to the development of offending are presented. Offending is referred to as not only the violation of legal codes but also the broader spectrum of

antisocial behavior. Section I reviews empirical findings on the association between two psychophysiological factors, heart rate and skin conductance, and offending. Section II discusses the heritability of antisocial behavior and the contribution of genetics to the understanding of developmental trajectories, stability, and change in offending. Section III describes structural and functional brain abnormalities in antisocial individuals across different age groups. Section IV covers research on hormones and neurotransmitters. It examines the role of cortisol, testosterone, serotonin, and dopamine on offending. Section V highlights the applications of neuropsychology in the understanding of offending across the life span, particularly in the domains of verbal and spatial intelligence and executive functioning. Section VI reviews research on pre- and perinatal factors related to later offending, including prenatal alcohol, nicotine, and lead exposure, minor physical anomalies, and birth complications. Each of the six sections aims to address issues important to the developmental and life-course criminological literature including whether the biological factor is consistently associated with offending throughout the life course and whether persistent offenders differ from other offenders in terms of biological influences. Section VII concludes with potential areas for future research.

## I. Psychophysiology

Psychophysiology is the study of cognition, behavior, and emotions as revealed through bodily events (Hugdahl 2001). Heart rate and skin conductance are psychophysiological measures that have been frequently examined in relation to offending.

### A. Heart Rate

Heart rate is controlled by both the parasympathetic and sympathetic branches of the autonomic nervous system. A meta-analysis concluded that low resting heart rate is likely the best-replicated correlate of antisocial behavior in children and adolescents (Ortiz and Raine 2004). Although more commonly examined in youths, low resting heart rate is also a risk factor for antisocial behavior in adults (Lorber 2004; Armstrong et al. 2009; Portnoy and Farrington 2015), making low resting heart rate a biological risk factor for offending across the life course.

Importantly, low resting heart rate has been found to predict future levels of antisocial behavior in prospective longitudinal research (Farrington 1997; Raine, Venables, and Mednick 1997; Sijtsema et al. 2010; Jennings, Piquero, and Farrington 2013). One study found that low resting heart rate as young as at age 3 years predicted aggression at age 11 years (Raine et al., 1997). Findings from the Cambridge Study in Delinquent Development showed that low resting heart rate at age 18 years predicted offending up to age 50 years independent of covariates including smoking, sports participation, impulsivity, binge drinking, body mass index, and early childhood individual and environment risk factors (Jennings et al. 2013). This study demonstrated for the first time that the predictive utility of low resting heart rate could extend into late adulthood.

It has also been found that low resting heart rate is only important in explaining initial levels rather than change in antisocial behavior over time. Baker et al. (2009) found that children with low resting heart rate at age 9 years were significantly more antisocial overall, but the reduction in antisocial behavior with age as the children entered early adolescence was not associated with heart rate. This suggests that low heart rate is a fixed, static neurobiological risk factor for antisocial behavior that does not predict desistance from offending throughout early adolescence.

Several theoretical explanations have been proposed to explain the relationship between resting heart rate and antisocial behavior. According to stimulation-seeking theory, low autonomic nervous system

arousal is an unpleasant physiological state, leading those with low resting heart rates to seek stimulating behaviors, including antisocial behaviors, in order to increase their level of physiological arousal to a more optimal level (Quay 1965; Raine 2002a). An alternative theory argues that low resting heart rate may reflect a relative lack of fear, which could predispose some individuals to commit antisocial acts that require a degree of fearlessness to complete. Low heart rate could also impede early childhood fear conditioning to socializing punishments (Raine 1993, 2002a). While support for these two theories has been broadly found (Latvala et al. 2015), recent studies documented that stimulation seeking, but not fearlessness, mediated the relationship between low heart rate and antisocial behavior (Sijtsema et al. 2010; Portnoy et al. 2014). Thus, a stimulation-seeking mechanism may be more likely to underlie this relationship.

## **B. Skin Conductance**

Skin conductance is an index of sympathetic nervous system activity that can be measured at rest or during laboratory tasks. Reduced skin conductance reactivity during fear conditioning paradigms has been associated with psychopathy (Birbaumer et al. 2005) and antisocial behavior, particularly persistent proactive aggression (Gao et al. 2015). Conditioning during childhood is thought to be central to socialization and conscience development. It has been suggested that the failure to condition could be a factor that predisposes some individuals to offend later in life (Eysenck 1977). Findings for skin conductance measured at rest tend to be less consistent. A meta-analysis found that low resting skin conductance was significantly associated with higher levels of psychopathy in adults and conduct problems in children, but not aggression or conduct problems in adolescence (Lorber 2004).

Like heart rate, reduced skin conductance has been documented to predict future levels of antisocial behavior. One study found that reduced skin conductance arousal at age 15 years predicted criminal behavior at age 24 years (Raine, Venables, and Williams 1990). Reduced skin conductance fear conditioning as early as age 3 years has been found to predict offending at age 23 years (Gao et al. 2010). These findings suggest that childhood and adolescent skin conductance can help to explain future levels of criminal behavior.

## **C. Biosocial Interactions Involving Psychophysiology**

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Some studies have found that low resting heart rate combined with high social risk increases the likelihood of antisocial behavior (Raine et al. 2014). Similarly, skin conductance has been found to interact with social adversity to predict antisocial behavior, though patterns of interaction are not always consistent, with high skin conductance serving as a risk factor for antisocial behavior among children at high social risk in several studies (e.g., Cummings et al. 2007). In general, psychophysiological studies suggest a reduced pattern of autonomic arousal across the life course in antisocial individuals, although results may be partly dependent on the individual's social context.

## II. Genetics

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Compelling evidence from behavioral genetic research, which broadly includes twin, adoption, and family studies, shows that heritable influences also contribute to the development of offending. A review on 19 twin and adoption studies between ages 1 and 18 years found that heritability explained 65 percent and 48 percent of the variance in aggressive behavior and delinquent/rule-breaking behavior, respectively (Burt 2009). Additionally, summarizing results from 51 twin and adoption studies in children, adolescents, and adults, Rhee and Waldman (2002) found that genetic factors explained 41 percent of the variance in antisocial behavior. Given findings on the heritability of offending, molecular genetic research has identified candidate genes for offending. Lower monoamine oxidase A (MAOA) gene activity has been associated with violent behaviors and offending over the life course (e.g., Beaver et al. 2013). Other genes suggested to be associated with child and adult antisocial behavior include the catechol-O-methyltransferase (COMT) gene (Volavka, Bilder, and Nolan 2004; Hirata et al. 2013), the vasopressin receptor 1B (Zai et al. 2012) gene, the oxytocin receptor (OXTR) gene (Malik et al. 2012), the human dopamine transporter (DAT1) gene (Guo, Roettger, and Shih 2007), the D2 receptor polymorphism (DRD2) gene, and the D4 receptor polymorphism (DRD4) gene (Beaver et al. 2007; Boutwell et al. 2014).

Reviews have also found that aggressive and delinquent/rule-breaking behavior exhibit different etiological patterns across age (Burt 2009). Genetic influences on aggressive behavior increased across development, while shared environmental factors decreased. In contrast, delinquent/rule-breaking behavior showed a decrease in genetic influences across development, while shared environmental influences remained stable. The results show that aggressive behavior is primarily influenced by genetic factors, while delinquent/rule-breaking behavior is influenced by both genetic and shared environmental factors.

Since 2003, several studies have examined the genetic and environmental influences on psychopathic personality in children, adolescents, and adults (e.g., Viding et al. 2005; Viding, Frick, and Plomin 2007; Brook et al. 2010; Bezdjian et al. 2011; Hicks et al. 2012). According to the average twin correlations across these studies, the heritability of psychopathic personality in males is approximately 64 percent. For females, the heritability of psychopathic personality is approximately 48 percent (Tuvblad 2013). A longitudinal study reported that 58 percent and 62 percent of the stable variance in two features of psychopathic personality, fearless dominance and impulsive antisociality, respectively, from ages 17 to 24 years were explained by genetic factors (Blonigen et al. 2006; Tellegen and Waller 2008).

p. 329 With regards to different developmental trajectories for offending, twin studies have shown that genetic influences are more important for stable-high/childhood-onset than for increasing/transitory antisocial behavior (e.g., Taylor, Iacono, and McGue 2000; Tuvblad et al. 2011). For example, in one study, genetic influences contributed more strongly to early-onset rather than late-onset delinquent behavior in 11-year-old boys (Taylor et al. 2000).

Longitudinal twin studies have also examined the contribution of genetics to stability in antisocial behavior. One study that measured antisocial behavior from ages 8 to 20 years showed that the stability of antisocial behavior was explained by a common latent antisocial behavior factor, for which genetics accounted for 67 percent of the variance (Tuvblad et al. 2011).

Other twin studies have examined the genetic contribution to change in antisocial behavior. This line of research has generally reported that change or “new” variance in antisocial behavior is primarily due to non-shared environmental factors (e.g., Haberstick et al. 2006). Analysis of three waves of data from the Minnesota Twin and Family Study showed that while genetic influences were to a large extent responsible for the initial level of antisocial personality disorder symptoms, non-shared environmental influences were largely responsible for change (Burt et al. 2007).

## A. Biosocial Interactions Involving Genetic Factors

As in molecular genetic studies, such as that by Caspi et al. (2002), which found that childhood maltreatment led to violence in adulthood among individuals with low levels of MAOA expression, behavioral genetic studies have generated a large number of gene–environment interaction (G×E) studies (for a review, see Dick 2011). Specifically, social factors such as family dysfunction, family warmth, high paternal punitive discipline, parental monitoring, religiosity, regional residency, and socioeconomic status have been found to moderate the genetic and environmental influences on antisocial behavior (Koopmans et al. 1999; Rowe, Almeida, and Jacobson 1999; Rose et al. 2001; Button et al. 2005; Tuvblad, Grann, and Lichtenstein 2006; Dick et al. 2007; Button et al. 2008; Middeldorp et al. 2014). Some studies have found higher heritability of antisocial behavior in individuals with low rather than high levels of social risk (Button et al. 2005), while others document that genetic influences contributed more to antisocial behavior when social risk was present (Dick et al. 2007).

## III. Brain Imaging

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Regarding structural abnormalities associated with offending, studies have largely focused on regions involved in decision-making (e.g., prefrontal cortex), emotion regulation (e.g., amygdala, hippocampus), and reward-processing (e.g., striatum). One of the first structural brain imaging studies of antisocial adults documented an 11 percent reduction in gray matter volume in the prefrontal cortex of men with antisocial personality disorder compared to normal controls and a psychiatric control group (Raine et al. 2000). Yang et al. (2005, 2009, 2010a) found reduced gray matter volume and thickness in the middle frontal and orbitofrontal cortex and reduced volume and surface deformations in the amygdala in psychopaths with prior convictions (i.e., unsuccessful psychopaths) compared to psychopaths without convictions (i.e., successful psychopaths) and non-psychopathic controls. More recently, violent offenders were shown to have abnormal hippocampal structure compared to non-violent controls (Boccardi et al. 2010; Yang et al. 2010b). These frontal and limbic deficits were similarly found in a large sample of nearly 300 incarcerated criminal offenders (Ermer et al. 2012). Using *vivo* diffusion tensor magnetic resonance imaging tractography, Craig et al. (2009) further showed impaired amygdala-orbitofrontal connections in psychopaths with convictions. However, findings for the striatum are not conclusive, as some studies have documented enlarged putamen, nucleus accumbens, and caudate (Schiffer et al. 2011), while others showed smaller nucleus accumbens in offenders (Boccardi et al. 2013).

In addition to structural imaging research, functional imaging studies have presented evidence for impaired brain functioning in criminal offenders, especially in the prefrontal and temporal cortex. A meta-analysis by Yang and Raine (2009) of 43 studies revealed that increased antisocial behavior was associated with reduced prefrontal structure and function, particularly in the right orbitofrontal, left dorsolateral prefrontal, and right anterior cingulate cortex. Employing a neurocognitive task, the non-verbal Stroop task, Schiffer et al. (2014) found reduced function in the anterior cingulate, dorsolateral prefrontal, superior temporal, putamen, and amygdala in violent offenders with antisocial personality disorder compared to non-offenders. One recent study using resting-state functional magnetic resonance imaging (fMRI) also revealed reduced activity, measured by the amplitude of low-frequency fluctuation, in the right orbitofrontal cortex as well as the left temporal pole, right inferior temporal gyrus, and left cerebellum in these offenders with antisocial personality disorder (Liu et al. 2014). In line with these findings, Ly et al. (2012) found thinner cortices in the right inferior frontal cortex, anterior temporal cortex, and anterior cingulate cortex, which also corresponded to reduced functional connectivity between the left insula and left dorsal anterior cingulate cortex in psychopathic compared to non-psychopathic criminal offenders.

Recently, in a longitudinal study, males with lower amygdala volumes at age 26 years were found to exhibit increased aggression, violence, and psychopathic traits at a 3-year follow-up (Pardini et al. 2014). Similarly, in a study on adult male offenders, lower anterior cingulate activity was associated with a greater likelihood of rearrest (Aharoni et al. 2013). These findings suggest that brain deficits can predict later offending.

p. 331 Consistent with research on adult offenders, studies of delinquent children and adolescents have revealed abnormal brain structures and function. For example, in a sample of female adolescents with conduct disorders, aggressive symptoms were negatively correlated with right dorsolateral prefrontal cortex volume, while callous-unemotional traits correlated positively with bilateral orbitofrontal cortex volume (Fairchild et al. 2013). Delinquents with high psychopathy scores also showed higher activity in the anterior cingulate cortex, insula, and amygdala during fear conditioning compared to healthy controls (Cohn et al. 2013). Longitudinally, a thicker temporal cortex was linked to higher rates of change in psychopathy during childhood and adolescence (Yang et al. 2015). Taken together, meta-analyses document that youths with disruptive behavior disorder or conduct problems show consistent functional deficits in the dorsal and rostral anterior cingulate and the medial prefrontal cortex (Alegria, Radua, and Rubia 2016), as well as reduced gray matter volume in the insula, left amygdala, and frontal and temporal regions (Rogers and De Brito 2016). One study documented that limbic structural deficits such as in the amygdala were associated with not only early-onset but also adolescent-onset conduct disorder (Fairchild et al. 2011). However, more recently, evidence has been found for quantitative differences in structural brain organization between childhood-onset and adolescence-onset conduct disorder (Fairchild et al. 2016) and for different growth trajectories of cortical thickness for distinct conduct problem pathways (Oostermeijer et al. 2016).

## A. Biosocial Interactions Involving Brain Imaging

Although few brain imaging studies to date have addressed the role of psychosocial risk and protective factors on offending, several studies have begun to address two related issues concerning whether home background moderates the relationship between violence and brain functioning and whether brain deficits combine with psychosocial deficits to predispose one to violence. Regarding the first issue, two studies using brain functioning as the outcome variable have demonstrated a moderating effect of home background, but in opposing directions. In one study, murderers from non-deprived home backgrounds showed a 14.2 percent reduction in functioning of the right orbitofrontal cortex relative to murderers from deprived home backgrounds characterized by abuse, neglect, and marital violence (Raine et al. 1998). It was argued that neurobiological deficits are more pronounced among violent individuals who lack the psychosocial deprivation that normally provides a “social push” toward violence. In contrast, a second fMRI study showed that violent offenders who had been severely abused as children were more likely to show poor temporal lobe functioning compared to violent offenders lacking abuse (Raine et al. 2001).

p. 332 Turning to the second issue, using violence as an outcome variable, an anatomical magnetic resonance imaging study of individuals with antisocial personality disorder and high psychopathy scores showed that the combination of reduced prefrontal gray volume, low autonomic responsiveness, and a set of 10 psychosocial deficits correctly classified 88.5 percent of subjects into antisocial personality disorder or control groups (compared to 73 percent for psychosocial predictors only and 76.9 percent for biological predictors only; Raine et al. 2000). A second structural imaging study on the corpus callosum in psychopaths showed that the combination of psychosocial risk factors with callosal measures accounted for 81.5 percent of the variance (Raine et al. 2003). Structural brain measures accounted for a significant increase in the variance in psychopathic/antisocial behavior over and above psychosocial risk factors in both studies.

## IV. Hormones and Neurotransmitters

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Compared to brain imaging research, fewer studies have examined the relationship between hormones and offending. Two most frequently studied hormones in relation to antisocial behavior are cortisol and testosterone, regulated by the hypothalamus-pituitary-adrenal (HPA) axis and hypothalamus-pituitary-gonadal (HPG) axis, respectively.

### A. Cortisol

Studies in children and adolescents have shown that cortisol may be related to antisocial behavior early in life. One meta-analysis found a mean effect size of  $d = -.40$  for the relationship between basal cortisol levels and disruptive behavior or aggressive symptoms in children after study sample sizes were taken into account (van Goozen et al. 2007). The mean effect size for cortisol reactivity in response to a stressor across 4 studies after correcting for sample sizes was  $d = .42$ . A second meta-analysis on 72 study outcomes found that in preschoolers (aged 0 to 5 years), higher basal cortisol was associated with externalizing behavior ( $d = .18$ ). Low basal cortisol was associated with externalizing behavior ( $d = -.28$ ) in elementary school-aged children (aged 5 to 12 years; Alink et al. 2008). However, no significant association was found between basal cortisol and externalizing behavior in adolescents or between cortisol reactivity to stress and externalizing behaviors. Thus, despite smaller relations in the second meta-analysis, there is some evidence of a significant relationship between basal levels of cortisol and antisocial behavior.

Similar findings were obtained for adults as low cortisol levels were found in offenders with psychopathy compared to non-psychopathic offenders (Holi et al. 2006; Cima, Smeets, and Jelicic 2008). In a study on cortisol reactivity using a social stressor, a significant difference in cortisol levels from pre- to post-stressor was observed, but only in males with low rather than high levels of psychopathy (O'Leary, Loney, and Eckel 2007).

Several studies have examined cortisol levels in relation to different categories of offenders. Fairchild et al. (2008) found that basal cortisol level or cortisol reactivity to a stressor did not differ between male adolescents with early-onset and adolescence-onset conduct disorder. It has been proposed that structural abnormalities in the amygdala may underlie the finding that early- and adolescent-onset conduct disorder are associated with lower cortisol responses to stress as the amygdala is involved in initiating HPA responses to stress (Fairchild et al. 2011). However, another study on boys aged 7 to 12 years found that lower cortisol was more strongly related to persistently aggressive boys as well as those with childhood-onset conduct disorder compared to adolescence-onset conduct disorder (McBurnett et al. 2000). This is bolstered by findings that low basal cortisol levels predicted disruptive behavior in boys and girls only if conduct problems were already present at age 10 to 12 years (Sondeijker et al. 2008) and that persistently high-aggressive adolescents exhibited decreased cortisol levels consistently over time compared to low-aggressive adolescents (Platje et al. 2013). Such findings suggest that cortisol levels are related to the persistent trajectory of antisocial behavior rather than the prediction of the onset of behavior problems at later ages.



## B. Testosterone

Experimental studies have shown that increased testosterone levels are associated with increased levels of aggression (Pope, Kouri, and Hudson 2000) and decreased levels of empathy (van Honk et al. 2011), which are associated with offending. Associations between higher levels of testosterone and antisocial behavior have been reported in children and adolescents. For example, adolescents with high levels of externalizing behaviors have been documented to have higher levels of testosterone than individuals with low levels of externalizing behaviors (Maras et al. 2003). Furthermore, testosterone levels were found to be higher in a disruptive behavior disorder group than in normal controls for an older subset of participants (aged 9 to 11 years) compared to those of younger ages (aged 5 to 8 years; Chance et al. 2000). However, some other studies have found mixed results on the testosterone–antisocial behavior relationship among children and adolescents (e.g., van Goozen et al. 1998; Dorn et al. 2009).

Additional studies have found a positive relationship between testosterone levels in adulthood and retrospectively reported severity of conduct disorder symptoms in childhood (e.g., Mazur 1995). Longitudinal studies have documented that testosterone levels in a community sample at ages 12 and 14 years predicted antisocial norm-violating behaviors at age 16 years (Tarter et al. 2009), and testosterone levels in conduct disordered boys at age 13 years predicted delinquency and criminal behavior at ages 16 and 21 years (Van Bokhoven et al. 2006). In adults, meta-analytic evidence suggests that testosterone is positively associated with aggression, with higher associations found for the age group of 22 to 35 years and in offender compared to non-offender populations (Archer et al. 2005). Higher testosterone levels also correlated positively with psychopathy scores in convicted criminals (Stålenheim et al. 1998). On the other hand, Glenn et al. (2011) found that instead of baseline testosterone, the ratio of baseline testosterone to cortisol reactivity after stress was significantly related to psychopathy. Generally, research suggests there is a small positive correlation between testosterone and antisocial behavior throughout the life span. Relationships seem to be weakest in young children and get stronger as individuals age (Yildirim and Derksen 2012).

## p. 334 C. Serotonin and Dopamine

Serotonin and dopamine are neurotransmitters that have been implicated in antisocial behavior and specifically in psychopathy. Most commonly, researchers have examined neurotransmitter metabolite levels in cerebrospinal fluid, such as HVA, a metabolite of dopamine, and 5-HIAA, a metabolite of serotonin (Freedman and Verdun-Jones 2010).

Studies have found that examining serotonin and dopamine levels together provides a better prediction of psychopathy scores. In a sample of violent offenders, the ratio of HVA to 5-HIAA was positively associated with psychopathy scores, particularly the Factor 2 Antisocial/Lifestyle score, which has been linked to life-course–persistent offending (Soderstrom et al. 2001; Yildirim and Derksen 2012). In a follow-up study, these results were replicated in a forensic sample. The HVA:5-HIAA ratio was positively related to childhood-onset disruptive disorders (Soderstrom et al. 2003).

Other research has suggested that serotonin levels are generally low in antisocial populations. One meta-analysis on 20 reports revealed reduced 5-HIAA in antisocial populations, particularly for individuals younger than 30 years, supporting the possibility that age-related increases in serotonin correlate with age-related declines in crime (Moore, Scarpa, and Raine 2002). Significantly lower serotonin levels were also found in boys with high levels of callous-unemotional traits (Moul et al. 2013). In children and adolescents with obsessive-compulsive disorder, participants with comorbid disruptive behavior disorders had significantly lower blood serotonin concentrations than participants with no comorbid behavior disorder (Hanna, Yuwiler, and Coates 1995). In the same study, a negative relationship was also found

between serotonin concentration and externalizing and aggression scores. Additionally, reduced concentrations of somatostatin, a peptide which stimulates the release of serotonin, have been found in the cerebrospinal fluid of children with disruptive behavior disorders compared to children with obsessive-compulsive disorder (Kruesi et al. 1990). Although reduced serotonin levels have been found in children, findings suggest that the strongest serotonin effects on offending occur in young adulthood (Moore et al. 2002). All in all, despite some mixed findings (Hughes et al. 1996), there is reasonably strong evidence that serotonin and dopamine play a role in the development of offending.

## D. Biosocial Interactions Involving Hormones and Neurotransmitters

Limited research has been conducted on biosocial interactions involving hormones and neurotransmitters. In one study, maltreatment was a significant moderator of the cortisol dysregulation–antisocial behavior relationship, such that low cortisol levels were more strongly associated with antisocial behavior in nonmaltreated children compared to maltreated peers (Hawes, Brennan, and Dadds 2009). In a similar vein, Hawes et al. (2009) suggested that early adversity plays a role in the development of antisocial behavior in children with low levels of callous-unemotional traits and higher basal cortisol levels, while high levels of callous-unemotional traits and low basal cortisol levels characterize a particularly severe subgroup for whom antisocial behavior develops somewhat independently of social adversity. A study on Dutch adolescents documented that among individuals who experienced low levels of an environmental stressor, namely neighborhood density, lower cortisol activity significantly predicted higher levels of delinquency and aggression (Yu et al. 2016). Thus, HPA-axis dysfunction may play a more significant role in the development of chronic antisocial behavior for individuals who have not been exposed to adversity.

## V. Neuropsychological Factors

Neuropsychology, the indirect, behavior-based assessment of brain dysfunction, has also been used to understand offending across the life span. Neuropsychological investigations of various forms of antisociality have largely targeted deficits in specific domains of cognitive functioning such as verbal and spatial intelligence and executive abilities.

### A. Verbal and Spatial Intelligence

To date, the best-replicated cognitive correlate of antisocial, violent, and criminal behavior among non-mentally ill individuals is general intelligence (e.g., IQ or Full Scale IQ) deficits (Wilson and Herrnstein 1985). Reduced verbal relative to spatial/performance IQ—a possible marker for left hemispheric dysfunction—has generally been documented to characterize both males and females from different age groups across studies of antisocial individuals (Raine 1993; Isen 2010). However, some antisocial individuals, such as those with antisocial personality disorder and psychopathy, have not consistently shown intellectual performance or verbal intelligence deficits (Barkataki et al. 2006; Kosson et al. 2007), although relationships have been noted between some specific psychopathic traits (i.e., criminal versatility and violence) and verbal dysfunction (Rasmussen, Almvik, and Levander 2001). Thus, while global and/or verbal intellectual dysfunction may characterize adult antisocial individuals in general, they may not characterize specific constellations of criminogenic and antisocial traits.

Reduced verbal intelligence also appears largely characteristic of antisocial children and adolescents (e.g., Barker et al. 2007). Moffitt, Lynam, and Silva (1994) found that verbal deficits in early adolescence predicted delinquency in later adolescence for persistent, high-level offenders who began offending in pre-adolescence. However, mixed results have been found for juvenile psychopathy. Loney et al. (1998) found no

p. 336 verbal deficits in children with conduct problems and callous-unemotional traits, while Salekin et al. (2004) found that verbal intelligence was positively related to the superficial and deceitful interpersonal style traits and inversely related to the affective processing-disturbance traits of psychopathy in juvenile inmates. In summary, verbal deficits in populations of antisocial youth overall appear relatively consistent, though continued studies of psychopathic youth may assist in clarifying heterogeneous verbal IQ findings among antisocial juveniles as in adults.

Longitudinal studies of community-based samples may call into question the classic view of verbal but not performance IQ deficits in antisocial individuals. In a Pittsburgh youth sample including childhood-limited, adolescent-limited, and life-course-persistent offenders, Raine et al. (2005) found both spatial and verbal impairments. In another sample from Mauritius, Raine et al. (2002c) found early spatial but not verbal deficits at age 3, and later spatial and verbal deficits at age 11 in persistently antisocial individuals. These results suggest that while early spatial deficits contribute to persistent antisocial behavior, verbal deficits may be developmentally acquired. Results support a proposed early starter spatial impairment model of life-course offending, in which early deficits in visuospatial functioning may interfere with mother-infant bonding, possibly reflecting right hemispheric dysfunction that disrupts emotional processing and regulation and, in turn, contributes to persistent offending.

## B. Executive Functioning

Executive functioning deficits are thought to represent impairment in frontal lobe functioning and are indicated by performance errors on neuropsychological tests of strategy formation, cognitive flexibility, or impulsivity (i.e., category, maze-tracing, Stroop interference, card sorting, verbal fluency and tower tests, and go/no-go and gambling tasks). In Morgan and Lilienfeld's (2000) classic quantitative review of 39 studies, overall executive functioning deficits were observed in antisocial individuals compared to controls. Strongest effects were found for the Porteus Mazes test and antisociality defined by judicial status. More recently, executive dysfunction has been associated with aggressive, violent, and antisocial personality-disordered populations (e.g., Stanford et al. 2007; Hancock, Tapscott, and Hoaken 2010; Dolan 2012), property criminality (Barker et al. 2007), child molesters with and without pedophilia (Schiffer and Vonlaufen 2011), single as opposed to multiple homicide victims in indigent murder defendants and death row inmates (Hanlon et al. 2010), murderers with schizophrenia compared to non-violent men with schizophrenia (Hanlon et al. 2012), mentally challenged versus non-impaired forensic hospital patients (Bastert et al. 2012), and offenders characterized by reactive as opposed to instrumental violence (Broomhall 2005).

p. 337 Psychopathy in adults has not been consistently associated with general executive functioning deficits (e.g., Kosson et al. 2007). Some neuropsychological studies have shown that psychopathy may be characterized more by orbitofrontal dysfunction, which is associated with processing rewards and punishments, and emotion (Rolls 2000; Blair et al. 2006). Additionally, successful, uncaught psychopaths have demonstrated significantly better dorsolateral prefrontal task performance relative to unsuccessful psychopaths and controls (Ishikawa et al. 2001), while white-collar criminals have been found to show increased executive functioning compared to offender controls (Raine et al. 2012). Furthermore, violent antisocial personality disordered offenders with and without psychopathy have demonstrated similar deficits in terms of "cool executive functioning," namely top-down processes subsumed by the dorsolateral and ventrolateral prefrontal cortex, that are distinctly cognitive in nature, such as working memory, response inhibition, planning, sustained attention, and attentional set-shifting, and "hot executive functioning," namely processes with an affective, motivational, or incentive/reward component subsumed by ventromedial connections between the mesolimbic reward pathway and the ventromedial prefrontal cortex, such as appraisal of the motivational significance of a stimulus in emotional decision-making (De Brito et al. 2013).

Findings on children and adolescents have been more mixed, with executive functioning deficits characterizing some antisocial youths (e.g., Cauffman et al. 2005) and not others (Moffitt et al. 1994; Nigg et al. 2004). The development of executive functions along with the ongoing myelination of the frontal cortex into and beyond adolescence (Raine 2002b) may explain differential patterns of executive functioning deficits among children and adults. This is supported by findings of executive functioning impairments in older maximum security hospital patients (Nestor 1992) and more pronounced impairments on an orbitofrontal neuropsychological task in psychopathic adults than psychopathic children (Blair 2006).

### **C. Biosocial Interactions Involving Neuropsychology**

In a study examining biosocial interactions, Gao et al. (2009) found that neurocognitive deficits indicated by more risky decision-making in the Iowa Gambling Task were associated with psychopathic tendencies only in children with higher socioeconomic status. Additionally, progressive cognitive dysfunction affected by adverse psychosocial experience may explain early-onset antisocial behavior (Aguilar et al. 2000) and lifetime, cumulative biosocial risk interactions may be stronger predictors of persistent aggression than risks only occurring in childhood or adolescence (Brennan et al. 2003). More specifically, Brennan et al. (2003), in a study of 370 Australian adolescents, identified that an interaction of biological risk factors including neuropsychological deficits and social risk factors predicted life-course-persistent aggression in boys and girls. Alternatively, the late-developing prefrontal cortex may be overloaded by the social and executive functioning demands of late adolescence, possibly leading to prefrontal dysfunction, behavioral inhibition failure, and significantly increased antisocial behavior (Raine 2002b). In sum, the neuropsychological literature demonstrates how the study of behavioral expressions of brain dysfunction has informed developmental neurobiological perspectives of offending across the life span.

## **VI. Early Health Risks**

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Evidence suggests that risk factors experienced early in life, such as during the prenatal and perinatal periods of development, are associated with longitudinal patterns of offending and may lead to the most detrimental effects over the life span (Day, Wanklyn, and Yessine 2014). Prenatal and perinatal factors that have been most closely linked to antisocial behavior include prenatal nicotine, alcohol, and lead exposure, minor physical anomalies, and birth complications.

### **A. Prenatal Nicotine, Alcohol, and Lead Exposure**

Children who are exposed to maternal smoking during pregnancy have been documented to have an elevated risk of offending throughout the life course (Wakschlag et al. 2002). Numerous studies have found associations between prenatal maternal smoking and juvenile offending, delinquency, conduct disorder, and violent offending (e.g., Wakschlag et al. 1997; Brennan, Grekin, and Mednick 1999; Paradis et al. 2015). In particular, a dose-response relationship was observed between the degree of prenatal maternal smoking and the extent of offspring's nonviolent and violent offending assessed at age 34 years (Brennan et al. 1999). However, there is current debate regarding whether the nicotine exposure-offending association involves a genetic confound (Glenn and Raine 2014).

Prenatal exposure to alcohol results in cognitive, behavioral, social, and physical deficits and can lead to a diagnosis of fetal alcohol syndrome (FAS). Fetal alcohol exposure has been documented as a risk factor for antisocial behavior in children, adolescents, and adults (Olson et al. 1997; Fast, Conry, and Looock 1999). However, even without FAS, high rates of delinquency have been found in children and adolescents with heavy fetal alcohol exposure (Mattson and Riley 2000).

Besides nicotine and alcohol exposure, a prospective study found that prenatal maternal blood lead concentrations during the first and second trimesters of pregnancy were associated with higher rates of criminal arrests measured at ages 19 to 24 years (Wright et al. 2008). Another longitudinal study on 195 adolescents found that lead levels from the prenatal period to 6.5 years of age were associated with delinquent and antisocial behavior in middle adolescence (Dietrich et al. 2001). Although few longitudinal studies in this area exist, these studies demonstrate that prenatal lead exposure is associated with the development of offending.

## **B. Minor Physical Anomalies**

p. 339 Minor physical anomalies (MPAs) such as low-set ears, single palmar crease, and furrowed tongue are considered indicators of fetal neural maldevelopment near the end of the first trimester or the beginning of the second trimester of pregnancy (Firestone and Peters 1983). Studies have found that MPAs are associated with greater antisocial behavior in children, adolescents, and adults, particularly for violent as opposed to non-violent offending (Glenn and Raine 2014). For example, MPAs measured at age 14 years predicted violent delinquency in 170 males at age 17 years, independent of childhood physical aggression or family adversity (Arseneault et al. 2000). Other studies have found that a larger number of MPAs is associated with recidivistic violent criminal behavior. One study documented that recidivistic violent offenders at ages 20 to 22 years had more MPAs between ages 11 to 13 years compared to individuals with one or fewer violent offenses (Kandel et al. 1989).

## **C. Birth Complications**

Birth complications, such as pre-eclampsia, preterm birth, and breech fetal positioning, have also been found to predispose to later offending (e.g., Liu et al. 2009). For example, Kandel and Mednick (1991) found that high delivery complications were associated with adult violent offending. Additionally, findings from a longitudinal study, the Fragile Families and Child Well-Being Study, showed that low birthweight was linked to serious aggression and destructive behavior at age 5 years and the relationship was mediated by verbal skills (Vaske, Newsome, and Boisvert 2013). Other perinatal risk factors for later offending include being small for gestational age and a small head circumference (Babchishin et al. 2017).

## D. Biosocial Interactions Involving Early Health Risks

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Studies have documented that prenatal nicotine exposure, MPAs, and birth complications interact with social factors to predispose to later offending. For example, prenatal nicotine exposure was found to lead to an 11.9-fold and 14.2-fold increase in recidivistic violent offending in adulthood when combined with the individual social risk factor of being raised in a single-parent family and with a group of psychosocial risk factors, respectively (Räsänen et al. 1999). Increased risk has particularly been observed for persistent violent offending (Brennan et al. 1999; Gibson and Tibbetts 2000; Brennan et al. 2002). Moreover, MPAs in boys at age 12 years were related to violent, but not non-violent property offending at age 21 years, but only among individuals reared in unstable homes (Mednick and Kandel 1988). Similarly, Brennan, Mednick, and Raine (1997) and Pine et al. (1997) found higher rates of adult violent crime in males and greater risk for disruptive behavior and conduct disorder at age 17 years among individuals with both MPAs and social risk factors. A recent study documented that individuals born at low birthweight were at an increased risk of adult offending if they were born to adolescent mothers (Vaske et al. 2015). This is consistent with the finding that birth complications combined with early maternal rejection measured at age 1 year increased the likelihood of violent offending at ages 18 and 34 years (Raine, Brennan, and Mednick 1994, 1997). Birth complications have also been found to interact with other psychosocial factors such as poor parenting (Hodgins, Kratzer, and McNeil 2001), family adversity (Arseneault et al. 2002), and being an only child (Kempainen et al. 2001) to lead to adult violent offending. These studies suggest that increased offending is observed when both early health risks and environmental risk factors are present.

## VII. Conclusion

Through a review of extant research, this chapter sheds light on the development of antisocial behavior and risk factors for offending at different ages, issues central to developmental and life-course criminology. Despite some null findings, many biological risk factors such as autonomic underarousal, genetics, structural and functional brain abnormalities (particularly in the prefrontal and temporal cortex), low basal cortisol, high testosterone, low serotonin, neuropsychological deficits, and early health risks are associated with antisocial behavior in children, adolescents, and adults. The strength of the risk factor-antisocial behavior associations may differ across development. For example, genetic influences increased across development for aggressive behavior and decreased across development for delinquent/rule-breaking behavior. Brain deficits predisposed individuals to more severe antisocial behavior if damage occurred earlier rather than later in life. In terms of hormones and neurotransmitters, cortisol levels were found to decrease across development for aggressive individuals. The relationship between high testosterone and antisocial behavior was weakest in young children and strongest in adults, while the effect of low serotonin on antisocial behavior was strongest in young adulthood. Furthermore, antisocial adults seem to suffer a greater degree of executive functioning deficits than younger antisocial populations. Studies examining biosocial interactions have also found that antisocial individuals exposed to fewer social stressors are more likely to exhibit biological risk factors compared to those with high social risk and that individuals are most likely to offend over the life course when both social and biological risk factors are present. Such interaction effects have been found in relation to child, adolescent, and adult offending.

The studies also revealed some differences in the associations between biological factors and offending for different types of offenders. For example, genetic influences were more important for childhood-onset compared to late-onset offending, brain deficits were associated with both early- and adolescent-onset offending, and a higher ratio of HVA to 5-HIAA was associated with life-course-persistent and child-onset offending. Additionally, it has been suggested that low heart rate, early spatial deficits, and perinatal complications may contribute particularly to life-course-persistent offending.

## A. Future Directions

Despite these findings, greater research is needed to advance understanding of the role of biology in developmental and life-course criminology. One area of future research involves protective factors for offending. Although psychological and social factors such as attachment (Farrington 2005a) and life events (Wikström 2005) have been proposed in developmental and life-course theories as variables that inhibit offending, such theories do not consider the role of biological factors as possible protective factors. Studies such as that by Raine, Venables, and Williams (1995, 1996) have documented that high resting heart rate and skin conductance can serve as protective factors. For example, antisocial adolescents who desisted from adult crime had significantly better skin conductance conditioning at age 15 years than persisters who were criminal at age 29 years (Raine, Venables, and Williams 1996). Nonetheless, research on biological protective factors is very much more limited compared to that on risk factors. Additional research can provide much-needed insight on the topic of desistance.

Developmental and life-course criminology is also concerned with the effects of life events on the development of offending (Farrington 2005b). Recent findings have provided support for a social neurocriminology perspective, in which biological factors are influenced by social environmental processes to affect antisocial behavior, by documenting that low heart rate partly mediated the social adversity–antisocial behavior relationship (Choy et al. 2015; Fagan, Zhang, and Gao 2017). Given that marriage is associated with lower levels of testosterone in males (Gray et al. 2002) and the finding that adolescents who experience adversity in the form of maltreatment early in life exhibited lower gray matter volumes in corticostriatal-limbic regions such as the dorsolateral prefrontal cortex and amygdala (Edmiston et al. 2011), future efforts could be directed at understanding how social environmental factors can affect offending through changes in biology.

In addition, although several developmental models such as that of Moffitt (1993) and Lahey and Waldman (2005) recognize some biological influences, they do not necessarily emphasize the interactive effects between biological and psychosocial variables. Many theories still fail to incorporate biological factors such as genetics or hormones in understanding the etiology of offending (Barnes et al. 2014). More biological testing should be conducted particularly in prospective longitudinal studies to examine within-individual differences in offending and to investigate biosocial interaction effects. In light of the proposed notion that criminological variables are affected by genetic influences, longitudinal research can be beneficial in accounting for some genetic influences as respondents serve as their own control over many observation points (Barnes et al. 2014). Such efforts can greatly contribute to a better understanding of the role of biology in models of offending and pave the way for the development of early intervention and prevention strategies for crime reduction.

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# Rewiring juvenile justice: the intersection of developmental neuroscience and legal policy

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**The past decade has been marked by historic opinions regarding the culpability of juveniles by the US Supreme Court. In 2005, the death penalty was abolished, 5 years later, life without parole for crimes, other than homicide, was banned, and then just last year, mandatory life sentences for any crime was abolished. The court referenced developmental science in all these cases. In this article, we highlight new scientific findings and their relevance to law and policy.**

The past decade has witnessed a series of US Supreme Court decisions relevant to differential treatment of juvenile versus adult offenders that reference developmental science. In 2005 (*Roper v. Simmons*, 543 U.S. 551) the majority held that execution of offenders under the age of 18 violated the Eighth Amendment barring ‘cruel and unusual punishments’. That decision moved nearly 100 inmates off death row in a dozen states. In *Graham v. Florida* (2010), the Court held that juvenile offenders could not be sentenced to life in prison without parole for non-homicide crimes. At that time, an estimated 100 inmates were serving Juvenile life without parole sentences for nonhomicide offenses. The 2000 or more inmates serving Juvenile life without parole for homicide were unaffected. Then, just last year (2012) in *Miller v. Alabama* and *Jackson v. Hobbs*, the Supreme Court held that mandatory sentences of life without parole for juveniles violate the Eighth Amendment. The ruling only stated that a juvenile could not be subjected to a mandatory sentence of life without parole. Therefore, inconsistencies in the treatment of juveniles remain, because these laws are regulated predominantly by the state that allows jurisdictions to impose different penalties on juvenile offenders.

Across all the Supreme Court cases, scientific evidence of immature cognitive functioning in juveniles was cited in the majority opinion. In this article, we highlight recent scientific discoveries on both behavioral and brain development relevant to these cases, and the treatment of minors, focusing on the recent *Miller v. Alabama* and *Jackson v. Hobbs* cases. There are several similarities in these two cases. In *Miller v. Alabama*, Miller was convicted of murder and given life without parole when he and another teen set fire to a

trailer following an altercation with an adult male, who later died of smoke inhalation. In *Jackson v. Hobbs*, Jackson was one of three teens involved in robbing a video store when one of the other teens pulled a gun and killed the store clerk. He was sentenced to life without parole. Both Miller and Jackson were male and 14-years old. Both cases involved emotionally charged situations and accomplices. These cases highlight the importance of understanding developmental and situational effects on brain and behavior during adolescence. We present recent scientific discoveries that go beyond simple cognitive abilities and suggest that adolescents are more reactive in emotionally charged and social situations than adults due to changes in refinement of competing brain circuitry.

## The brain on adolescence

The teen years represent a period of struggle between seeking independence from parents while still being dependent on them for many basic needs. This transient developmental period is not specific to humans but is observed across species and is reflected in elevated novelty seeking, increased peer interactions, and distancing from parents [1]. During this time, cortical development and functional circuits are highly dynamic. Phylogenetically older regions of the brain are fine-tuned first, whereas higher order association cortices mature later, with areas of the prefrontal cortex important for regulation of behavior, not reaching maturity until the early twenties [2]. Concurrent with these neurobiological changes are marked behavioral changes in risk taking, judgment, and decision-making. Of particular relevance to the legal system is what criminologists refer to as the ‘age-crime curve’, or emergence of criminal behavior, especially in males, during adolescence that peaks around 17 years of age and then decreases [3] (Figure 1A).

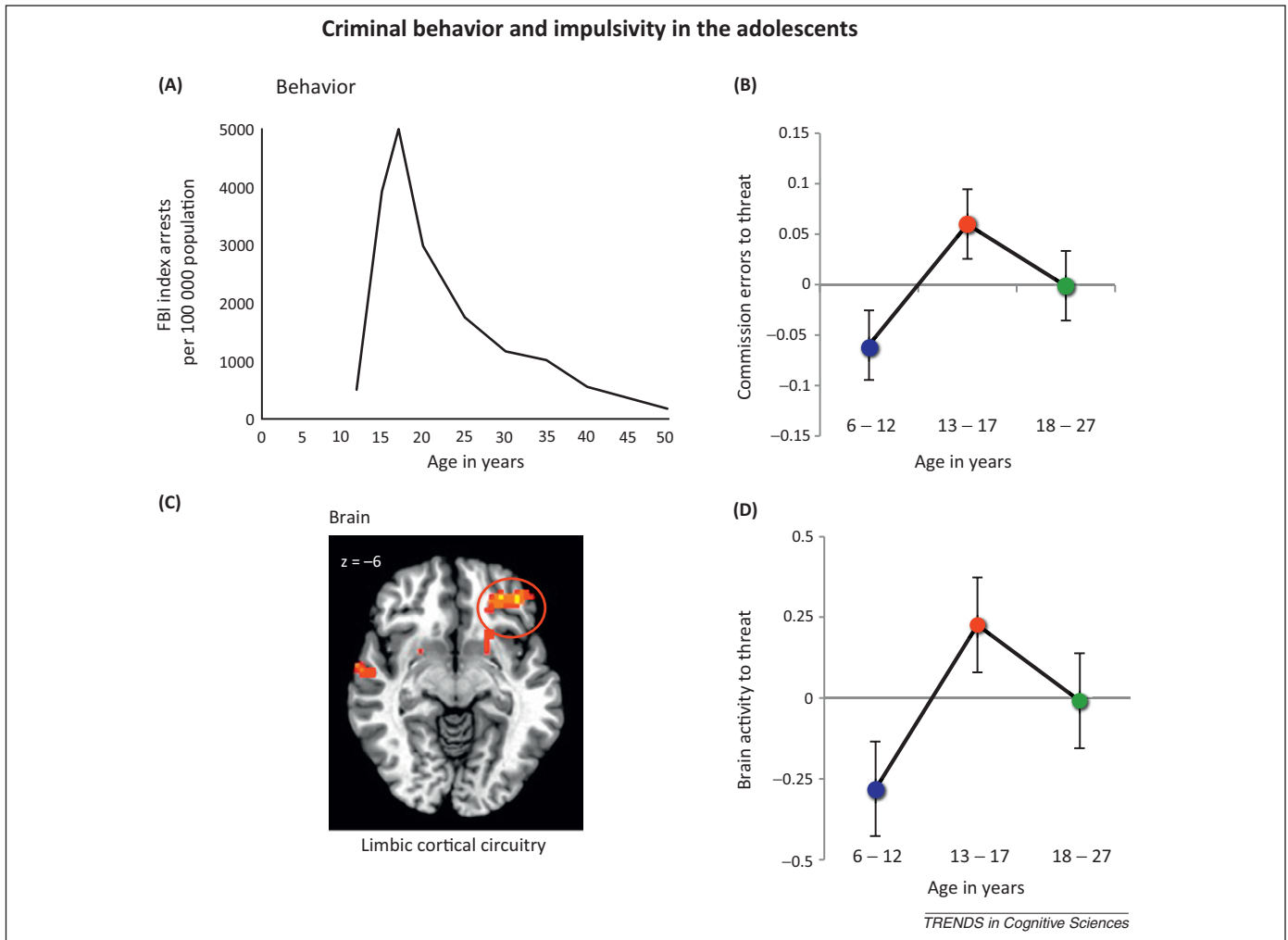
An imbalance model of brain development has been proposed to help explain these phenomena [4]. According to this theory, differential development of brain regions can lead to an imbalance in their activity, with greater reliance on emotional regions than on prefrontal control regions during adolescence as compared to both childhood and adulthood, when the circuitry is either in the process of developing or fully mature. In situations that are not emotionally charged, prefrontal circuitry helps direct attention and action toward relevant information while suppressing responses to irrelevant information. Given that this circuitry continues to develop throughout adolescence, actions and judgments may be suboptimal relative to an adult. In emotionally charged situations, this less developed circuitry

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**Figure 1.** Developmental differences in criminal and impulsive behavior and the brain. **(A)** Arrest rates sharply increase at the beginning of adolescence, peaking at around 17 years of age. **(B)** Criminal behavior is paralleled by an adolescent-specific increase in impulsive responses to threat cues and **(C)** increased brain activity in limbic (emotion-related) cortical regions when **(D)** successfully suppressing the impulse to respond. Data from [9].

appears even less capable of adequately regulating emotions and actions, resulting in a teen exercising less self-control in making a risky decision, even when he or she knows better. The neurobiological and psychological immaturity of adolescents may render them more vulnerable to making poor decisions in such contexts. However, this diminished self-control is transient and will continue to develop as underlying circuitry becomes fine-tuned with experience and time. Recent studies examining the development of this circuitry and behavior in the context of emotionally charged and social situations are reviewed below.

**The influence of emotion**

The inflection in violence and criminal behavior during adolescence has been suggested to be due to a proclivity toward incentives [5] and risk taking [6]. Yet, criminal behaviors often involve highly charged emotional or threatening situations. Emerging evidence suggests that adolescents have difficulty suppressing attention and actions toward emotional stimuli, even when irrelevant to the task at hand [7,8]. Some adolescents appear to be drawn to cues that signal potential threat (e.g., frightened faces) as evidenced by adolescents, especially males,

impulsively reacting to threat cues (Figure 1B). This pattern of behavior is not observed in adults or children. In a recent study examining brain circuitry implicated in impulsivity to threat, Dreyfuss and colleagues [9] showed enhanced activity in limbic frontostriatal regions during adolescence relative to childhood and adulthood (Figure 1C,D). By contrast, prefrontal control regions were more active during successful suppression of an action, regardless of emotion content. Together, these findings suggest that nonlinear changes in limbic circuitry while prefrontal control circuitry is still maturing, coincide with the likelihood of adolescents approaching, rather than retreating, from potential threats.

**The influence of peers**

Peers can also mobilize teens to engage in dangerous behavior. The need for acceptance and approval by peers is especially important during the teen years. When rejected by peers, a teen is more likely to engage in risky behaviors to fit in with a group [10,11]. These situations can impair judgment and may draw a teen to engage in behaviors, including illegal activity, even when they know better. Unlike in adults, most criminal offenses among



teens occur in groups [10,12]. To the extent that an adolescent seeks favor with a peer group, the adolescent may try to emulate peer behavior and attitudes or act to gain their favor.

Some of the most compelling brain evidence for these findings comes from Chein and colleagues [13], who have shown using a simulated driving task that the mere presence of peers can directly influence adolescents' decisions and actions. Half the subjects performed the task alone, and the other half in the presence of friends. Adolescents, but not adults, made more risky decisions and showed heightened activity in reward-related limbic circuitry, in the presence of peers. These findings suggest that peer influences have powerful effects on adolescents that can contribute to risky and potentially dangerous behaviors.

### Concluding remarks

The *Miller v. Alabama* and *Jackson v. Hobbs* US Supreme Court cases led to a majority opinion that a mandatory life sentence without parole for a juvenile was unconstitutional. Based on the studies reviewed, these crimes illustrate a triple threat on behavior in that: (i) the defendants were adolescents, shown to have poorer judgment than adults; (ii) the crimes were committed in an emotionally charged situation, shown to trigger reactivity in adolescents; and (iii) the crimes occurred with peers, shown to mobilize teens more than adults, to engage in reckless behavior. These cases highlight the importance of understanding developmental and situational effects on brain and behavior during adolescence when considering the punishment of juveniles relative to adults for criminal behavior. Together, the studies outlined above suggest that, in the heat of the moment, as in the presence of peers, potential threat, or rewards, emotional centers of the brain hijack less mature prefrontal control circuits during adolescence, leading to poor choice behaviors.

Although neuroimaging techniques are not currently able to aid in arguing for the guilt or innocence of a defendant in the courtroom, developmental research yields important insights into brain function relevant to juvenile justice policy. Until recently, much of the work in this area relied on psychological rather than neuroscientific evidence, with psychologists and legal scholars coming together to provide commentary on juvenile justice policy based on the well-characterized differences in behavior (e.g., increased impulsivity, risk taking, and sensation seeking) observed in adolescence. With neuroscience, we can begin to understand why this developmental group behaves uniquely. However, this does not exonerate adolescents from guilt by reason of immaturity. Rather, adolescents should be held accountable for their actions, but punishment should be considered in the context of diminished responsibility.

Given the evidence that juveniles are fundamentally different from adults, fair sentencing should take on different meaning. It may be considered cruel and unusual punishment under the Eighth Amendment to subject a developing teen to an adult punishment. An incarceration model, in effect, prevents an adolescent from developing into a prosocial, independent adult. Although some juveniles may require incapacitation to protect the public, locking up a juvenile takes away social opportunities in which the teen could learn to regulate emotions and impulses and may also detrimentally shape identity formation by association with incarcerated peers. Supporting this idea, a longitudinal study of incarcerated adolescent males showed that amount of time incarcerated had a negative effect on developing psychosocial maturity and that, following incarceration, decrements in temperance and responsibility were observed [14]. Instead of hindering growth, juvenile justice policies should aim to promote rehabilitation, reduce recidivism, and implement interventions that will bolster healthy development [12,15].

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## The Importance of Neurobiological Research to the Prevention of Psychopathology

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There is both a biological and environmental component to the neural substrates for various forms of psychopathology. Brain dysfunction itself not only constitutes a formidable liability to psychopathology, but also has an impact on environmental and social responses to the individual, compounding the risk for an adverse outcome. Environmental conditions, such as social and physical stimulus deprivation, poverty, traumatic stress, and prenatal drug exposure, can further compromise brain function in the context of existing liabilities. The relationship between genetic and environmental processes is interactive, fluid, and cumulative in their ability to influence an individual's developmental trajectory and alter subsequent behavioral outcomes. Given the codependent relationship between these processes, brain function is now believed to be malleable via manipulations of the environment in ways that may decrease liability for psychopathology. Research that explores these relationships and ways in which interventions can redirect this developmental track may substantially advance both the science and practice of prevention. Studies attempting to isolate the neurobiological effects of socioenvironmental factors are reviewed, implications for intervention strategies are discussed, and a future research agenda is proposed to provide greater insight into specific brain-environment relationships. Armed with this knowledge, prevention scientists may eventually design programs that directly target these effects to reverse or attenuate negative outcomes.

**KEY WORDS:** neurobiology; neurotransmitters; prevention; antisocial behavior; drug abuse.

Although we know a great deal about the effects of socioenvironmental conditions on the propensity to certain behavioral disorders, only recently have discoveries in the field of neuroscience linked brain function with a predisposition for psychopathology, such as depression, schizophrenia, drug abuse, and antisocial behaviors. Several markers indicative of brain dysfunction have been identified and associated with particular behaviors and temperaments that characterize liability for psychopathology. For exam-

ple, studies suggest that individuals prone to highly aggressive behavior possess a greater number of particular genetic variations (i.e., polymorphisms) involving serotonin and dopamine systems than those who do not (see Fishbein, 1998). Also, physiologic, neuropsychologic, and imaging studies implicate dysfunction of particular brain regions in several aspects of vulnerability to drug addiction and related behaviors, including impaired judgment, sensation-seeking, attention deficits, and impulsivity (see Raine, 1993). Research has clearly established that the origins of brain and behavioral dysfunction are both genetically determined and environmentally induced (McGuire *et al.*, 1994; O'Connor *et al.*, 1998a; Pike *et al.*, 1996; Reiss *et al.*, 1995); thus, their presence can cumulatively alter an individual's developmental trajectory to influence subsequent development and behavioral

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outcomes. Because brain function is now known to be at least partially alterable by our environment in ways that may increase or decrease liability for psychopathology, it is critical that prevention research begin to explore these relationships and devise ways in which prevention programs can redirect this developmental track.

#### STRUCTURING THE ENVIRONMENT TO MINIMIZE RISK FACTORS

There is a critical need for research-based prevention programming to optimize individual potentialities in the context of prevailing social and biological conditions. Under optimal socioenvironmental circumstances, a responsive social system supports and encourages constructive choices, lifestyles, and opportunities. And on an individual level, the necessary internal controls are present to select and sustain a productive path. The potential to take advantage of existing external resources, make adaptive choices, and reach potentialities depend upon executive decision making and rational thought capacities—functions modulated within the central nervous system. In the dual absence of favorable external resources and developmentally appropriate brain function, high-risk or maladaptive behavior more likely becomes the default option. In general, therefore, research-based prevention strategies must achieve three goals: (1) to structure the environment to be more responsive to human needs and expand the availability of constructive choices and opportunities, (2) to optimize brain functioning, and (3) to introduce an intervention that will have an impact on one or both of these processes when they are somehow in deficit.

To effectively accomplish these goals, the relationship between environmental and biological liabilities must be better understood. This identification process will generate a better understanding not only of how environmental conditions influence brain function, but also how genes and aspects of brain function moderate the social environment. Such information will more fully explain why some individuals are susceptible to psychopathology, e.g., more likely to choose to alter brain function via abusable drugs or engage in risky and antisocial behaviors, than others under certain conditions. Although there is ample research demonstrating the role of innate strengths and vulnerabilities in propensity for various types of psychopathology, this article focuses on the

external environment's contribution to behavioral disorders through its impact on brain function.

The purposes of examining neurobiological research in the context of prevention approaches are many and varied:

1. To aid practitioners in the identification of individual vulnerability factors by virtue of neurobiological vulnerabilities, and prevailing environmental conditions.
2. To eventually be able to consistently identify environmental conditions that act as triggers, enhancing the expression of vulnerabilities, such as depressive, aggressive, impulsive, or drug taking behaviors.
3. To develop more effective methods for early detection and intervention that are targeted and developmentally appropriate with respect to existing environmental conditions and biological liabilities.
4. To provide support for public health and medical approaches in lieu of simple incarceration or institutionalization, which generate many extraordinary personal, social, and financial costs.

The discussion begins with a conceptual perspective for explorations of the brain-environment relationship. Then, a review of the literature is presented specific to the impact of environmental factors on brain function and behavioral outcomes, including exposure to adverse conditions from the prenatal environment through adulthood, with a focus on traumatic stress. In conclusion, implications of the neurobiological research for prevention strategies are discussed, and a prospective research agenda is proposed.

#### RESPECTIVE ROLES OF GENETIC, BIOLOGICAL, AND ENVIRONMENTAL CONDITIONS

Both biological and behavioral traits are the product of an ongoing interaction between genes and environmental conditions, from the in utero environment to the social milieu. The "genotype" is the complement of genes inherited from parents, although genetic mutations or recombinations during embryonic development also contribute to an individual's genetic complement. The "phenotype" includes observable biological and behavioral traits that are reflective of the interaction between the genotype and environment; i.e., gene functions are me-

diated and modulated by environmental influences and subsequently expressed in biological processes and behavioral outputs. For example, neurogenetic mechanisms such as brain chemistry and its activity levels are genetically designed with respect to the synthesis and metabolism of brain chemicals, the number of receptor sites present, and the activity of competing or regulating enzymes. Nevertheless, environmental inputs and experiences can modify the expression of affected genes, thereby altering behavioral outcomes for better or for worse. Understanding this interactive process translates into the ability to redirect behavior by providing particular experiences, directive training and opportunities that influence critical neurobiological functions. Thus, although gene functions cannot be “reprogrammed” by altering the molecular genetic structure to change behavioral outcomes, they can be manipulated. Genes establish the framework for brain function while the environment customizes and fine-tunes it.

Preliminary research has identified numerous putative neurogenetic mechanisms (i.e., features of brain function that are genetically designed and environmentally influenced) in various forms of psychopathology. For example, alterations in brain dopamine functioning have been found in different types of behavioral disturbances, implicating genetic influences on this association (Cabib *et al.*, 1997). Research on Tourette’s syndrome, a neuropsychiatric disorder with co-occurring attention deficits and conduct problems, has provided valuable information regarding relationships between genetic vulnerability, likely involving dopaminergic systems and environmental influences (Cohen, 1992). The disorder is genetically transmitted through alterations in neuroanatomical and chemical systems. However, its clinical manifestations are environmentally sensitive. Attention Deficit Hyperactivity Disorder (ADHD) is yet another example of the relationship between neurogenetic mechanisms and environmental factors. Neuroanatomical, physiologic, and chemical differences found in this population are thought to be modulated by cultural and familial factors (Taylor, 1998). Current thinking is that environmental conditions do not forecast a particular type of pathology, but that genetic factors may be somewhat more predictive. In other words, environmental influences act in a nonspecific way on specific genetic processes, manifested as neurobiological risk factors (e.g., low serotonergic tone or executive cognitive deficit), to induce their expression.

Neurogenetic factors increase liability for psy-

chopathology by influencing related, core phenotypes that antedate and are associated with the eventual behavioral outcome, such as temperament, personality traits, patterns, and orientations of behavior and relationships. Phenotypes related to and predictive of psychopathology include impulsivity, cognitive deficits, attention deficits, high activity levels, sensation or novelty seeking, conduct disorder, negative affect, risk imperception, poor conditionability, lack of pain avoidance responses, abnormal levels of arousal, and low verbal ability. Several of these phenotypes have been associated with particular neurogenetic mechanisms, such as irregularities in neurotransmitter function and hormone responses, and genetic variants (see Cloninger *et al.*, 1993; Fishbein, 1998; Raine, 1993). Prevention strategies will be most effective if they focus on these underlying phenotypes, in conjunction with particular forms of environmental stimulants and supports as indicated by the needs of targeted individuals and neighborhoods.

Neurobiological conditions are, therefore, mutable; although genes underlie their expression, they are environmentally influenced and can be altered via environmental manipulations. For example, highly stressful experiences produce measurable differences in brain chemistry; in particular, a decline in serotonin activity levels (Davis *et al.*, 1997; Fichtner *et al.*, 1995; Graeff *et al.*, 1996; Southwick *et al.*, 1997; van der Kolk, 1997). This finding implies that traumatic experiences directly affect biological traits, which can subsequently increase risk for negative behavioral outcomes. One might anticipate, as a result, increases in serotonergic activity levels with an effective intervention. Another example is that of stimulus deprivation, associated with a variety of cognitive and neurologic deficits that favorably respond to environmental enrichment programs (see later section on “environmental stimulation”). In sum, genetic risks are expressed through vulnerability or heightened sensitivity to adverse environmental factors; thus, biological features can be either suppressed or expressed in response to environmental inputs. No individual is predestined strictly by virtue of their genes or their biology to psychopathology; environmental conditions carry significant weight in this equation.

#### A Heuristic Biosocial Model of Antisocial Behavior

A model has been proposed (Raine *et al.*, 1997a) to guide investigations into biological and social interactions which has import for the use of neurobio-

logical findings in prevention strategies. In their model, biological and psychosocial risk and protective factors interact in a dynamic, constantly fluctuating, and cumulative process to determine risk for behavioral disorders. Protective factors exert an influence and can alter this pathway at any point in the developmental process to reduce risk status and improve the outcome. The behavioral outcome can also, in a feedback loop, affect risk and protective conditions to further strengthen or weaken risk status. For example, a child with ADHD (one of many childhood behavioral disorders with genetic origins) may be easily frustrated and difficult to manage. Parents without proper coping skills may harshly and inconsistently punish the child, further strengthening the child's risk for antisocial behavior (O'Connor *et al.*, 1998a, 1998b). The child may react to such parenting with hostility and defiance, providing further fuel for a negative developmental outcome. The results may be quite different for a learning disabled child in the presence of a supportive home with appropriate intervention.

This integrated model readily applies to the widely accepted drug abuse prevention principles outlined by Hawkins and Catalano (1995). The authors suggest that the most promising route to effective strategies for the prevention of alcohol and other drug problems is through a focus on risk and protective factors, from the individual to the community level. Their framework can easily accommodate biological and genetic factors as they interrelate with the social and psychological conditions the authors include to formulate a comprehensive and contemporary model for prevention strategies. An understanding of differential vulnerability to social and environmental conditions, *i.e.*, individual differences in resiliency against similar social stressors (Anisman *et al.*, 1998), would be subsequently enhanced. The resulting more encompassing model implies that prevention programs will be infinitely more effective when they account for both neurobiological and environmental aspects of risk and resiliency factors.

#### ENVIRONMENTALLY INDUCED BIOLOGICAL ASPECTS OF PSYCHOPATHOLOGY

Understanding the dynamics and consequences of stress is key to unraveling etiologic mechanisms in psychopathology. Stress is the physical and psychological response to an excess of stimulation compared with an individual's resources for coping (Meaney *et*

*al.*, 1996). The source of stimulation may be either environmental (e.g., child abuse, family dysfunction, sensory deprivation), biological (e.g., lead poisoning, prenatal drug exposure, head trauma) or a function of the relationship between the two. Resources for coping may also be grounded in conditions that are either biological (e.g., IQ, executive cognitive skills), social (e.g., parenting techniques), psychological (e.g., self-esteem) or, most likely, a combination. Stressful experiences can temporarily or permanently alter brain function and chemistry. An acute stressor occurs in the short term and generally produces only a temporary effect; biological and physiologic adjustments in the brain's response to the stressor take place after the stressor terminates. The presence of a chronic or recurring stressor, in contrast, more often results in a cumulative effect on biological and physiologic responses, constituting a formidable risk factor. Chronic stress primes the brain for maladaptive responses to the environment by altering brain function, disengaging coping mechanisms, and compromising ability to formulate and act on rational choices, thereby increasing the likelihood of psychopathologic behavior (Anisman & Zacharko, 1986). Inherent susceptibilities or vulnerabilities help to determine particular behavioral outcomes of that stress, e.g., from schizophrenia to depression to violence, whereas positive attributes of either the individual or the environment can provide some protection from these outcomes.

#### The Physical Environment and its Stressors

##### *Prenatal Influences*

Integrity of the internal environment of the developing fetus is predictive of future outcomes in terms of organ function, anatomic features, cognitive ability, intelligence level, psychiatric status, and behavioral patterns (Glover, 1997). The mother's experiences and mental state influence this internal environment and, consequently, play an active role in determining the range of abilities the child will have in interaction with his or her genetic make-up. Her nutritional intake, use of substances, and even stress levels directly affect fetal development. Hundreds of studies document the relationship between suboptimal prenatal conditions and later behavioral and psychological disorders. One particular study (Lou *et al.*, 1994) followed 3021 women through their pregnancy and compared the 70 most stressed with 50 controls

from the sample. Both antenatal stress and smoking contributed independently and significantly to lower gestational age, lower birth weight, and small head circumference when corrected for birth weight. Prenatal stress was also significantly associated with poorer scores on the neonatal neurologic examination. Further investigations have begun to examine the specific effects of the prenatal environment on various dimensions and risk factors for psychopathology.

One of the most profound and also preventable precipitants of behavioral and psychological disorders during pregnancy is prenatal drug exposure. Animal and human studies indicate that repeated prenatal exposures to abusable drugs leads to disruptions in normal neurotransmitter function and may enhance development of tolerance and/or sensitization to later drug use in the offspring (Allan *et al.*, 1998; Battaglia *et al.*, 1995; Henry *et al.*, 1995; Howard & Takeda, 1990; Legido, 1997; Slotkin, 1998).

*Alcohol.* One very profound and direct cause of mental retardation which is entirely preventable is fetal alcohol exposure. Fetal alcohol syndrome (FAS) is easily diagnosable owing to the obvious facial deformities and mental retardation that occur in the offspring when alcohol was consumed in large quantities throughout pregnancy. However, subtler forms of FAS can also result from lower or less frequent intake of alcohol, which contribute to less obvious physical deformities, making diagnosis more difficult. Rather than profound mental retardation, these cases may present themselves with cognitive deficits, learning disabilities, hyperactivity, and behavioral problems. Individuals so affected are more vulnerable to psychopathology and, in particular, conduct disorder behavior by virtue of the many risk factors they possess (Backon, 1989; Famy *et al.*, 1998; Stressguth *et al.*, 1991).

Damage to the brain from fetal alcohol exposure may increase vulnerability to psychopathology specifically by affecting executive cognitive functioning and verbal skills. Also, neurobiological research suggests that the activity levels of serotonin in the offspring are lower (Gorio *et al.*, 1992; Guerra, 1998; Tajuddin & Druse, 1988), possibly contributing to the development of impulsivity and aggressiveness. Impairments are exhibited in the following forms:

- An inability to calculate the consequences of one's actions
- Difficulty linking cause with effect
- Impaired logic

- Relative lack of remorse
- Memory and learning impairments
- Inappropriate behaviors and impulsivity
- Defects in abstract thought
- Difficulty in following directions

The social consequences of these neuropsychological deficits include a tendency to suggestibility, poor judgment, gullibility, increased vulnerability to abuse, rejection by peers, frustration, hostility, association with like-peers, and alienation in school. The impairments suffered by victims of FAS last a lifetime and frequently remain undiagnosed.

*Tobacco.* Maternal smoking during pregnancy also increases the risk for behavioral problems and cognitive deficits in the offspring. Prenatal exposure to nicotine is associated with adverse reproductive outcomes, including alterations in neural structure and functioning, cognitive deficits, and behavior problems in the child. Wakschlag *et al.* (1997) reported that mothers who smoked more than half a pack of cigarettes daily during pregnancy were significantly more likely to have a child with conduct disorder. A significant effect of maternal smoking on externalizing behavior problems, e.g., oppositional, aggressive and/or overactive behaviors, was also reported by Orlebeke *et al.* (1997). Rantakallio *et al.* (1992) found an association between maternal smoking in pregnancy and delinquency in the offspring during adolescence and early adulthood, although the nature of causal mechanisms was unclear. Milberger *et al.* (1996) reported an association between maternal smoking during pregnancy and ADHD in the children they sampled.

The assumption underlying these and other studies is that maternal smoking causes brain damage by reducing oxygen to the fetal brain and by interfering with the development of neurotransmitter and modulator systems. For example, there is evidence that acetylcholine receptor activity is disrupted in fetuses exposed to nicotine (Navarro *et al.*, 1989; Slotkin, 1998; Tizabi *et al.*, 1997), contributing to lower cognitive, psychomotor, language, and academic performance, in addition to hyperactivity and attention deficits (Dunn *et al.*, 1997; Milberger *et al.*, 1996, 1997). Although particular forms of psychopathology have been associated with maternal smoking, it is not yet possible to predict the development of a specific disorder. Also, many who are exposed to tobacco in utero are seemingly unaffected. Nevertheless, in combination with a disadvantageous or suboptimal environment (e.g., poor parenting or family dysfunction)

tion), the effects of maternal smoking during pregnancy on behavioral problems are expected to be stronger.

*Cocaine.* In some large urban areas, between 10 and 15% of all women in their child-bearing years are users of cocaine (Giacoina, 1990). Cocaine readily crosses the placental barrier and rapidly becomes concentrated in fetal brain tissue. Chronic prenatal exposure results in depletion of brain chemicals (e.g., dopamine) and damage to receptors. For example, prenatal cocaine exposure increases release of the adrenergic amines, such as norepinephrine, to initiate the "stress response" (fight/flight mechanism). These chemicals are also involved in basic neuropsychological functions (e.g., attention, activity levels, and regulation of anxiety and other emotional states). Cocaine further affects blood flow, possibly resulting in fetal hypoxemia and decreased nutrient transfer. Mothers who use cocaine are also less likely to obtain prenatal care, follow a proper diet, or experience appropriate weight gain. Similarly, most cocaine users also consume alcohol, complicating the isolation of specific effects.

Consequences to the fetus are believed to be many and varied, from cerebral infarction and seizures to disrupted sleep patterns and irritability (see Mott *et al.*, 1993). Problems with attention regulation, activity levels, and capacity to modulate behavior have been reported, which are all risk factors for later psychopathology. Neurobiological research shows that receptor activity of serotonin, dopamine, and norepinephrine is disrupted in exposed newborns, resulting in developmental delays that may pose a liability to negative outcomes (Battaglia *et al.*, 1995; Legido, 1997; Seidler & Slotkin, 1992; Slotkin, 1998). Also, EEG abnormalities in the newborn exposed to cocaine prenatally suggest cerebral irritation, in addition to tremors, irritability, and hypertonicity. Fetal weight tends to be lower, length of the body shorter, and head circumference smaller, but lags in the development of these features become more trivial as the infant matures. There are also indications of:

- impairments in interactive capabilities, state regulation, and habituation
- hyperexcitability or depression
- lowered mental and psychomotor developmental scores
- deficits in context of free play
- less representational play
- a high rate of scattering, batting, and picking

up and putting down toys rather than sustained play or curious exploration

- minimal brain dysfunction and learning disabilities
- difficulty in concentrating, interacting with other kids, and playing alone
- impairment in basic attentional regulation processes

Nevertheless, there are controversies regarding the effects of prenatal cocaine exposure on offspring behavior, which have not been documented consistently across studies. Also, it is difficult to isolate the effects of cocaine on the fetus when cocaine-abusing mothers so often are polysubstance abusers.

Cognitive effects are strongly dependent upon the quality of home environment. The prevailing lifestyle can complicate the outcome for the developing child (Azuma & Chasnoff, 1993; Brooks-Gunn *et al.*, 1994). Conditions that often prevail in the homes of children exposed prenatally to cocaine include a chaotic environment, lack of appropriate stimulation, lack of parenting skills, mother with impaired mental functioning by virtue of her addiction, inappropriate developmental modeling, as well as abuse and neglect. The presence of these conditions increases the likelihood of further impairments to intellectual capability and social-ethical behavior.

#### *Maternal Social Conditions*

The social environment of a mother during pregnancy may also alter the prenatal biological environment, subsequently affecting outcomes for the offspring. Exposure to high levels of stress during pregnancy can influence the integrity of physiologic, hormonal, and neurotransmitter systems developing in the fetus, subsequently increasing the risk for psychopathology in the child (Benes, 1997; McIntosh *et al.*, 1995; Roughton *et al.*, 1998; van Os & Selten, 1998; Ward, 1991). Recent studies suggest that environmental stress during this period can activate genes linked to psychological disorders (Benes, 1997; Kaufer *et al.*, 1998; Smith *et al.*, 1997; Stabenau, 1977; Van Os & Selten, 1998). In particular, the gene called "*C-fos*" may be turned on in the fetus by exposure to both maternal stress and drug abuse (Kaufer *et al.*, 1998; Senba & Ueyama, 1997). Increased *C-fos* activity is believed to contribute to the development of abnormal neural connections, causing neurons to fire in the absence of a trigger, which may elicit feel-

ings or behaviors that are out of context, given environmental conditions. Children who experience high levels of stress, hypothetically either in utero or in early life, may become sensitized to future stressful experiences and exhibit inappropriate emotions associated with mental disorders (Post, 1992).

### *Perinatal Complications*

Perinatal conditions occur between the seventh month of pregnancy to 28 days after birth (Brennan & Mednick, 1997). They include prematurity and delivery complications such as hypoxia, infectious disease, prolapsed cord during delivery, irregular heart beat in the child during delivery, late-stage drug use, and other difficulties immediately before, during, or after birth. These conditions are believed to increase the risk for negative outcomes, particularly aggressive behavior, presumably as a function of the fetal brain damage they can cause. Piquero and Tibbetts (1999) provide a thorough overview of research summarizing the relationship between perinatal factors and antisocial behavior, showing support for the relationship (although there are some discrepancies). Importantly, the most recent studies cited suggest a strong interactive relationship between the effects of perinatal complications and the social environment on antisocial outcomes. They conclude from their review that “poor or deficient familial and socioeconomic environments may magnify the effects of pre/perinatal complications.” Piquero and Tibbetts surmise that perinatal complications may contribute to neuropsychological deficits that impede the socialization process. In the dual presence of neuropsychological impairment and a poor familial environment, characterized by family dysfunction, neglect or abuse, inconsistent parenting, or lack of supervision, the socialization process is further compromised, exponentially increasing risk for an antisocial outcome.

Overall, exposure to adverse physical stimuli, particularly during gestation and the birth process, can compromise later brain function. Postnatally, numerous other physical insults can also alter neurobiological processes, such as head injury and neurotoxic factors. Although individuals are differentially affected by similar exposures, it is impossible at this juncture to predict who will be affected and to what extent. Ongoing research in the fields of genomics and epigenetics (the study of inherited alterations in

gene expression) may eventually help to flesh out differential response tendencies.

### The Social Environment and its Stressors

The physical and social environment of the mother and her offspring contributes in substantial and necessary ways to brain development and function. Not only does the growing brain of a child require a certain amount of physical stimulation, there are also strong biological needs for positive social interactions, bonding, and protection against traumatic experiences. For example, children who were not provided with the most basic academic skills (e.g., learning colors or how to spell their names) during the first few years may have difficulty once they enter school and become academically disadvantaged, even though they may be innately quite bright. More intense stimulation to sensory and cognitive functions may be necessary for these children to advance appropriately.

### *Caregiver-Child Social Interactions*

The bond between caregiver and child, and the regular sensory contact that stems from this bond, are basic biological needs; even the most basic biological systems depend on the quality of social stimulation early in life. The brain continues to develop neural connections during the first year of life, by which time approximately 50% of all human learned responses have formed. Between year one and year three, adaptational responses to the environment are formed, including the essential stage called “basic trust.” Through attachments to caregivers, infants and children develop a sense of security, self-efficacy, reassurance about the safety of their environment, and successful experiences with others. Children who do not develop basic trust often have attachment disorders, aggressiveness, attention deficits, anxiety, emotional disturbances, and withdrawal. In the absence of adequate levels of early social stimulation, children lack the foundation to deal with the rigors of daily life and its stressors. Thus, even in the presence of prenatal trauma or perinatal complications, manipulations of the environment can minimize biological risks or disadvantages to alter outcomes.

An example highlighting the importance of adequate caregiver-child interactions in offspring behav-



ior is found in reports on maternal depression. Both animal and human studies have shown that primate development is influenced by infants' attachment relationship primarily with the mother (see Goodman & Gotlib, 1999). Mothers who interact infrequently, with less intensity, inconsistently, or with relative unresponsiveness compromise a stable attachment relationship. Studies suggest that, as a result, offspring manifest various disturbances in affect and mood, cognitive ability, sociability and coping responses (Allen *et al.*, 1998; Cicchetti *et al.*, 1997; Goodman & Gotlib, 1999). The specific risks for psychopathology in the offspring may be a function of inheritance, innate dysfunction of neuroregulatory processes, exposure to negative maternal orientations, and/or the stressful environment (Goodman & Gotlib, 1999). Rosenblum and Andrews (1994), in particular, discuss evidence that the long-term effects of disturbed mother-child interactions on infant development may be partially a product of alterations in the function of serotonergic and noradrenergic systems.

#### *Environmental Stimulation Needs*

Physical and sensory stimulation, from tactile contact to visual explorations of the environment, are essential to develop and maintain proper brain function (Kuhn & Schanberg, 1998). The brain experiences crucial periods when cells must be stimulated adequately to develop vision, language, smell, muscle control, and reasoning ability. Neural connections not supported by the external environment shrink and may die. Animal and human babies who are stimulus deprived are less responsive to their environments and if the condition is chronic, learning impairments, a thinner cortex (especially in the occipital portion), inadequate neurotransmitter activity, less dense connections between neurons, and increased incidence of premature aging can occur (Holsboer, 1989; Kempermann *et al.*, 1998; Kuhn & Schanberg, 1998; McEwen, 1997; Stokes, 1995). As a result, coping skills under stressful conditions may be impaired throughout life in affected individuals. One of the most extreme examples of such deprivation is in substandard orphanages where infants lack routine caregiver interactions, both social and sensory; mental retardation and even physical deformities may result in the absence of genetic abnormalities.

Thus, touch has biological value to maintain nor-

mal growth and development. Premature animals (Meaney *et al.*, 1991; Meaney & Aitken, 1985) and human babies (Kuhn and Schanberg, 1998) who are touched frequently gain more weight, are more active and alert, and show more brain growth. A deficit in tactile contact is associated with enzyme deficiencies in the brain and body. For example, "psychosocial dwarfism" is a syndrome associated with a lack of environmental stimulation in an infant leading to insufficient stimulation of the hypothalamus which regulates the release of growth hormone (Albanese *et al.*, 1994; Voss *et al.*, 1998). As a result, growth is stunted and can be permanent if not reversed at an early age. Because the hypothalamus also regulates many aspects of both survival and emotional responses, underactivity in the hypothalamus due to stimulus deprivation can affect behavior and emotionality.

Under conditions of sensory deprivation, animals and humans tend to seek stimulation the brain requires for proper functioning. The reticular activating system (RAS), which radiates from the brainstem up through the thalamus with fibers that connect to higher cortical centers, activates neural systems in response to environmental input, enabling an awareness of and reaction to that input. When stimulation from the environment is inadequate, due either to sensory deprived conditions or physiologic deficiencies within the RAS, the tendency to seek stimulation elsewhere increases. As a child, stimulation needs are primarily physical, often resulting in distractibility, constant motion, inability to sit still, and excessive physical contact with others, as seen in hyperactivity.<sup>3</sup> As the child matures, however, high stimulation needs may be met in more sophisticated ways by risk taking, novelty seeking, drug use, and other excessive behaviors. Hypothetically, therefore, even in the absence of a genetic or biological deficit in CNS arousal levels, environmental stimulus deprivation may simulate a condition such as hyperactivity or sensation seeking by creating a deficiency state, resulting in increased needs for external stimulation.

Fortunately, there is a high degree of plasticity in the brain, particularly in the early years of life (Joseph, 1999; Young *et al.*, 1999). Thus, while deprived rearing conditions may induce disturbances of

<sup>3</sup>Hypoarousal within the RAS has been associated with hyperactivity, which may help to explain why the administration of a stimulant, Ritalin, helps to calm and focus a hyperactive child. Their unusual need for external stimulation is counterbalanced when the RAS is receiving proper amounts of internal stimulation.

social and emotional functioning, enriched rearing conditions may help to restore function (Nakamura *et al.*, 1999). Starting as young as 6 weeks old, an enriched environment can produce improvements in brain function in individuals exposed to sensory deprived environments. There is evidence from animal (Kuhn & Schanberg, 1998; Passig *et al.*, 1996; Pham *et al.*, 1997; Schwartz & Goldman-Rakic, 1990), human biological (Meaney *et al.*, 1991; Pham *et al.*, 1997; Weisglas-Kuperus *et al.*, 1993), and neuroimaging (Risch, 1997) studies that changes incurred through environmental enrichment, where complex and intensive inanimate and social stimulation is provided, may endure through adulthood.

In sum, environmental stimulus deprivation has been associated with the development of psychopathology in humans and animals, from aggressive behaviors to depression (Agid *et al.*, 1999; Kuhn & Schanberg, 1998; Post & Weiss, 1997; Siegel *et al.*, 1993). Underlying mechanisms for this relationship are presently not well understood, although it is likely that the development of psychopathology in general is a function of neuropsychological deficits, hormonal and neurotransmitter irregularities, and other biological effects of deprivation. The particular behavioral disorder that emerges in response to stimulus deprivation, however, is more likely a result of phenotypic predisposition.

#### *Child Abuse and Other Traumatic Experiences*

Child abuse plays a distinct and significant role in the risk for behavioral disorders owing to the social and psychological trauma (Maxfield & Widom, 1996). What is less well known, however, is the impact of child abuse on the developing brain, which may actually mediate the behavioral response. Child abuse has been associated with alterations in neurotransmitter activity (e.g., serotonin) and stress hormone levels, including cortisol and epinephrine (Kaufman *et al.*, 1997; Lemieux & Coe, 1995; Lewis, 1992). In general, poor parenting has been related to low serotonin levels in the child (Pine *et al.*, 1996, 1997). Furthermore, fewer neural connections, CNS instability (as reflected in EEG abnormalities), and aberrant cortical development have been reported in individuals with a history of child abuse (Ito *et al.*, 1993; 1998; Shin *et al.*, 1997; Stein *et al.*, 1997; Teicher *et al.*, 1997). These findings may help to explain the higher incidence of developmental delays and behavioral disorders in this population.

Sexual abuse during childhood has been linked to negative physiologic changes that can affect childhood development. In particular, abnormal hormonal, and pubertal and neuroendocrine changes have been found (De Bellis *et al.*, 1994; Stein *et al.*, 1997). Subgroups of sexually abused girls tend to mature earlier, have different hormonal reactions, and possibly develop impaired immune functioning compared to control girls, as seen in elevated antinuclear antibodies (ANA), a measure of immune system overactivity (De Bellis *et al.*, 1996). Higher levels of urinary catecholamines (a class of neurotransmitter released by the brain's locus coeruleus and the adrenal glands) were noted in abused girls relative to controls. Excessive catecholamine levels induce stress and hyperarousal in the central and peripheral nervous systems, thus inducing sleep disorders, nervousness, and anxiety. In a related study, responses of the stress hormones cortisol and adrenocorticotropic hormone (ACTH) to the injection of corticotropin releasing hormone (CRH) were abnormal in sexually abused girls compared with controls. This finding suggested that the hypothalamic-pituitary-adrenal axis, responsible for the "fight or flight response," was dysregulated in these girls and other parts of this system were compensating for the abnormality by downregulating cortisol levels. Such dysregulation has been linked to depression in other studies of adults (Dinan, 1996).

An unusual level of brain cell death can occur due to heightened hormone release (e.g., glucocorticoids) in response to child abuse and other traumatic childhood events (McEwen, 1997; McEwen *et al.*, 1995; Sapolsky, 1996; Smith, 1996; Uno *et al.*, 1994). As a result, chronic stress can lead to deficits in learning and memory by the damage stress hormones cause in the hippocampus, a brain structure responsible for memory among other functions. Later in life, the stress associated with traumatic events has been associated with social rank, self esteem and competency in animals and humans (De Goeij *et al.*, 1992; Gust *et al.*, 1991; Higley *et al.*, 1991; Kraemer *et al.*, 1989; Oates *et al.*, 1985; Sapolsky, 1989; Sapolsky & Mott, 1987; Virgin & Sapolsky, 1997). Levels of stress and sex hormones, cholesterol, and immune system function have all been linked to previous stress and present social rank. There is speculation, however, that high quality parenting can minimize problems associated with abnormal levels of neurotransmitter and hormonal activity, regardless of whether the deficit was a function of genetics, environment, or a combination thereof (Field *et al.*, 1998).

### *Relationships Between Prenatal Conditions and Parenting*

Babies exposed to prenatal or perinatal disturbances, or predisposed to a difficult temperament, are often more troublesome to care for. Although some prenatally or genetically disadvantaged babies sleep excessively, others are more volatile and temperamental, cry more frequently, do not develop normal sleep or eating patterns, have colic, and are difficult to soothe. Furthermore, delays in brain development and greater physical needs are often coupled with a lack of appropriate stimulation from their caretakers, particularly in cases when the mother is a drug abuser, a teenager, or unusually stressed or anxious (McIntosh *et al.*, 1995; Ward, 1991); all conditions associated with improper prenatal care, drug exposure, and pre/perinatal complications. As a result, these more "difficult" children commonly elicit harsher responses from their primary caretaker who may not have the psychological or physical resources to cope with their baby's special problems and needs. Once the relationship between the caretaker and child is strained, the risk for abuse and/or neglect is much greater. For example, O'Connor *et al.* (1998b) found that adopted children who were at genetic risk by virtue their biological mother's antisocial behavior were more likely to receive negative parenting. Thus, in a developmental sense, these children enter the world disadvantaged and, subsequently, experience harsh, inconsistent, or inadequate parenting (O'Connor *et al.*, 1998a, 1998b). Upon entering school, their difficulties are compounded and risk for behavioral disorders heightened when they exhibit learning disabilities, failure in school, social isolation, and further parental rejection (Moffitt, 1993; Moffitt *et al.*, 1993).

### *Trauma During Adolescence and Adulthood*

Severe and/or chronic traumatic experiences throughout the lifespan can alter brain function. Studies report disruptions in neurotransmitter activity and metabolism as a consequence of trauma. Separation from the mother and social isolation have been shown to increase vulnerability to drug abuse in the affected individual (or animal), with abnormalities in DNA synthesis, hormone responses and neurotransmitter systems as the mediator of this effect (Kuhn & Schanberg, 1998; 1998; Phillips *et al.*, 1997; Piazza & Le Moal, 1996). Post-traumatic stress disorder (PTSD) is also associated with low levels of serotonin

activity and other neurotransmitters (Beckham *et al.*, 1997; Fitchner *et al.*, 1995; Kaufer *et al.*, 1998). There is further evidence that severe stress during adolescence can damage coping responses by disrupting neurotransmitter responses (Gerra, *et al.*, 1998; Ryan, 1998). Parental divorce, for example, has been associated with neuroendocrine changes in adolescents (Gerra *et al.*, 1993). Parental divorce can have serious psychological and behavioral consequences during childhood, including problems in peer relationships and a high incidence of aggressive behavior and alcohol consumption. These studies suggest that resulting disorders may be due to changes in the secretion patterns of neurohormones induced by the stress of the parental divorce, thereby reducing adaptation to stress in the adolescent. Fortunately, several factors offer some protection from these deleterious conditions, including quality of the home life, relationships with others, and intimate bonds.

Evidently, exposure to highly stressful and/or novel situations can alter sensitivity of the mesolimbic dopamine reward system, the same system that mediates the rewarding effects of drugs of abuse (Bardo *et al.*, 1996; Cools & Gingras, 1998; Horger & Roth, 1996). Recent studies shed light on individual differences in drug seeking behavior by demonstrating that heightened sensitivity of this system, due to environmental stress or novelty, may increase susceptibility to abuse and addiction (Phillips *et al.*, 1997; Piazza & Le Moal, 1996, 1998). Stress can switch genes on or off at the "wrong" times, leading to the development of abnormal networks of brain cell connections, which can result in, for example, excessive secretion of stress hormones (e.g., glucocorticoids). When levels of stress hormones are excessive, their presence increases sensitivity of mesolimbic dopamine neurons to drugs, further exacerbating the risk for drug abuse. Damage to key brain structures has also been associated with stress, producing irregularities in brain function that are similar to those associated with propensity to both drug abuse and impulsive-aggressive behavior. Accordingly, consequences may include learning deficits, mood disturbances, drug abuse, tension, depression, and an inability to cope with external stressors, which all increase risk for psychopathology.

It is evident from this research that social experiences affect psychological processes and can alter neurobiological traits and states. Both acute social stressors that are severe and chronic social stressors, from mild to severe, may produce measurable and long-standing changes in several biological systems

that influence behavior. On the other hand, the extent to which a stressor has an impact on any given individual is also contingent on the unique characteristics and perceptions the individual brings to the situation. Fortunately, the ability of the social environment to alter biological systems is reflective of the malleability of these systems and their outcomes.

#### IMPLICATIONS FOR PREVENTION STRATEGIES

Findings from research in neurobiology provide food for thought for prevention scientists. Neurobiological findings have demonstrated that individuals vary considerably with respect to their biological strengths (protective factors) and weaknesses (risks). Biological weaknesses or vulnerabilities are influential in an individual's risk for psychopathology. Rather than acting alone, however, this body of research suggests that these biological features operate by setting the stage for how adaptively an individual will respond to personal stressors. A stressful environment is more likely to contribute to some form of psychopathology when it is received by a biological system that is somehow compromised. Thus, although the probability of a pathologic response is a function of the number of these individual risk factors present, the probability is even greater in the presence of an adverse environment with severe stressors. As a result, prevention programs that incorporate findings linking environmental stressors to neurobiological impacts and vice versa are likely to produce improvements in integrity of both psychosocial and biological mechanisms. Once communication and exchange between these disciplines occur, investigators will eventually be able to (a) identify the myriad of interacting risk and protective factors, (b) disaggregate populations with behavioral disorders into relatively distinct subgroups based on prevailing risk factors, (c) determine which interventions work best in particular subgroups, and (d) design interventions to correspond with developmental stage.

So far, neurobiological research shows that stress, both internally and externally induced, affects neurologic processes and behavioral outcomes during particular phases of development. The environment can contribute to changes in behavior by altering

- neurotransmitter responses
- CNS and behavioral activity levels
- blood flow and glucose metabolic rates in the brain

- development of neuronal connections over time
- psychoneuroimmunologic responses
- density of autoreceptors affecting regulatory capabilities
- hormonal responses
- physiologic responses and tone

All of these biological processes underlie many forms of psychopathology. Measurable differences and changes in biological processes that are associated with behavioral and mood state have both genetic and environmental origins. Thus, an individual's developmental trajectory is determined by both genotype and environmental experiences.

#### Prevention Strategies to Increase Resiliency and Minimize the Impact of Risk Factors

Evaluations of several interventions provide evidence for their effectiveness in reducing the incidence of behavioral disorders (see especially Botvin *et al.*, 1995; Eggert *et al.*, 1994; Olds *et al.*, 1998; Spoth *et al.*, 1998; Thompson *et al.*, 1997; Webster-Stratton & Hammond, 1997). However, benefits accrue only to a subset of participants. Questions that remain to be answered, therefore, are which subgroups of participants are most likely to benefit from which programs and, importantly, what differentiates them from those who do not respond favorably. The research cited herein explicitly suggests that tailored, targeted interventions will be most effective when social and environmental manipulations are "matched" to an individual's genotype, thereby reinforcing more adaptive and normative phenotypes. On the other hand, even global, community- or school-wide programs would benefit by addressing environmental conditions that are universally "contraindicated."

Specific programs that affect critical brain systems to improve behavioral self-regulation may, in effect, reduce the number of individual risk factors and minimize the impact of environmental stressors. Two characteristics of preventive interventions have potential to yield the highest gains: (1) a stress management and reduction component, and (2) early interventions, from prenatal to preschool stages, to exert an influence before problems become magnified across the lifespan. Examples of approaches that aim to improve an underlying dysfunction include neuro-psychological enhancements; cognitive remediation; problem solving training program; "low-tech," small

group interventions within an intensive behavioral rehabilitation program; psychoeducational programs; speech and language therapy; environmental enrichment; computer games for sensory and motor rehabilitation; alternative activities; functional and integrative training; and interdisciplinary consultation.

Rehabilitation programs for head injured patients have potential implications for the targeted treatment and prevention of psychopathology. Several lines of evidence implicate dysfunction of the prefrontal cortex, in particular, in aspects of psychopathology: impulsivity, executive cognitive dysfunction, aggressive behavior, inability to assess consequences, disinhibition, poor coping strategies, and so forth (see Bechara *et al.*, 1996; Frith & Dolan, 1997; Kandel & Freed, 1989; Post & Weiss, 1997; Volavka, 1995). Patients with prefrontal lobe head injuries often exhibit impairments in ability to make rational decisions in personal and social matters, in addition to difficulties in the processing of emotion (Damasio *et al.*, 1994). In brain injured individuals, a functional disconnect between frontal cortical regions, and between the prefrontal cortex and the limbic system, may result in impaired impulse control, reasoning, and decision-making. Thus, the cognitive, behavioral, and psychological challenges that often present themselves after injury are, in some cases, also associated with the executive system impairment seen in forms of psychopathology.

Cognitive and behavioral "neurorehabilitation" strategies used for traumatic brain injuries may have protective or therapeutic effects in psychopathologic individuals with prefrontal dysfunction. An approach that combines learning theory, cognitive psychology and neuropsychology to focus on the emotional, motivational, and cognitive functions involved in psychopathology may be used to identify and remediate cognitive and behavioral difficulties (Wilson, 1997). There is evidence that the same tools used to assess executive cognitive skills (i.e., neuropsychological tests) can also be employed to strengthen these abilities (see Giancola, 1999 for a review). Computerized versions of these assessment instruments and cognitive "games" can be programmed with a hierarchy of difficulty levels so that as executive cognitive capacity increases, the individual could play more demanding versions.

Another example of a universal prevention strategy that incorporates neurobiological research was designed by Bardo *et al.* (1996). Studies have implicated the trait of sensation seeking in propensity to use drugs and engage in antisocial behavior. Because

high sensation seekers are "biologically prepared to attend to novel information more than low sensation seekers" (p. 36), prevention strategies should incorporate messages that attract individuals with this biological predisposition. Donohew *et al.*, 1994; Lorch *et al.*, 1994; and Palmgreen *et al.*, 1994 have implemented interventions that convey anti-drug messages using highly sensational program content with high-risk teens. Significant changes in attitudes toward drugs were incurred. Lessons learned from this research are that programs simply attempting to extinguish drug abuse may not be sufficient in high-risk populations; instead, treatment and prevention strategies should replace drug seeking behaviors with new behaviors which are inconsistent with drug use (Bardo *et al.*, 1996).

Other externally focused interventions aim to change the environment to minimize effects of existing dysfunctions and may also have primary preventative effects. Some examples are given, which extend from the findings reported herein.

1. Reinforced interaction with a complex cognitive and sensory environment can both stimulate anatomical and biochemical plasticity and ameliorate some of the behavioral consequences of a stressful, inadequate or deprived environment.
2. Mandatory parenting classes within the school curriculum, early detection and intervention strategies, and a better equipped child welfare system can prevent child abuse. Therapeutic strategies that focus on the neurobiological effects of child abuse may improve integrity of affected neuroendocrine systems, hypersensitivity to stressors, and coping strategies.
3. Stress reduction and prevention programs, in some cases with adjunctive serotonergic agonists, may optimize serotonin activity levels in individuals exposed to chronic or high levels of environmental stress.
4. Parent training, postnatal home visitation, and family therapy are warranted in high-risk populations to mitigate the effects of fetal drug exposure and maternal stress.
5. Very early identification of children at risk, and the provision of a stimulating and nurturing environment with strong social bonds, are critical given that a significant amount of brain development occurs within the first year of life.

6. Adequate prenatal care, particularly for low income populations, may reduce our reliance on the mental health and criminal justice systems given the association between pre- and perinatal complications and later conduct problems in offspring.

Although several biological markers for psychopathology and their relationship with environmental influences have been investigated, their clinical usefulness has yet to be fully explored. It is possible that manipulations of the social environment may alter an individual's biological stamina, improving impulse control and coping strategies. At the present time, however, behavioral scientists are discussing the need for an integrated approach to prevention (see for example Lewis, 1992; Mayes, 1999; West *et al.*, 1990), but the actual research has not yet been done. The few studies that have focused on biological effects of environmental manipulations do provide support for further, more intensive efforts to flesh out related research inquiries. For example, Klintsova *et al.* (1997) demonstrated that complex motor training not only improved motor performance in rats impaired by alcohol exposure, but that the number of synapses per purkinje neuron in the cerebellar cortex (which is normally reduced due to alcohol exposure) increased. In another study, Popova *et al.* (1998) examined the ability of a biological feedback test to alter the integrative activity of the brain in humans, which is involved in psychopathology with phobic syndromes. Behavioral change and alterations in EEG traces were provoked during training on this task. Weisglas-Kuperas *et al.* (1993) reported that children at high biological risk for delayed cognitive development showed favorable responses in mental development, neurological scores, and intelligence to a highly stimulating home environment. And Kuhn and Schanberg (1998) administered massage therapy to rats separated from their mothers and showed marked gains in weight, behavioral development, and sympatho-adrenal maturation.

Capitalizing on the malleability of risk and vulnerability factors, prevention approaches can potentially suppress genetic expression of risk factors by, for example, favorable family environment, if neurobiological research can identify which risk factors are inherited and by what mechanisms they become psychopathology. Similarly, prevention strategies can focus on genetic expressions in specific, high-risk communities if this research can identify the endophenotypes that respond to favorable or adverse community factors.

#### Future Research Agenda

Although research suggests that certain socio-environmental conditions alter brain function, the mechanisms for that change are not well understood. Scientific examinations are needed to isolate the neurologic effects of these factors, providing greater insight into specific brain-environment relationships. There is a need for additional human studies, because several of the most intriguing bits of evidence are generated from animal research that cannot be easily extrapolated. Furthermore, longitudinal designs are necessary to identify critical periods of neural sensitivity to environmental influences, and to assess relative contributions of psychosocial stress and phenotypic predisposition. Referring to animal models and recent human studies, prevention scientists can eventually design programs that directly target these effects to reverse or attenuate negative outcomes. For example, effects of prenatal drug exposure on cognitive function and related behaviors have yet to be fully delineated and remain controversial. Some reports provide evidence for both gross and subtle deficits as a result of prenatal cocaine exposure while others do not. Identification of drug effects on the growing fetus and child will lead to a better understanding of prenatal exposures and their possible influence on liability to drug abuse. The prevention implications for such studies are substantial.

Future research questions pertaining to potential linkages between neurobiology and prevention sciences are many and varied, and include the following:

1. What are the neural substrates and their behavioral and temperamental manifestations in various forms of psychopathology?
2. What is the impact of the environment on these neurogenetic mechanisms?
3. What are the critical stages of development during which psychosocial stress differentially exerts its effects?
4. How can the assessment of environmental-neurobiological relationships contribute to the design of interventions that impact at critical points in the developmental trajectory to alter risk status?
5. If the genetic make-up sets the stage for responses to environmental input, can environmental interventions alter (a) genetic expression of risk traits and, (b) the behavioral phenotype, and will the outcome of this impact be sufficiently measurable?

6. Can an integrated data set including both socioenvironmental and neurobiological variables account for more of the variability in intervention response than the use of one set of variables alone?
7. What designs and methodologies can be employed to identify neural substrates amenable to prevention interventions and to assess change over time?

One example of an integrated research design is the examination of changes in brain function in relation to behavioral change during treatment. Theoretically, the use of a combination of neuropsychological, imaging (e.g., PET or fMRI) and behavioral measures before, during, and after an effective intervention will demonstrate a trend toward normalization over time. The same design can examine subgroups that do not respond favorably to identify underlying differences. Thus, the biological impact of prevention approaches can be determined by combining assessment techniques to discern change in both brain function and related behaviors.

The development of this proposed research agenda is predicated on findings generated from a multistage process of research. The purpose of the first phase of studies would be to identify underlying, causal mechanisms in psychopathology, including mental illness, drug abuse, and antisocial behavior. The second phase involves the identification of protective factors that suppress vulnerability, including both internal (certain aspects of temperament, verbal intelligence, cognitive function) and external (caregiver bonds, family stability, targeted community services) resources. A third general area of research is to introduce a preventive intervention and assess the ability of a treatment to alter vulnerability factors, both biological and behavioral. It is expected that treatment effectiveness will be directly related to (a) changes incurred in vulnerability markers, (b) the type and number of existing protective factors, and (c) the lack of immutability and/or severity of vulnerability conditions. And fourth, research must address the ways in which protective factors moderate outcomes in the presence of inherent liabilities to psychopathology. In such a rare but informative protocol, neurobiological measures are treated as independent variables in the initial stages of research, while in the later stages, neurobiological factors are manipulated as dependent variables to assess response to an intervention stimulus.

Research in neurobiology suggests that a sole

focus on the social contributions to behavioral disturbances is insufficient. Nor is it adequate to simply examine neurobiological influences. Individual vulnerability and protective factors differentially relate to and are altered by environmental conditions to either heighten or minimize risk for psychopathology. In accordance, a more comprehensive and effective approach to the science, treatment and prevention of psychopathology involves exploration of the relationship between neurobiological and psychosocial forces. As a result of the ineffective, unidimensional approaches of the past, we are now defaulting to the mental health and criminal justice systems with troubled individuals. Rather than ignoring the warning signs in childhood and waiting until adulthood to put these systems into motion, spending billions of dollars for legal remedies that do not produce favorable outcomes, the provision of sorely needed services and interventions to high risk individuals can yield far greater benefits.

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# The full translational spectrum of prevention science: facilitating the transfer of knowledge to practices and policies that prevent behavioral health problems

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## Abstract

A broad-span, six-stage translational prevention model is presented, extending from the basic sciences—taking a multi-level systems approach, including the neurobiological sciences—through to globalization. The application of a very wide perspective of translation research from basic scientific discovery to international policy change promises to elicit sustainable, population-level reductions in behavioral health disorders. To illustrate the conceptualization and actualization of a program of translational prevention research, we walk through each stage of research to practice and policy using an exemplar, callous-unemotional (CU) traits. Basic science has identified neurobiological, psychophysiological, behavioral, contextual, and experiential differences in this subgroup, and yet, these findings have not been applied to the development of more targeted intervention. As a result, there are currently no programs considered especially effective for CU traits, likely because they do not specifically target underlying mechanisms. To prevent/reduce the prevalence of conduct disorder, it is critical that we transfer existing knowledge to subsequent translational stages, including intervention development, implementation, and scaling. And eventually, once resulting programs have been rigorously evaluated, replicated, and adapted across cultural, ethnic, and gender groups, there is potential to institutionalize them as well as call attention to the special needs of this population. In this paper, we begin to consider what resources and changes in research perspectives are needed to move along this translational spectrum.

## INTRODUCTION

Despite exciting advances in our knowledge of the biological, social, and environmental underpinnings of behavioral health problems, the translation of original research to routine public or mental health practice takes at least one or two decades, sometimes longer. The reasons for this protracted gap between research findings and the implementation of evidence-based strategies and practices are complex, related to difficulties in

communication across research and practice disciplines, as well as logistical and political considerations [1]. To more effectively reduce the burden caused by behavioral health problems, more comprehensive translational processes that facilitate the cycle of moving basic research findings to actionable practice and policy are needed. These processes must consider multiple and integrated stages of knowledge transfer that join discovery, intervention creation, evaluation, scaling, policy reform, and public support for prevention science as a holistic process. There are also weighty scientific gaps and logistic, cost, and political barriers that may delay the application and acceptance of science-based practices and policies in settings where they are most needed and can exert the broadest benefits [2]. The fundamental characteristics that define quality behavioral health services—effective, efficient, contemporary, and timely—with potential to improve or save lives cannot be achieved without careful attention to the translational practices that transform basic science discoveries into institutionalized practice and policy. Such work is especially imperative in prevention science given the burden of human suffering as well as the fiscal costs associated with neglect for early detection and intervention of mental, emotional, and behavioral disorders.

Intrinsic to translational research is the communication of scientific discoveries across a “nomological network” to facilitate the acquisition of new knowledge and new applications of that knowledge [1]. Several frameworks have been used to describe translation of research from basic to applied science in the biomedical field, e.g., the NIH Five-Phase Model, the Flay Eight-Phase Model, Classification for Application Model, Program Development Models, Diffusion of Innovations, and Type 1 and Type 2 Translation [1, 2]. Few of these existing models, however, apply specifically to the prevention sciences, and they do not necessarily reflect a system-oriented, transdisciplinary approach incorporating back translation nor do they span the full spectrum from basic discovery to global change in attitudes and systems.

An important element of our proposed translational framework is its emphasis on transdisciplinary collaborations within and across six stages of knowledge transfer. Translational research does not simply involve an additive approach to distinctly different stages but demands a synergistic perspective that values varied expertise and capabilities and requires communication among different programmatic and scientific roles and perspectives within and across stages. These roles may involve persons from rather different academic backgrounds that create a consensual model of inquiry (i.e., transdisciplinary approach) to be able to engage in effective, inclusive translation. Such collaboration may run contrary to a traditional system of scientists tending to work in their own domains and not communicating well or often with those working in other domains [3]; these research silos constitute a barrier to true translation. What is most needed to accelerate translational research and advance the practice of prevention is an integration—not compartmentalization—of thought/theory and approach/methodology applied in an effective and scientifically sound manner.

Another essential characteristic of our translational typology is its incorporation of a system approach [4]. Conceptualizing the etiology of problematic behaviors and the translational paradigm needed to transform this understanding into prevention programming that incorporates or is based on a complex system approach has potential to improve efforts to prevent behavioral health problems in youth and subsequently in adulthood [5, 6]. Although there is no common definition, a complex system is typically thought of as an entity composed of many different parts that are interconnected in such a way that the characteristics of the system as a whole cannot be anticipated from analyzing its components alone. Many factors can contribute to this complexity including inter-related components with bidirectional “feedback” loops, non-linear relationships among some components (e.g., threshold or ceiling effects), impacts stemming from multiple levels of influence, or heterogeneous and often long time delays between cause and effect. Prevention science as a whole may be characterized as a complex system of inquiry. Prevention of behavioral health problems must consider the *dynamic interplay between factors at multiple levels* including *individual* (e.g., genetics, neurobiological factors, and personality characteristics), *micro-social* (e.g., parental role modeling, social network characteristics, and social norms), and *macro-social* (e.g., school systems, advertising campaigns, agricultural initiatives, political parties, and political action [7]). Unfortunately, numerous system-level barriers exist, including scientific funding constraints, as well as political decision-making and institutional disincentives. These realities impede the transfer of basic science knowledge to development of multi-level interventions, despite extensive research indicating that such interventions are necessary and effective in addressing the complex pathways to behavioral disorders.

A new generation of *transdisciplinary* research grounded in a system approach now highlights the many complexities of behavioral health problems that arise from interactions across multiple levels and domains of innate but

dynamic individual characteristics, experiences, exposures, and contexts. Emerging prevention research demonstrates that individual differences in risk for behavioral health problems can only truly be understood by recognizing that an individual’s orientation to and processing of environmental inputs rely highly upon genetic and neurobiological mechanisms. These underlying mechanisms, in turn, interact with the quality of an individual’s psychosocial and environmental exposures and protective factors to alter trajectories either toward or away from poor overall outcomes. A parallel body of research further suggests that neural dysfunction underlying behavioral disorders, regardless of its origins, may be malleable and, relatedly, that compensatory mechanisms can be strengthened with indicated psychosocial (e.g., life skills and socio-emotional learning) or biomedical (e.g., pharmacologic and neurofeedback) manipulations. And of particular intrigue for prevention science is the potential for environmentally induced epigenetic change in one generation to alter outcomes in subsequent generations [8]. Consideration of the interplay of these factors—both causative (impoverished environments) and consequential (effects of adversity on neurodevelopment)—presents new and exciting possibilities for prevention science. These scientific discoveries only await replication and then translation to interventionists, policy-makers, and the public to exert their greatest preventative impact.

#### TRANSLATIONAL TYPOLOGIES

This emerging body of transdisciplinary research has extraordinary potential for preventing behavioral health disorders and promoting resilience. There are at least two aspects of research in prevention of behavioral health problems that are plagued by deep gaps in translation. First, much of the emerging research on the brain and behavior has not yet been integrated into a holistic model of prevention research or used to inform development of new and innovative practices. And, as mentioned, research silos, communication challenges across disciplines, and narrow funding streams create barriers to such integration. Second, translation science has not done enough to facilitate knowledge transfer through to the end stages of translation including wide-scale dissemination and institutionalization. Certainly, important work has been completed on diffusion and scaling-up of innovations [1]. However, much end stage application typically relies on soft money strategies (i.e., temporary support), is limited by the language or origin of programming (e.g., by the delivering agency), and the means to update and sustain programming generally are not available. A better understanding of exactly how to best institutionalize programming, translate programming globally, and contribute to international policy reform (e.g., in education, mental, and public health) requires a great deal more attention.

These limitations highlight the need for a more refined, interpretable, and consensual model of translational prevention science. We refer to our model as the *full translational spectrum of prevention science* and provide six basic stages of translational research as shown in Table 1 and Fig. 1. Each stage describes the

**Table 1** | Full translational spectrum of prevention science: research stages

Type	Type 0 Translation (T0)	Type 1 Translation (T1)	Type 2 Translation (T2)
Definition	The fundamental process of discovery, where findings from the social, behavioral, and biomedical sciences (animal and human) are translated into applied research with human subjects. Includes study of analogous processes and phenomena via field- or lab-based investigations using human subjects that could be applied to preventive intervention.	Moving the research from bench to bedside location. Includes the translation of applied theory to development of methods (measures and analysis) and programs.	Moving from bedside to practice. Involves the translation of program development to implementation (i.e., efficacy trials with emphasis on internal validity and effectiveness trials with emphasis on internal and external validity).
Example	A parallel study with forward and back translation to understand the impact of early environmental adversity on brain development and mechanisms that subsequently confer risk.	Development of measures, methodologies, and interventions that focuses on self-regulatory processes subserved by prefrontal-limbic connections. Includes the initial development of the Good Behavior Game and Promoting Alternative Thinking Strategies (PATHS).	Randomized clinical trials of preventive interventions to establish the size of outcomes that can be attributed to the programs (controlling for alternative influences), followed by rigorous testing with well-defined populations.
Type	Type 3 (Translation) (T3)	Type 4 Translation (T4)	Type 5 Translation (T5)
Definition	The practice-oriented phase involving research to test the degree to which efficacy and effectiveness trial outcomes can be replicated under real-world settings. Focuses on adoption, adaptation, and dissemination.	Research focused on “scaling-up.” Wide-scale implementation, adoption, and institutionalization of new guidelines, practices, and policies.	Translation for application in global communities. Involves fundamental and universal change in attitudes, policies, and social systems.
Example	Study of parameters of adaptation of highly replicated programs and interventions with strong positive effects across time and context.	Research on scaling of the evidence-based programs in multiple school districts within and across counties.	Policies based on acceptance of science-based practices such as laws insituting juvenile justice reforms and programs providing wide-scale educational innovations.

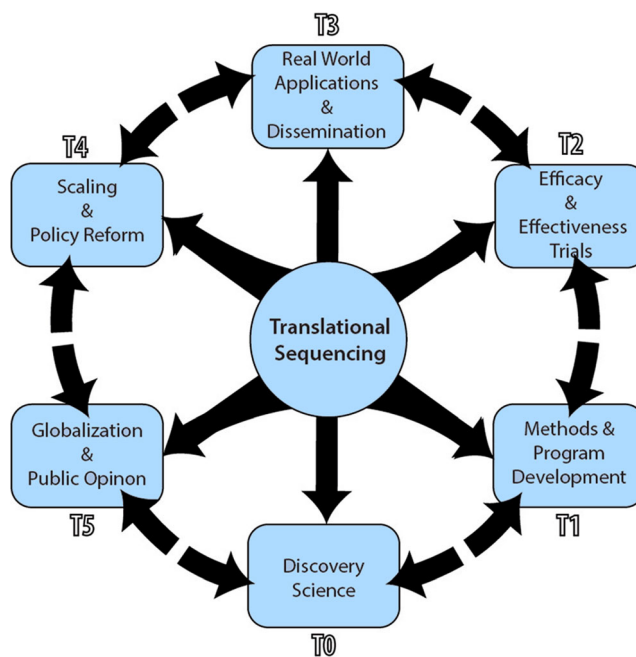


Fig. 1 | The full translational spectrum of prevention science model showing the following six basic stages of translational research: T0 Discovery Science, T1 Methods and Program Development, T2 Efficacy and Effectiveness Trials, T3 Real-World Applications and Dissemination, T4 Scaling and Policy Reform, and T5 Globalization and Public Opinion

results of one activity being translated to an activity in the next stage of translation along the pathway. Research methodologies that are ideal in one stage (e.g., randomized control trials used for Type 2 Translation) often cannot be employed for other stages of translation (e.g., institutions and states often cannot be randomized, *per se*). Thus, the *full translational spectrum of prevention science* model recognizes the need for rigorous research methods specifically adept to address research questions of each translation type [e.g., 9–11].

Below, we describe each of the six stages starting with Type 0 Translation (T0, Discovery Science). T0 is the basic process of scientific discovery [2]. It is at this most fundamental stage where replicated findings from many areas of basic research from animal and human subject studies, including molecular, cellular, biological, and psychological lab-based or field-based research, with individuals or groups, and incorporating environmental influences are translated to inform the next stage of applied research with human subjects. We refer herein to discoveries that have import to the development of preventive interventions that more directly target mechanisms underlying a behavioral problem, as described in the next stage. Most often, discovery scientists do not consider their work relevant to prevention, e.g., neurotransmitter systems implicated in drug reward that are alterable to some extent with targeted intervention.

Type 1 Translation (T1, Methods and Program Development) refers to the transfer of knowledge from the basic sciences to the applied sciences with the translational outcome being applied methods and theory-based program development. Accomplishments in Types 0 and 1 Translational

Research advance our understanding of the underlying mechanisms in behavioral health disorders and, further, of the malleable mechanisms of behavioral change that can be targeted in intervention development. Translation of findings on etiological underpinnings of behavioral health leads to a better understanding of the significant reciprocal impacts of the cognitive/affective processes and the social and physical environment with neurogenetic systems in ways that will, in turn, optimize development of both universal processes for adaptation and *personalized prevention* approaches. This pivotal stage moves us forward on the translational continuum toward actionable impact.

Type 2 Translation (T2, Implementation and Effectiveness) embraces the applied strategies generated by T1 and aims to facilitate, in part, preparation for testing and establishing evidence-based or scientifically validated interventions. For the T2 process to succeed, most prevention scientists require evidence for intervention’s *efficacy* (i.e., its degree of benefit under high internal validity conditions and evaluating outcomes attributable to the program) and *economy* (i.e., benefits eventually exceeding its costs) with large defined populations. Although T2 is currently receiving increased attention, the reality remains that many interventions found to be efficacious fail to achieve *effectiveness* (i.e., replicating outcomes from efficacy trials in “real-world” settings, deliverers, and recipients, also using rigorous research designs), do not reach those most in need, or are so poorly implemented that their potential for impact suffers. Likewise, even after evidence has accumulated that demonstrates a program lacks efficacy, a protracted period of time often elapses before such interventions are discontinued due to institutional

inertia or misguided understanding of intervention mechanisms.

These are only a few of the factors that illustrate the importance of T2 implementation research and the processes that support effective practices in real-world conditions [9]. The goal is that individuals in population groups for whom interventions are developed in the “lab” may engage positively and achieve long-term success across multiple domains of functioning. However, without complete implementation evaluation, many others for whom more personalized or culturally tailored approaches are needed never receive the services or “dosages” required, respond less favorably, and thus exhibit a trajectory toward onset and escalation of behavioral maladjustments. And in spite of growing community-level enthusiasm for prevention in concept, key players including funding agencies, political and agency leaders, and front-line service providers often lack the knowledge base and capacity to implement, evaluate, and refine potentially impactful programs. Challenges involving whether or not efficacy and effectiveness outcomes apply to much less well-controlled settings (i.e., real world) are addressed in the Type T3 Translation.

Translational Research (T3, “Real-World” Applications) responds to the further need for the application of an integrative and comprehensive translational research agenda that prioritizes the transfer of research findings from earlier stages in the research process to T3. T3 moves practices developed through T2 research beyond the academic research environment into applied settings where adoption and adaptation of evidence-based practices occur with a goal to systematically reduce individual- and population-level behavioral health disorders. A myriad of different implementation strategies and research designs might be utilized to help understand and maximize T3 translation. Unfortunately, community stakeholders, practitioners, policy-makers, and even scientists across disciplines are not fully aware of the wealth of rigorous and replicated research findings generated by the prevention sciences that have been demonstrated to operate across varying environmental contexts [10]. As a result, there is a serious gap between development of evidence-based programming and program application leading to a lack or inconsistent schemes of systematic and sustainable adoption of evidence-based practices for prevention and insufficient feedback for appropriate fine-tuning of programming across contexts. Further, there is a void in this stage of translation where emerging knowledge in genomics/epigenetics that may inform personalized medicine approaches and advanced knowledge in ethnology could be integrated to ensure personal and cultural adaptations for optimal effectiveness. Hence, more critical and strategic thinking is needed to address the multitude of investigator-level, institutional, and environmental factors that impede the translation of relevant findings across stages of the translational spectrum in a

recursive fashion, involving implementation science, wide-scale adoption and adaptation to various settings and cultures, sustainability on a population level, and eventually institutionalization. Remedies include consideration of the foundational findings and delineating transdisciplinary applications of system science and innovative research techniques in the implementation and evaluation sciences. Also important is to enhance communication between researchers and communities (e.g., practitioners and policy-makers) necessary for eventual acceptance and rigorous adoption [4, 9–12].

Type 4 Translation (T4, Scaling and Policy Reform) serves to formally acknowledge and categorize research to understand how to move effective prevention programs into a stage in which they can be *safely* applied in clinical, non-research-oriented contexts and subsequently become self-sustaining in terms of fiscal subsidization, professional servicing, and infrastructure maintenance and support. There is very little research in T4 prevention science translation, possibly because the need to integrate health behavior research with system science and business methodologies, among other disciplines, stretches collaborative networks into uncharted territories needed to move forward. Please see Rohrbach et al. and Spoth et al. [13, 14] for excellent reviews of existing frameworks.

There have been a few evidence-based practices, however, that have reached the doorstage of this T4 stage in terms of greater adoption and some degree of institutionalization. For example, Triple P (<https://www.pfsc.uq.edu.au/research/evidence/>) has evolved into a system of interventions that are provided in multiple sites across the USA and has been scaled up in Canada and 25 other countries [15]. Parts of the system or unique configurations of the system have been adapted for various jurisdictions. Chamberlain and colleagues have reported in a series of papers the results, vagaries, and successes of scaling the Multidimensional Treatment Foster Care (MTFC) and other interventions at the T4 stage [16]. Forgatch and DeGarmo have applied a “full transfer model” with direct observation and random assignment using the national Norwegian implementation of Parent Management Training-Oregon Model (PMTO™), an empirically supported treatment for families of children with behavior problems [17]. In this work, second-generation teams are trained and then train their own therapists, achieving effects comparable to those in the original efficacy trials with sustained fidelity and cross-cultural generalizability. Also, PROMoting School-community-university Partnerships to Enhance Resilience (PROSPER) is a delivery system that provides evidence-based programs for middle school youth and their families. PROSPER has a three-tiered structure that includes teams from the community, prevention coordinators, and a state management team that facilitates the receipt of ongoing proactive technical assistance based on need assessments of any given community [18–20]. And finally, the well-known Communities that Care (CTC) prevention service delivery



system develops local infrastructures and coalitions of community stakeholders to improve the behavioral health of young people [21, 22].

These programs and systems have achieved widespread implementation, maintenance, and documented successes. However, most are not part of official governmental systems, which would more fully characterize them in the realm of T4 translation. Soft money contracts and grants often fund them, which is limiting and can threaten sustainability and full infiltration. The Evidence-based Prevention and Intervention Support Center (EPISCenter) differs somewhat in this regard. It represents a collaborative partnership between the Pennsylvania Commission on Crime and Delinquency (PCCD) and the Bennett Pierce Prevention Research Center at the Pennsylvania State University. Funding comes from the Pennsylvania Commission on Crime and Delinquency (PCCD) and the Pennsylvania Department of Human Services (DHS). The EPISCenter supports the dissemination, quality implementation, sustainability, and impact assessment of a menu of proven-effective prevention and intervention programs and conducts original translational research to advance the science and practice of evidence-based prevention.

In general, T4 efforts are rife with challenges and system transformation needs that are unmet by the program purveyor alone. There is a need for growing professional capacity to support effective implementation and scale-up within service systems and agencies. A transdisciplinary science of implementation that has been coalescing through the emergence of this new field of implementation, and the application of this science, much like the application of an evidence-based practice (EBP), requires skillful practice to make use of it in context. We manage, plan, and react to the service system or agency in front of us, just as a practitioner does with patient or family in front of them. Science alone cannot fully solve implementation and scale-up issues; they can only be resolved by the application of the science through skillful professional practice. The science needs to continue to accelerate, of course, but it only has its impact at scale through practice.

Type 5 Translation (T5, Globalization and Public Opinion). In concept, the eventual achievement of T4 practice results at the local and national levels in altering our universal (worldwide generalizable) understanding of the key determinants of behavioral health and well-being, constituting stage T5 in this typology. T5 involves translation to global communities, pertaining to ways in which global policies and environmental change can effectively target relevant health conditions across multiple cultures and societies. In effect, this stage addresses international behavioral health priorities as set by international agendas, thus impacting large-scale population-level shifts in well-being. The ultimate goal is to reform universal social systems to become more responsive to human needs based on sound and well-tested scientific evidence, taking into account global political, economic,

and cultural variations. Possibly, one recent example approaching the T5 stage is the Framework Convention on Tobacco Control (FCTC) [6] which provides an international model for policies that focus on the many consequences of tobacco consumption. However, although the framework has been accepted to some extent, behavioral health change has not yet occurred on a global level. There are virtually no living examples of T5 in the prevention sciences.

#### Back translation

Back translation, an iterative part of the process, occurs at every stage in a translational process or continuum in a recursive fashion. This activity incorporates bidirectional exchange across all stages, contributing to constant modifications and refinements, as needed. If the results of a trial are negative or unexpected findings occur, for example, they likely inform knowledge that had been culled during prior translational stages and may require further assessment and refinement. To illustrate, a randomized clinical trial is in essence also an etiology experiment in which specific environmental factors are manipulated while all others are controlled.

Back translation allows us to continuously address outstanding questions posed by persistent or emerging findings of individual- or group-level differences in intervention outcomes. Thus, with ongoing development, implementation, and refinement of the science-based interventions in different populations, cultures, and settings, knowledge regarding etiological underpinnings of high-risk behaviors grows more universal and yet provides for a more comprehensive and confirmatory assessment of underlying mechanisms of therapeutic outcomes for subgroups or individuals as well. The ultimate goal is that, through a transfer of knowledge from etiology to practice and back to etiology, clinical and public health policies will be increasingly responsive, applicable, and effective, thereby exerting greater reductions in psychopathology.

Back translation generally has been neglected in traditional models and will be addressed as a critical component of the bidirectional and recursive translational model in this special issue of *Translational Behavioral Medicine* [11]. Accordingly, this stage is proposed as critical to recognize the necessity for back translating real-world observations to continually confirm and inform etiology and basic biopsychosocial research. Early in the translational process of advancing knowledge from one stage to another, any adaptations could be considered groundbreaking as well as preliminary. Ideally, pilot studies and beta testing would be used prior to large-scale research; Ridenour et al. describe and illustrate rigorous techniques for conducting within-subject (which could consist of persons, clinical settings, and states) experiments for pilot testing of preventive intervention [11].

To optimize the societal benefits of prevention science, the ultimate goal of this translational process is to

determine *what prevention/clinical practices work best for whom (moderation), why (mediation), and under what circumstances (contextual, experiential, and implementation qualities)*. In other words, how do individual-level genetic, neurobiological, and psychological mechanisms interact with the psychosocial and physical environment to promote or, alternatively, interfere with improvements in behavior in response to intervention? The premise behind such a program of research is that tailored, targeted interventions will be most effective when psychosocial and pharmacologic manipulations are “mapped” to an individual’s unique constellation of social, psychological, and biological attributes, thereby reinforcing more adaptive and normative phenotypes. And in a translational fashion, information gleaned from this transdisciplinary, integrated approach can foster synergistic opportunities to apply prevention science results to protect individuals and communities from harm and foster systematic ways that researchers, practitioners, and policymakers can work together to support improved interventions for more individuals, families, and communities.

Below, we review the full translational spectrum using an exemplar from research focused on a subclass of conduct disorder, an isolating and disruptive behavioral health disorder. This example allows us to stage through the translational process in a largely theoretical framework but based on solid scientific findings. We highlight ways in which understanding the mechanisms, triggers, and developmental progression of a specific conduct disorder subtype may have important implications for the translational processes needed to effectively develop and adopt evidence-based strategies for prevention and treatment.

#### EXEMPLAR PHENOTYPE: CALLOUS-UNEMOTIONAL TRAITS

The potential utility of a transdisciplinary approach across all six stages of the translational spectrum is exemplified in a futuristic manner by the foregoing discussion of research on callous-unemotional (CU) traits in children. This phenotype was selected due to a new and growing body of discovery research implicating distinct neurobiological and cognitive interactions in and differences between children with and without CU traits.

**T0**—Youth with conduct problems are characterized by heterogeneous subgroups with disparate environmental risk factors, individual level vulnerabilities, and ultimately behavioral trajectories [23, 24]. The presence of CU traits represents a specific subtype of conduct problems [25] that is characterized by callousness (deficiencies in empathy or remorse), unemotionality (fearlessness and blunted emotions), and uncaring attitudes and behaviors (aggression and difficulty maintaining relationships) [26]. Children with CU traits are at elevated risk of developing more severe, persistent, and treatment-resistant conduct problems compared to children with conduct disorder without

CU traits [27]. In fact, characterizing CU traits has emerged as a reliable means of dissociating subsets of youth with conduct problems at highest risk for detrimental outcomes.

During this basic process of discovery, studies are reporting that CU traits are measurable by age six [27] and are highly stable [28]. Of great relevance, children with these traits are also distinctive—psychologically, neurobiologically, and cognitively—from those with other traits and conditions predictive of externalizing problems (e.g., aggression and substance abuse), such as conduct disorder (CD), oppositional defiant disorder (ODD), anxiety, and attention deficit hyperactivity disorder (ADHD). Basic research has shown that, in general, children with conduct problems often exhibit deficits in reinforcement processing in tasks measuring reward-based decision-making [29], passive avoidance learning [30], operant extinction [31–33], and reversal learning [34]. Youth with CU traits, however, also appear to derive positive rewards from deviant behavior (e.g., social status from bullying [35]) and fail to encode outcomes that violate societal expectancies [36, 37]. In addition, youth with CU traits show significant disruption in processing punishment information [38, 39]. This evidence suggests that high CU youth are more likely to initiate early, escalate, and/or persist in deviant behaviors because they are less mindful of its negative consequences [40–44].

T0 research has further shown that these deficits are neurally subserved by abnormalities in the “motivational network” (mesocorticolimbic dopamine pathways) that mediates reward-based decision-making [30, 45]. Neuroimaging studies have related the decision-making impairment in CU youth to reduced representation of expected value within the ventromedial prefrontal cortex (how much reward/punishment is associated with a response choice) and prediction error signaling within caudate (signaling the difference between the reward expected and that received) [39]. These data suggest a neurobiological mechanism that may explain why CU youth would exhibit poorer and slower learning of reinforcements associated with objects and actions. Thus, typical alterations in corticolimbic systems that predispose adolescents to high-risk behaviors appear to function differently in those with CU traits and in a manner that may further contribute to behavioral dysregulation. And as in all complex human behaviors, there are also environmental exacerbators or triggers (e.g., maltreatment and stress) that interact with these neural factors and, thus, play a role in the ultimate outcome for children with CU traits [46–48]. These behavioral and brain findings support the development of a transdisciplinary, system-based conceptual model that maps impairments in punishment- and reward-based decision-making and dysfunction in underlying neural circuitry leading to psychopathological outcomes of CU traits. This information, applied by prevention scientists, holds great potential to guide the future of translational research.

**T1**—Transfer of this basic knowledge about the pathophysiology of CU traits to inform the development of

research methods and intervention programs—with the goal to exert an impact on the phenomenon under study—constitutes T1 translation in this example. Success in early risk assessment, prevention, and treatment can only occur if the mechanisms, triggers, and developmental progression of CU traits are understood. Importantly, CU traits predict long-term negative prognosis [49]. This program of research is highly significant given the burden to children, their families, and society of their difficulties in social relationships and oftentimes dangerous behavior. Thus, it is critical that this basic science information be used to guide development of interventions that target these mechanisms and, in turn, determine their role as mediators and moderators of program effects.

In T1, an intervention is developed (conceptually) with components that map specifically to the array of etiologic features of CU psychopathology as putative mediators of effect. First, near-future program development efforts might consider making use of the six-stage “chain model” to develop a prevention curriculum targeting CU [50]. According to this model, a theory of program mediation should first be developed to address CU. Based on discovery of mechanisms underlying CU (T0), strategies might involve, for example, instruction in amygdala-related stimulation protocols (e.g., pharmacotherapy) or environmental stimulation that plausibly addresses CU traits. A targeted intervention activity should alter in some way the functional basis and unfolding of CU and its influence on later antisocial behavior.

Second, there is a need to systematically pool and warehouse promising activities for new uses. The theory of program mediation developed in the prior stage leads one to search for promising interventions to test, from the pharmacological to the psychosocial. Third, there is a need to systematize a set of perceived efficacy studies that can screen among promising program activities or component ideas gathered in the last stage for additional program development work. This could be viewed as a program activity screening stage. There are numerous activities one may screen from. These activities might be adapted from existing programs shown to be effective with this subtype of conduct problems or may be novel, new directions to facilitate youth development and may target individuals or subgroups. Fourth, there is a need to systematize a set of immediate impact studies that can provide a means of determining workability, acceptability, and developmental appropriateness of individual program components. Fifth, there is a need to systematize program construction and pilot testing of a complete program. Rules of construction should be addressed, including a consideration of program content and process sequencing, along with a consideration of pragmatics of testing a complete program. For example, instruction in the topography of CU and self ratings of CU traits would be completed prior to activities designed to alter CU traits or their expression. And finally, in the T1 stage, there is a need to refine a set of immediate

posttest/postintervention activity set measures that predict longer-term outcomes relative to short-term measures. Such measures are not overly lengthy or difficult to implement. Pilot testing outcome measures are likely to be able to predict not only target population receptivity but also longer-term behavior.

Given that CU traits significantly compromise typical intervention efforts for conduct problems, approaches informed by neurobiological knowledge regarding subtypes of youth promise to be vastly more effective than non-specific interventions directed toward a heterogeneous population [27, 51]. One way to approach this need is to design interventions around regulatory processes that are potentially malleable, such as those cited above which have been implicated in CU traits [52–54]. For example, pharmacological or psychosocial therapies designed to stimulate activity of the amygdala and its connections (e.g., akin to deep brain stimulation in depression [55]) and reinforce prefrontal inhibitory controls may normalize cognitive and emotional regulatory deficits seen in CU youth. Another intriguing possibility is the potential preventive effect of educating caregivers, educators, and public health policy-makers regarding approaches that may address differential developmental pathways in CU youth. For example, early enrichment, tactile stimulation, stress reduction, and other environmental enhancements early in life may strengthen prefrontal cognitive controls and enlarge the striatum, possibly reducing the novelty seeking and emotional dysregulation associated with CU [56]. Current therapeutic inefficiencies arise because treatment methods do not map program components to underlying etiologies and developmental progression [26, 57]. Targeting program components to subgroups that confer differential vulnerability to conduct problems and that are likely to influence responsiveness to a given intervention may substantially improve outcomes and cost-effectiveness. Thus, within the full translational prevention spectrum, studies are needed to link basic understanding of mechanisms to the translation of effective intervention strategies that take into account the specific etiological underpinnings, the interactions between individual and environmental factors, and contextual considerations of intervention implementation (e.g., assessments to inform clinical case conceptualization for CU youth).

In our current example, few interventions have been successful in remediating or redirecting CU traits. Perhaps, application of knowledge from T0 and T1 regarding aberrations in neurobiological, cognitive, and emotional regulatory processes might be suitable targets for intervention; this approach has yet to be undertaken. One existing intervention that may bear fruit is mindfulness-based stress reduction (MBSR). MBSR is predicated on basic research showing significant improvements in cognition, neural activation in regions of interest, and normalization in physiological stress indices [58]; all appropriate targets given basic research implicating deviations in these processes in children with CU traits. Another intervention—emotion recognition training (ERT) [59]—has been used to

address complex issues in CD and found to specifically work well with children and adolescents exhibiting higher level of CU traits. This intervention targets skills that are underpinned by the neural substrates implicated in CU; thus, there are theoretical and empirical reasons to predict a favorable response. Interestingly, this positive effect on children with higher level of CU traits was independent of diagnosis. Also, those children with CU traits who experienced the treatment-as-usual condition exhibited an exacerbation of their behavioral problems. Thus, it is critical to identify appropriately targeted interventions and not programs used more universally or for other “targets” that do not address known specific underlying mechanisms of a given problem. Further, at this stage, translational scientists must develop measures sensitive to individual differences in change in outcomes and subtype specific mediating mechanisms.

**T2**—The next stage in this translational process—T2—is to implement the adapted or novel intervention(s) on a larger scale, with all due attention rigor in research design, program receptivity, implementation rigor (e.g., fidelity), cultural sensitivities, and potential sustainability. T2 involves translation of program development to implementation with an emphasis on randomized controlled trials (RCTs) under ideal conditions or quasi-experimental trials with large defined populations. At this stage, CU youth would be randomized to two conditions, e.g., standard care preventive intervention or other attentional control and a novel specifically targeted approach. A wait-list control design might be considered unethical given that as CU youth age, the more entrenched CU traits and their cognitive and neurobiological functional corollaries become. Data should be collected at multiple intervals from various perspectives to validate intervention effects. General issues regarding implementation rigor, cultural sensitivity, developmental appropriateness, overall acceptability, and potential sustainability apply to this exemplar in the same way they are considered in more traditional intervention approaches; i.e., they should be attended to irrespective of the mechanistic underpinnings and targeting strategies described up to this point. However, attention to implementation rigor is particularly critical when testing mediation models, thus calling for carefully constructed implementation studies to fully capture process evaluation data.

Additional issues that are particularly relevant to our example may also apply to other specific populations (e.g., juvenile justice-involved or behaviorally and emotionally disturbed youth). One such issue is how to engage children/adolescents with CU traits and their families in programs, both those that involve highly controlled settings and those under more usual conditions. Individuals with these traits (e.g., both youth and adults with psychopathy) are known to “contaminate” other recipients in group settings and often actually perform worse with certain types of interventions than controls [60]. They have tendencies to be resistant, oppositional, and undeterred by threats of punishment. Program components must, then, be

stimulating, compelling, novel, and incentivizing to promote full engagement. And it may be more effective to deliver the intervention on an individual basis or in tightly controlled and structured groups of similar peers. Also critical is the involvement of caregivers and other family members given the challenges they often experience in dealing with CU youth and based on strong evidence that parents often have similar conduct problems. Family involvement is key to successful intervention outcomes—yet, these families are often very difficult to recruit and retain. Consideration must be given to family dynamics that are counterproductive or even damaging as CU youth appear to be particularly susceptible to adversity and trauma, in effect exhibiting greater CU traits and destructive behaviors under these conditions [61]. Although these issues are relevant throughout all translational stages, they are particularly critical at the T2 stage when interventions are implemented and evaluated in naturalistic settings where external validity is paramount. Given that youth with CU traits are often identified by teachers and administrators as being troublesome, prone to classroom disruptions, difficult to teach, and lacking in certain social skills, schools are ideal environments for screening and intervention, especially in the form of clinical referrals. Other venues for the resulting EBPs targeting CU youth are juvenile justice and child welfare systems where these youth are over-represented. Not only do interventions need to be specifically structured for these distinctive settings but they must not cause undue burden to providers and outcomes should be easily observed and measured and sellable to political leaders. It is helpful when ways to gauge outcomes are consistent with procedures (e.g., intake and exit assessments) already used by the system or setting for easier implementation and sustainability. Both T1 and T2 stages grapple with the contexts and cultures within which to develop programming (family, school, and welfare system, setting where individuals of color may be disproportionately represented) and provide rigorous implementation and impact research designs for testing.

**T3**—Once success has been achieved in the implementation in controlled settings—which is, again, specifically targeted to underlying mechanisms discovered in T0—this stage of translation (T3) involves dissemination, replication, and scaling-up in real-world settings. Similar to T2, all the same considerations are relevant here regardless of the intervention. A determination must be made of what populations to target, in which settings (e.g., community, school, and clinical), and with what program components that specifically target underlying mechanisms in the problem one is attempting to prevent (e.g., CU traits). Attention to potential mediators and moderators of effects will help to discern who—individuals or groups—responds best to the intervention and why, thus providing opportunities for potentially revising the intervention. In CU youth, knowledge about the role of contextual factors (e.g., trauma, family dynamics, and peer groups) and individual-level factors (e.g.,

aggressiveness, cognitive functioning, and emotion regulation) will help identify potential moderators of effects and suggest potential intervention adaptations needed for greater efficacy. Change in neurobiological indicators may help to identify subgroups more or less likely to respond favorably to any given intervention. Developmental and cultural issues are again addressable at this stage. CU youth may differ in their development in terms of cognitive function and sociability in ways that are likely highly relevant for intervention adoption. Community buy-in issues should be considered at the beginning of the T3 stage involving adoption of CU prevention programming, as well as a means to minimize stigmatizing persons who fall along relative extremes on CU. Effective modes of communication are important to convey the need for the intervention to non-research audiences and to increase palatability to potential recipients, their families, funding agencies, and social systems, all of which may differ for addressing the needs of CU youth. Focusing on the preferences of consumers tends to translate more effectively into eventual behavior change [45].

*T4–T4* translation then focuses on scaling up and examining the potential for “true” institutionalization of evidence-based interventions for CU youth that have produced positive outcomes and are accepted by recipients and their families. In general, very few EBPs in the behavioral and mental health fields are scaled at this magnitude, even the few that are based on T0 discovery science. A major reason pertains to the funding sources for this level of research. Many interventions are developed with federal grant dollars and when grants expire, both the research and the funds to support the program conclude. As a result, despite any advances, positive outcomes, and enthusiasm by providers and recipients, there is no scaffolding to sustain the momentum. Without adequate attention to T4, any real progress in preventing the emergence or escalation in the phenomenon under study occurs slowly and without fanfare.

To maximize the opportunities for EBP adoption and scaling across usual practice settings, schools, communities, and public service systems, several stages need to be taken as outlined by Chamberlain and Saldana [62, 63]. In our exemplar, it is important that the intervention is amenable to the setting in which it would be implemented. Universal approaches generally do not directly target CU mechanisms, which means an individual-based program is often necessary. Adoption and scaling, in this case, may be seen as less appropriate given that CU youth are such a minority; however, once effective programs have been developed, school systems should have knowledge of and access to them for ready screening and referral. An intriguing possibility, though, is that there is potential for some universal interventions to also influence CU youth, even though not directly targeted. For example, mindfulness or socio-emotional learning programs *may* produce positive outcomes for *all* children and have a residual effect on improving CU traits. Thus, institutionalizing EBPs may increase resilience universally with a goal to

influence (protect or buffer) those at particularly high risk, making these individuals more amenable to additional selective or indicated interventions.

*T5–At T5*, there is a global shift in mindset given a new and more widespread understanding of CU traits, their underpinnings, manifestations, and potential solutions. There is now greater understanding of the needs of these children based on knowledge of their differences and how existing deficits may be remediated. There is also a much quicker and more effective response given the greater awareness of poor individual outcomes and public safety implications without interventions. Policies are in place at this stage to invoke early detection strategies and a smooth transition to targeted interventions and services. The global nature of this new understanding and response strategy further requires sensitivity and adaptations to accommodate country- and cultural-level differences given the impact of this level of translation on program development, implementation, evaluation, and dissemination. In a sense, it may be best to consider translation as involving some reinvention to be adaptable to country-level differences and their structural and political manifestations. These differences may be surface-level (e.g., any name exemplars, slang terms, and language nuances) or deep-level (e.g., cultural differences in how behavioral health problems are viewed and social structural differences which need to be imparted into the programming). It may also be wise to think in terms of financial support for research and sustainability of programming in a particular country, as well as subjective “ownership” of programming in that country. Again, most translational prevention research in the behavioral sciences does not rise to this level; however, this special issue of *Translational Behavioral Medicine* and similar works may motivate this process through wide-scale policy and mindset change.

*Back translation*—Back translation comes into play at each stage of the translational process. In this exemplar, one possible finding might be a lack of positive intervention effects in a subgroup of CU youth. They may be distinguishable from other CU youth by some set of particular characteristics that CU youth who respond more favorably do not possess. Interventionists would then turn back to the basic scientists to explore mechanisms that underlie these subgroup characteristics on the basis of any number of potential factors: neurobiological, trauma history, family dynamics, learning challenges, cultural differences, and so forth. Another example of back translation might occur when educational policies are reformed to institute screening techniques, based on T0 knowledge, for early detection of CU traits. Poor predictability or validity may also lead administrators to turn back to either T0 scientists or intervention developers to provide further guidance. Further, failures to adopt or institutionalize proven practices may need more research in translational stages relating to dissemination and persuasion.

This exemplar served the purpose of illustrating how science regarding etiological underpinnings of a problem to be prevented can move through the

translational spectrum from knowledge to the practice of prevention and policy reform. For CU traits and many other behavioral problems, this full route has not been taken; prevention science focuses a great deal of attention to T1-T2 and at times T3, according to our typology, but rarely T4 and, to date, never the T5 stage. And very recently, T0 and T1 are receiving some renewed attention given emerging findings that environmental factors impact epigenetic and neurophysiological states in ways that can focus innovative prevention strategies to target these malleable, developmental processes. The hope is for this discourse to stimulate collaborations across disciplines that speak to each stage of translation to facilitate the transfer of knowledge relevant to prevention science and its actionable outcomes. Children with CU traits (like many other behavioral health problems) are at such very high risk for a whole variety of problems that interfere with their own development and success and potentially threaten public safety. Thus, we recommend that prevention science take heed of these findings by designing intervention studies that map program components to potentially malleable neurobiological markers.

### CONCLUSIONS

This manuscript introduced six (T0 through T5) stages of translation, extending the scope of translation from basic science to globalization and institutionalization of programming and promoting a “prevention mentality” whereby proactive approaches are prioritized. It is our hope that this scheme will assist in (1) formulating recommendations for the transfer of scientific information across the spectrum of translation, i.e., from basic research on “mechanisms of behavioral change” for practice and policy impact; (2) confronting the real-world challenges in applying a translational approach with recommended innovations to overcome existing obstacles; and (3) coming full circle to develop methods and processes for effective prevention programs to be self-sustaining and use back translational evidence to inform basic sciences.

To accomplish the goals of this model, perhaps researchers should not simply convey data-driven results but rather engage in telescopic thinking based on outstanding questions in their program of research and the next logical translational stages in the agenda. We need greater discussion about what is needed to move the research to a future point across the translational spectrum and to identify the means to facilitate the application and eventual adoption of replicated results. In particular, we need to confront the obstacles that currently impede the transfer of results to their application and adoption in the real world. From an individual scientist perspective, it is not possible to be familiar enough with multiple fields to be capable of conducting more than one to two stages of translation; successful investigators often collaborate with others in

similar fields, and thus, research is not transferred to the next stage. Engaging in translation requires extra stages that can be taxing or stretch any given researcher’s purview. A flexible, dynamic, and collaborative approach is necessary to connect scientists across stages. And there are many other obstacles beyond those that are scientific, including narrowly focused review processes, difficulty in obtaining funding, tendencies to silo, and others described by Czajkowski et al. [2]. It is time to consider new translational approaches to address the multitude of obstacles. The challenge is to think beyond our own research and consider how transdisciplinary approaches can produce transformative research and practical applications. Ultimately, our hope is that this model will highlight how a transdisciplinary translational approach to prevention research can improve children’s and adolescent’s chances for growing up healthy and being afforded the opportunities for healthy development and ultimately success in multiple domains of life.

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# Health determinants of adolescent criminalisation

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Several conditions related to health and development in adolescence can increase the risk that a young person will be exposed to the criminal justice system. Such determinants include neurodevelopmental disability, poor mental health, trauma, and experiences of maltreatment. Furthermore, the risk of exposure to the criminal justice system seems to be amplified by social marginalisation and inequality, such that young people are made susceptible to criminal behaviour and criminalisation by a combination of health difficulties and social disadvantages. This Review presents evidence on the health determinants of criminalisation among adolescents, providing a persuasive case for policy and practice reform, including for investment in approaches to prevent criminalisation on the basis of health and developmental difficulties, and to better address related needs once within a criminal justice system.

## Introduction

Adolescence is a dynamic phase of development in which maturation is shaped through interaction with the social environment, enabling the acquisition of the cognitive, social, and emotional abilities needed to transition into adulthood.<sup>1</sup> Neurological development is particularly pronounced in the maturation of executive functioning skills, emotional regulation, and reward processing.<sup>2</sup> Health and wellbeing in childhood and adolescence underpin this developmental process. Childhood neurodevelopmental disability, mental health difficulties, and experiences of adversity or trauma can all significantly affect an individual's developmental trajectory.

Adolescence is also a crucial period of the life course with regard to criminality, with a peak rate of engagement with a criminal justice system among those in the late teenage years (figure).<sup>3,4</sup> Although for most of these individuals criminal behaviour is limited to adolescence and ceases in the transition into adulthood,<sup>3</sup> importantly, one of the strongest predictors of adult criminality is adolescent criminality, and the earlier such behaviour begins in childhood, the greater the risk of a more persistent and serious criminal career.<sup>3</sup> Furthermore, substantial involvement in the justice system can undermine one's ability to achieve key adolescent developmental milestones, such as the completion of education, which can have significant and lifelong repercussions.<sup>5</sup>

In this Review, we examine how difficulties related to health and development in childhood and adolescence are associated with involvement in a criminal justice system before 18 years of age. Emulating the well established social determinants of health framework, we consider the health determinants of adolescent criminalisation. The social determinants of health refer to the conditions in which people live and age—and the systems and policies that shape those conditions—for which so-called social gradients in health outcomes, and therefore health inequalities, are apparent at a population level.<sup>6</sup> Several key social determinants have been established, including those related to early childhood experiences, education, employment, income, and community. The foreword to the Marmot Review<sup>6</sup> highlights university education as one such determinant, arguing that “For people aged 30

and above, if everyone without a degree had their death rate reduced to that of people with degrees, there would be 202 000 fewer premature deaths each year.” Clearly a university education does not in itself directly affect health but is a strong correlate of health outcomes at the population level, thus representing an important indicator of health inequalities. In this vein, we sought to identify the manifestations of difficulties and experiences affecting health and development in adolescence that increase the likelihood that a young person will come into contact with the criminal justice system. These health determinants are not presented as direct causes of criminality or criminalisation, but as illustrative of inequalities in the population related to the risk of being engaged in criminal justice systems.

The structure of this paper reflects our aims: first, to identify the health and developmental difficulties that serve as determinants of criminal justice involvement before 18 years of age; second, to understand how social disadvantage can combine with health and developmental difficulties to exacerbate the risk of exposure to criminal justice systems; and, finally, to consider the implications of this evidence for system responses. These aims are

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## Key messages

- Across varied national contexts, child and adolescent health and developmental difficulties are important determinants of criminal justice system involvement. Determinants that increase the risk of criminalisation include neurodevelopmental disabilities, traumatic brain injury, mental health difficulties, and childhood experiences of trauma and adversity.
- The risk of criminal justice system involvement associated with health and developmental difficulties in childhood and adolescence is amplified by experiences of societal marginalisation, structural disadvantage, and inequality.
- Earlier identification of health and developmental needs among those at risk of criminal justice system involvement can prevent offending or enable diversion to specialist support, which can be funded through the targeted reinvestment of criminal justice funds.
- It is imperative that the rights of young people with health and developmental difficulties are fully upheld within criminal justice systems, to ensure effective engagement and support of these individuals. To this end, recognition of and response to specific and distinct needs and circumstances are required, and are dependent on assessment and responsive interventions.



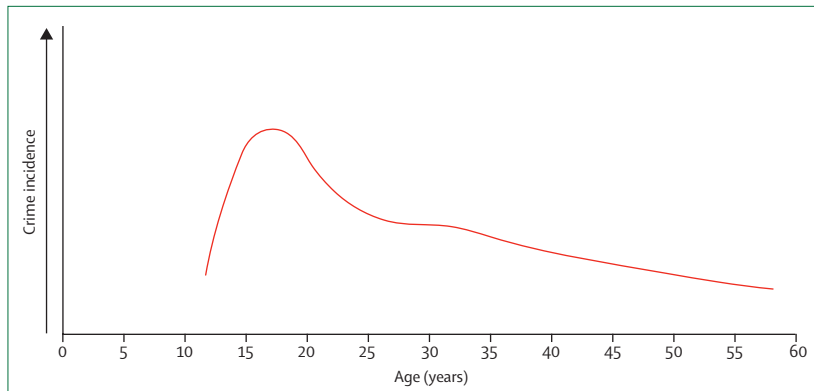


Figure: Illustrative age-crime curve

### Panel 1: Definitions of criminological concepts

#### Antisocial behaviour

Behaviour that causes harm or affects the wellbeing of others, including behaviours that are harmful but not criminal.

#### Conduct disorder

A clinical diagnosis given when a young person is engaged in persistent patterns of behaviour that is aggressive, destructive, deceitful, or otherwise counter to established societal norms, where this behaviour is causing the young person substantial impairment in social, academic, or occupational functioning.

#### Criminalisation

The definition of a particular act or behaviour as criminal, and therefore the parallel definition of a person convicted of the crime as a criminal.

#### Delinquency

Behaviour that is criminal when committed by a young person. In some definitions, the term includes youthful behaviour that is generally deemed unacceptable but is not criminal. Delinquency can, therefore, be measured by official criminal justice statistics or self-reported behaviours.

#### Externalising behaviour

Problem behaviours directed towards the external environment and other people—including physical or verbal aggression, disobeying rules, and destruction of property—and often associated with poor impulse or emotional control.

#### Life-course-persistent offenders

Individuals for whom patterns of crime and antisocial behaviour in childhood continue into adulthood (in contrast to the majority, whose offending is limited to adolescence).

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achieved through a state-of-the-art review<sup>7</sup> of international research, including cross-sectional studies examining the associations between specific health and developmental difficulties and criminal justice system involvement; and longitudinal studies that identify criminal justice outcomes associated with such difficulties, as well as associations with conduct disorder, externalising behaviour, antisocial behaviour, and delinquency, which increase the risk of criminal justice involvement. Such evidence, therefore, draws on an array of overlapping terminology relevant to criminality and criminal justice (panel 1).

Issues of overlapping terminology are also apparent in the terms used to describe adolescents. The term adolescence is itself used irregularly, including to refer to those aged 10–17 years, or to also include those aged 18–24 years. Additionally, those younger than 12 years are commonly referred to as children, those aged 12–17 years as young people, and those aged 18–24 years as young adults. Furthermore, when within certain policy and professional systems, the terminology changes once again, reflecting the political imperatives and constructs of those systems. Most notably, when engaged by a criminal justice system, young people are described as youths or juveniles, yet, when made vulnerable by experiences of maltreatment or out-of-family care, any person under 18 years of age is referred to as a child. In our Review, we necessarily reflect the language of these systems and contexts, and the related research, while acknowledging the obfuscation of these inconsistencies, especially as we show the same young people to be routinely constructed as both vulnerable children and dangerous juveniles.

Before discussing our findings, we first acknowledge some limitations. As a state-of-the-art review, this paper is deliberately broad in its coverage, both of topic and of research method, with the intent to map the terrain of the evidence base, revealing the key characteristics of the literature and highlighting emergent issues. As such, it is necessarily limited in the extent of critical analysis of individual studies, and instead we use the shorthand of methodology and sampling frame to suggest quality. As with all such reviews, the lack of systematic search criteria also risks distorting the evidence base as a whole. Neither the breadth of topics covered nor the depth of coverage of specific topics are exhaustive. The issue of breadth is a particular concern given the multidisciplinary nature of the subject matter. Finally, we are necessarily restricted in our consideration of the interplay of health with other influences on adolescent criminality. Such influences on adolescent criminality are many, complex, and varied, and include family, community, and sub-cultural norms; genetics and other biological factors; and temperament and personality.<sup>8</sup> It is beyond the focus of this Review to consider these influences—except where there is an identified explicit interplay with health determinants—and it is not our intent to argue the relative importance of health among this varied range of factors.

### Health and developmental determinants

A disparate range of difficulties in adolescent health and development increase the risk of involvement in a criminal justice system. These influences include neurodevelopmental disabilities, traumatic brain injury (TBI), and mental health difficulties, as well as experiences of trauma and adversity, which have the potential to affect subsequent developmental processes relevant to the risk of criminalisation. Key terms are defined in panel 2.

**Panel 2: Definitions of key terms****Learning or intellectual disability**

Deficits in cognitive capacity (measured by an IQ score of <70) and adaptive functioning (substantial difficulties with everyday tasks).

**Fetal alcohol spectrum disorder**

Reduced height, weight, or head circumference; characteristic facial features; and deficits in executive functioning, memory, cognition, intelligence, attention, or motor skills (or a combination of these deficits); resulting from prenatal alcohol exposure due to maternal alcohol consumption during pregnancy.

**Attention-deficit hyperactivity disorder**

Persistence in multiple symptoms of inattention, hyperactivity, and impulsivity.

**Traumatic brain injury**

Disruption to the normal function of the brain resulting from a direct blow to the head, penetration of the skull, or a force that causes the brain to move around inside the skull.

**Psychotic illness**

Perception or interpretation of reality in ways that differ from the perception of those around them, sometimes involving delusions (false beliefs) or hallucinations (false perceptions).

**Depression**

Prolonged and intense experiences of depressed mood, loss of interest, guilt, or low self-worth, impacting on sleep, appetite, energy, or concentration.

**Anxiety**

Prolonged and intense experiences of stress, panic, and worry, resulting in physical symptoms such as restlessness, panic attacks, sweating, shortness of breath, dizziness, or heart palpitations.

**Child maltreatment**

Any form of physical, emotional, or sexual abuse, neglect, or exploitation, with the potential to result in harm to a child's health, development, or survival, while the child is in the care of a person they trust or depend on.

**Trauma**

When a person is emotionally or cognitively overwhelmed and feels unable to cope following an event or experience that he or she is involved in or witnesses.

**Post-traumatic stress disorder**

Anxiety developed as a result of experiencing or witnessing a traumatic event, experienced as mental or physical distress in response to specific trauma-related cues, heightened acute stress response, disturbing thoughts or feelings, or alterations in thinking and feelings.

	Young people in the general population	Incarcerated young people
Learning disability	2–4% <sup>9,10</sup>	10–32% <sup>11–17</sup>
Attention-deficit hyperactivity disorder	3–9% <sup>18</sup>	12–30% <sup>19</sup>
Fetal alcohol spectrum disorder	2–5% <sup>20</sup>	11–36% <sup>21,22</sup>
Traumatic brain injury	5–24% <sup>23</sup>	32–50% <sup>23</sup>
Psychiatric disorder	7–12% <sup>24</sup>	..
Male	..	60–70% <sup>25–27</sup>
Female	..	60–80% <sup>25–27</sup>
Major depressive disorder	0.2–3% <sup>28</sup>	..
Male	..	11% <sup>19</sup>
Female	..	29% <sup>19</sup>
Anxiety	4.4% <sup>29</sup>	9–21% <sup>16,26,30–32</sup>
Psychosis	0.4% <sup>33</sup>	..
Male	..	3.3% <sup>19</sup>
Female	..	2.7% <sup>19</sup>
At least one type of adverse childhood experience	38–39% <sup>34</sup>	96% <sup>35</sup>
Experience of a potentially traumatic event	25–50% <sup>36,37</sup>	88–90% <sup>36,38,39</sup>
Post-traumatic stress disorder	0.4% <sup>40</sup>	..
Male	..	10–37% <sup>38,41–46</sup>
Female	..	40–50% <sup>45–47</sup>

**Table: Reported prevalence of health or developmental difficulties among young people**

**Childhood neurodevelopmental disability**

Childhood neurodevelopmental disability encompasses a range of conditions that manifest early in life and are characterised by a varied combination of functional impairments. Herein, we provide illustrative examples of such conditions, but are far from exhaustive in our coverage. As shown in the table, a substantial body of research has established the disproportionate prevalence of various neurodevelopmental disabilities among justice-involved young people in various nation states. For example, adolescents with a learning or intellectual disability appear to be over-represented throughout the criminal justice system.<sup>11–14</sup> In contrast to the estimated prevalence of learning or intellectual disability among adolescents in the general population (2–4%),<sup>9,10</sup> a review of studies in varying adolescent criminal justice populations suggested a prevalence of 7–15%,<sup>15</sup> while two UK-based studies of young people in custody reported 27%<sup>16</sup> and 32%.<sup>12</sup> Two surveys of more than 18 000 young people in the UK showed conduct disorder to be more than five times more common among children aged 5–16 years with learning disability than among those without.<sup>17</sup>

Attention-deficit hyperactivity disorder (ADHD) is also more prevalent among adolescents in the criminal justice system (with a meta-analysis of 25 international studies finding a rate of 11.7% among incarcerated young males; age range 10–19 years)<sup>19</sup> compared with those in the general population (wherein rates of 3–7% are commonly identified).<sup>18</sup> Longitudinal studies suggest that childhood

### Panel 3: Mechanisms linking neurodevelopmental impairment to adolescent antisocial behaviour

Reflections on the links between neurodevelopmental impairment and adolescent antisocial behaviour have emphasised the influences of functional difficulties: both direct influences on susceptibility to certain behaviours in specific criminogenic contexts, and indirect influences through increased exposure to social and environmental risk factors for offending.<sup>61</sup>

Various specific functional difficulties associated with neurodevelopmental impairments have been shown to directly influence offending behaviour, including the following:

- Impulsivity can lead to acting without forethought, reflection, or consideration of the consequences of behaviour, and is the hallmark of much of the typical offending of adolescents
- Emotional functioning deficits can lead to increased sensitivity to threat and reactive aggression, or an inability to empathise with the feelings of potential victims
- Deficits in executive functioning can lead to decreased inhibition, poor anticipation of consequences of action, or an inability to recognise contextually inappropriate behaviour

This body of research highlights the importance of social context in understanding the manifestation of impairment. Difficulties are not always expressed in a clear, consistent manner, and might be more apparent in particular contexts, including those in which offending can occur. For example, various studies indicate challenges in unsupervised peer group interactions, including susceptibility to bullying, negative peer pressure, and associated delinquency among those with learning disabilities, attention-deficit hyperactivity disorder (ADHD), or communication disorders.<sup>61</sup>

The risk of negative peer influence is also indicative of the relationship between impairment and social and environmental factors known to increase the likelihood of adolescent offending. Most notably, disengagement from education is a particular risk for young people with unmet needs related to neurodevelopmental impairment. For example, challenges associated with ADHD—such as impulse control, attention problems, and hyperactivity—can potentially inhibit readiness to start school, affecting the acquisition of initial key skills and thereby cumulatively affecting educational engagement.<sup>61</sup> Similarly, studies of long-term behavioural outcomes for young people with a traumatic brain injury suggest that social and environmental factors, such as family functioning, have a greater influence than the severity of the injury.<sup>61,62</sup>

ADHD predicts later antisocial behaviour.<sup>5,48</sup> Consistently, a meta-analysis of 20 studies reported ADHD to be a substantively important predictor of delinquency.<sup>49</sup> The particular symptoms of ADHD—impulsivity<sup>50</sup> and hyperactivity<sup>51</sup>—are also strongly associated with delinquency. This association is proposed to be indirect and mediated through the development of conduct disorder, illicit drug use, and peer delinquency.<sup>52</sup>

The associations between symptoms of fetal alcohol spectrum disorder (FASD)—including hyperactivity<sup>51</sup> and deficits in cognition and executive functioning<sup>53,54</sup>—and criminal behaviour are similarly well established. Although there is insufficient evidence to draw firm conclusions, an emerging body of research consistently suggests higher prevalence of FASD among young people exposed to the criminal justice system. According to a systematic review,<sup>21</sup> four Canadian studies<sup>55–58</sup> diagnosed FASD in 11–23% of young people (age range 12–19 years) in custody, while a study of a similar population aged

10–17 years in Western Australia found a prevalence of 36%.<sup>22</sup> By contrast, 2–5% of children in the USA and European countries are estimated to be born with FASD.<sup>20</sup> Notably, however, research on incarcerated populations in Australia and Canada consistently presents wide disparity in reported prevalence between Aboriginal (4–8%) and non-Aboriginal youth (19–47%);<sup>21,22,55–58</sup> therefore, it is unclear whether the association between FASD and engagement with the criminal justice system is more accurately explained by increased criminalisation among Aboriginal young people. Furthermore, experiences of FASD cannot be readily separated from intergenerational disadvantage, poor access to health care, and risk of mental health difficulties.<sup>59</sup>

Some evidence shows a higher prevalence of autism spectrum disorder in incarcerated young people than in the general population; however, this evidence is inconclusive, as studies have tended to use specific samples and sampling frames, making prevalence difficult to establish.<sup>60</sup>

Although it is beyond the scope of this Review to consider the complex array of different mechanisms that might lead a young person with a particular health or developmental need into the justice system, panel 3 considers factors associated with neurodevelopmental impairment as an illustrative example.

### Childhood traumatic brain injury

Childhood TBI can result in functional difficulties with the potential to affect behaviour,<sup>62,63</sup> including deficits in cognition, social communication, impulse control, empathy, and response to the emotions of others. Such deficits are repeatedly identified as factors that increase risk of criminality,<sup>53,54</sup> early-onset and life-course-persistent offending,<sup>64</sup> and violent crime.<sup>60</sup>

A systematic review<sup>23</sup> suggested that 32–50% of young people in custody report experience of a TBI resulting in loss of consciousness, compared with 5–24% of adolescents within the general population, with the disparity seemingly more pronounced as the severity of the injury increases. Notably, all included studies were done in Australia, the UK, or the USA, despite evidence of higher rates of childhood TBI in low-income and middle-income countries (LMICs),<sup>65</sup> particularly in sub-Saharan Africa and Latin America. A broader global impact of TBI on criminalisation might therefore be assumed.

While acknowledging the potential greater likelihood for TBI where hyperactivity or impulse control problems pre-exist, population studies have suggested increased propensity for crime following childhood TBI when controlling for other factors.<sup>66–68</sup> Most notably, an analysis of whole-population hospital records in Sweden between 1973 and 2009 used comparison with siblings unaffected by TBI to take account of genetics, social context, and economic background, and found a two-fold increase (95% CI 1.8–2.3) in subsequent violent crime following TBI before 18 years of age.<sup>66</sup>

## Mental health

There is extensive evidence of the high prevalence of mental health difficulties among young people in criminal justice systems in the USA and the UK, and to a lesser extent in Australia and parts of Europe. In these contexts, the prevalence among justice-involved young people appears to be consistently and considerably higher than that in the general youth population. For example, rates of serious psychiatric disorder among young people in criminal justice custodial institutions in US-based studies of young people range from 60–70% for males and 60–80% for females between 10 years and 18 years of age.<sup>25–27</sup> This compares to estimates of 7–12% in the general population.<sup>24</sup>

This trend was reaffirmed by a meta-analysis<sup>19</sup> of 25 studies from the USA (15 studies), the UK (four studies), and Australia, Russia, the Netherlands, Denmark, Canada, and Spain (one study each), which incorporated a total of 16750 adolescents (age range 10–19 years) and suggested that around 11% of males and 29% of females had major depressive disorder. A similar prevalence of 10% was reported among 370 young people aged 14–18 years in custody in Russia.<sup>41</sup> By contrast, 0.2–3% of children aged 10–13 years are estimated to have depression in non-custodial populations.<sup>28</sup> Comorbidity between antisocial behaviour and depression in adolescence is also well established in epidemiological samples of community populations, as evidenced by a meta-analysis<sup>69</sup> that reported a median joint odds ratio of 6.6 (95% CI 4.4–11.0). These associations appear more marked among young women than young men.<sup>70</sup>

Similar trends are apparent for anxiety and psychosis. Approximately 4.4% of those aged 11–16 years have an anxiety disorder,<sup>29</sup> whereas, among young people aged 12–18 years in criminal justice institutions within the USA,<sup>26,30,31</sup> the UK,<sup>16</sup> and the Netherlands,<sup>32</sup> rates of this diagnosis range from 9% to 21%. The estimated prevalence of psychotic disorders in those aged 5–18 years is 0.4%,<sup>33</sup> in contrast to 3.3% (95% CI 3.0–3.6) of males and 2.7% (2.0–3.4) of females in youth custody having a diagnosis of psychotic illness, as reported in the aforementioned meta-analysis of 25 studies.<sup>19</sup>

Statistically significant rates of heterotypic comorbidity of internalising disorders (such as depression and anxiety) and externalising disorders (such as conduct disorder) have been repeatedly observed.<sup>69,71</sup> Several studies have shown that conduct problems can result from depression or anxiety; for example, one 5-year prospective longitudinal study<sup>72</sup> of 104 children (age range 8–13 years at recruitment) found that, among those with comorbid depression and conduct disorder (n=16), depression was diagnosed first in nine (56%) cases, while conduct disorder predated depression in only four (25%). In 12 (75%) cases, conduct disorder persisted after depression remitted. However, a longitudinal study of 204 children aged 8–15 years in the USA found that those who had depression were no more

susceptible to subsequent conduct problems in adolescence than those without.<sup>73</sup> It is more commonly argued that depression results more frequently from conduct problems than vice versa.<sup>74</sup>

Although conclusive evidence on the sequencing of conduct and depressive disorders is not available, two longitudinal studies of 506 males<sup>75</sup> and 890 males<sup>76</sup> followed from age 13 years to 17 years showed that the presence of depressive symptoms alongside conduct problems predicted escalation in the seriousness and frequency of adolescent delinquent behaviour, independently of other common risk factors, with depression having a more robust effect on delinquency than delinquency had on depression.

Whereas the evidence for associations between mental health difficulties and criminal justice involvement in high-income countries is reasonably strong, evidence for such associations in LMICs is more limited, with studies of the prevalence of mental health difficulties among justice-involved young people being rare. Psychiatric disorders were more prevalent among incarcerated young people in Nigeria than in a matched sample of non-delinquent adolescents aged 10–19 years,<sup>77</sup> and a prevalence of 44% was identified in a small sample of adolescents (age range 8–18 years) appearing before a juvenile court in Kenya.<sup>78</sup> However, a systematic review of research in LMICs<sup>79</sup> only identified longitudinal studies relating to anxiety or depression in China,<sup>80–82</sup> Chile,<sup>83,84</sup> Colombia,<sup>85</sup> and Puerto Rico,<sup>86</sup> none of which showed more than a weak association of these disorders with antisocial or aggressive behaviour. Notably, however, prevalence estimates for mental health difficulties are consistent internationally.<sup>87</sup>

## Childhood adversity

Growing evidence shows potential negative effects on long-term neurological development resulting from adversity during childhood and adolescence.<sup>88</sup> Prolonged exposure to toxic stress can disrupt brain development and functioning, reduce the ability to regulate impulses, intensify physiological responses to stress, and ultimately increase the likelihood that one will engage in maladaptive behaviours, such as aggression and delinquency.

In the USA and the UK, a dominant framework for understanding the effect of adversity in childhood or adolescence on future life outcomes has emerged from the Adverse Childhood Experiences Study.<sup>34</sup> The framework typically includes ten adverse childhood experiences (ACEs): emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, intimate partner violence, household substance abuse, household mental illness, parental separation or divorce, and incarceration of a parent. A person's score is measured by counting the number of distinct ACEs they have had by 18 years of age.

ACEs greatly increase the risk of exposure to the criminal justice system during adolescence. A study of

more than 64000 young people involved in the criminal justice system in the USA found that 96% had had at least one ACE (around twice the rate in the general population);<sup>34</sup> 27% of males and 45% of females had experienced five or more.<sup>35</sup> A group of studies drawing on data from 5000 to more than 60000 young people in the juvenile justice system in Florida, USA, have shown that young people with more ACEs have a greater likelihood of recidivism,<sup>89,90</sup> early onset of offending,<sup>91</sup> incarceration following arrest,<sup>92</sup> and committing serious violent offences.<sup>93,94</sup> One of very few prospective studies of a sample of families at high risk for contact with the child welfare system found that black American adolescents reporting greater numbers of ACEs were significantly more likely to report having been arrested than were those with fewer ACEs,<sup>95</sup> although this relationship was not significant for white youth.

The ACEs framework has quantified a strong relationship between adversity and criminal justice system involvement in high-income countries. However, this body of research has not yet pinpointed the mechanisms by which adversity leads to delinquency in only some young people and not others. Furthermore, although the proportion of adults reporting at least one ACE was similar in high-income (38·4%), high-middle-income (38·9%), and low-income or lower-middle-income (39·1%) countries in a study of 21 countries,<sup>96</sup> few data on the effect of adversity on criminal behaviour in LMICs are available.

Among the various forms of adversity, maltreatment has the most strongly established association with criminal justice involvement.<sup>97,98</sup> A seminal longitudinal study of 1575 people in the USA found that those with official records of maltreatment in childhood were more likely than those without such records to be subsequently arrested in adolescence or adulthood.<sup>99</sup> A meta-analysis of 33 prospective longitudinal studies of a total of 23 973 young people showed strong correlations between previous maltreatment and adolescent antisocial behaviour, including associations between experiences of sexual and physical abuse and subsequent aggression.<sup>100</sup> Additionally, an extensive review showed a strong association between experiences of physical abuse and subsequent adolescent violent and non-violent offending.<sup>101</sup> Similarly, a systematic review of 20 empirical studies showed consistent evidence of an increased propensity for delinquency following sexual abuse.<sup>102</sup> Experiences of maltreatment are especially apparent among young women aged 10–18 years in criminal justice systems,<sup>103,104</sup> with reported rates of sexual abuse being seven to ten times higher among young women than among young men in detention.<sup>38,39,105</sup>

Beyond reviews of research done predominantly in high-income countries, maltreatment has also been correlated with several psychological and behavioural difficulties in 10–17-year-olds (n=1782) in South Africa<sup>106</sup> and among cohorts of Chinese youth (aged <25 years) in various Asian countries.<sup>107</sup> Exposure to domestic violence

showed moderate to strong associations with a range of negative outcomes in a cross-sectional analysis of a survey of 22 656 school-aged young people in Namibia, eSwatini, Uganda, Zambia, and Zimbabwe.<sup>108</sup> Young people in custody (n=204) in Nigeria were also twice as likely to have witnessed domestic violence and six times more likely to have experienced serious physical abuse than a school-based comparison group (n=204).<sup>36</sup> However, a 2018 systematic review of longitudinal studies suggested that the relationships between maltreatment and antisocial behaviour are less consistent in LMICs.<sup>79</sup> Only three relevant longitudinal studies were identified—two in South Africa<sup>109,110</sup> and one in Brazil<sup>111</sup>—all of which showed weak or null associations between maltreatment or witnessing family violence and subsequent antisocial behaviour.

### Trauma

One of the mechanisms by which adversity influences adolescent criminality is through experiences of trauma. As well as some of the aforementioned family adversities, causes of trauma can include experiences of war, community violence, displacement, serious accidents or injuries, or loss of home.

Young people involved in criminal justice systems have high rates of exposure to potentially traumatic experiences. For example, compared with estimates of 25% and 50% from two distinct studies in US populations,<sup>37</sup> surveys of 16–20-year-olds (n=898) in detention in the USA and 10–18-year-olds (n=590) detained in England and Wales both showed that more than 90% had experienced at least one potentially traumatic event.<sup>38,39</sup> Furthermore, in a Nigerian study, the prevalence of exposure to trauma was 88·7% among 204 justice-involved young people, with a mean age of 15·9 years, in contrast to 48·5% within a comparison group of 204 secondary school students.<sup>36</sup>

Research evidence suggests increased prevalence of post-traumatic stress disorder (PTSD) in criminal justice populations. Estimates of lifetime PTSD prevalence among 10–18-year-olds within the criminal justice system in the USA range from 10–37%.<sup>38,42–44</sup> Similar values are reported in other national contexts, including Australia (20%),<sup>45</sup> Russia (25%),<sup>41</sup> and Japan (36% met partial criteria).<sup>46</sup> Furthermore, PTSD is especially prevalent among criminalised females: 49% in a US institution,<sup>47</sup> 40% in Australia,<sup>45</sup> and 50% in Japan.<sup>46</sup> By comparison, in the general population, 0·4% of young people aged 11–15 years (0·2% of boys and 0·5% of girls) have PTSD.<sup>40</sup> A Nigerian study showed that, although the prevalence of PTSD was lower overall, 16–20-year-olds incarcerated in the Nigerian juvenile justice system (n=144) had a significantly increased prevalence of current (5·8%) and lifetime (9·7%) PTSD compared with a school-based sample (current 1·4%, lifetime 2·8%; n=144).<sup>112</sup>

There remains little evidence regarding the proportion of young people in criminal justice systems in LMICs

who have experienced trauma, despite the greater risk of trauma in some such contexts relative to that in high-income countries. A systematic review<sup>79</sup> revealed only one longitudinal study, from Croatia,<sup>113</sup> examining associations between antisocial behaviour and exposure to war at a young age, which suggested no association between these factors. The authors called for further research regarding other commonly experienced causes of trauma in LMICs, including female genital mutilation, being orphaned by AIDS, and stresses associated with child labour.<sup>79</sup>

### Exacerbation by societal marginalisation and inequality

Although health and developmental difficulties in childhood and adolescence greatly impact trajectories into the criminal justice system, our Review also suggests that this risk is amplified when such difficulties occur in the presence of one or more of a variety of social and economic disadvantages. In turn, socioeconomic advantage confers more protective experiences that can moderate the effects of health and developmental difficulties.

Criminological research has long emphasised the influence of social disadvantages in increasing the risk of crime among young people. Such disadvantages include family poverty, community deprivation, high levels of crime in a neighbourhood, educational disengagement, and parental incarceration. Detailed consideration of the direct effects of this range of social factors is beyond the scope of this Review, and has been reviewed elsewhere.<sup>114,115</sup> Instead, while noting that criminal justice involvement can also occur in the absence of social disadvantages, we draw attention to how social influences increase the likelihood of exposure to, or exacerbate the effect of, health determinants of adolescent involvement in the criminal justice system.

Strong evidence from multiple countries shows that adolescent mental health is highly influenced by various types of social disadvantage and marginalisation, such as discrimination (particularly that related to ethnic origin), neighbourhood deprivation (in high-income countries), rates of youth unemployment, and levels of community support and social cohesion.<sup>116</sup> A systematic review, including nine studies from the USA, Canada, and Norway, showed depressed mood or anxiety to be 2·5 times more prevalent among young people with low socioeconomic status than among those with high socioeconomic status.<sup>117</sup> Exposure to disadvantage has a cumulative effect on psychosocial development, and therefore on behaviour, with both the biological and the social mechanisms by which poverty and stress affect mental health increasingly understood.<sup>118</sup>

Although childhood maltreatment occurs in all sections of society, it is more likely in families subject to other types of adversity and household stress,<sup>119,120</sup> and thus its particular contribution to involvement in the criminal justice system is difficult to distinguish from that of

other family risks. The World Report on Violence and Health<sup>121</sup> presented evidence from geographically and culturally diverse countries and territories (including Bangladesh, China, Colombia, Egypt, India, Italy, Mexico, occupied Palestinian territory, the Philippines, South Africa, Sweden, and the USA) that the potential for childhood maltreatment is increased when families are affected by low education, low income, or domestic violence; when communities have a high concentration of poverty or unemployment; and when societies have weak social welfare systems.

A further social factor with a well established association with delinquency is educational disengagement; in particular, low IQ and school failure are associated with subsequent criminal behaviour.<sup>8</sup> Young people with unmet needs related to specific learning or functional difficulties are especially at risk of educational disengagement. For example, young people with oral language deficits related to neurodevelopmental disabilities can experience cumulative challenges engaging in the classroom;<sup>122</sup> where problematic behaviour disguises these difficulties, the young person's underlying language needs can be overshadowed and ignored.

Social inequality might also heighten the risk of neurodevelopmental disabilities; for example, as noted above, FASD is especially prevalent in Aboriginal communities in Australia and Canada, and is linked to broader experiences of extreme disadvantage, discrimination, and oppression.<sup>59,60</sup> Social factors also affect the progression and experience of neurodevelopmental disabilities. Socioeconomic status affects access to specialist support for complex conditions, with no such access in many LMICs and differential access in high-income countries. Without sufficient support, secondary difficulties can result from the disability; for example, if unrecognised or unsupported, young people with neurodevelopmental difficulties that affect their learning are at much greater risk of educational disengagement, which is itself a key contributing factor to the risk of subsequent criminality.<sup>123</sup>

### Discussion

Despite a relative lack of evidence from LMICs compared with high-income countries, strong and consistent evidence shows the existence of important health determinants of criminal justice involvement in adolescence, with an increased risk of engagement in the criminal justice system for young people who have had neurodevelopmental disability, mental health difficulties, ACEs, or trauma. This risk of criminal justice engagement appears to be amplified by experiences of social marginalisation and inequality. Substantial numbers of young people are therefore left vulnerable to criminal behaviour and criminalisation because of a combination of health difficulties and social disadvantage. Furthermore, the adolescent population engaged by criminal justice systems has a considerable prevalence of complex needs

### Search strategy and selection criteria

Our search strategy and selection criteria were intended to allow us to illustrate the extent of evidence across the widest possible range of topics (rather than being comprehensive in relation to specific topics), and to be inclusive of research from various global regions, and from high-income, middle-income, and low-income countries. We combined (using the AND operator) synonyms related to “criminal justice” and “youth justice” (including “antisocial behaviour”, “conduct disorder”, “criminalisation”, “delinquency”, “externalising behaviour”, and “life-course-persistent offenders”) and “health” and “adolescent development” (including “learning and intellectual disability”, “fetal alcohol spectrum disorder”, “attention-deficit hyperactivity disorder”, “traumatic brain injury”, “psychotic illness”, “depression”, “anxiety”, “child maltreatment”, “trauma”, and “post-traumatic stress disorder”). In selecting synonyms, we were deliberately reflective of various disciplinary and national or cultural discourses and terminology. We searched PubMed and ASSIA, as well as doing a purposive search of Google Scholar where gaps in evidence were apparent, particularly in relation to low-income and middle-income countries. We also searched reference lists of sources identified through these searches. We also drew upon several systematic reviews done by authors of this Review, who were purposively selected for their varied international knowledge of the field. In selecting evidence, we prioritised systematic reviews and meta-analyses regarding prevalence studies, as well as longitudinal research regarding developmental outcomes, although, given the aim to engage with emerging evidence across the globe, we were inclusive of other research designs where more robust research was lacking. We did not place any restrictions on the year of publication, including sources published up until our final searches in October, 2018 (supplemented by more recent sources suggested by authors in response to peer reviewer comments), but prioritised references from the past 10 years when there was considerable evidence regarding a particular topic. The authors provided access to evidence from a wide variety of international contexts, and reviewed research in various languages, although all sources included here were published in English. This search strategy resulted in the inclusion of 116 publications in the final Review.

related to health and development that put them at increased risk. This finding offers important points for reflection in considering the prevention of criminal justice system involvement among seemingly vulnerable young people, as well as appropriate support upon engagement with systems.

### Earlier intervention for prevention

As noted at the outset, evidence of a determinant occurring in an individual is not necessarily evidence of causation, even where risk indicators clearly predate criminality. In some cases, specific difficulties might cause a behaviour, as with the emotional and social functional difficulties associated with specific disabilities (as discussed in panel 3). However, reasons for engagement in offending behaviour and pathways into criminal justice systems are clearly complex, and cannot typically be reduced to single factors, attributes, or experiences, including mental disorder.<sup>124</sup> Nonetheless, the weight of evidence regarding the increased risk of engagement in criminal justice systems associated with adolescent health and developmental difficulties calls into question the extent to which these difficulties are appropriately understood, recognised, and responded to as early warning signs for possible future criminal

justice involvement. The evidence implies a need for earlier identification of health and developmental needs through routine assessment of young people, including when behavioural problems are first observed, when a child is at risk of exclusion or disengagement from school, and on first contact with the criminal justice system. Likewise, it implies the need for monitoring of behaviour when health and developmental difficulties are observed. Stronger information sharing and referral between health systems, community mental health services, family support services, and schools are required to achieve these goals. The evidence also supports calls for community-based preventive services that target all young people at risk of delinquency as well as those at risk of mental health or developmental difficulties.<sup>125</sup>

Early intervention is only possible with suitable investment in community services, which is clearly not universally available at present. However, recognition of the substantial influence of health and development on trajectories into the criminal justice system, and towards serious and persistent offending resulting in incarceration, suggests value in the application of models of so-called justice reinvestment at a population level.<sup>126</sup> These initiatives seek to reduce both the frequency of crime and the costs associated with current criminal justice processes through the redirection of funds away from custodial sentences and towards community-based alternatives, especially those delivered outside of the criminal justice system. To date, the primary emphasis of justice reinvestment initiatives has been on geographical areas with high crime rates, so as to consider underlying causes and invest resources appropriately. A similar framework can readily be applied to young people with certain health and developmental needs who are disproportionately susceptible to criminal behaviour, with reinvestment in health, education, family, and community support programmes intended to counter onset or continuation of problematic behaviour.

### Reforming criminal justice practices

As well as limitations in our understanding of the true causal effects of health needs and developmental difficulties on offending, the evidence presented in this Review does not negate that young people with health and developmental difficulties should be subject to the principles of free will, responsibility, capacity, and culpability that typically underpin a criminal justice system.<sup>127</sup> As such, diversion and decriminalisation are not appropriate in all instances where health and developmental difficulties are apparent. Those with health and developmental difficulties will also commit crimes involving the same complex myriad of reasons as other young people, and engagement with criminal justice systems and processes can be an appropriate means to address this behaviour and reduce harm.

However, failure to identify and understand health and developmental difficulties, and the potential effects they can have, can serve to limit the effectiveness of the justice system, and even exacerbate these difficulties (as suggested in a parallel Scoping Review<sup>128</sup> of the health needs of justice-involved young people), thereby reinforcing criminal behaviour and the young person's engagement in the system.

Evidence regarding the extent of health and developmental difficulties among those exposed to criminal justice systems also suggests that these systems are the primary service provider for many young people with complex needs. Thus, it is imperative that these needs are addressed, and thereby that the rights of young people with health and developmental difficulties are fully upheld, within criminal justice systems. Likewise, in recognising children engaged in criminal justice systems as children first and as offenders second, the UN Convention on the Rights of the Child makes it clear that responses to crime must be governed by principles of welfare and a responsiveness to a child's individual needs and circumstances. This principle echoes the UN Standard Minimum Rules for the Administration of Juvenile Justice (the Beijing Rules), which state that "The well-being of the juvenile shall be the guiding factor in the consideration of her or his case" (rule 17.1[d]); and that, where criminal justice intervention is required, it must be "in proportion not only to the circumstances and the gravity of the offence but also to the circumstances and the needs of the juvenile" (rule 17.1[a]).<sup>129</sup> An absence of routine screening and assessment for health and developmental difficulties early in a criminal justice system means a lost opportunity for earlier support.

The principles of therapeutic justice offer an approach that embodies these rights, whereby the primary aim of a criminal justice system is to "address the main factors—the roots—of what may lead the individual to come into contact with the law", whether these factors are developmental, economic, social, or a complex combination. In doing so, the intention is to ensure "a more holistic and less punitive method for the troubled groups within the society".<sup>130</sup> Such an approach shifts the discourse from one of criminality to one of vulnerability, recognising distinct needs and therefore different types of support that might be needed to address offending behaviour. Addressing behaviours in this way is likely to require interventions in support of health and developmental needs that are well evidenced in other settings but not typically employed in criminal justice systems, or, in some cases, over-employed by the courts through excessive referrals for assessments without sufficient resources or accountability to ensure treatment follows.<sup>131,132</sup>

Furthermore, responses should not be determined by psychological assessment alone, but instead account for the broader environmental factors that must be changed to prevent criminal behaviour by young people. A

growing interest in promotive and protective processes associated with resilience in young people exposed to significant levels of risk is changing the emphasis in criminal justice systems—from one of containment of problem behaviours to one of earlier intervention and relapse prevention. This shift in focus is especially important in contexts of social deprivation or where exposure to past trauma has overwhelmed the coping capacity of young people to find socially desirable ways to meet their developmental needs.

In making the case for recognition and reform of how criminal justice systems understand adolescents, we would extend the argument to include those over 18 years of age. The Beijing Rules state that efforts should be made "to extend the principles embodied in the Rules to young adult offenders" (rule 3.3), which is in keeping with a broader definition of adolescence, based on understandings of continued maturation into the mid-20s.<sup>1</sup>

#### Contributors

NH led the review and drafted the manuscript. KN did specific literature searches and reviewed sources. All authors informed the initial development of the argument, provided additional text and references on specific areas of expertise, and critically reviewed drafts of the manuscript.

#### Declaration of interests

We declare no competing interests.

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## Intersection between Mental Health and the Juvenile Justice System

Mental health disorders are prevalent among youths in the juvenile justice system. A meta-analysis by Vincent and colleagues (2008) suggested that at some juvenile justice contact points, as many as 70 percent of youths have a diagnosable mental health problem. This is consistent with other studies that point to the overrepresentation of youths with mental/behavioral health disorders within the juvenile justice system (Shufelt and Coccozza 2006; Meservey and Skowyrza 2015; Teplin et al. 2015). However, prevalence varies depending on the stage in the justice system at which youths are assessed. In a nationwide study, the prevalence of diagnosed disorders increased the further that youths were processed in the juvenile justice system (Wasserman et al. 2010).

While there appears to be a prevalence of youths with mental health issues in the juvenile justice system, the relationship between mental health problems and involvement in the system is complicated, and it can be hard to disentangle correlational from causal relationships between the two (Shubert and Mulvey 2014).

This literature review will focus on the scope of mental health problems of at-risk and justice-involved youths; the impact of mental health on justice involvement as well as the impact of justice involvement on mental health; disparities in mental health treatment in the juvenile justice system; and evidence-based programs that have been shown to improve outcomes for youths with mental health issues.

### Defining Mental Health and Identifying Mental Health Needs

**Defining Mental Health.** According to the U.S. Department of Health and Human Services, mental health includes a person's psychological, emotional, and social well-being and affects how a person feels, thinks, and acts. Mental disorders relate to issues or difficulties a person may experience with his or her psychological, emotional, and social well-being. As Stein and colleagues explained, "each of the mental disorders is conceptualized as a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is associated with present distress (e.g., a painful symptom) or disability (i.e., impairment in one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom" (2010, 1).

The *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* is a standard classification tool for mental disorders used by many mental health professionals in the United States (American Psychiatric Association 2013). It includes 20 chapters of mental health disorders, including the following:

**Suggested Reference:** Development Services Group, Inc. 2017. "Intersection Between Mental Health and the Juvenile Justice System." Literature review. Washington, D.C.: Office of Juvenile Justice and Delinquency Prevention.

<https://www.ojjdp.gov/mpg/litreviews/Intersection-Mental-Health-Juvenile-Justice.pdf>

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- Substance-related and addictive disorders
- Bipolar and related disorders
- Depressive disorders
- Anxiety disorders
- Obsessive-compulsive disorders
- Trauma- and stressor-related disorders such as posttraumatic stress disorder and adjustment disorders
- Disruptive, impulse control, and conduct disorders
- Neurodevelopmental disorders, which includes intellectual disabilities,<sup>1</sup> attention deficit/hyperactivity disorder, and autism spectrum disorders

A broader categorization divides mental health disorders into two categories: internalizing and externalizing. *Internalizing disorders*, which are negative behaviors focused inward, include depression, anxiety, and dissociative disorders. *Externalizing disorders* are characterized by behaviors directed toward a youth's environment and include conduct disorders, oppositional defiant disorder, and antisocial behaviors.

**Tools to Identify Mental Health Needs.** Juvenile justice systems use a variety of tools to identify mental health needs, although most fall into one of two categories:

- **Screening.** The purpose of screening is to identify youths who might require an immediate response to their mental health needs and to identify those with a higher likelihood of requiring special attention (Vincent 2012). It is similar to a triage process in a hospital emergency room. Although there are numerous screening instrument options, two commonly used are the Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2; Grisso and Barnum 2006) and the Diagnostic Interview Schedule for Children (Wasserman, McReynolds, Fisher, and Lucas 2005). In addition to tools that screen for multiple mental health-related issues, there are also tools that screen for specific problems, such as the Children's Depression Inventory (Kovacs 1985) or the Suicidal Ideation Questionnaire (Reynolds 1988), which can help determine if a youth should be monitored for suicide attempts upon entry to detention or residential facility.
- **Assessment.** The purpose of assessment is to gather a more comprehensive and individualized profile of a youth. Assessment is performed selectively with those youths with higher needs, often identified through screening. Mental health assessments tend to involve specialized clinicians and generally take longer to administer than screening tools (Vincent 2012). There are numerous mental health assessments. One widely studied assessment is the Achenbach System of Empirically Based Assessment (Achenbach and Rescorla 2001), which includes three instruments completed by youths (Youth Self-Report), parents (Child Behavior Checklist), or teachers (Teachers Report Form)<sup>2</sup>.

## Scope of the Problem

Multiple studies confirm that a large proportion of youths in the juvenile justice system have a diagnosable mental health disorder. Studies have suggested that about two thirds of youth in detention or correctional settings have at least one diagnosable mental health problem, compared with an

<sup>1</sup> A separate *Model Programs Guide* literature review on intellectual/development disabilities among youths in the justice system can be accessed here: <https://www.ojjdp.gov/mpg/litreviews/Intellectual-Developmental-Disabilities.pdf>

<sup>2</sup> For more information on Risk/Needs Assessments for Youths, please see the literature review on the *Model Programs Guide*: <https://www.ojjdp.gov/mpg/litreviews/RiskandNeeds.pdf>

estimated 9 to 22 percent of the general youth population (Schubert and Mulvey 2014; Schubert, Mulvey, and Glasheen 2011). The 2014 National Survey on Drug Use and Health found that 11.4 percent of adolescents aged 11 to 17 had a major depressive episode in the past year, although the survey did not provide an overall measure of mental illness among adolescents (Center for Behavioral Health Statistics and Quality 2015). Similarly, a systematic review by Fazel and Langstrom (2008) found that youths in detention and correctional facilities were almost 10 times more likely to suffer from psychosis than youths in the general population.

These diagnoses commonly include behavior disorders, substance use disorders, anxiety disorder, attention deficit/hyperactivity disorder (ADHD), and mood disorders (Chassin 2008; Gordon and Moore 2005; Shufelt and Coccozza 2006; Teplin et al. 2003). The prevalence of each of these diagnoses, however, varies considerably among youths in the juvenile justice system. For example, the Pathways to Desistance study (which followed more than 1,300 youths who committed serious offenses for 7 years after their court involvement) found that the most common mental health problem was substance use disorder (76 percent), followed by high anxiety (33 percent), ADHD (14 percent), depression (12 percent), posttraumatic stress disorder (12 percent), and mania (7 percent) (Schubert, Mulvey, and Glasheen 2011; Schubert and Mulvey 2014). A multisite study by Wasserman and colleagues (2010) across three justice settings (system intake, detention, and secure post-adjudication) found that over half of all youths (51 percent) met the criteria for one or more psychiatric disorders. Specifically, one third of youths (34 percent) met the criteria for substance use disorder, 30 percent met the criteria for disruptive behavior disorders, 20 percent met the criteria for anxiety disorders, and 8 percent met the criteria for affective disorder.

Many of these youths are also diagnosed with multiple disorders. For example, the Pathways to Desistance study found that 39 percent of youths met the threshold for more than one mental health problem (Schubert, Mulvey, and Glasheen 2011). Similarly, the Northwestern Juvenile Project (a longitudinal study that followed over 1,800 youths who were arrested and detained in Cook County, Illinois) found that 46 percent of males and 57 percent of females had two or more psychiatric disorders (Teplin et al. 2013). In a study of youths in contact with the juvenile justice systems (including community-based programs, detention centers, and secure residential facilities), in Texas, Louisiana, and Washington, Shufelt and Coccozza (2006) found that 79 percent of the youths diagnosed for one mental health disorder also met the criteria for two or more diagnoses.

## **Impact of Mental Health Problems on Juvenile Justice Involvement**

As previously mentioned, the relationship between mental health problems and involvement in the juvenile justice system is complex. As Schubert and Mulvey explained, “although these two problems often go hand in hand, it is not clear that one causes the other. Many youths who offend do not have a mental health problem, and many youths who have a mental health problem do not offend” (2014, 3). There has been research to show how mental health diagnoses and problem behaviors are associated with each other. But as is often emphasized, correlation does not mean causation. In addition, certain risk factors could increase the occurrence of both mental health and problem behaviors in youths. For example, exposure to violence can increase mental health issues, such as posttraumatic stress, in youth and increase the occurrence of delinquent behavior (Finkelhor et al. 2009). However, although the research can point to a relationship between mental health issues and juvenile justice involvement, it remains difficult to determine the exact correlation.

Research on individual risk factors often focuses on how certain mental health problems may be associated with delinquency, violence, and justice system involvement. Researchers have found that some externalizing disorders (e.g., conduct disorders, oppositional defiant disorder, and antisocial

behaviors) and substance use disorders do increase the likelihood of delinquency, violence, and contact with the justice system (Barrett et al. 2014; Hawkins et al. 2000; Huizinga et al. 2000).

For instance, in their meta-analysis of predictors of youth violence, Hawkins and colleagues (2000) found evidence that psychological factors—such as aggression, restlessness, hyperactivity, concentration problems, and risk taking—were consistently correlated with youth violence. However, they also found that internalizing disorders—such as worrying, nervousness, and anxiety—were either unrelated to later violence or reduced the likelihood of engaging in later violence. A recent meta-analysis by Wibbelink and colleagues (2017) also examined the relationship between mental disorders (including internalizing, externalizing, and comorbid disorders) and recidivism in juveniles. Similar to the findings from the Hawkins and colleagues (2000) meta-analysis, Wibbelink and colleagues (2017) found that externalizing disorders were significantly related to recidivism, while internalizing behaviors were not related to recidivism (and in some cases, internalizing behaviors had a buffering effect on recidivism).

This link between certain mental health problems and delinquency has also been studied for youths in certain subpopulations. Among maltreated youths living in out-of-home care, the presence of a mental health disorder was significantly associated with juvenile justice system involvement, and conduct disorder was the strongest predictor (Yampolskaya and Chuang 2012). A study of psychiatric-inpatient adolescents found that having a disruptive disorder, a history of aggressive behavior, and using cocaine were all predictors of juvenile justice system involvement (Cropsey, Weaver, and Dupre 2008).

Trauma or exposure to violence may also increase the likelihood of juvenile justice involvement. Multiple studies show a connection between childhood violence exposure and antisocial behavior, including delinquency, gang involvement, substance use, posttraumatic stress disorder, anxiety, depression, and aggression (Wilson, Stover, and Berkowitz 2009; Finkelhor et al. 2009). In the Northwestern Juvenile Project, 92.5 percent of detained youths reported at least one traumatic experience, and 84 percent reported more than one (Abram et al. 2013). Other studies that have looked at past traumatic exposures in juvenile justice populations have also found high rates (e.g., Romaine et al. 2011; Rosenberg et al. 2014).

## Impact of Justice System Involvement on Mental Health Problems

Entry into the juvenile court system may exacerbate youths' existing mental health problems for many reasons. For instance, there is inconsistency across some of the decision points of the juvenile justice system (including in the court systems and residential facilities) in providing referrals to treatment and appropriately screening, assessing, and treating juveniles with mental health conditions. There are also the difficulties that many juveniles face when detained or incarcerated, the increased odds of recidivating once youths are involved in the justice system, and the perceived barriers to services that can prevent youths from seeking or receiving treatment (National Mental Health Association 2004).

*Lack of Referrals for Treatment.* Among youths involved in the juvenile justice system (including those who have been referred to court or those who have been adjudicated and placed in a residential facility), only a small percentage of those in need of services can access treatment. For example, a 2014 juvenile residential facility census found that 58 percent reported they evaluated all youths for mental health needs, 41 percent evaluated some but not all youths, and 1 percent did not evaluate any youths (Hockenberry, Wachter, and Sladky 2016). However, it is unknown how many of the evaluated youths received referrals for treatment. In a study of juvenile courts in Tennessee, Breda (2003) found that fewer than 4 percent of juveniles who had committed offenses (regardless of diagnosis) were referred for mental health services. A study of a southern California correctional facility also found that only 6

percent of youths were referred for mental health services (Rogers et al. 2001).

Even among youths who have been diagnosed, treatment is not guaranteed. The Pathways to Desistance Project found overall low rates of services provided to youths; however, this depended on both the type of facility in which youths had been placed (i.e., state-run juvenile corrections facilities, contract residential settings, detention centers, and jails/prisons) and the diagnosable mental health issue (Schubert and Mulvey 2014). Similarly, the Northwestern Juvenile Project found that only 15 percent of youths diagnosed with psychiatric disorders and functional impairment received treatment while in detention (Teplin et al. 2013). A study of mental health delivery patterns in Maryland found that only 23 percent of the youths diagnosed with a mental disorder received any treatment (Shelton 2005). A national study found that even if juvenile justice facilities reported having the capacity to provide services to youths in their care, youths with a severe mental health disorder often did not receive any emergency mental health services (Shufelt and Coccozza 2006). Finally, numerous studies have revealed disparities in regard to which youths are more likely to be referred for treatment (see Disparities in Mental Health Treatment below for more information).

***Impact of Detention/Confinement.*** Juvenile detention and correctional facilities may impact youths with mental health issues due to overcrowding, lack of available treatment/services, and separation from support systems (such as family members and friends). In addition, for juveniles in correctional facilities, being placed in solitary confinement or restrictive housing also has the potential to worsen mental health issues (National Institute of Justice 2016).

***Greater Likelihood of Recidivism.*** Given the aforementioned limitations of the juvenile justice system, having a mental health problem while involved in the system can increase youths' likelihood of recidivating or engaging in other problem behavior (e.g., Yampolskaya and Chuang 2012). This link has been documented most frequently for externalizing disorders (Barrett et al. 2014; Constantine et al. 2013; McReynolds, Schwalbe, and Wasserman 2010) and for substance use disorders (Baglivio et al. 2014; Hoeve et al. 2013; Schubert and Mulvey 2014).

For example, in their study of Florida youths who had completed juvenile justice residential placements, Baglivio and colleagues (2014) found that current substance use was a predictor of re-arrest. In their study of youths who were previously placed in a detention facility, Mallett and colleagues (2013) found that having a conduct disorder diagnosis and a self-reported previous suicide attempt predicted subsequent recidivism to detention placement. In their study of almost 100,000 youths whose cases had been processed by the South Carolina Department of Juvenile Justice, Barrett and colleagues (2014) found that an early diagnosis of an aggressive disorder was the strongest predictor of recidivism.

***Perceived Barriers to Treatment among Youth.*** Abram and colleagues (2015) surveyed youths with alcohol, drug, and mental health disorders in detention and found that the most frequently cited barrier to services was that youths believed their problems would go away without getting any help. Other reported perceived barriers were that youths were unsure whom to contact or where to go for help, and believed it was too difficult to obtain help. Perceived barriers can impact whether youths pursue treatment in the first place, as well as whether they participate and remain in treatment (Abram et al. 2015).

## **Disparities in Mental Health Treatment in the Juvenile Justice System**

Researchers have also found disparities—particularly by race/ethnicity, gender, and age—in who is



referred for treatment in the juvenile justice system.

**Race/Ethnicity.** Racial disparities exist among mental health diagnoses and treatment in both the community and the juvenile justice system. In the community, researchers have found that youths of color are less likely to receive mental health or substance use treatment (Dembo et al. 1998; Garland et al. 2005). Researchers have also found that minority youths receive fewer services than white youths in the foster care and child welfare populations (Garland and Besinger 1997; Horwitz et al. 2012). Among youths being served by mental health systems, youths of color are more likely to be referred to the juvenile justice system than white youths (Cauffman et al. 2005; Evens and Vander Stoep 1997; Scott, Snowden, and Libby 2002; Vander Stoep, Evens, and Taub 1997).

Once in the juvenile justice system, minority youths are less likely to be treated for mental health disorders than white youths (e.g., Dalton et al. 2009; Herz 2001; Rawal et al. 2004). According to a 2016 systematic review of articles that examined racial disparities among referrals to mental health and substance abuse services from within the juvenile justice system, most of the studies published from 1995 to 2014 found that there was at least some race effect in determining which youths received services, even when including statistical controls for mental health or substance use diagnosis or need (Spinney et al. 2016).

For example, an examination of detained youths in Indiana found that both African American and Hispanic youths were less likely than white youths to receive contact with a mental health clinician within 24 hours of detention center intake and to receive a referral to mental health services upon detention center discharge—even after incorporating statistical controls for age, gender, detention center site, and whether the youth had a positive MAYSI-2 screening (Aalsma et al. 2014). Additionally, in a study of mental health delivery patterns in the Maryland juvenile justice system, Shelton (2005) found that while 42.6 percent of white youths who met diagnostic criteria received mental health services, only 11.9 percent of the African American youths who met diagnostic criteria received these services. She concluded that the data reflected a racial bias in the provision of services.

**Gender-Related Factors.** As the proportion of girls involved in the juvenile justice system grows (Espinosa, Sorensen, and Lopez 2013; Odgers et al. 2005), researchers are increasingly looking at how gender differences impact the receipt of mental health care within the system. They are reporting a higher rate of referrals for females than males overall (Teplin et al. 2003; Cauffman et al. 2007; Fazel and Langstrom 2008; Herz 2001). In a study on juvenile offenders in Texas, Daurio (2009) found that girls were more likely than boys to receive mental health placements than incarceration, as a disposition outcome. Gunter-Justice and Ott (1997) also found that family court judges recommended mental health placements more frequently for girls, compared with boys. Once within the system, girls are also more likely to be referred for treatment by facility staff, which, as Rogers and colleagues (2001) suggested, may have to do with the staff members themselves being female. Finally, although girls in the juvenile justice system are referred for mental health treatment more frequently than boys, they are usually not referred for further follow-up treatment upon community reentry (Aalsma, Schwartz, and Perkins 2014).

The following differences between boys and girls may explain why gender is a significant predictor of mental health placement:

1. Girls are most often detained for status offenses and technical violations.
2. Girls report mental health symptoms and are more willing to use psychiatric services than boys.

3. Girls are more likely to exhibit internalizing disorders—such as anxiety, depression, and suicidality—than externalizing disorders such as aggression, bullying, and oppositional behaviors (Huizinga et al. 2000; Espinosa et al. 2013; Teplin et al. 2006).

Ogders and colleagues (2005) also found that the rates of comorbidity of disorders increase exponentially for girls in the juvenile justice system. Regardless of their higher levels of referral as compared with boys, girls are still undertreated in the system given their high need (Espinosa et al. 2013).

**Age-Related Factors.** Age is often a determinant for who receives mental health services within the juvenile justice system. As various studies have indicated, younger juveniles (usually under 15 years of age) are more likely to be referred for mental health placements (Herz 2001; Daurio 2009). Rogers and colleagues (2001) found that of the youths in a Southern California juvenile correctional facility, those who had been arrested before the age of 14 were more likely to have been referred for treatment than youths arrested after the age of 14. Herz (2001) posited that this referral disparity indicates evidence of a “two-tiered system,” in which older adolescents receive a more punitive than rehabilitative approach than younger adolescents.

## Outcome Evidence

Some programs and treatment approaches for justice-involved youths, particularly those involving cognitive-behavioral therapy (CBT), have shown positive results. CBT is designed to help youths adjust their thinking and behaviors related to delinquency, crime, and violence (Little 2005; Beck 1999). CBT programs have also been shown to be effective in reducing recidivism rates (Jeong, Lee, and Martin 2014). Research on other program types that specifically target youths with mental health needs, such as mental health diversion initiatives, have also shown positive results (Colwell, Villarreal, and Espinosa 2012; Cuellar, McReynolds, and Wasserman 2006).

The following are examples of evidence-based programs from the *Model Programs Guide* that have demonstrated positive outcomes for youths with specific mental health needs, the first two of which specifically draw on the strategies of CBT.

**Functional Family Therapy.** Functional family therapy (FFT) is a family-based prevention and intervention program for high-risk youths ages 11–18. It concentrates on decreasing risk factors and increasing protective factors that directly affect adolescents who are at risk for delinquency, violence, substance use, or behavioral problems such as conduct disorder or oppositional defiant disorder. FFT is conducted over 8–12, 1-hour sessions for mild cases; it includes up to 30 sessions of direct service for families in more difficult situations. Sessions generally occur over a 3-month period and can be held in clinical settings as an outpatient therapy model or as a home-based model.

In one large-scale study on FFT, which was delivered by community-based therapists, Sexton and Turner (2010) found that when adherence to the FFT model was high, FFT resulted in a significant reduction in felony crimes and violent crimes and a nonsignificant decrease in misdemeanor crimes. In addition, a study by Celinska and colleagues (2013) found that FFT had a positive effect on youths in the areas of reducing risk behavior, increasing strengths, and improving functioning across key life domains.

**Multisystemic Therapy.** Multisystemic Therapy (MST) is designed to help adolescents ages 12–17 who have exhibited serious clinical problems such as drug use, violence, and severe criminal behavior. Through intense family involvement, MST aims to assess the origins of adolescent behavioral problems and change the youth’s ecology to increase prosocial behavior while decreasing problem and delinquent behavior. MST typically uses a home-based model of service delivery to reduce barriers that

keep families from accessing services. The average treatment occurs over approximately 4 months, although there is no definite length of service, with multiple therapist–family contacts occurring each week.

In one evaluation of MST, Henggeler and colleagues (1992) found that, at 59 weeks post-referral, the group that received MST had just more than half the number of re-arrests than the comparison group, which received treatment as usual. Another study showed significant differences between treatment and comparison groups 4 years after the end of their probation: 71.4 percent of the individual therapy comparison group participants were arrested at least once, compared with 26.1 percent of MST participants (Borduin et al. 1995).

*Jefferson County Community Partnership.* The Jefferson County Community Partnership in Birmingham, Ala., offers services for youth with serious emotional disturbances, which are accessible, community-based, individualized, culturally competent, and include an individual’s family in the planning and delivery of treatment. Overall, the goal of this collaborative approach is to reduce youths’ contact with the juvenile justice system. This includes reducing the odds of future offending and decreasing the seriousness of offenses, if they were committed (Matthews et al. 2013). The Jefferson County Community Partnership is not a program; rather, it is a collaborative framework that operates within a system-of-care concept. An evaluation of the Jefferson County Community Partnership found a significant reduction in contact with the juvenile justice system among youths in the Birmingham system-of-care community, compared with the comparison community (Matthews et al. 2013).

*Special Needs Diversionary Program.* Based on the theory of therapeutic jurisprudence, the Special Needs Diversionary Program (SNDP) provides intensive supervision and treatment for juvenile probationers (ages 10–17) who display low levels of conduct and mental health disorders. The goal of the program is to rehabilitate the youths and prevent them from further involvement in the justice system. SNDP offers mental health services (including individual and group therapy), probation services (including life skills, mentoring, and anger management), and parental education and support. Specialized juvenile probation and professional mental health staff from the local mental health centers work together to coordinate intensive case-management services. The program follows procedures based on typical wraparound strategies. Services provided to juveniles include individual and family therapy, rehabilitation services, skills training, and chemical dependency.

In their study on SNDP, Cuellar and colleagues (2006) evaluated re-arrests for juveniles who participated in the program. They found that there were 63 fewer arrests per 100 youths served by the program over a 1-year period, compared with youths who had not been enrolled in the program.

For more information on these programs, click on the links below.

[Functional Family Therapy](#)

[Jefferson County Community Partnership \(Birmingham, Ala.\)](#)

[Multisystemic Therapy](#)

[Special Needs Diversionary Program](#)

## Conclusion

The research presented shows that many youths with mental health issues in the justice system are in need of treatment. Substance use disorders are particularly prevalent. However, the intersection

between mental health and the juvenile justice system represents a challenging area for policymakers and practitioners, because the exact relationship between mental health issues and problem behaviors (such as delinquency) is not always clear (Schubert and Mulvey 2014). The research indicates there are shared risk factors for mental health issues and juvenile justice involvement; however, the research is less conclusive about whether mental health problems increase the odds of youth involvement in the justice system or whether being a part of the justice system increases youths' mental health problems.

Despite the prevalence of mental health disorders among justice-involved youths, particularly for those processed further into the system, many do not receive services to meet their needs (Teplin et al. 2013). In addition, there are discrepancies in referrals for treatment, particularly regarding race and gender (Teplin et al. 2003; Spinney et al. 2016).

However, there are several evidence-based programs that specifically target youths with mental health needs in the juvenile justice system and focus on reducing delinquency and other related problem behaviors by properly addressing both criminogenic risk factors and the mental health needs of these youths (Cuellar et al. 2006; Matthews et al. 2013).

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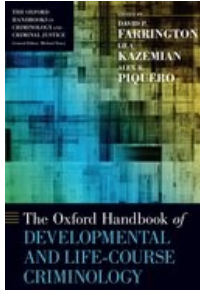
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## The Oxford Handbook of Developmental and Life-Course Criminology

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### CHAPTER

## 1 Developmental and Life-Course Criminology

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### Abstract

This chapter provides a brief overview of developmental and life-course criminology. These approaches are concerned with the study of the development of offending over the course of one's life, from onset to persistence and, eventually, desistance. Although these two theoretical approaches share many common features, they have distinctive focal concerns. Stemming from the field of sociology, the life-course perspective focuses attention on social structure and life events. The developmental approach, on the other hand, stems from the field of psychology and generally emphasizes the role of individual and psychological factors in the explanation of developmental processes. Moreover, the developmental approach investigates the onset of offending as well as the role of early risk and protective factors in the explanation of future offending. Meanwhile, the life-course framework examines the influence of turning points in offending trajectories and in the process of desistance from crime.

**Keywords:** [life-course criminology](#), [developmental criminology](#), [offending](#), [sociology](#), [psychology](#), [crime](#)

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DEVELOPMENTAL and life-course criminology is concerned with the study of the development of offending over the course of one's life, from onset to persistence and, eventually, desistance. Although these two theoretical approaches share many common features, they have distinctive focal concerns. Stemming from the field of sociology, the life-course perspective focuses attention on social structure and life events, whereas the developmental approach, stemming from the field of psychology, generally emphasizes the role of individual and psychological factors in the explanation of developmental processes. While the developmental approach investigates the onset of offending as well as the role of early risk and protective factors in the explanation of future offending, the life-course framework examines the influence of turning points in offending trajectories and in the process of desistance from crime. Developmental research examines effective processes for early prevention and intervention efforts, whereas life-course studies

explore mechanisms to curb offending after onset. In many instances in the field of criminology, these two approaches have been integrated. Both approaches are necessary in order to build up a complete picture of offending careers.

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At least up to the 1970s, criminologists carried out cross-sectional surveys and attempted to draw conclusions about the causes of offending from comparisons between individuals. One common feature of the emerging developmental and life-course approaches is their reliance on longitudinal data, particularly prospective rather than retrospective studies. Prospective longitudinal data are preferred for three main reasons: (1) they minimize retrospective bias; (2) they allow the researcher to establish causal ordering with more certainty; and (3) they enable the study of within-individual changes across different periods of the life course. Le Blanc and Loeber (1998, p. 116) explained that a major strength of the within-individual approach “. . . is that individuals serve as their own controls.” Past research has mainly focused on contrasting offending ↴ patterns between individuals who possess particular risk factors and those who do not. Predictably, these between-individual comparisons have shown that individuals characterized by a greater number of risk factors are likely to have more active criminal careers when compared with those with fewer risk factors. For instance, it is expected (and unsurprising) that individuals who are married (versus single) or employed (versus unemployed) are less likely to engage in offending or to persist in offending over extended periods of time. In contrast, in order to develop effective post-onset intervention efforts, it is more valuable to determine whether offending declines for individuals after the turning points have occurred (Farrington 2007). For example, offending during unemployment periods is compared with offending during employment periods for the same individual (see, e.g., Farrington et al. 1986). In this comparison, each person acts as his or her own control, so all individual factors (e.g., impulsiveness, intelligence) are held constant. These types of within-individual comparisons yield much more convincing evidence about causal effects, compared with between-individual comparisons where there are inevitably many uncontrolled variables. From a theoretical viewpoint, the emphasis on within-individual change speaks directly to debates about stability and change.

Developmental criminology began with the classic American longitudinal studies of Sheldon and Eleanor Glueck and William and Joan McCord, as well as the famous Philadelphia Birth Cohort Studies by Wolfgang and colleagues and the Racine Cohort Studies by Shannon. These were soon followed by longitudinal studies in the United Kingdom (by Israel Kolvin, and Donald West and David Farrington), Scandinavia (by David Magnusson and Lea Pulkkinen), Canada (by Marc Le Blanc and Richard Tremblay), and New Zealand (by Phil Silva and David Fergusson). The 1980s proved to be the golden age for the initiation of American longitudinal studies (Farrington 2013). Three companion projects in Denver, Colorado; Rochester, New York; and Pittsburgh, Pennsylvania—known as the Causes and Correlates of Delinquency studies—were launched with funding from the Office of Juvenile Justice and Delinquency Prevention, as well as other major longitudinal studies such as the Oregon Youth Study and the Seattle Social Development Project (see, e.g., Thornberry and Krohn 2003). In the longitudinal surveys with the strongest designs, information is obtained repeatedly from different sources, including the participants themselves, their parents, their teachers, their peers, and official (criminal and health) records. Many findings from longitudinal studies are presented in this *Handbook*.

Since convictions are only the “tip of the iceberg” of offending, it is important to compare official records with self-reports of offending not only to assess convergence and divergence but also to estimate the “scaling-up factor.” For example, in the Pittsburgh Youth Study there were over 20 self-reported offenses for every conviction (Theobald et al. 2014). Most longitudinal researchers focus on statistical analyses, but some present detailed case histories from childhood to adulthood (see, e.g., Zara and Farrington 2016).

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Not all criminologists saw inherent value in studying the life course and especially in the use of longitudinal designs. Nearly three decades ago, Gottfredson and Hirschi ↴ (1990) argued that since criminal propensity remains relatively stable across time, it was not very illuminating or informative to follow up individuals

over long periods; they also maintained that the correlates of crime were the same at all ages. Sampson and Laub (1993, p. 16) responded to this by arguing that “the continuity to which they [Gottfredson and Hirschi 1990] refer is relative stability, which does not mean that individuals remain constant in their behavior over time.” Most researchers agree that there is both stability and change in offending patterns across the life course (e.g., Piquero, Farrington, and Blumstein 2003; Kazemian 2007). Also, as mentioned, within-individual analyses in longitudinal studies provide more compelling evidence about causes of offending than between-individual comparisons in cross-sectional studies (Farrington 1988).

Whatever their background, most longitudinal researchers investigate not only violence and property crime but many other problem areas, including drug use, alcohol use, drunk driving, reckless driving, smoking, gambling, sexual behavior, relationship problems, employment problems, educational problems, and mental and physical health. Many researchers have concluded that offending is only one element of a larger syndrome of antisocial behavior that tends to persist from childhood to adulthood and from one generation to the next. The challenge is how to prevent and interrupt this persistence, and a number of longitudinal studies (e.g., the Montreal project of Richard Tremblay; see Vitaro et al. 2013) have tested the effectiveness of an experimental intervention designed to achieve this.

Many longitudinal researchers have proposed developmental and life-course (DLC) theories to explain their findings (Farrington 2005), many of which are presented in this *Handbook*. In most cases, their theories were highly influenced by their data. For example, Terrie Moffitt analyzed the Dunedin study of over 1,000 3-year-old children who were followed into their thirties (see, e.g., Caspi et al. 2016). Her more psychologically based theory distinguished between two specific types of offenders: one that offends early—and throughout—the life course (termed life-course-persistent offenders) and a second that restricts the offending to the adolescent period and desists by early adulthood (termed adolescence-limited offenders). Her framework emphasized childhood risk factors for life-course-persistent offending. In contrast, Robert Sampson and John Laub (1993; Laub and Sampson 2003) reanalyzed the Gluecks’ study of 500 delinquent males and focused on their adult years, roughly from ages 30 to 70. Their more sociologically based theory emphasized informal social control by adult social institutions, such as marriages and jobs, and aimed to explain desistance.

In studying the development of offending, the most important phenomenon is the age-crime curve. In most times and places, the aggregate rate of offending increases up to a peak in the late teenage years (usually) and then decreases more gradually in the 20s and beyond. In general, the age-crime curve for males is more sharply peaked than the curve for females, which is flatter and has a higher average age of offending. The age-crime curve for individuals, however, may be very different from the aggregate curve. In recent years, inspired by the work of Daniel Nagin (2005), there has been a great deal of interest in identifying different offending trajectories.

p. 6 Relatedly, following the work of Alfred Blumstein and his colleagues, as detailed in the influential National Academy of Sciences report on criminal careers (see Blumstein et al. 1986), developmental criminology also contributes to the advancement of knowledge about criminal careers (Piquero, Farrington, and Blumstein 2007). Criminal careers are typically characterized by several parameters, including age of onset, frequency, versatility, seriousness, duration, and desistance. Knowledge about all of these topics is renewed in this *Handbook*. Le Blanc and Fréchette (1989) and Le Blanc and Loeber (1998) discussed three processes underlying the development of offending behavior: activation, aggravation, and desistance. During their careers, offenders commit a variety of crimes with a particular frequency per year. Most offenders are versatile, with only a very small minority exhibiting specialization in certain offenses. There is little evidence of escalation in the seriousness of offending during criminal careers.

Developmental researchers have devoted substantial attention to the identification of early risk factors for persistent offending as well as to interventions that prevent the development of offending and antisocial

behavior. The major risk factors for male offending are well known and highly replicable in longitudinal studies (Farrington 2015). They include individual factors (e.g., high impulsiveness, low achievement), parental factors (e.g., young or criminal parents), child-rearing factors (e.g., poor parental supervision, physical punishment), socio-economic factors (e.g., low family income, large family size, broken families), peer factors (e.g., associating with delinquent peers), school factors (e.g., attending a high-delinquency-rate school), and neighborhood factors (e.g., living in a high-crime neighborhood). Many risk factors and correlates of offending are reviewed in this *Handbook*. While a great deal is known about risk factors that predict the onset of offending, less is known about risk factors for other criminal career dimensions, such as persistence after onset, frequency, duration, specialization, or escalation.

The extent to which risk factors have causal effects is not entirely clear. For example, in the Pittsburgh Youth Study, peer delinquency was the strongest correlate and predictor of delinquency (between individuals), but it did not predict within-individual change. In other words, changes in peer delinquency did not predict changes in delinquency for the same individual from one wave to the next. In contrast, parental factors such as poor parental supervision and low involvement of the boy in family activities predicted the boy's delinquency both between and within individuals (Farrington et al. 2002). Because the concept of a cause requires that a change in an individual factor predicts a change in delinquency within individuals, it was concluded that parental factors might be causes of delinquency, but that peer delinquency was not. Because most offenses by young people are committed with other young people, peer delinquency is probably an indicator rather than a cause of delinquency.

The interest in protective factors against delinquency is growing, but much less is known about these factors (Ttofi et al. 2016). Protective factors are defined either as factors that predict a low rate of offending or as factors that predict a low rate of offending among people in a risk category. The first type of protective factor is not necessarily the "other side of the coin" to a risk factor. For example, in the Pittsburgh Youth Study, high achievement predicted a low probability of delinquency but low achievement did not predict a high probability of delinquency (compared with average achievement; see Farrington, Ttofi, and Piquero 2016). The second type of protective factor has important implications for intervention. For example, in the Cambridge Study in Delinquent Development, living in poor housing was a risk factor for delinquency, but boys who were living in poor housing and receiving good child-rearing had the same probability of delinquency as boys who were living in good housing (Farrington and Ttofi 2011). Therefore, the protective factor of good child-rearing nullified the risk factor of poor housing, suggesting that parent training to improve child-rearing might be effective in reducing the delinquency of boys living in poor housing. Results from the Pittsburgh and Cambridge studies, along with numerous other longitudinal projects, are described in this *Handbook*.

There has been a great deal of research on the influence of later life events on the course of development of offending, and the life event that has been studied most is getting married. Longitudinal research shows that offending by males decreases after they get married (compared with matched males who did not get married) and, conversely, that offending increases after males become separated or divorced (Theobald and Farrington 2009, 2013). Other important turning points that have been studied include cohabiting with a romantic partner, having a first child, moving house, obtaining a steady job, joining the military forces, and religion. This *Handbook* will discuss the influence of these kinds of turning points on offending patterns across the life course.

This volume offers a thorough overview of the issues relevant to contemporary developmental and life-course criminology. It is organized in five main thematic sections: (1) the development of offending, (2) developmental and life-course theories, (3) developmental correlates and risk/protective factors, (4) life transitions and turning points, and (5) developmental interventions.

Section II examines factors associated with the development of offending, with an exploration of various criminal career parameters. In Chapter 2, Britt provides a discussion of the age-crime link and reviews classic and contemporary research that has examined this question. Doherty and Bacon then present evidence on the association between age of onset and later offending (Chapter 3), followed by Mazerolle and McPhedran's investigation of changes in versatility and specialization across the life course (Chapter 4). In Chapter 5, Jennings and Fox assess the state of knowledge on patterns of acceleration, deceleration, escalation, and de-escalation over the course of criminal careers. Relatedly, Chapter 6 by Liu and Bushway offers an overview of the factors underlying the processes of persistence and desistance from crime. In Chapter 7, Morizot draws on existing longitudinal studies to examine how offending trajectories vary across various periods of the life course. This section concludes with an analysis of changes in co-offending patterns over the course of criminal careers (Chapter 8, by van Mastrigt and Carrington).

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Section III of this *Handbook* summarizes the most influential developmental and life-course theories in the field of criminology and addresses controversies and points of contention between the different frameworks. In Chapter 9, McGee and Moffitt summarize Moffitt's dual taxonomy, which seeks to explain variations in life-course offending patterns across different types of offenders. Loeber (Chapter 10) provides an overview of his developmental model of pathways leading to problem behavior and delinquency. Farrington's Integrated Cognitive Antisocial Potential (ICAP) theory is laid out in Chapter 11, followed by Le Blanc's theory of the Interconnected Development of Personal Controls and Antisocial Behavior (Chapter 12). Chapter 13 presents Hawkins and Catalano's Social Development Model, and Thornberry and Krohn describe the concepts underlying Interactional Theory, as well as the empirical investigations of this theoretical framework, in Chapter 14. Wikström and Treiber (Chapter 15) then discuss the dynamics of change, as explained by Situational Action Theory (SAT) and the Development Ecological Action (DEA) model. This section concludes with a summary of Sampson and Laub's age-graded theory of informal social control, which seeks to explain variations in crime across different periods of life (Chapter 16).

Section IV of this volume investigates the developmental correlates of offending and also important risk and protective factors associated with criminal behavior. Choy and collaborators summarize the state of knowledge on the role of biosocial indicators in the explanation of offending behavior across the life course (Chapter 17). In Chapter 18, Jolliffe and Farrington discuss the influence of personality traits and other individual factors in the development of offending behavior. The following three chapters focus on various dimensions of the social environment. Fagan and Benedini assess the relationship between family influences and youth offending (Chapter 19). Chapter 20 (by Sullivan, Childs, and Gann) discusses the role of deviant friends, and this is followed by an overview of research on schools and crime (by Pepler, Chapter 21). White (Chapter 22) concludes this section with a review of longitudinal research exploring the connections between criminal behavior and substance use over time.

Section V presents an overview of the empirical evidence on the role of various life transitions and turning points in the explanation of offending behavior. In Chapter 23, Theobald, Farrington, and Piquero examine the impact of changes in family situations on persistence and desistance from crime. Savolainen, Aaltonen, and Skardhamar (Chapter 24) review research on the link between employment and crime over the life course and address recent controversies in this area of research. In Chapter 25, Kirk tackles an important but understudied topic, namely the impact of neighborhood context and residential mobility on persistence and desistance from crime. Bouffard and Jin (Chapter 26) provide a summary of empirical evidence on the influence of two often-neglected turning points in life-course research: religion and the military. The following two chapters examine the effects of contacts with the juvenile and criminal justice systems. Petrosino and colleagues (Chapter 27) assess the impact of juvenile system processing on subsequent delinquency outcomes, while Kazemian and Walker (Chapter 28) discuss the various individual and social consequences of incarceration. In Chapter 29, Anderson and McNeill expand on the cognitive indicators that

may promote the desistance process. Broidy and Thompson (Chapter 30) close this section with a discussion of developmental and life-course findings on girls and women.

p. 9 Section VI focuses on effective developmental interventions, which have been inspired by research on the development of criminal and antisocial behavior. Welsh and Zane (Chapter 31) highlight the features of effective family-based programs for the prevention of offending behavior. In Chapter 32, Zych and Farrington summarize the evidence on the effectiveness of developmental preschool and school programs against violence and offending. Zara then discusses some of the most effective cognitive-behavioral interventions to prevent offending behavior (Chapter 33), and Li and McIntosh offer a valuable assessment of the monetary costs and benefits associated with developmental prevention initiatives (Chapter 34).

The volume concludes with a summary of key findings from research reviewed in the various chapters, some reflections on the state of knowledge of developmental and life-course criminology, and a discussion of what we need to know and how we can find out.

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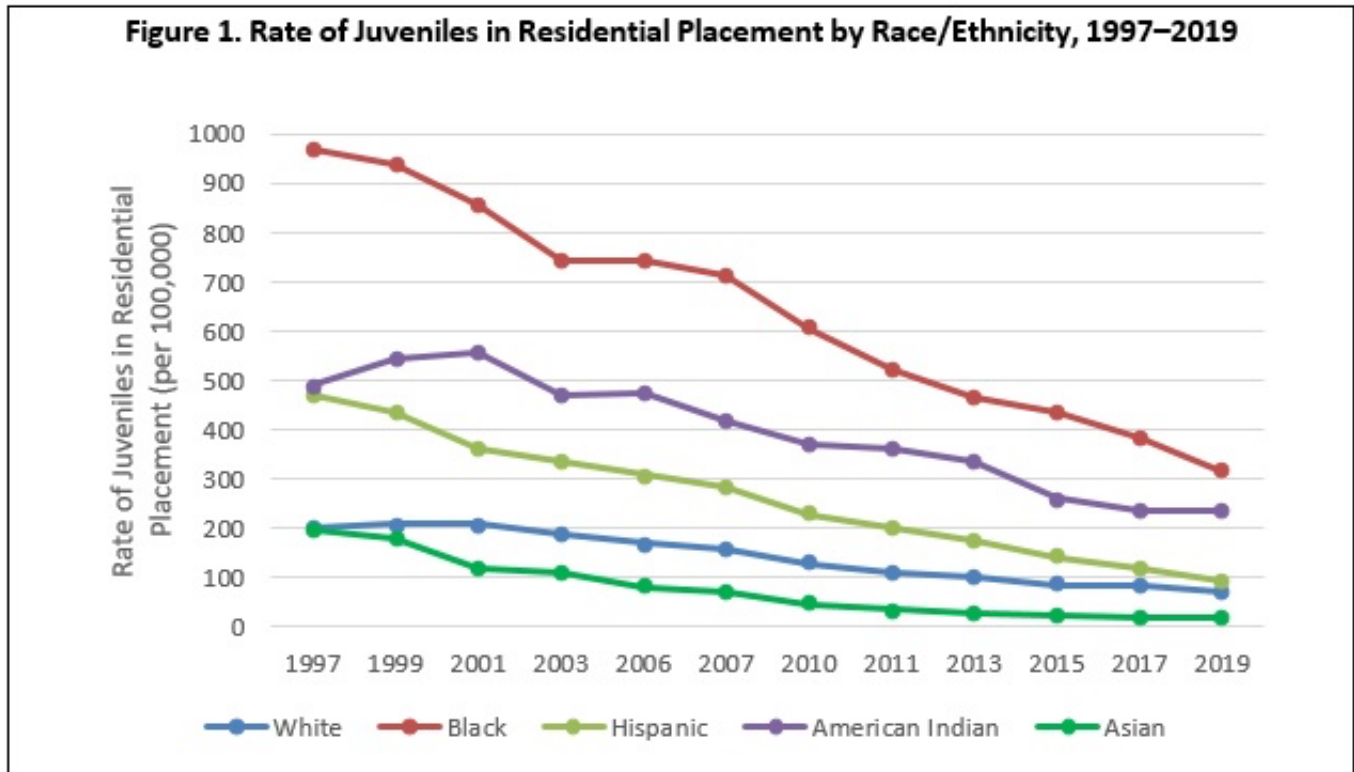
# Racial and Ethnic Disparity in Juvenile Justice Processing

Literature Review: A product of the Model Programs Guide

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Data have shown that youths of color are more likely than white youths to be arrested and subsequently go deeper into the juvenile justice system (e.g., Puzzanchera, 2021; Puzzanchera and Hockenberry, 2013; Sickmund et al., 2021; Sickmund, Sladky, and Kang, 2021). Researchers have examined the contributing factors to these racial and ethnic disparities for decades, often testing hypotheses and theoretical frameworks related to differential offending and system biases (Leiber and Fix, 2019; Pope and Feyerherm, 1990; Pope, Lovell, and Hsia, 2002; Zane and Pupo, 2021). Most scholars acknowledge there are numerous factors at work and that this complex social problem cannot be reduced to either differential offending or differential treatment alone (National Research Council, 2013). Much of the work to address racial and ethnic disparities in the juvenile justice system has been driven by amendments to the federal

Juvenile Justice and Delinquency Prevention Act (JJDP) through the federal Office of Juvenile Justice and Delinquency Prevention (OJJDP). Although some progress has been made and overall involvement in the juvenile justice system has been decreasing nationally, disparities continue to exist today, especially for Black and American Indian/Alaska Native youths (see Figures 1, 2a, and 2c).



Source: Sickmund, M., Sladky, T.J., Puzanchera, C., and Kang, W. 2021. *Easy Access to the Census of Juveniles in Residential Placement*. Online. Available: <https://www.ojjdp.gov/ojstatbb/ezacjrp/>

This literature review covers racial and ethnic disparities in the juvenile justice system. It begins with definitions related to racial and ethnic disparities, which are followed by how disparities can be measured and a description of the scope of the problem. A brief history of the Core Requirement to address racial and ethnic disproportionality in the JJDP is then presented, followed by a description of a large body of empirical studies that attempt to explain why there are disparities in juvenile justice. A brief overview is provided on some of the efforts to address racial and ethnic disparities that have been captured by research literature, followed, finally, by examples of programs related to the reduction of these disparities.

## Definitions

Terminology related to racial and ethnic disparity has changed over time. According to the JJDP, amended in 2018, *racial and ethnic disparity* means minority youth populations are involved at a decision point in the juvenile justice system at disproportionately higher rates than nonminority youth at that decision point (Pub. L. 115–385, title I, § 102) and is often written as R.E.D., RED, R/ED, or ERD. From 2002 to 2018, OJJDP referred to this as *disproportionate minority contact (DMC)*. Before that, DMC stood for *disproportionate minority confinement*. *Confinement* was changed to *contact* in 2002 because of disproportionality throughout all stages of the juvenile justice system (e.g., arrest, diversion, probation), and not merely at confinement (OJJDP, 2009a).

The terms *disproportionality* and *disparity* often are used interchangeably to refer to rates of contact with any point of the juvenile justice system that are not the same among different races or ethnicities, regardless of the cause. However, their meanings differ slightly: *disproportionality* refers to the state of being out of proportion, while *disparity* refers to a state of being unequal (Abrams, Mizel, and Barnert, 2021; Dettlaff et al., 2011).

The term *minority overrepresentation* is still used by some organizations but increasingly has been replaced by either the term *disparity* or *disproportion* since minority youths often are *underrepresented* in receiving more lenient outcomes such as diversion from court and probation placement after a finding of delinquency.

Juvenile justice *contact points* or *decision points* are terms used to refer to different points where youths have “contact” with the juvenile justice system (e.g., arrest, detention, petition). These two terms are frequently used interchangeably but referring to these stages as decision points shifts greater attention on the juvenile justice system decisionmakers who determine whether the youths will become involved in the system at that point.

*Discrimination* denotes between-group differences in outcomes based on the consideration of extralegal or illegitimate factors (Bishop, 2005). The terms *discrimination* and *bias* are used when disparities appear to be caused by some

intent on the part of the decisionmaker or when a system's design puts minority youth at a disadvantage. Both individual and system bias can be intentional but often are unintentional or implicit (Fix, 2020; Goff et al., 2014; Gove, 2011; Tomaskovic-Devey and Warren, 2009).

## Measuring Racial and Ethnic Disparity and Disproportionality

Disproportionality can be measured using various approaches, such as comparing proportions or using rates. Each of these measures identifies levels of disproportionality in a specific way.

- **Proportions.** When using proportions, the racial breakdown of youths in the general population is usually compared with the racial breakdown of youths at a certain point in the juvenile justice system. For example, someone may explain that while only 15 percent of all youths in the United States are Black, 41 percent of juveniles in the population committed to residential placement are Black, indicating racial disparities (Rovner, 2021a). Proportions at one point can also be compared with the proportions in the preceding point (or points) to see incremental changes. For example, one publication compared the representation of Black youth in the general population with five stages of the justice system (arrests, referrals to court, detention, residential placement, admission to adult prison), demonstrating their increasing involvement in the justice system in Pennsylvania (Shoenberg, 2012). In this case, Black youths made up less than 20 percent of the youth population but more than 25 percent of the arrests, more than 30 percent of the referrals, slightly less than 40 percent of the detained and placed youths, and almost 60 percent of the youths admitted to adult prison. There are some limitations to using proportions. It can be difficult to use proportions to compare disparities in different jurisdictions or to examine trends over time when the composition of the youth population changes (Feyerherm and Butts, 2002; Feyerherm, Snyder, and Villarruel, 2009). Also, when minority groups are in the majority (i.e., when most youths in a population are nonwhite), disparities may appear less evident than when using rates.
- **Relative Rates.** Another approach to measuring disproportionality is to use the

relative rate index (RRI). The RRI compares the rates of processing for minority youth with the rates of processing for white youth. The RRI method describes the volume of activity from one contact point to the next and how it differs between white and minority youths, thereby isolating disproportionality at a particular point (e.g., comparing secure detention rates among the population of youth referred to court) (Feyerherm and Butts, 2002; Feyerherm, Snyder, and Villarruel, 2009). The RRI can also be based on the general youth population (e.g., comparing the incarceration rate based on the general youth population). Thus, as with using proportions, the RRI can consider the rates of processing at the previous point or compare rates from the general youth population.

- **Rates.** Rates and relative rates can show different aspects of disproportionality. For example, the *Census of Juveniles in Residential Placement* provides the counts, percentages, and rates of youths in custody per 100,000 in the population. In the most recent census, Massachusetts had one of the lowest rates of residential placement for Black juveniles (133 per 100,000). However, because the rate for white juveniles in Massachusetts (19 per 100,000) was much lower than the Black rate, the Massachusetts' RRI is higher than the national average of 4.4 (see Figure 2a), indicating high levels of disproportionality in the state. By contrast, Indiana had one of the lowest population-based RRIs for Black youth, even though they had higher residential placement rates for Black youth than Massachusetts. Since the residential placement rate for Black youths in Indiana (298 per 100,000) was closer to the rate for white youths in Indiana (138 per 100,000), it had a much lower RRI than Massachusetts (RRI of 2.2 in Indiana compared with 7.0 in Massachusetts) but still a higher placement rate for Black youths than Massachusetts (Sickmund et al., 2021).

Counts, rates, proportions, and RRIs all direct policymakers and practitioners to the points of the juvenile justice system that may need more examination, but none of these measures identifies contributing mechanisms for this disproportionality (Hsia et al., 2006). Each of these measurement approaches has been used at different times by OJJDP (Harp, 2018; Leiber and Fix, 2019) and within the research literature (e.g., Leiber and Fix, 2019; Abrams, Mizel, and Barnert, 2021; Rovner, 2021b), as each measure provides unique information that is valuable for recognizing and monitoring disproportionality. As of 2019, OJJDP no longer accepts RRI to demonstrate compliance with the Core Requirement

(see "Federal Legislation" section below).

## **Scope of the Problem**

National data show that Black youths and other youths of color are more likely than white youths to be arrested, referred to court, petitioned after referral (i.e., handled formally), and placed in an out-of-home facility after being adjudicated (Hockenberry and Puzzanchera, 2020; Sickmund, Sladky, and Kang, 2021.).

In 2019, compared to white youths, Black youths were 2.4 times more likely and American Indian youths were 1.5 times more likely to be arrested. On the other hand, Asian youths were less likely than white youths to be arrested (OJJDP, 2020).

Juvenile court data generally provide more detail than arrest data, including information for Hispanic youths. In 2018, 52 percent of delinquency cases involving white youths in juvenile court were handled formally (instead of being handled informally—that is, without filing a petition for adjudication, such as through diversion), compared with 64 percent of cases involving Black youths, 58 percent of cases involving American Indian youths, 55 percent of cases involving Hispanic youths, and 54 percent of cases involving Asian youths. Also, after being adjudicated delinquent, cases involving Black juveniles and Hispanic juveniles were more likely to result in out-of-home placements (32 percent each) than cases involving youth of all other races/ethnicities (27 percent of cases involving American Indian juveniles, 23 percent of cases involving white juveniles, 20 percent of cases involving Asian juveniles) (Hockenberry and Puzzanchera, 2020:58–59).

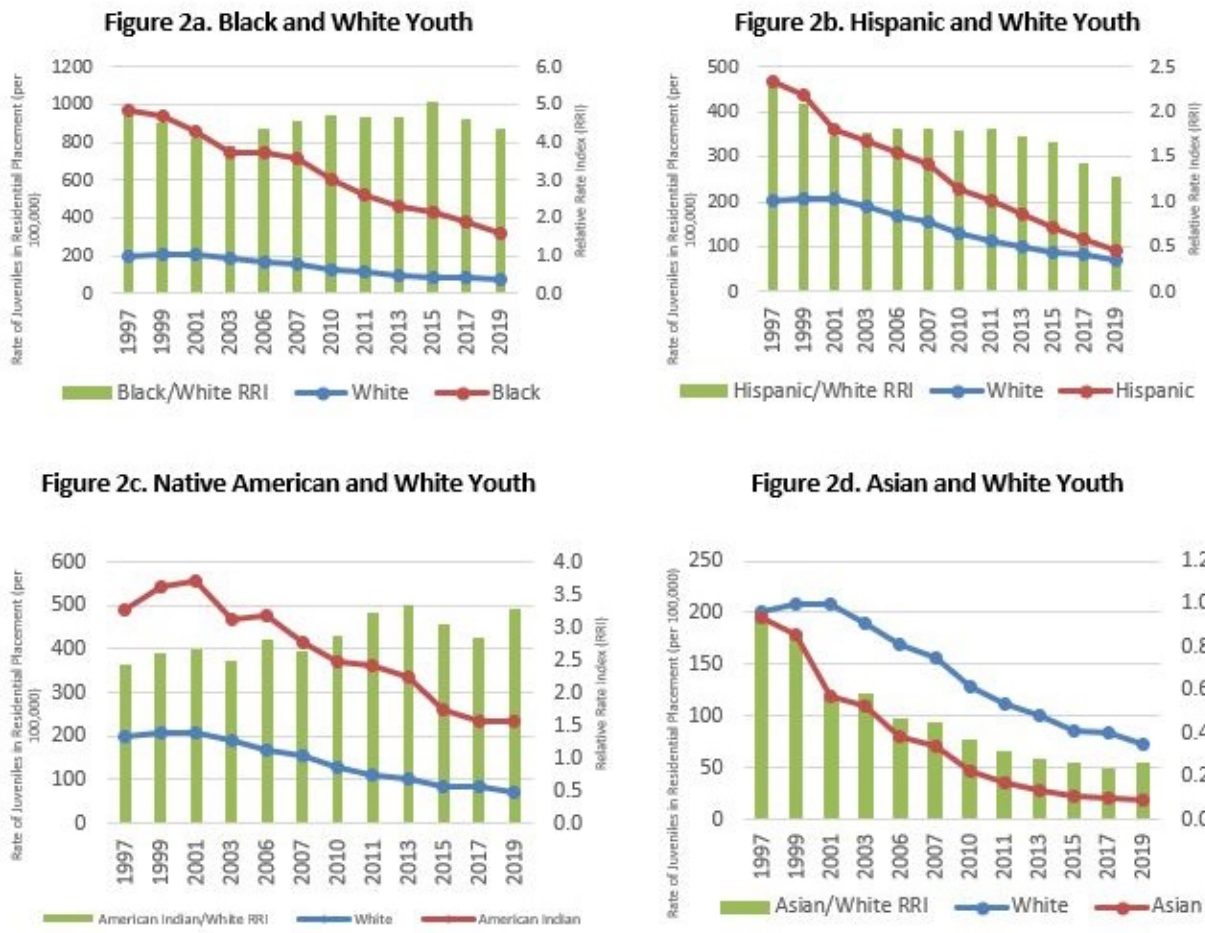
However, although Black youths tend to be pushed further into the system at most juvenile justice decision points than youths of other races/ethnicities, this is not always the case. Among cases handled formally in juvenile court, American Indian youths were the most likely to be adjudicated delinquent (59 percent), followed by Hispanic youths (57 percent), white youths (52 percent), Asian youths (49 percent), and finally Black youths (49 percent) [Hockenberry and

Puzzanchera, 2020]. Similarly, a systematic review of empirical studies examining racial disparities in juvenile justice found that the adjudication decision was the least likely to show disadvantage toward youth of color, including Black youth (Spinney et al., 2018).

The previous two paragraphs describe disparities at each point, as youths move from one juvenile justice contact point to another. Point-in-time estimates at the deep end of the system can also demonstrate the prevalence of disparities relative to the whole population. For example, in 2019, the *Census of Juveniles in Residential Placement* showed a rate of 315 Black youths in custody per 100,000 in the population, compared with 72 white youths per 100,000—a ratio of approximately 4.4 to 1.0 (Sickmund et al., 2021), which is the same as a population-based RRI of 4.4 (see Figure 2a). Data collected for Hispanic and American Indian youths have also indicated higher levels of placement than white youth, although these disparities have lessened for Hispanic youths (see Figure 2b) over time (Sickmund et al. 2021).

Nationally, the rate of juveniles in residential placement decreased from 356 per 100,000 in 1997 to 114 per 100,000 in 2019 (Sickmund et al., 2021). During this time, the residential placement rates decreased for all youth races (see Figure 1). However, disparities have not decreased in the same way for all. While it appears that disproportionality in residential placement has decreased for Hispanic youths, compared with white youths (as measured with a decreasing RRI from 2.3 in 1997 to 1.3 in 2019; see Figure 2b), it has remained relatively steady for Black youths (ranging from 3.9 to 5.0 since 1997; see Figure 2a). Disproportionality for American Indian youths appears to be increasing (see Figure 2c). Asian youths were less likely than white youths to be in a residential placement each year from 1997 to 2019, and this relative rate has decreased consistently from almost 1.0 in 2007 to about 0.25 in 2017 and 2019 (see Figure 2d).

Figures 2a–d. Rates and Relative Rates of Juveniles in Residential Placement



Data source: Sickmund, M., Sladky, T.J., Puzzanchera, C., and Kang, W. 2021. *Easy Access to the Census of Juveniles in Residential Placement*. Online. Available: <https://www.ojjdp.gov/ojstatbb/ezacjrp/>

Although these national rates provide an important snapshot, disparities vary from state to state, jurisdiction to jurisdiction, among different offense types, and by other demographics. For example, the *Census of Juveniles in Residential Placement* provides juvenile placement rates by state and race, which demonstrate large differences in disproportionality: the population-based RRI for Black youth in New Jersey, New Hampshire, and Wisconsin is over 10.0, while it is less than 3.0 in Alabama, Indiana, New Mexico, and Wyoming; the population-based RRI for Native American youth is more than 10.0 in Nebraska and less than 1.0 in New Mexico, Nevada, and Texas (Sickmund et al. 2021).

State studies also find differences in disproportionality by jurisdiction. For example, Michigan data collected by the Michigan Committee on Juvenile Justice show that Black youths were statistically significantly less likely to be securely



detained than white youths in Kent County, but there was no statistically significant difference in Oakland County (Michigan Committee on Juvenile Justice, 2021). Similarly, a DMC assessment study of Tennessee found that two major metropolitan areas had statistically significantly higher levels of disparities for Black youth, compared with rural areas of the state (Tennessee Commission on Children and Youth, 2012:64).

In terms of gender, state and national data show some differences in levels of disparity, although consistent trends have not emerged. For example, data from Florida show that statewide racial disparities are greater for Black boys than for Black girls at the arrest stages (RRI of 3.3 for Black boys and 2.6 for Black girls) and at the diversion stage (RRI of 0.7 for Black boys and 0.9 for Black girls<sup>[1]</sup>) [Florida Department of Juvenile Justice, n.d.]. But racial disparities were the same for boys and girls in Florida at detention (RRI of 1.4 for both genders). Also, a Virginia study found that gender composition of racial/ethnic groups in Norfolk County varied among youth referred to juvenile court: 46 percent of the Hispanic youths referred to court were girls, compared with 39 percent of white youths and 36 percent of Black youths (Harig et al., 2012). Finally, a Nebraska study found that for white, Black, and Hispanic youth, males were statistically significantly more likely to be taken into custody than females, but for Native American youth, females were more likely to be taken into custody than males (Hobbs et al., 2012).

National data showing racial and ethnic compositions at various points of the juvenile justice system also demonstrate some differences by gender. For example, in the population of boys in residential placement in 2019, 33 percent were white, and 42 percent were Black; in the population of girls, 38 percent were white, and 35 percent were Black (Sickmund et al., 2021). Similarly, juvenile court data demonstrate differences in gender composition for certain charges. For example, among girls with drug charges in 2019, 61 percent were white, while 39 percent were minority; among boys with drug charges, 51 percent were white, while 49 percent were minority (Sickmund, Sladky, and Kang, 2021). However, for person offenses, the portion of the sample that was minority was higher for the boys than for the girls (58 percent, compared with 61 percent).

Finally, racial disparities vary by offense type. Arrest data from the Federal Bureau of Investigation (FBI) show that both arrest rates and relative rates differ by offense. For example, Black youths were eight times more likely than white youths to be arrested for stolen property (buying, receiving, possessing) and seven times more likely to be arrested for robbery. However, they were less likely than white youths to be arrested for drunkenness, liquor laws, and driving under the influence. American Indian youths were six times more likely than white youths to be arrested for offenses against the family and children and five times more likely to be arrested for drunkenness, but they were less likely than white youths to be arrested for gambling, robbery, embezzlement, prostitution and commercialized vice, and forgery and counterfeiting. Offense types among the residential population also differ by race. Further, according to the *Census of Juveniles in Residential Placement*, although all races/ethnicities were most likely to be in residential placement for a person offense (35.7 percent) or a property offense (26.0 percent), white and Native American youths were overrepresented among status offenders (Sickmund et al., 2021).

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[1]At the diversion stage, an RRI lower than 1 indicates disproportionality disadvantaging minority youth, since being diverted is a positive option.

## Federal Legislation

Over the years, amendments to the federal [JJJPA of 1974](#) and OJJDP compliance requirements for states applying for and/or receiving JJJPA Formula Grant funding have provided direction on how states address racial and ethnic disparities. These amendments occurred in 1988, 1992, 2002, and 2018.

First, the 1988 JJDP Act amendment contained a requirement that states address DMC (which at this point meant disproportionate minority *confinement*) in their state plans. Then, in the 1992 amendment, the identification of DMC became a Core Requirement, tying state compliance to future funding through the Formula Grants Program (OJJDP, 2013; OJJDP, n.d.a; OJJDP, n.d.b).

Requirements in subsequent amendments were also tied to Formula Grant funding.

Amendments in 2002 resulted in a requirement that states, "address juvenile delinquency prevention efforts and system improvement efforts designed to reduce, without establishing or requiring numerical standards or quotas, the disproportionate number of juvenile members of minority groups, who come into contact with the juvenile justice system" (Pub. L. No. 107–273, 116 Stat. 1878 (23)). Between 2002 and 2018, states were required to submit data to OJJDP on the numbers of youths by race/ethnicity who came into contact with nine juvenile justice system points statewide, and for at least three targeted counties in the state. The nine juvenile justice points were 1) arrest (law enforcement referral), 2) referral to court, 3) diversion, 4) secure detention, 5) petition filed (charged), 6) adjudication (delinquent, guilty finding), 7) probation supervision, 8) secure confinement, and 9) transfer to adult court (waiver).

OJJDP outlined a five-stage process for states to follow: 1) identify the extent to which DMC exists, 2) assess the reasons for DMC, 3) develop an intervention plan to address DMC, 4) evaluate the effectiveness of interventions, and 5) monitor DMC trends (OJJDP, 2009a). During this time, DMC was measured using the RRI.

In December 2018, the [Juvenile Justice Reform Act](#) was signed into law, again reauthorizing the JJDPA and amending certain parts of the Act. The amendments became effective on Oct. 1, 2019 (OJJDP, 2019b). The requirement to "address DMC" was changed to "identifying and reducing racial and ethnic disparities" (OJJDP, 2019a). Other changes included a reduction in the number of decision points where states are required to track data, from 9 points to 5 points (OJJDP, 2019c), "where research has shown that potential disparity may occur":

1. Arrest
2. Diversion [filing of charges]
3. Pretrial detention
4. Disposition commitments
5. Adult transfer [OJJDP, n.d.c]

OJJDP also began requiring that states measure disparities by using proportions instead of relative rates and that they submit plans with three-pronged strategies. The three prongs are to 1) submit statewide data for at least four of the five juvenile justice contact points (indicated above), by providing the percentage distribution of race or ethnic groups compared with the general population distribution, 2) develop an action plan to reduce racial and ethnic disparities, and 3) conduct an outcome-based evaluation by tracking changes in numbers, addressing whether goals were met, indicating what worked and what drove that success, identifying barriers to success, indicating how OJJDP can help, explaining how they will protect the public and hold offenders accountable, and forming goals for the following year (OJJDP, n.d.c).

### **Empirical Studies of Racial and Ethnic Disparities**

Numerous national and jurisdiction-specific studies on racial and ethnic disparities have been conducted. These empirical studies differ from those that focus solely on rates, counts, and proportions because empirical studies attempt to better understand why the disproportionality is occurring. Between 2002 and 2018, OJJDP distinguished between these two stages, with the former being the "identification stage" and the latter being the "assessment stage."

Many of these empirical studies examine whether race had an effect on one or more juvenile justice decision points after controlling for other variables (e.g., offense severity, prior record, age, gender). Many of these studies are guided by research interests and are published in scholarly journals (e.g., Abrams, Mizel, and Barnert, 2021; Rodriguez, 2007; Leiber, Brubaker, and Fox, 2009; Freiburger and Burke, 2010; Zane, Mears, and Welsh, 2020), while another group of studies resulted from the OJJDP mandate for states to conduct DMC assessment studies and are generally published as reports available to the public (Donnelly and Asiedu, 2021).

Several large-scale, comprehensive efforts have been conducted that analyzed the body of research literature on racial and ethnic disparities in juvenile justice (Pope and Feyerherm, 1990; Pope, Lovell, and Hsia, 2002; Engen, Steen, and

Bridges, 2002; Bishop, 2005; Bishop and Leiber, 2012; Spinney et al., 2018; Zane and Pupo, 2021). For example, one of these reviews (Spinney et al., 2018) was an OJJDP–funded review of articles from 2002 to 2014 evaluating the percentage of studies that found disparities, by decision point and by race/ethnicity. This study found that, while the picture that emerges collectively is complex, effects of race that disadvantage minority youths were found to exist at all decision points. This finding is similar to the results of other reviews, which found that race affects decisionmaking to some extent but also that other legal variables (such as prior offense and offense seriousness) and extralegal variables (such as age) also play key roles (Pope and Feyerherm, 1990; Pope, Lovell, and Hsia, 2002; Engen, Steen, and Bridges, 2002; Bishop, 2005; Bishop and Leiber, 2012; Zane and Pupo, 2021). The degree of these disparities can vary considerably by both decision point and race/ethnicity.

First, the extent of disparity varies across points in the process. For example, in the 2018 review by Spinney and colleagues described above, studies that included analysis of *earlier* decision points in the juvenile justice system (e.g., arrest, secure detention, and referral to court) overwhelmingly found there was some disadvantage to minority youths. However, fewer studies of *later* decision points (e.g., adjudication, probation, secure confinement, and disposition in adult court for transferred youths) found racial disadvantage to minority youths.

Second, levels of disparity at each point in the system vary by racial and ethnic group. A more-recent systematic review used meta-analytic techniques to analyze the data from studies of racial disparities. This review found there was a small average effect for some outcomes (e.g., detention) and no discernible average effect on others (e.g., petition, waiver, adjudication). Specifically, the authors found that

- For Black/white comparisons, there was evidence of small average race effects on detention and placement, a slight average effect on intake, and no average effects on petition, waiver, or adjudication.
- For Hispanic/white comparisons, there was evidence of a small average race effect on detention; slight average effects on petition, adjudication, and placement; and no average effects on intake or waiver.

- For nonwhite/white comparisons, there was evidence of small average effects on detention, intake, and waiver; a slight average effect on placement; and no average effect on petition or adjudication. [Zane and Pupo, 2021]

However, even small average race effects can make a large impact over the course of the many decisions in the juvenile justice system through *cumulative disadvantage* (Kurlychek and Johnson, 2019; Pope and Feyerherm, 1990; Zane, 2018). Cumulative disadvantage can be displayed in at least two different ways. First, simple accumulation occurs when a higher rate of arrest for minority youth is subsequently followed by a lower rate of diversion, higher rates of formal processing as delinquent, and so forth (Pope and Feyerherm, 1990; Spinney et al., 2018). Thus, although the differential treatment at any particular stage may appear "small," the cumulative impact across the entire juvenile justice system may be relatively large. Second, decisions made at earlier stages, such as detention, can affect outcomes at later stages—in particular, judicial disposition (Leiber and Fox, 2005; Mendel, 2014; Rodriguez, 2010). For example, one study of predictors of formal disposition in a large southern state found that the number of days spent in secure detention predicted formal disposition even after controlling for offense type, gang affiliation, weapon carrying, and extralegal factors (Caudill et al., 2013). However, minority youths are more likely to be detained than their white counterparts. Thus, although minority youths and white youths who have been detained may be treated similarly, because the minority youths are more likely to be detained, they are also more likely than to receive more severe dispositions than do their white counterparts.

An emerging body of literature has examined additional discretionary decisions. For example, a systematic review of 26 studies examining racial disparities among referrals to mental health and substance misuse services from within the juvenile justice system found that the majority of studies showed at least some race effects in the decision to refer youths (Spinney et al., 2016). Another study (Ogle, 2019) examined whether there were racial and ethnic disparities in the use of solitary confinement among pre-adjudicatory youth in juvenile detention centers in Florida, finding that Black youths had 68.8 percent greater odds of being placed in solitary confinement than white youths, even after incorporating

statistical controls for relevant factors such as risk to reoffend. Researchers also have examined other decision points, including failure to appear for court hearings (Walker et al., 2019), probation violations (Gale–Bentz, 2019; Leiber and Peck, 2013), and being written up for new offenses while institutionalized (Oglesby–Neal and Peterson, 2021). Similarly, some researchers have examined racial disparities in pathways into the juvenile justice system, specifically in referrals from schools (Blad and Harwin, 2017; Hughes, Raines, and Malone, 2020).

### **Contributing Factors to Racial and Ethnic Disparities**

Often racial and ethnic disparity is presented as being caused by *differential offending* (i.e., youths of color commit more crimes or commit more serious crimes) or *differential treatment* (i.e., the juvenile justice system treats youths of color differently). Differential offending is also referred to as *differential involvement* or *differential behavior*, and differential treatment is also referred to as *differential selection* or *systems factors*. These two theoretical frameworks have largely helped frame discussions and studies (Bishop, 2005), for these key theoretical distinctions suggest independent causal mechanisms that account for racial and ethnic disparities (Zane and Pupo, 2021).

The differential offending framework centers on the individual and refers to differing rates at which youths from various racial and ethnic subgroups are involved in delinquent activity. Differential behavior results when minority youths are involved in more serious crime, participate more deeply in gang activity, begin delinquent activity at earlier ages, and are involved in other social service– or justice-related systems such as the child welfare system (Leiber, Richetelli, and Feyerherm, 2009). This perspective requires that causes of differential involvement be sought outside the court system by looking at individual, family, and neighborhood factors that are related to offending (e.g., Piquero, Moffitt, and Lawton, 2005; Tracy, 2005). For example, Fite, Wynn, and Pardini (2009) found that much of the difference in arrest rates between white and Black boys was attributable to higher levels of both individual and contextual risk factors for

Black boys across multiple domains.

In this framework, legal factors are often related to "minority-centered contexts of risk" (National Research Council, 2013:224), such as

- Economically disadvantaged and unstable communities and neighborhood social contexts (Fite, Wynn, and Pardini, 2009; Sampson, Morenoff, and Raudenbush, 2005; Moak et al., 2012)
- Low-performing institutions, especially public schools (Hirschfield, 2018; Sharkey and Sampson, 2010)
- Delinquent peers (Fite, Wynn, and Pardini, 2009; Haynie and Payne, 2006)
- Family risk factors such as unmarried or single parents, incarcerated parents, poor parent– child communication, death of a parent, and harsh, lax, or inconsistent discipline (Fite, Wynn, and Pardini, 2009; Jarjoura et al., 2013; Maguire–Jack, Lanier, and Lombardi, 2020; Sampson, Morenoff, and Raudenbush, 2005; Vespa, Lewis, and Kreider, 2013)
- Greater exposure to violence (Kilpatrick, Saunders, and Smith, 2003; Maguire–Jack, Lanier, and Lombardi, 2020)

Further, the allocation of prevention and treatment resources within communities is seldom uniform or universally accessible across an entire community. In some instances, those allocations create a disadvantage for minority youth (Leiber, Richetelli, and Feyerherm, 2009). For example, effective programs may be geographically inaccessible to minority youth in a jurisdiction, or existing programs may be designed for white, suburban youth. Thus, retention and outcomes for minority urban youth are weak. The National Research Council concluded that the "totality of these risk factors is such that minority youths are born into and raised in severely compromised familial, community, and educational environments that set the stage for a range of adverse behaviors and outcomes, including problems in school, relationships, and engaging in prosocial behavior" (2013:224).

The differential treatment framework perspective, by contrast, generally concentrates on the structure of justice decisionmaking acts that can disadvantage minority youth (e.g., Leiber, 2003; Pope and Feyerherm, 1990). This



perspective, also known as *bias theory*, argues that minority youths are more likely than white youths to suffer harsher consequences at each stage of the juvenile justice decisionmaking process because the system treats minority youths differently (and more punitively). This theoretical orientation expects to find differential treatment of minority youth even after accounting for legal, and often extralegal (e.g., age, socioeconomic status, school status), factors (e.g., Mallett and Stoddard–Dare, 2010). The differential treatment framework centers on the juvenile justice system to explain disparities and is the approach that most frequently characterizes empirical studies of racial and ethnic disparities (e.g., Leiber, 2003; Leiber, Brubaker, and Fox, 2009; Richetelli, Hartstone, and Murphy, 2009).

A contributing factor related to differential treatment is *justice by geography* (Leiber, Richetelli, and Feyerherm, 2009). Minority youths may live in jurisdictions that have stricter law enforcement or harsher judges, compared with jurisdictions where white youths live (Bray, Sample, and Kempf–Leonard, 2005; Leiber, Richetelli, and Feyerherm, 2009; Taylor et al., 2012). For example, a Massachusetts DMC assessment study found that police tend to patrol urban minority neighborhoods more aggressively than suburban areas where fewer minorities reside. Thus, the likelihood of arrest is much higher for minority youth than white youth in this state (Kaufman, 1997).

Another explanation for differential treatment includes *legislation, policies, and legal factors* (Leiber, Richetelli, and Feyerherm, 2009). Policies enacted through legislation or administrative action may sometimes contain elements that create a disadvantage for minority youth. For example, statutes that define drug offenses tend to treat crack cocaine more seriously than powdered cocaine, which, given the usage patterns for the two forms of cocaine, creates a disadvantage for minority youth (Birckhead, 2017; Leiber, Richetelli, and Feyerherm, 2009). Zero-tolerance policies and other harsh discipline practices in school also adversely affect students of color (Dunbar and Villarruel, 2004; Hirschfield, 2018).

*Differential processing or inappropriate decisionmaking* is another contributing

mechanism that can explain differential treatment. Differential processing or inappropriate decisionmaking results when the criteria used to make decisions in the system are either not applied consistently across all groups of youth or when the criteria are structured in a manner that disadvantages some groups. One example of differential processing or inappropriate decisionmaking is the use of the term *gang related*, which is cited frequently as a factor in decisions about how to handle juveniles. To assess gang-related impact, it is important to know how a jurisdiction defines the term and whether the “gang related” question is asked only of youth from certain communities. If so, then use of this criterion likely will place minority youth at some disadvantage relative to white youth—especially white youth from community areas not believed to be gang affiliated (Birckhead, 2017; Leiber, Richetelli, and Feyerherm, 2009). Another example is related to parenting structure. Some courts, fearing lack of supervision, may be more likely to use secure detention if the child is from a single-parent home. If minority youths are more likely to live in single-parent homes (Vespa, Lewis, and Kreider, 2013), these decisions will contribute to disparities (Leiber, Richetelli, and Feyerherm, 2009), regardless of the family’s ability to supervise their child.

Another contributing factor that has increasingly gotten more attention is *implicit bias* and its role in the many decisions made about juveniles as they move through (or are diverted from) the juvenile justice system (Darling–Hammond, 2017; Glenn, 2019; Marsh, 2009; National Juvenile Justice Network, 2017). Whereas explicit bias is a conscious preference (positive or negative) for a social category, implicit bias is a preference (positive or negative) for a social category that operates outside of awareness (Marsh, 2009). Although the research focused on exploring the link between implicit bias and racial and ethnic disparities in juvenile justice is limited (Glenn, 2019), many of the interventions aimed at reducing discretion in judicial decisionmaking are based on the belief that this discretion is influenced by bias, and more specifically by implicit bias. These interventions include two main approaches: 1) the use of risk assessment instruments (see below) and 2) trainings designed to reduce implicit bias among justice system decisionmakers by targeting implicit bias itself (e.g., Fix, 2020; Worden et al., 2020).

In addition to these examples of how differential treatment may occur, there are several related academic theories that may also explain differential treatment. The *racial or symbolic threat theory* (Ousey and Lee, 2008; Moak et al., 2012), within the differential treatment framework, focuses on the social–psychological processes behind decisions that disadvantage one or more racial/ethnic groups compared with others (Kurtz, Linnemann, and Spohn, 2008). In this framework, decisionmakers are influenced by emotions driven by the perception of minority youth as threatening to middle-class standards and public safety (Leiber and Fox, 2005). Reference is often made to the work of scholars such as Tittle and Curran (1988), who explored how negative perceptions of Black youth and stereotypes affect decisionmakers. A recent study expanded the definition of “threat” and found that higher rates of county-level homicide prosecutions and racial differences in unemployment were associated with secure detention and placement of youth (Fix et al., 2021). The authors concluded that racial threat and other theories aiming to explain racial disparities should be reexamined and modified to include markers of violent and sexual offenses.

Similarly, *labeling theory* posits that dominant groups maintain their status by using labels to define deviant or criminal behavior and disenfranchise certain other groups (Tapia, 2010). One example of labeling theory is when youths who experience police stops align their identities with the delinquent label and subsequently engage in illegal activities (McGlynn–Wright et al., 2020). For example, one recent study found that being stopped or arrested not only increased future delinquency but also amplified deviant attitudes (Wiley and Esbensen, 2016).

Other theories from the differential treatment framework include individual-level approaches such as *attribution theory*, which posits that decisionmakers may rely on internal and external factors they perceive to be linked to blameworthiness and delinquent behavior (Lowery and Burrow, 2019; Rodriguez, 2007:633), and *focal concerns theory*, which examines the factors that guide actors’ decisions in the justice system and the mechanisms by which these focal concerns shape final case outcomes (Harris, 2009).

In terms of attribution theory, researchers have demonstrated that juvenile justice decisionmakers are more likely to assign negative internal attributes (e.g., personality, attitude, cooperativeness) to youths of color and negative external attributes (e.g., delinquent peers, family conflict, school issues) to white juveniles; this is an important finding, for researchers have found that decisions are influenced more by negative internal attributes than by negative external attributes (Bridges and Steen, 1998; Beckman and Rodriguez, 2021). To empirically test the negative attributions theory, a recent study of diversion decisions found that youths of color were more likely to be linked to negative internal attributions in their files, in comparison with white youths, and that negative internal attributions in turn decreased the probability of receiving diversion (Beckman and Rodriguez, 2021). Another recent study examined the effects and intersections of race, legal characteristics, and macro-level community characteristics on juvenile institutionalization through the lens of attribution theory, concluding that race does influence confinement decisions (Lowery and Burrow, 2019).

Several studies have applied a focal-concerns framework to explain racial disparities in juvenile justice by examining the differences in the focal concerns of decisionmakers at different points of the system (Bishop, Leiber, and Johnson, 2010; Ericson and Eckberg, 2016). A key assertion of the focal concerns framework is that decisionmakers have limited time and information to make decisions, so they develop “perceptual shorthand,” which is often conditioned by stereotypes, extralegal factors, and legal cues (Hartley, Maddan, and Spohn 2007; Hawkins 1981; Ishoy and Dabney, 2018). The juvenile system consists of a several different independent bureaucracies that are responsible for decisions at different points of the process, and each set of bureaucracies contributes some outcome or information that pertains to the next point. Bishop, Leiber, and Johnson (2010) hypothesized that focal concerns would influence outcomes at loosely coupled points (intake, detention, disposition), but not at tightly coupled points (petition, adjudication), and found that their findings were generally consistent with these expectations.

Another explanation under the differential treatment framework is the *liberation*

*hypothesis* (Guevara et al., 2011; Spohn and Cederblom, 1991). This hypothesis posits that in less-serious cases and when evidence is less conclusive, there is more ambiguity for decisionmakers, thus decisions are more likely to be influenced by race or other extralegal factors. In other words, the decisionmakers are “liberated” from legal constraints and therefore individualize the decision on a variety of factors, including racial and ethnic biases. Though limiting decisionmaker discretion using culturally competent, standardized decisionmaking tools is a main component of most approaches designed to reduce racial and ethnic disparities (e.g., Cabaniss et al., 2007; Center for Children’s Law and Policy, 2015; Hinton Hoytt et al., 2003; Nellis, 2005), some studies have failed to find support for the liberation hypothesis, which posits that this discretion is a contributing factor to disparities. In their study of juvenile court referrals in a northeastern state, Beaudry–Cyr and colleagues (2020) failed to find support for their hypothesis that extralegal factors would have a diminishing effect on case outcomes as the severity of the case increased. Similarly, in their study of factors that influence pre-adjudication and disposition outcomes between an urban and suburban county, Taylor and colleagues (2012) found there were more varying effects of legal and extralegal factors across race in the urban county than in the suburban county. Their interpretation of the liberation hypothesis was that there would be more of a due-process orientation in the urban locations, which would result in greater reliance on legal factors; their findings did not support this hypothesis.

Various scholars have identified shortcomings in looking exclusively at either the differential offending framework or the differential treatment framework (e.g., Tracy, 2005; Pope and Feyerherm, 1990; Bishop, 2005). With a complex social problem such as racial and ethnic disparity, numerous factors are likely at work, including poverty, segregation, educational challenges, residential instability, and the broader “racialized society” in which many institutional practices, public policies, and cultural representations operate (National Research Council, 2013). Thus, racial/ethnic disparities are “not reducible to either differential offending or differential selection” (National Research Council, 2013).

In addition to differential involvement and differential treatment, Engen and

colleagues (2002) proposed two other perspectives: *macro-contextual explanations* and *structural–processual explanations*. Both mention that differential treatment may take place in some contexts but not in others (Zane and Pupo, 2021). The key issue for the structural–processual perspective is the separate and interrelated decisions of system processing, while the macro-contextual explanations focus on larger societal and community-levels factors (Rodriguez, 2007; Sampson and Wilson, 1995).

## **Outcome Evidence**

The current literature measuring the effectiveness of interventions to reduce racial and ethnic disparities generally involves comparing numbers, percentages, rates, or relative rates before and after the implementation of an intervention. Changes in disparities can happen at the local, state, or federal level. Thus, researchers must be clear on how and where changes in disparities are targeted and measured.

Several frameworks and strategies for reducing racial and ethnic disparities in juvenile justice have been developed, promoted, implemented, and evaluated. Leiber and Fix (2019) examined the effect of three of these large-scale initiatives: 1) the OJJDP requirement to address racial disparities in the JJDP, 2) the Annie E. Casey Foundation's Juvenile Detention Alternatives Initiative (JDAI) model (often implemented in partnership with the W. Haywood Burns Institute), and 3) the MacArthur Foundation's Models for Change initiative. Overall, the study found that these three efforts were often ineffective, though some practices had mixed support. They concluded that the common factors found to effectively reduce racial and ethnic disparities included

- Access to data collection and utilization.
- Stability in terms of employment for those receiving services.
- Collaboration among various agencies.
- Affiliation with other efforts to prevent delinquency and racial and ethnic disparities.

- System change (most notably in the form of developing and implementing racially and ethnically neutral objective decisionmaking tools).
- Cultural competence training.
- Commitment to disparity reduction in the short and long terms.
- State and local leadership.
- Long-term partnerships with universities and/or people trained in methodologies to aid in the study, implementation, and evaluation of strategies and interventions.

Before the Leiber and Fix study, an OJJDP–funded study identified nine jurisdictions that were able to decrease racial disparities as measured by the RRI and conducted case study research to describe the interventions that led to these reductions (Spinney et al., 2014). The researchers found that jurisdictions that successfully reduced disparities in their systems used nine primary strategies, several of which were identified by Leiber and Fix (above). In addition to the strategies identified by Leiber and Fix, the Spinney and colleagues (2014) case study research identified the following additional strategies: shifting the institutional culture from a punitive or procedural focus toward a focus on what was best for the youths and the community; creation of alternatives to secure detention, secure confinement, and formal system involvement; directing reduction interventions at the system (and not at the youths); and changing policies, procedures, and laws.

One example of a successful jurisdiction in the Spinney and colleagues (2014) study was Bernalillo County, NM, a jurisdiction that was able to decrease disproportionality (as measured by the RRI) in arrests,<sup>[2]</sup> referrals to court, and diversions from the juvenile justice system for Black, Hispanic, and Native American youths. For example, in 2004, the arrest rate for Black youth was 16.4 per 100 youths while the white arrest rate was 8.8 per 100 youths, resulting in an RRI of 1.9. By 2010, the Black arrest rate had declined to 7.1, while the white arrest rate declined to 6.6, resulting in an RRI of 1.1.<sup>[3]</sup> Bernalillo County's sustained reductions in racial disparities at multiple stages of the juvenile justice system for Black, Hispanic, and Native American youths was likely a result of multiple strategies designed primarily around systems reform, attention to data,

and increasing community-based services for court-involved youth. Strategies included implementation of the JDAI framework, emphasis on reducing the number of youths in secure detention, enhanced services for detained youths after returning to the community, establishment of a unit to increase access to diversion, and involvement of multiple partners over long periods of time in their efforts, even when individuals moved to new positions.

Several other publications describe reductions in racial and ethnic disparities (Hinton Hoytt et al., 2003; Nellis and Richardson, 2010; Shoenberg, 2012; Spinney et al., 2014). For example, a study of an intervention to reduce failures to appear in court in one jurisdiction was evaluated to identify whether there was a reduction in disparities as a result (Walker et al., 2019). The authors found that although the program significantly reduced the likelihood of youths failing to appear in court at the first court hearing following a summons (arraignment), it did not affect subsequent hearings and had no effect on reducing racial disparities. Another study that examined the use of a risk assessment instrument (RAI) in a mid-sized county in the Midwest found that the instrument did not eliminate racial and ethnic disparity in secure detention placements; however, that study suggested that the use of an RAI may reduce the effect of race on detention placement decisions (Mallett and Stoddard–Dare, 2010).

At least two evaluations examined the effect of multifaceted juvenile justice reforms at the state level. Donnelly (2019) examined changes in racial and ethnic disparities at secure detention and placement decisions in three Pennsylvania counties after the implementation of several juvenile justice reforms. Reforms included development of alternatives to secure detention and placement, revision of a RAI to inform detention proceedings, modification of the placement decisionmaking guidelines and process, and partnership with the Models for Change initiative. The author of the study found that the reforms resulted in a greater reliance on legal factors in decisionmaking, which should moderate the effect of race on processing outcomes.

Zane (2021) examined whether racial and ethnic disparities declined in Connecticut between 2000 and 2010, after the state had made substantial reforms, which included police training for working effectively with youth,



development of a model memorandum of understanding for police officers and schools to use to reduce school-based arrests and referrals to court, funding for projects to build relationships between youth and police in local jurisdictions, and establishing two informational campaigns: Just.Start, which focused on addressing disparities in the juvenile justice system, and Right Response CT, which concentrated on schools and police knowing the “right response” to youth misbehavior. During this period, there was steady leadership from the Juvenile Justice Specialist, and the State Advisory Group later contributed to developing and executing these strategies (Spinney et al, 2014). Zane (2021) found that Black–white disparities in detention decreased over time. However, Black–white disparities increased for petition, adjudication, and waiver, and Hispanic–white disparities increased for adjudication (while not changing for other outcomes). Another analysis of changes in racial disparities in Connecticut found that during 2006–12 the RRI values at referral to court declined from 2.9 to 1.6 for Hispanic youth and from 6.3 to 4.7 for African American youth (Spinney et al., 2014).

Given the methodological challenges of evaluating comprehensive interventions to reduce racial and ethnic disparities, most of the more rigorous program evaluations examine the effect of specific, direct services to reduce differential offending among youths of color, which is just one of many plausible contributing factors.

A few programs are designed specifically for youths of color. For example, [Protecting Strong African American Families \(ProSAAF\)](#) is designed to improve family functioning and enhance youth development by targeting parents’ relationships and parenting skills. One study found that families who participated in ProSAAF saw statistically significant improvements in parental monitoring, self-concept, conduct problems, and substance-use initiation (Beach et al., 2016). [Project Venture](#) is a prevention program designed for at-risk Native American youths. This outdoor experiential program resulted in statistically significant reductions in the growth of substance use, including alcohol, marijuana, and other illicit substances (Carter, Straits, and Hall, 2007).

In addition to programs designed specifically for youths of color, mainstream programs can also result in positive outcomes. A meta-analysis of 350 studies of

programs addressing juvenile delinquency found no evidence that mainstream delinquency intervention programs yield poorer outcomes for minority youth than for white youth (Wilson, Lipsey, and Soydan, 2003). Thus, targeting those interventions to youths of color may reduce disparities in a jurisdiction. Some examples of evidence-based intervention programs from the *Model Programs Guide* include the following:

The [Child–Parent Center Program](#) is a school- and family-based early intervention program that provides comprehensive educational and family support services to economically disadvantaged children. A longitudinal study that followed more than 1,500 predominantly Black children growing up in a high-poverty area of Chicago, IL, found that this intervention resulted in statistically significant declines in substance use, incarceration rates, and felony arrest rates at age 24 (Reynolds and Ou, 2011).

The [Little Village Gang Violence Reduction Project](#) is a comprehensive gang violence reduction program with five core elements: 1) community mobilization, 2) social intervention, 3) provision of social opportunities, 4) suppression, and 5) organization change and development of local agencies and groups. An evaluation of the project in the Little Village neighborhood of Chicago, which is predominantly Hispanic, found that the intervention resulted in statistically significant reductions in total violent crime, serious violent crime, and drug crime arrests (Spergel et al., 2003).

[Project BUILD](#) (Broader Urban Involvement and Leadership Development, now the BUILD Violence Intervention Curriculum), is a violence prevention curriculum designed to help youths in detention overcome problems they may face in their communities, such as gangs, drugs, and crime. The program is designed to intervene in the lives of youths who have come into contact with the juvenile justice system to reduce recidivism and diminish the prospects that they will become adult offenders. A 2000 study by Lurigio and colleagues found that youths who participated in Project BUILD had statistically significantly lower rates of recidivism, compared with nonparticipants.

However, these interventions do not address community-level and systems-level

contributing factors to racial disparities, which many practitioners, policymakers, and advocates identify as the most important to address.

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[2] Bernalillo County refers to arrests as "law enforcement referrals to probation."

[3] An RRI of 1.0 would indicate no disproportionality.

## Conclusion

The existence of racial and ethnic disparities in the U.S. juvenile justice system is a complex issue. Its causes are multifaceted, and methodologically rigorous studies linking interventions to systemwide decreases in these disparities are not available (National Research Council, 2013:234–235). The evaluations that do exist find mixed results. Exacerbating the difficulty of addressing this issue is the fact that disparities exist well before contact with the juvenile justice system has occurred—in child welfare, the foster care system, school readiness, school performance, and school suspensions and expulsions (HHS, 2021; Knott and Giwa, 2012; Morris and Perry, 2016). Youths of color are more likely to live in single-parent families, in poverty, in disadvantaged communities with low performing schools, and in high-crime areas (Hirschfield, 2018; Moak et al., 2012; National Research Council, 2013). Given the problem's extent and complexity, this issue is difficult to address.

The 2013 National Research Council report on reforming juvenile justice summarized the continued need to address this complex issue: 1) the existence of racial and ethnic disparities in the juvenile justice system raises questions of bias, fairness, and legitimacy regarding its functioning; and 2) these disparities raise questions about the larger life-course trajectories of many youths in minority communities who may become marked by criminal records early in life (2013:211).

Since 1988, OJJDP has mandated that states participating in the federal Title II Formula Grant Program address racial and ethnic disparities, and jurisdictions

across the United States have made attempts to reduce these disparities. Although there is no conclusive evidence of what works to eliminate racial disparities, appropriate responses most likely require a multifaceted approach (Cabaniss et al., 2007; Center for Children's Law and Policy, 2015; Donnelly, 2019; OJJDP, 2009b; Pope, Lovell, and Hsia, 2002; Spinney et al., 2014; Spinney et al., 2018).

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## Adverse Childhood Experiences, Coping Resources, and Mental Health Problems among Court-Involved Youth

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### Abstract

**Background:** Mental health problems are gaining attention among court-involved youth with emphasis on the role of childhood adversity, but assessment lags.

**Objective:** The present study uses a commonly delivered assessment tool to examine mental health problems (current mental health problem, mental health interfered with probation goals, and suicide ideation) as a function of an expanded set of adverse childhood experiences (ACEs; childhood maltreatment, family dysfunction, and social disadvantage). Adaptive coping resources—impulse control, aspirations, and social support—were tested as both direct contributors and moderators of the influence of ACEs on mental health.

**Methods:** Using a diverse sample of youth on probation (N=5,378), this study utilized logistic regression models to test contributions of the three domains of childhood adversity—childhood maltreatment, family dysfunction, and social disadvantage. These models also examined the moderating roles of coping resources.

**Results:** Childhood maltreatment emerged as the strongest contributor to mental health problems, with significant moderation from social support. Youth aspirations were inversely related to mental health problems and moderated the relation with ACEs and mental health problems that interfered with probation.

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Compliance with Ethical Standards:

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The local Institutional Review Board approved all procedures. The first author takes responsibility for the data integrity and analysis procedures.

The authors of this study have no conflicts of interest to report.

**Conclusion:** Assessment and mitigation of the detrimental effects of childhood maltreatment are important considerations in the intervention programs that target mental health outcomes of court-involved youth. Intervention programs to prevent recidivism and improve mental health should improve impulse control and aspirations.

### Keywords

Juvenile justice; assessment; mental health; adverse childhood experiences; coping resources

Youth involved with the juvenile justice system suffer higher rates of mental illness than their counterparts in the general population (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). Moreover, mental illness is one of the most reliable predictors of recidivism among delinquent youth (Barrett, Katsiyannis, Zhang, & Zhang, 2014). Many jurisdictions in the United States are increasing their focus on improving the mental well-being of these minors, resulting in some improvement of mental health assessments (Shufelt & Coccozza, 2006). Routine use of such assessment tools holds promise for providing timely, practical guidance for these institutions toward mitigating the risk that mental illness carries for problematic outcomes. Elucidating risk and protective factors surrounding mental illness could improve the ability of communities and local governments to allocate resources more appropriately and effectively to help affected individuals and their families, as well as to prevent delinquency and recidivism.

A growing literature argues that a contributing factor for high rates of mental illness among court-involved youth is elevated exposures to childhood adversities, such as family dysfunction and child maltreatment (Baglivio et al., 2014; Dierkhising et al., 2013). This youth-focused work builds on two decades of research investigating adverse childhood experiences (ACEs) and associated sequelae, which demonstrates that increased exposure to ACEs is tied to higher rates of mental and behavioral disorders among adults (Downey, Gudmunson, Pang, & Lee, 2017; Felitti et al., 1998; Schilling, Aseltine, & Gore, 2007). Unsurprisingly, youth involved in the juvenile justice system are much more likely to have been exposed to one or more ACEs than the general population (Baglivio et al., 2014).

However, few studies have examined the mental health consequences of ACEs for delinquent youth and fewer still have explored the role of protective factors in this framework and population (Craig, Baglivio, Wolff, Piquero, & Epps, 2017; Perez, Jennings, Piquero, & Baglivio, 2016). Emphasis instead has been placed on the roles of ACEs in contributing to delinquent behavior (Baglivio & Epps, 2015; Fox, Perez, Cass, Baglivio, & Epps, 2015). For example, Barrett and colleagues (2014) found that more extensive childhood maltreatment and prior diagnosis of mental health disorder are each related to higher rates of delinquency, but they did not test direct pathways between social factors and mental health. The relative lack of research on ACEs and mental health alongside the limited availability of mental health resources in juvenile court systems has left the relations among adverse life experiences, mental health, and delinquent behavior relatively underspecified (Desai et al., 2006). Despite this, the ability to address these questions has improved. Recent examinations have extended the ACE framework to include other forms of adversity germane to youth health and development, such as poverty (Logan-Greene, Kim, & Nurius,

2016; Sacks, 2014) and out-of-home placements (Cronholm et al., 2015; Rebbe, Nurius, Ahrens, & Courtney, 2017), which better capture the breadth of adversity frequently experienced by court-involved youth.

There is a growing consensus among practitioners and researchers that issues of mental health should be better monitored and addressed by court systems in order to help ameliorate the effects of mental illness with concurrent involvement in juvenile justice (Shufelt & Coccozza, 2006; Underwood & Washington, 2016). However, because of the lack of research on the issue, there is relatively little clinical guidance for how court personnel can identify and best treat youth with mental health needs, especially when those needs may be related to burdens of trauma and adversity (Desai et al., 2006).

The present study aims to address this gap by testing how three domains of childhood adversity - childhood maltreatment, family dysfunction, and social disadvantage - contribute to risk of mental health problems among court-involved youth. Furthermore, our analysis assesses the role of coping resources and demographic factors (e.g. race, income, access to health insurance) in maintaining and constraining the ACE-mental health association. Although bivariate associations between ACEs and mental health have been examined in juvenile court populations, multivariate associations linking ACEs, mental health, coping resources, and demographics have remained relatively unexamined. Lastly, the few studies of ACEs in juvenile justice populations have clustered primarily within Cook County, Illinois and Florida (Baglivio & Epps, 2015; Teplin et al., 2002). Our present population extends geographic representation to the Western United States, offering further insights into how associations between early life adversity and mental health and behavior are maintained and differ across regions in the US.

## ACEs and Developmental Cascades

ACEs catalyze a diverse range of sequelae through effects on both biological and psychosocial development with demonstrated associations to eroded psychological health throughout the lifespan (Chapman et al., 2004; Nurius, Green, Logan-Greene, & Borja, 2015; Taylor, Way, & Seeman, 2011). Exposure to childhood maltreatment often results in long-term changes in stress responses that include abnormal hormone regulation, hyper-reactivity, hyper-arousal, and limited impulse control (Danese & McEwen, 2012). These effects predispose individuals to social, emotional, and cognitive impairment and the adoption of risky behaviors that can cause further issues beginning in childhood that may last throughout their lifetimes (Duke, Pettingell, McMorris, & Borowsky, 2010; Fang & Corso, 2007; Purewal et al., 2016; Sprague, Verona, Kalkhoff, & Kilmer, 2011). ACEs are associated with increased risk for psychiatric disorders throughout life, including depression, anxiety, attention-deficit disorder, and posttraumatic stress disorder (Arnou, 2004; McLaughlin et al., 2012), in addition to increased risk for delinquent behavior (Barrett et al., 2014).

These effects on mental health do not occur in a vacuum. Work on developmental cascades demonstrates that difficulties in one domain or system of development often result in effects spreading across and accumulating in other facets of an individual's development because of

the many complex interactions between domains (Masten & Cicchetti, 2010). For example, depressive affect early in life can prevent an individual from succeeding in different developmental tasks, such as adaptive socialization with peers, thus limiting their ability to recover from developmental insults (Masten & Cicchetti, 2010). As stressor exposures accumulate, neurobiological response systems become overwhelmed, disrupting development of self-regulatory processes (e.g., attention control, inhibitory control, planning) that help children cope with external demands (Evans & Kim, 2013). Compromised parenting capacity can further compound these deficits and represent an important intervention target (Lengua et al., 2014). An individual with developmental difficulties, such as a lack of positive social supports, self-regulation deficits related to impulse control and future-oriented planning, and mental health difficulties, is further marginalized by delinquency with limited opportunities for interrupting the challenges in their developmental trajectories. This hypothesis is demonstrated in work focusing specifically on court-involved youth (Underwood & Washington, 2016).

## **Mental Health and Developmental Cascades in Court-Involved Youth**

Mental health is particularly salient for individuals involved in the judicial system not only because they suffer a disturbingly high prevalence of mental health problems (Abram et al., 2008; Fazel, Doll, & Långström, 2008; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002), but also because the resulting developmental cascades often lead them to experience a worsening cycle of negative outcomes. The danger of these trajectories is readily apparent from studies comparing delinquent youth with and without mental illness. Those diagnosed with mental health disorders are more prone to recidivism (Barrett et al., 2014), and they are more likely to be victims of violent death - over 4 times as likely for males and 8 times for females (Teplin, McClelland, Abram, & Mileusnic, 2005). The combination of experience in the legal system and living with poor mental health likely leads them to suffer more negative outcomes than individuals with poor mental health alone. Their risk of suicide and substance dependence in adolescence, for example, is significantly greater than their peers without histories of criminal justice experience (Abram et al., 2008; Kinner et al., 2014). The elevated risk underscores the serious need to address these youth therapeutically, not just punitively, during the involvement with the courts

There has been some work investigating ACEs and juvenile justice populations, especially with regards to ACEs and mental health in juvenile justice populations (Baglivio & Epps, 2015). However, elucidating how coping resources and demographic characteristics moderate associations between ACEs and mental health may provide insight into treating these youth and preventing or mitigating damaging developmental cascades. The importance of coping resources alongside risk factors has been laid out previously in criminological frameworks. At least one primary theory positions them as potentially impactful targets for intervention with wide-ranging and long-lasting effects on preventing further delinquency.

## **Protective Factors and General Strain Theory**

General Strain Theory (GST) is a useful lens through which to link childhood adversity, coping resources, mental health problems, and delinquency. It is a criminological framework

that explains how delinquency results from the accumulation of strain on individuals (Agnew, 2001). This strain develops from the pressure of negative affective states stemming from life stressors. Typically, the sources of strain are considered to be 1) the failure to achieve positive goals; 2) the removal of positively valued stimuli; and 3) the presentation of negative stimuli (Agnew, 2001). Once this strain surpasses a threshold, individuals may become prone to reactive and maladaptive responding, including delinquency, both as a general state and as specific act, as a result of their strain. For example, if an individual blames someone for his or her inability to gain a positively valued stimuli, directing aggression towards that person may be seen as a way to rectify the inequity. Or, if individuals feel unable to achieve their goals, they may resort to drugs or other maladaptive coping to change their affective states, relieving their stress through reduced investment in these goals or calming of their biological states.

Empirical tests have demonstrated the general validity of these hypotheses in that elevated strain in the context of limited agency is associated with increased delinquency and, alternatively, improved coping resources reduce the likelihood an individual engages in delinquency. For example, perceived experience of repeated injustices (which convey social strain) has been positively associated with delinquency among middle and high school students (Rebellion, Manasse, Van Gundy, & Cohn, 2012). Conversely, higher levels of social support from an individual's neighborhood weaken the association between victimization and substance use in adolescents (Fagan, Wright, & Pinchevsky, 2013). Further studies have demonstrated that regulatory capacities mediate these linkages. Hollist, Hughes, and Schaible (2009), for example, tested GST and found that negative emotions partially accounted for the relation between adolescent maltreatment and delinquency.

Because not everyone who is exposed to these pressures commits delinquent acts, there is a need to consider individuals' constraints and resources buffering them from, or catalyzing them towards, delinquency. These come in the form of coping resources, such as social skills and supports, and self-regulatory abilities, such as impulse control. In addition, the experience of early adversity affects an individual's psychosocial and neurobiological development in ways that often decrease their coping capacities and aspirations for the future (Danese & McEwen, 2012; Lengua et al., 2013). For example, increased exposure to institutional care (e.g., foster care) early in life has been tied to decreased impulse control in children (Hostinar, Stellern, Schaefer, Carlson, & Gunnar, 2012). An individual with decreased impulse control is less likely to have the skills to adaptively resolve conflicts with authority figures, and within the framework of GST, this would increase the likelihood that this individual commits delinquent acts.

By incorporating coping resources, such as aspiration and impulse control, alongside demographic factors typically considered protective, such as income levels, our analyses apply GST to further the understanding of mental health ecologies in court-involved youth - moving beyond a basic descriptive analysis of this relation.

## The Present Study

The present study integrates the ACEs framework with GST to advance our understanding of how three domains of early adversity (maltreatment, family dysfunction, social disadvantage) are related to mental health problems among court-involved youth, and how coping resources may affect these pathways. Our focus on court-involved youth with demographic characteristics that differ importantly from other populations represented in the literature extends the regional scope and generalizability of this body of literature. We hypothesize that increased exposure to childhood adversities will be associated with increased mental health problems and that coping resources will attenuate this association. Specifically, we predict that poorer coping resources will serve to compound the effects of early adversity; those with higher adversity and poor coping resources will be at greatest risk of mental health problems.

## Methods

### Data

These data come from the Washington State Juvenile Court Assessment (WSJCA) provided by a juvenile court in a diverse jurisdiction containing both urban and rural areas in Washington (Barnoski, 2004b). In 1997, the Washington State Legislature enacted the Community Juvenile Accountability Act (CJAA) to encourage the use of research-based programs aimed at reducing crime and recidivism rates among adolescents. As part of the Act's requirements, the Washington Association of Juvenile Court Administrators and the Washington State Institute for Public Policy (WSIPP) collaborated to develop a 132-item assessment tool, which was implemented statewide in 1999. The Washington State Institute for Public Policy has examined the measures in this assessment tool and found them to be valid and empirically sound (Barnoski, 2004a). The rater training has been an implementation priority, especially across gender and race/ethnicity groups (Baglivio & Jackowski, 2013; Barnoski, 2004a). The assessment includes measures of dynamic and static risk and protective factors spanning multiple domains of youths' psychosocial context (Barnoski, 2004b). Only the courts and similar state personnel can grant access to this dataset. An Institutional Review Board approved all study procedures.

### Sample

The youth included in this dataset (N=5,378) were identified by the court as moderate to high risk youth (Barnoski, 2004a) who had a minimum of three months community probation between 2003–2013. Youth with sex offenses were excluded. For those who appeared in the dataset multiple times due to recidivism, only the first assessment was used. A majority of the participants were male (76.4%) with an average age of 15.5 years ( $SD = 1.46$ ). Racial composition was as follows: 59.8% Caucasian, 25.8% African-American, 6.1% Latinos (assessment did not differentiate between race and ethnicity), 3.2% Native Americans, 3.1% Asian Americans, 1.6% Hawaiians, and 0.4% mixed or other race.



## Measures

The delivery of the WSCJA is completed by court personnel (usually probation officers, termed Juvenile Probation Counselors in Washington State) who have received in-depth training. They are instructed to answer each question after interviewing the youth and their family, and after consulting extant records (e.g., school collaterals, child welfare databases) as appropriate.

**Adverse Childhood Experiences (ACEs).**—We created three ACEs scales to assess separate domains of adversity hypothesized to have differential, individual impacts on mental health: childhood maltreatment, family dysfunction, and social disadvantage. These scales are designed to distinguish between adversities that carry clear threat of harm (maltreatment) with those that more reflect dimensions of deprivation (family dysfunction reflecting variables that are likely to compromise healthy and sufficient parenting; social disadvantage reflecting poverty) (McLaughlin, 2016). All items included in these indexes were either dichotomous in their original form or collapsed for use in this analysis where noted (see [blinded for review] for more information). Total scores represent sums of ‘yes’ (0 = “No,” 1 = ‘Yes’) responses across identified items.

Prior ACE work has addressed questions of dimensionality within assessed exposures with mixed results (Ramiro, Madrid, & Brown, 2010; Scott, Burke, Weems, Hellman, & Carrión, 2013). It is well accepted that having one ACE exposure increases the likelihood that an individual will experience other ACEs, but the particular linkages between different types of exposures have varied across populations. Because childhood adversities tend to co-occur and to be cumulative in nature relative to health impacts, increasing emphasis has been placed on use of cumulative assessments (Arata, Langhinrichsen-Rohling, Bowers, & O’Brien, 2007; Dube et al., 2003; Edwards, Holden, Felitti, & Anda, 2003; Evans, Li, & Whipple, 2013). A single exposure is less likely to influence developmental outcomes, because a multiplicity of stressful experiences are more likely to overwhelm the body’s stress response systems and capacity to cope (Evans, 2003; Flouri, 2008). Focus on individual adversities is useful when contrasts in specific items undergird the premises of the research question. However, this approach risks missing the range of exposures, and could increase error by interpreting single item effects to be equivalent to a larger, more inclusive domain of adversity. Therefore, we included three ACE scales to distinguish separate domains of adversity that, based on the literature, may have differential impacts on mental health.

*Childhood Maltreatment* ( $M = 1.18$ ,  $SD = 0.97$ ) included four different types of maltreatment reported by youth (range=0–4). The WSJCA differentiates between physical and sexual abuse events within and outside the family, which were collapsed into one item each for the present analysis. Neglect was assessed with a single item. Dichotomized family violence/emotional abuse was based on having experienced any exposure to family violence, verbal abuse, or very heated arguments.

*Family Dysfunction* ( $M = 1.34$ ,  $SD = 1.24$ ) was measured as the sum of six dichotomized items of parental experiences of alcohol abuse, drug abuse, mental health problems, physical

health problems, family member imprisonment (any of father, mother, or sibling), and any out-of-home placements (range=0–6).

*Social Disadvantage* ( $M = 0.99$ ,  $SD = 0.94$ ) was assessed as a total across 4 dichotomized items: having low family income (either a family income of less than \$15,000 or below the poverty line based on family size), lack of health insurance, history of parental employment problems, and homelessness (range=0–4).

**Coping Resources.**—Indicators of coping resources included impulse control, aspirations, and social support. *Impulse control* was measured using the mean of six items that pertain to the youth's ability to monitor triggers, avoid impulsive responses, and aggression ( $\alpha = 0.79$ ,  $M = 0.00$ ,  $SD = 0.70$ ). Because this scale included items with differing number of anchors (e.g., some questions had three possible answers, others had four), we created z-scores for each item before creating the mean scale. This minimized the effects the different formats had on total scale values, and yielded a scale with a mean near zero. *Aspirations* was assessed as the mean of three items (also transformed to z-scores) pertaining to belief in future success, optimism, and goal setting ( $\alpha = 0.68$ ,  $M = 0.00$ ,  $SD = 0.78$ ). *Social support* is an inverse sum of two items measuring past and current lack of any close friends ( $r = 0.67$ ,  $p < .001$ ,  $M = 1.86$ ,  $SD = 0.47$ ); higher scores indicate consistently having close friends.

**Mental health problems** were assessed in three dichotomous forms: whether the youth had any current diagnosed mental health problems, had reported suicidal thoughts, and whether mental health problems interfered with court personnel's work with the youth during probation. These three variables capture complementary dimensions of mental health and allow us to assess stability of predictor effects across them. Table 1 provides descriptive statistics for these three indicators.

### Analytic Approach

We first assessed the prevalence of adversities within this sample by examining the frequencies of exposure to childhood maltreatment, family dysfunction, and social disadvantage. Next, we examined the bivariate relations among study variables using correlations. Logistic regression models tested the cumulative impact of adversities and coping resources on mental health indicators, accounting for demographic factors. Finally, we employed interaction terms to examine the moderating capacity of each coping resource on the relations between ACEs and mental health problems. For the multivariate analyses, we used dummy variables to compare minority youth (Black, Latino, and Other), using Caucasian youth as the reference group, in part because they comprise the largest portion of the sample, but also to be in line with research that highlights the needs of minorities within the justice system. We also examined the significance of the smaller racial groups (Hawaiian, Native American, and Asian), and observed no significant effects. We did not include those groups independently due to small cell size problems with the dependent variables.

## Results

### Prevalence of Study Variables

Results reveal that a large proportion of the youth in this sample had experienced some form of childhood maltreatment (see Table 1). Almost 75% experienced at least one type, and 10% had experienced at least three types of maltreatment. Experiences of family dysfunction showed similar patterns, where 70% of the sample reported at least one type, and 17.5% reported at least three types of family dysfunction. Most of the sample experienced some form of social disadvantage, with 64.1% reporting at least one type of economic disadvantage, and 8.4% reporting three or more.

The prevalence of indicators of mental health problems were also relatively high. Over a quarter (26.5%) of the sample carried some sort of mental health diagnosis. 6.8% of the sample were deemed to have a mental health problem that interfered with probation work. Finally, 6.3% reported current suicide ideation.

### Bivariate Relations

The majority of relations among study variables were significant and in the expected direction (see Table 2), with effects ranging from small (e.g., social support with family dysfunction and social disadvantage) to large (e.g., aspirations and impulse control). Although social disadvantage was significantly associated with other adversity domains and all of the coping variables in the expected direction, it was inversely related to mental health problems, contrary to our expectations. All coping factors were significantly related to all adversities and mental health indicators. No associations were sufficiently strong to indicate multicollinearity.

### Logistic Regressions

We next conducted logistic regression models (see Table 3) that predicted each of the three mental health problems as a function of demographics, ACEs, and coping resources. For all three models, minority groups were less likely to report a mental health problem compared to Caucasian youth. Being younger was linked to mental health diagnosis, whereas females were more likely to report suicide ideation, net of other factors. Childhood maltreatment was a robust predictor for each mental health indicator, whereas social disadvantage was significant in the opposite direction; family dysfunction did not achieve significance. All three of the coping variables were significant and robust contributors, controlling for other factors.

To test whether coping resources moderated the relations between childhood adversities and mental health problems, we created multiplicative interaction terms. In Table 4, the results of nine regression models are presented that test each coping factor's moderating capacities for each of the three ACE scales. In the first seven lines of the table, the moderating effects of impulse control on the three ACE scales are presented for each of the three dependent variables. The main effects of ACEs and impulse control are relatively unchanged across each of these models. Table 4 also shows the analogous sets of interaction tests for aspirations and social support, respectively. Aspirations significantly moderated the relations

between family dysfunction and social disadvantage with having a mental health problem that interferes with probation work. Social support significantly moderated the relation between childhood maltreatment and suicide ideation, showing a pattern of worsening mental health problems relative to their peers with high aspirations.

These four significant interactions were probed using the Johnson-Neyman method (Hayes, 2013; Hayes & Matthes, 2009) and the PROCESS macro for SPSS (Hayes, n.d.) to determine the ranges of significant moderation effects. The first of the interactions, childhood victimization X impulse control predicting having a mental health problem, was not significant when probed. The second, family dysfunction X aspirations predicting mental health problems that interfered with probation, showed significant moderation when aspirations was  $< 0.85$  and  $> 0.09$ . The third interaction, social disadvantage X aspirations predicting mental health problems that interfered with probation, was significant when aspirations was  $> -0.09$ . The fourth interaction, childhood victimization X social support predicting suicide ideation, was significant when social support was  $> -1.16$ . Figures 1–3 present graphs of these results for easier interpretation (Dawson, n.d.). In Figure 1, it is clear that having low aspirations in the presence of high family dysfunction significantly elevates the risk of having a mental health problem that interferes with probation. Figure 2 shows that low aspirations plus low social disadvantage has the same effect. Finally, Figure 3 reveals that low social support and high child victimization makes suicide ideation more likely.

## Discussion

This study is among the first to provide a detailed assessment of three domains of adverse childhood experiences among court-involved youth and their contributions to mental health. It is distinctive in testing the cumulative and unique contributions of these adversity forms, as well as by linking ACEs to coping resources as direct and moderating protective resources. Findings bolster the importance of assessing potentially ameliorative coping resources that could serve as targets for preventive and resilience-fostering interventions. This research fills an important gap in the literature on links between mental health and childhood adversity, which often rely on either “typical” population-based samples or very high risk samples, such as incarcerated, hospitalized, or group residential youth. As probation is often a first contact point for delinquent youth, it presents an opportunity for secondary prevention across a range of systems to address mental health needs to foster rehabilitation and reduce recidivism (Kim, Losen, & Hewitt, 2010).

### Adverse Experiences among Court-Involved Youth

As expected, these court-involved youth demonstrated substantial burdens of childhood adversity. Only 25.1% of the sample reported no form of childhood maltreatment; almost 10% had experienced 3 or different types of maltreatment by the time of assessment. This is much higher than the rates found in the original ACEs study, in which they estimated that 48.0% of the general population reported no childhood exposures to any ACE items (Felitti et al., 1998). A recent study using a sample of low-income pediatric patients showed that only 32.8% had experienced no ACEs of any kind (Burke, Hellman, Scott, Weems, & Carrion, 2011); examining all ACE items included here showed that only 6.7% had

experienced no exposures, underscoring the heavy burden of adversity carried by court-involved youth. The results of the current study strengthen the epidemiologic case that court-involved youth who enter the system are more likely to have experienced adverse childhood experiences compared to their uninvolved counterparts (Baglivio et al., 2014; Dierkhising et al., 2013).

Family dysfunction was also high, as hypothesized. Only 29.6% had none of the assessed experiences, and 37.9% had two or more. We assessed a wider scope of possible adverse experiences than is typically included in the ACE assessment, including the addition of physical health problems, which may confer unique difficulties to a youth population by stress associated with a hospitalized parent or poverty from a parent who is unable to work (Choi, 2011). Consistent with some pediatric adversities screening (Purewal et al., 2016), we included out-of-home placements. These experiences are of particular concern to practitioners in juvenile justice because of their negative effect on youths' behaviors and mental health (Jonson-Reid & Barth, 2000), and may serve as avenues through which youth get funneled into the juvenile justice system. Overall, these high levels of family dysfunction demonstrate that the majority of youth in our sample struggled with a disrupted and stressful home life.

It is also clear that this sample struggled with economic deprivation, with 64% endorsing one or more indicators, which provides important contextual information toward capturing chronic poverty related adversities cumulative with maltreatment and family dysfunction. Social disadvantage is not only germane to engaging in delinquency; it is an important stressor with impacts on biopsychosocial development (McBride Murry, Berkel, Gaylord-Harden, Copeland-Linder, & Nation, 2011). Economic deprivation is associated with food insecurity and the neglect of other important aspects of children's care. This can lead to both physical maldevelopment - compounded by a lack of access to medical care and nutritional and residential security - and deficits in social skills and emotional health (Jarjoura, Triplett, & Brinker, 2002). The high burden of poverty faced by youth in this sample demonstrates not only disproportionate adversity, but also home life that lacked the capacity to meet youths' basic needs. Although not commonly assessed, other research has expanded the understanding of ACEs to include poverty and other forms of strain more likely to be encountered in court-involved youth (Purewal et al., 2016; Wade, Shea, Rubin, & Wood, 2014), and found that family poverty can be one of the most stressful experiences based on youth report.

### **ACEs and Mental Health Problems**

Childhood maltreatment and family dysfunction showed positive relations with the three mental health problem indicators, as expected. The strength of the association between childhood maltreatment on mental health indicators aligns with a longitudinal relationship between ACEs and depressive symptoms in a previous study of the general US population (Schilling et al, 2007). Further, the increase in odds of having a mental health problem with each increase in childhood maltreatment is similar to what a recent study found with a general population of adults in Iowa (Downey, Gudmunson, Pang, & Lee, 2017). However, social disadvantage had an inverse relation with both mental health problems and suicidality.

This unexpected finding may be in part a function of the way mental health is commonly assessed in juvenile court setting. In this assessment, probation officers talk with youth and their families about any mental health diagnoses that the youth have formally received, including whether youth have received mental health treatment. However, this assumes that all youth have equitable access to assessment and treatment, which is a fundamentally flawed assumption. Socially disadvantaged youth are less likely to receive mental health assessments, particularly minority youth or those without health insurance (Kataoka, Zhang, & Wells, 2002). This finding does not, in our view, indicate that youth from impoverished backgrounds are less likely to have mental health problems, but rather that those problems are less likely to be identified or impact dimensions other than what is assessed here. Unfortunately, available data makes confirmation difficult, as this tool does not directly assess clinical symptomology of psychopathology. However, the significant findings with respect to coping resources (discussed in more detail below) provide tentative support for underreporting of diagnoses, rather than a lack of impairment.

The full models demonstrated support for the importance of multi-form adversity in explaining mental health problems. Although few of the demographic factors demonstrated significance, two merit noting. First, females were more likely, net of other factors, to report suicide ideation. This is congruent with findings that girls in the juvenile justice system are more likely to demonstrate mental health problems compared to boys (Cauffman, Lexcen, Goldweber, Shulman, & Grisso, 2007; Teplin et al., 2002), and more likely to report suicide ideation (Abram et al., 2008). Additionally, racial minority groups in each model were significantly less likely than Caucasian youth to report assessed mental health problems, net of other factors. This initially surprising factor may also be explained by the underutilization of mental health services by minorities (Garland et al., 2005), which is often attributable to stigma, income, or other barriers to access. This finding bolsters previous research suggesting that low minority access of mental health services is a serious public health concern.

The pattern of ACE scales effects were relatively consistent across the three outcomes, with childhood maltreatment making a strong independent contribution. Although this may suggest that childhood maltreatment has a stronger net contribution to explaining mental health outcomes (Schilling et al., 2007), other ACEs carry detrimental effects. Importantly, these experiences rarely happen in isolation and carry a cumulative level of impact (Baglivio & Epps, 2015). Thus, examining youth's experiences broadly provides insight into multiple pathways through which different forms of adversity carry effect. Childhood maltreatment has been found particularly detrimental to mental health, and may reflect environments in which youth are exposed to other forms of adversity not assessed here, such as community violence (Finkelhor, Ormrod, & Turner, 2007).

### **ACEs and Coping Resources**

Childhood adversity is theorized to impact physical and mental health via biological stress pathways and neurological dysregulation that are strongly related to socioeconomics (Turner, Thomas, & Brown, 2016). An important corollary to this is that the mechanisms may be interrupted by protective capacities to reduce stress and improve emotional

regulation. The three coping resources examined in this study - impulse control, aspirations, and social support - all demonstrated significant bivariate associations with all three ACE scales in the direction and relative size seen in previous studies (Lovallo et al., 2013; Mc Elroy & Hevey, 2014). The results are consistent with prior findings that impairment resulting from maltreatment and related toxic stressors can be ameliorated by malleable factors such as impulse control and fostering aspirational traits such as goal setting skills, optimism, and self-efficacy beliefs.

Poor impulse control has long been viewed as a likely contributor to delinquent behaviors (Hirschfield, Maschi, White, Traub, & Loeber, 2006), and recent research linking adversity with impairment of neurological mechanisms of self-regulation provides insight into the mechanism of action. Briefly, chronic or severe adversity in childhood can disrupt the neural systems in charge of stress responses, impairing an individual's ability to cope with social interactions and potential threats, predisposing them to behave aggressively (Shonkoff et al., 2012), which aligns with GST theorizing. Although the one significant interaction was not evident after probing, impulse control had strong independent effects in all models. Congruent with this, recent research supports interventions that target self-control as a method to reduce delinquency (Piquero, Jennings, Farrington, Diamond, & Gonzalez, 2016).

In our study, youth aspirations made significant independent contributions to all three mental health indicators, and moderated the relations between family dysfunction and social disadvantage when mental health interfered with probation work. Lowered aspirations may have direct, immediate impacts to both delinquency and mental health difficulties. First, lower aspirations lead individuals to have shorter time horizons in decision-making and display greater temporal discounting (Joshi & Fast, 2013). That is, they discount delays in reward much more steeply than those with high aspirations - they are less willing (and perhaps able) to wait for the same reward. This impacts long-term decisions such as financial planning and health-promoting behaviors, but also leads to greater risk-taking and attraction to promise of immediate gains. Mental health is then impacted through the behavioral cascade resulting from these changes - poor physical health impacts mood, anxiety, and executive control (particularly through changes in neurogenesis and other mechanisms) - and lowered aspirations often lead to depressive affect and mood disorders (Gallagher & Lopez, 2009) and undermine resilience to trauma (Tedeschi & Calhoun, 2004).

Our results at least partially support this. Figure 2 displays our finding that lowered aspirations impact mental health indicators more strongly in youth with high family dysfunction. As family dysfunction increases, increased aspects of our aspirations measure (i.e. belief in future success, optimism, and goal setting) may motivate youth to interact more constructively with probation officers. However, lowered aspirations appear to impact mental health indicators more strongly in youth with low social disadvantage (Figures 1 & 2). Individuals with lower aspirations are more likely to have higher social disadvantage our sample (Table 2), so individuals who are both low in social disadvantage and low in aspirations may differ more strongly from most of the same-age peers with whom they interact. This may increase distress experienced from lowered aspirations. Previous research has pointed to the importance of local inequalities in determining mental health (e.g. Riva, Bambra, Curtis, & Gauvin, 2011), and perhaps our measure of aspirations is acting similarly.

Further, the individual parts of our aspirations measure (i.e. belief in future success, optimism, and goal setting) may manifest in ways that factor strongly in a mental health diagnosis. In this way, differences in access to mental health professionals would be reflected more strongly in individuals with low aspirations as opposed to high aspirations. Unfortunately, we do not have the data to parse through these explanations, but, taken together, these results highlight the protective aspects of higher aspirations among these youth.

Social support is widely viewed as one of the more consistent buffers of adversity across a variety of outcomes, including both delinquency and mental health problems (Chu, Saucier, & Hafner, 2010; Hill, Kaplan, French, & Johnson, 2010; Wang & Eccles, 2012). Our study found that social support was significantly associated with ACEs and mental health problems at both the bi- and multivariate levels. The relationship between mental health problem indicators and social support is similar to the range of effect sizes reported by Chu and colleagues (2010). It was a significant moderator of the relation between childhood maltreatment and suicide ideation. Social support is complicated with delinquent youth wherein antisocial peer support may lead to recidivism (Martinez & Abrams, 2013). However, prosocial support by peers and adults is an important target for reducing youth distress and improving regulatory capacity. Indeed, accumulating research suggests that adolescents' support is crucial to reduce delinquency and improve functioning following adverse experiences (Kort-Butler, 2010).

### Limitations

A primary limitation of this study involves measurement constraints. The indicators of mental health problems, for example, do not include directly assessed symptomology. However, the indicators used do tap important clinical parameters, including receiving a mental health diagnosis, suicidality, and challenges to working relationships with court personnel. Even with these limitations these findings are coherent, consistent with prior research, and suggest the value of using system data, routinely collected at baseline, to guide early prevention-oriented services. This aligns with calls for fuller use of administrative data toward providing "practical strategies" to address youth maltreatment and related problems, and for developing theory (Putnam-Hornstein, Needell, & Rhodes, 2013). Our findings also argue the value of strengthening assessment of mental health, such as symptomology, which may be particularly helpful for youth with diminished access to clinical assessments and treatment. Although system data often lack a theorized base or the benefit of multi-item scaling, our findings encourage use of assessment tools applied in many juvenile justice jurisdictions that assess ACEs as a beginning point in linking early adversity with youth mental health and protective resources that might be strengthened to support resilience.

An additional limitation is the nature of the sample. These youth are from a western US district, which raises questions as to representativeness of other areas of the country. However, this district is diverse in respect to both race/ethnicity and socioeconomic characteristics. For example, 60% of juveniles are labeled Caucasian and 25.8% African-American, which places the district between the extremes found between states like Maine and Mississippi with about 90% Caucasian and 45% African-American, respectively



(Sickmund & Puzzanchera, 2014). The county includes a mid-size metropolitan city, Native American reservations, and some fairly rural conditions. Thus, the sample is better reflective of the diversity found in the United States than many other single jurisdiction samples might be.

Finally, as this is a cross-sectional sample, we do not have longitudinal data to verify temporal relations among variables nor the ability to verify some aspects of reported ACEs. Studies have shown, however, that recall is excellent for youth reporting childhood maltreatment and adversity, and that self-report is consistent with substantiated system records in analyses (Smith & Thornberry, 1995). Additionally, some of the adversities assessed for childhood are likely to be ongoing. Although the measurement may limit the certainty of prevalence and causal relations, findings to date suggest that linear relations tend to be robust to these limitations (Baglivio, Wolff, Piquero, & Epps, 2015; Hardt, Vellaisamy, & Schoon, 2010; Yancura & Aldwin, 2009). As a final note, it is important to acknowledge that our sample size is large, meaning that small effect sizes may emerge as significant. For this reason, we have provided detailed information from our results (i.e., unstandardized and standardized betas in addition to odds ratios), so that the reader can accurately assess the clinical importance of each finding.

## Conclusions and Implications

This study adds to a growing body of literature demonstrating both significant mental health challenges and burdens of childhood adversity among juvenile justice-involved youth. A significant implication of the present research, however, is that commonly used assessment tools may miss mental health problems among economically disadvantaged youth by asking specifically about mental health diagnoses rather than symptoms. To better identify these youth, a clinical tool that identifies symptomology should be added to initial assessment. The Massachusetts Youth Screening Instrument (MAYSI-2) is a particularly well-suited tool because of the inclusion of questions concerning traumatic experiences. This initial processing has been identified as a critical opportunity for assessment for these vulnerable youth (Skowyra & Coccozza, 2007).

Despite these circumstances, delinquent youth with psychopathology are typically under-treated, due largely to the lack of resources and limited understanding of which environmental factors increase their risk for developing mental health difficulties (Kinner et al., 2014). Expanding our understanding of these risk factors in juvenile offenders will improve allocation of mental health resources, prevention-based mental health care strategies for social workers and communities, and general insight into why individuals become involved in delinquent behavior. Furthermore, self-regulatory mental health precursors, such as poor impulse management, play key roles in shaping system-involved youths' stress response profiles, including behaviors that require effortful control. Understanding the associations between these symptoms and developmental environments can potentially elucidate pathways between early adversity and delinquency and the negative developmental cascades caused by their co-occurrence.

Once identified, court-involved youth need services that can address mental health issues that stem from childhood adversity. At present, research suggests that these needs are not well met, perhaps especially among youth on probation (Shufelt & Coccozza, 2006). Fortunately, evidence based programs do exist. However, their implementation requires that governmental resources be invested in programming. Although some states have taken steps to meet these needs, others still lag (Skowrya & Coccozza, 2007). As research accumulates that demonstrates the high burden of adversities among court- involved youth, the resulting mental health problems they face, and potential targets for intervention such as impulse control and a positive outlook, more programming will be put in place to improve outcomes.

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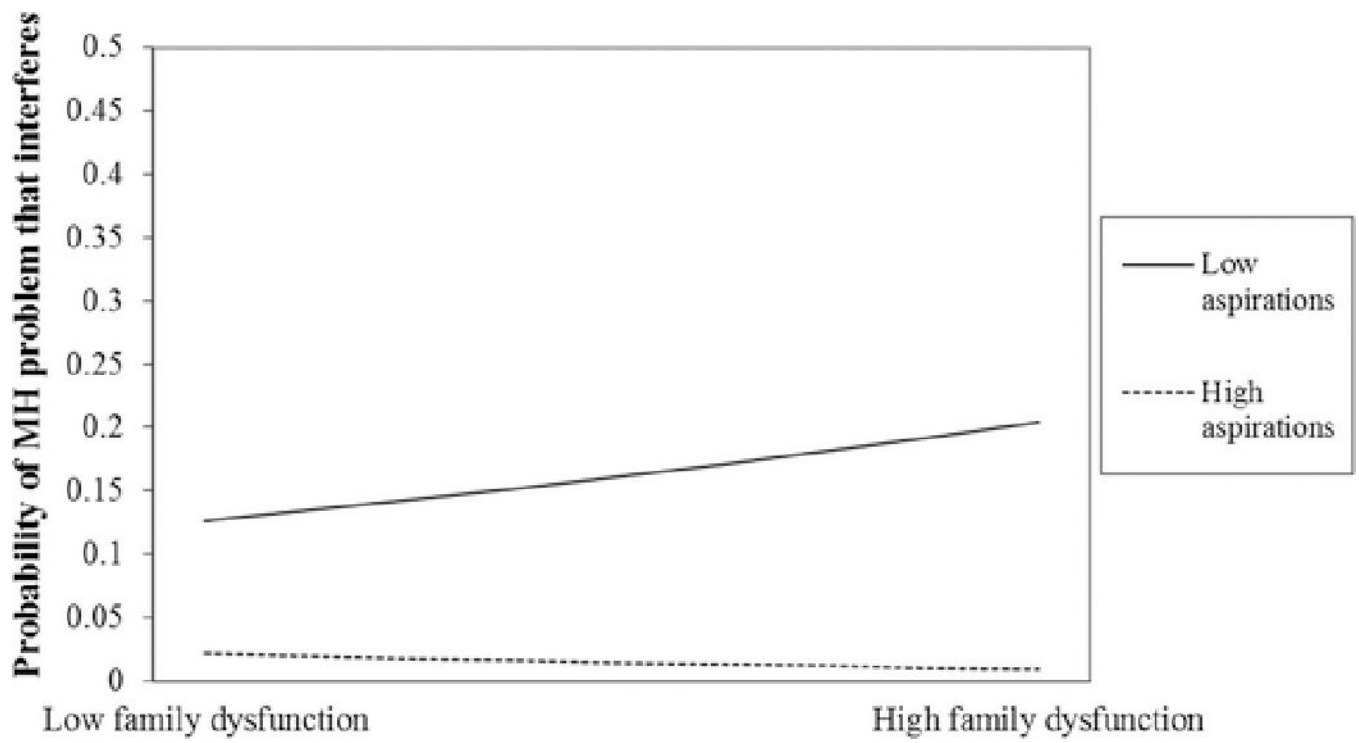
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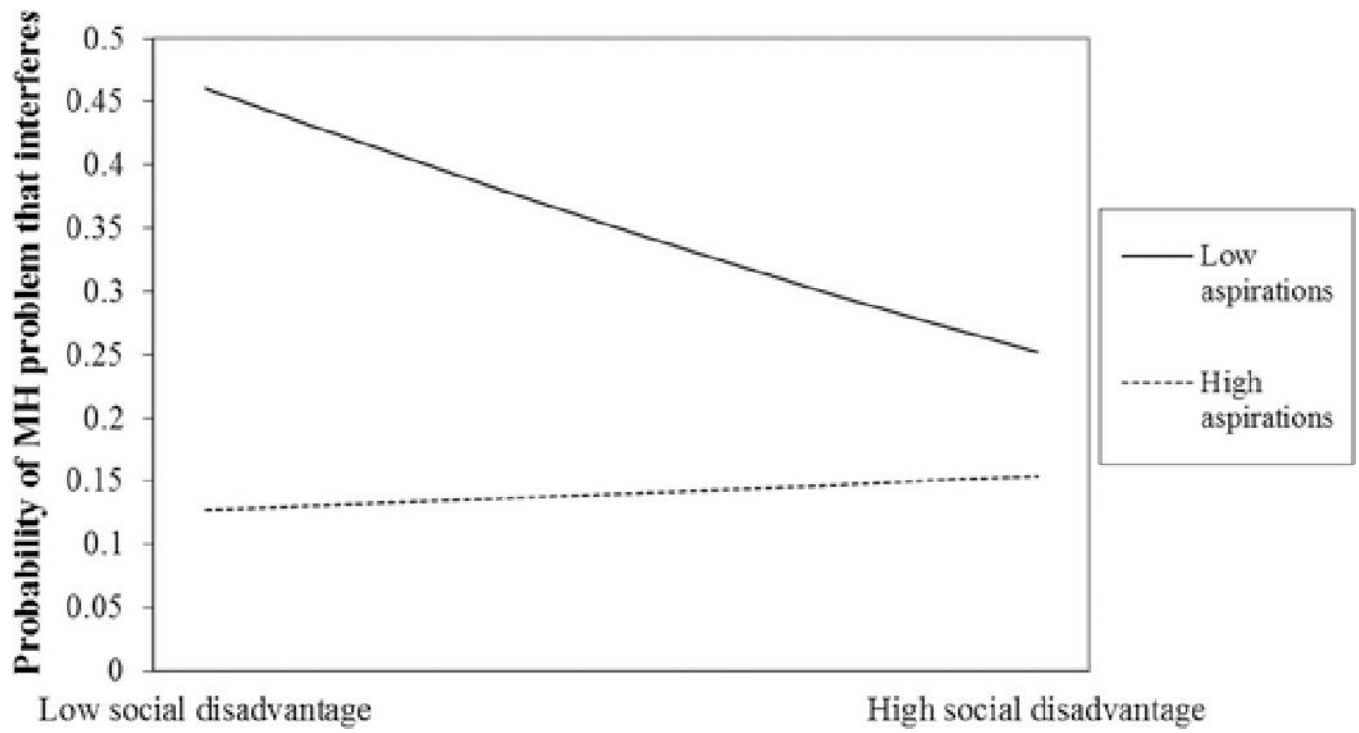
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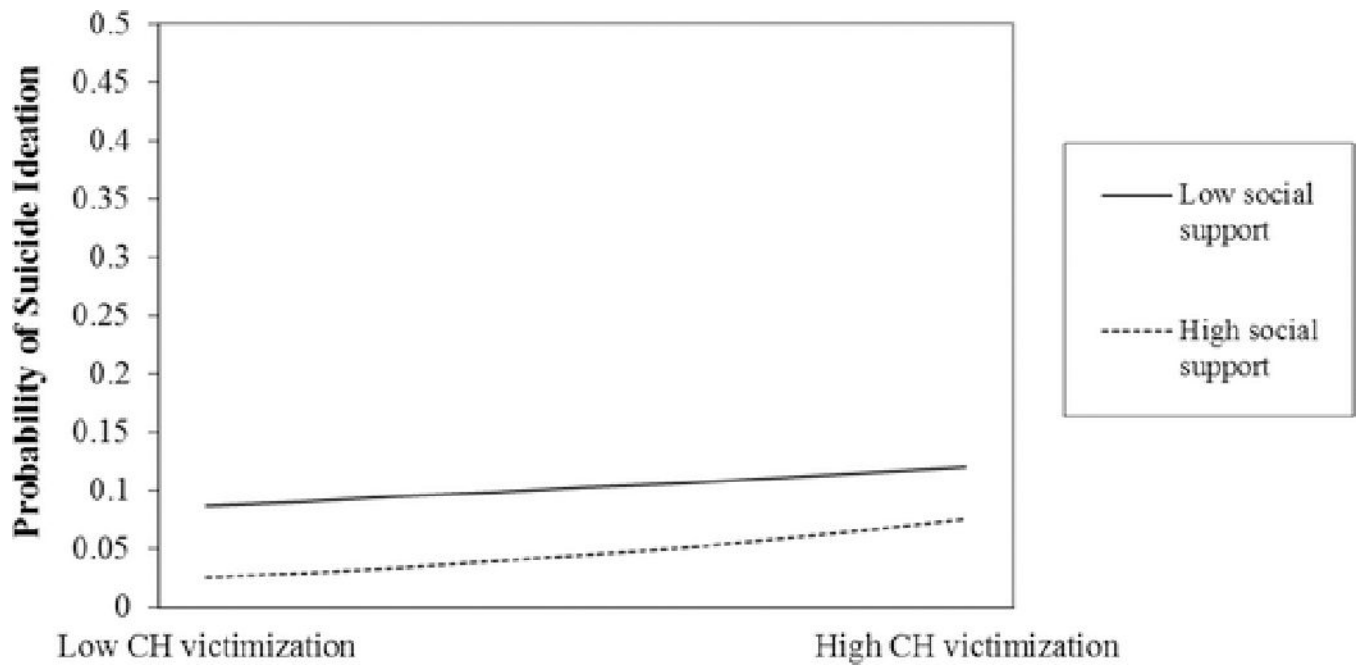


**Figure 1.** Plot of interaction between family dysfunction and aspirations, predicting having a mental health problem that interferes with probation.





**Figure 2.** Plot of interaction between social disadvantage and aspirations, predicting having a mental health problem that interferes with probation.



**Figure 3.** Plot of interaction between childhood victimization and social support, predicting having suicide ideation.

**Table 1**

Count of exposures for Adverse Childhood Experiences - frequency (percentage)

	Number of Exposures			
	0	1	2	3
Maltreatment	1351 (25.1%)	2356 (43.8%)	1124 (20.9%)	547 (10.2%)
Family dysfunction	1592 (29.6%)	1749 (32.5%)	1098 (20.4%)	939 (17.5%)
Social disadvantage	1933 (35.9%)	2002 (37.2%)	989 (18.4%)	454 (8.4%)

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Table 2

Correlations between ACE scales and coping factors

	1	2	3	4	5	6	7	8
1. Mental health problem								
2. MH problem interferes	0.450***							
3. Suicide ideation	0.433***	0.256***						
4. Maltreatment	0.256***	0.178***	0.151***					
5. Family dysfunction	0.087***	0.062***	0.034***	0.336***				
6. Social disadvantage	-0.049***	-0.007***	-0.031*	0.157***	0.373***			
7. Impulse control	-0.174***	-0.164***	-0.097*	-0.226***	-0.132***	-0.169***		
8. Aspirations	-0.159***	-0.193***	-0.209***	-0.209***	-0.128***	-0.161***	0.504***	
9. Social support	-0.205***	-0.225***	-0.078***	-0.138***	-0.079***	-0.035*	0.089***	0.126***

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$ .

**Table 3**  
 Regressions (ORs) using ACEs and coping factors to explain mental health outcomes

	Mental Health Problem			Mental Health Problem Interferes with Probation			Suicide Ideation		
	B (SE)	B	OR (sig)	B (SE)	B	OR (sig)	B (SE)	B	OR (sig)
Age	-0.049 (0.024)	-0.092	0.952 <sup>*</sup>	0.005 (0.042)	-0.015	1.005	0.027 (0.043)	0.022	1.027
Gender	-0.080 (0.083)	-0.031	0.924	0.195 (0.149)	0.041	1.099	-0.381 (0.135)	-0.160	0.683 <sup>**</sup>
Black	-0.889 (0.089)	-0.381	0.411 <sup>***</sup>	-0.886 (0.173)	-0.383	0.412 <sup>***</sup>	-0.893 (0.173)	-0.386	0.409 <sup>***</sup>
Latino	-0.66 (0.235)	0.112	0.407 <sup>***</sup>	-0.072 (0.486)	0.019	0.358 <sup>***</sup>	-0.093 (0.504)	0.024	1.10
Other race	-1.365 (0.169)	-0.481	0.255 <sup>***</sup>	-1.198 (0.324)	-0.389	0.333 <sup>***</sup>	-1.225 (0.332)	-0.433	0.294 <sup>***</sup>
Maltreatment	0.477 (0.040)	0.481	1.612 <sup>***</sup>	0.463 (0.065)	0.467	1.589 <sup>***</sup>	0.449 (0.064)	0.451	1.567 <sup>***</sup>
Social disadvantage	-0.285 (0.042)	-0.264	0.752 <sup>***</sup>	-0.295 (0.074)	-0.278	0.745 <sup>***</sup>	-0.289 (0.075)	-0.271	0.749 <sup>***</sup>
Family dysfunction	0.040 (0.031)	0.049	1.041	0.017 (0.054)	0.021	1.017	-0.037 (0.055)	-0.046	0.964
Impulse control	-0.451 (0.062)	-0.200	0.637 <sup>***</sup>	-0.678 (0.120)	-0.357	0.507 <sup>***</sup>	-0.398 (0.112)	-0.175	0.672 <sup>***</sup>
Aspirations	-0.160 (0.051)	-0.175	0.852 <sup>**</sup>	-0.561 (0.086)	-0.478	0.571 <sup>***</sup>	-0.365 (0.086)	-0.325	0.694 <sup>***</sup>
Social support	-0.610 (0.069)	-0.286	0.544 <sup>***</sup>	-0.778 (0.074)	-0.369	0.459 <sup>***</sup>	-0.234 (0.101)	-0.113	0.791 <sup>*</sup>
Classification		75.9%			93.6%			93.8%	
Nagelkerke R <sup>2</sup>		0.208			0.220			0.124	

<sup>a</sup>Female = 1, Male = 2. Racial referent group = Caucasian.

\* *p* .05,

\*\* *p* .01,

\*\*\* *p* .001.

**Table 4**  
Regression-Based Tests of Moderation: Coping Factors with ACEs on Mental Health

	Mental Health				Mental Health				Suicide	
	Problem				Interferes with Probation				Ideation	
	B (SE)	B	OR (sig)	B (SE)	B	OR (sig)	B (SE)	B	OR (sig)	
<b>Impulse Control:</b>										
Impulse control main effects	0.532 (0.040)	-0.421	0.548***	-1.077 (0.174)	-0.755	0.341***	-0.620 (0.155)	-0.434	0.538***	
Maltreatment	0.143 (0.054)	0.517	1.702***	0.582 (0.070)	0.566	1.790***	0.476 (0.066)	0.463	1.609***	
Impulse control * Maltreatment	0.143 (0.054)	0.142	1.153**	0.122 (0.098)	0.121	1.129	-0.030 (0.091)	-0.303	0.971	
Family Dysfunction	0.039 (0.032)	0.048	1.039	0.005 (0.063)	0.007	1.005	-0.015 (0.058)	-0.018	0.985	
Impulse control * Dysfunction	-0.036 (0.048)	-0.43	0.965	-0.066 (0.094)	-0.080	0.936	0.083 (0.088)	0.100	1.087	
Social Disadvantage	-0.290 (0.044)	-0.273	0.748***	-0.275 (0.089)	-0.259	0.760**	-0.284 (0.083)	-0.268	0.753***	
Impulse control * Disadvantage	-0.101 (0.065)	-0.091	0.904	-0.059 (0.130)	-0.053	0.943	-0.075 (0.377)	-0.068	0.928	
<b>Aspirations:</b>										
Aspirations main effects	-0.388 (0.084)	-0.303	0.678***	-0.812 (0.149)	-0.634	0.444***	-0.627 (0.146)	-0.490	0.534***	
Maltreatment	0.534 (0.039)	0.519	1.706***	0.591 (0.071)	0.575	1.806***	0.512 (0.066)	0.498	1.669***	
Aspirations * Maltreatment	0.042 (0.046)	0.054	1.043	0.076 (0.074)	0.096	1.079	0.086 (0.073)	0.109	1.090	
Family Dysfunction	0.038 (0.031)	0.047	1.039	-0.110 (0.065)	-0.135	0.896	-0.029 (0.059)	-0.036	0.971	
Aspirations * Dysfunction	-0.036 (0.038)	-0.054	0.964	-0.260 (0.065)	-0.385	0.771***	0.023 (0.065)	0.034	1.023	
Social Disadvantage	-0.258 (0.042)	-0.243	0.773***	-0.130 (0.083)	-0.123	0.878	-0.300 (0.083)	-0.283	0.741***	
Aspirations * Disadvantage	0.021 (0.051)	0.023	1.021	0.276 (0.091)	0.304	1.318**	-0.072 (0.090)	-0.079	0.931	
<b>Social Support:</b>										
Social support main effects	-0.742 (0.132)	-0.349	0.476***	-1.119 (0.161)	-0.526	0.327***	-0.680 (0.195)	-0.320	0.506***	
Maltreatment	0.600 (0.135)	0.584	1.823***	0.440 (0.137)	0.428	1.553***	0.182 (0.173)	0.176	1.199	
Social support * Maltreatment	-0.033 (0.072)	-0.062	0.968	0.075 (0.078)	0.142	1.078	0.198 (0.094)	0.375	1.220*	
Family Dysfunction	-0.078 (0.117)	-0.097	0.925	-0.173 (0.129)	-0.214	0.841	-0.118 (0.169)	-0.146	0.889	
Social support * Dysfunction	-0.301 (0.151)	0.155	1.066	0.115 (0.072)	0.278	1.122	0.043 (0.090)	0.105	1.044	
Social Disadvantage	-0.301 (0.151)	-0.283	0.740*	-0.088 (0.164)	-0.083	0.916	-0.111 (0.217)	-0.105	0.895	

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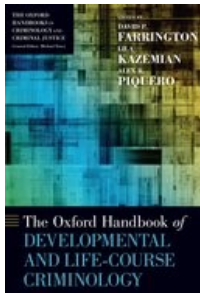
Impulse Control:	Mental Health Problem			Mental Health Interferes with Probation			Suicide Ideation		
	B (SE)	B	OR (sig)	B (SE)	B	OR (sig)	B (SE)	B	OR (sig)
Social support * Disadvantage	0.037 (0.080)	0.069	1.038	-0.066 (0.094)	-0.122	0.936	-0.066 (0.321)	-0.123	0.936

Note: Regressions control for all demographics.

\*  $p$  .05

\*\*  $p$  .01

\*\*\*  $p$  .001



## The Oxford Handbook of Developmental and Life-Course Criminology

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### CHAPTER

## 9 The Developmental Taxonomy

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### Abstract

This chapter considers whether the peak in the age–crime curve is a function of active offenders committing more crime during adolescence or a function of more individuals actively offending in the peak years. It discusses the two main and most empirically tested typological groupings: the life-course persistent group and the adolescence limited group. The chapter then reviews the evidence on a theoretically interesting grouping: those who abstain from antisocial and offending behavior. It focuses on the debate regarding whether those who were originally thought to recover from early-onset antisocial behavior have childhood-limited antisocial behavior or exhibit low-level chronic antisocial behavior across the life course. Finally, the chapter discusses how the theory it introduces accounts for adult-onset offending and considers whether there are gender differences that need to be accounted for by the theory.

**Keywords:** [age–crime curve](#), [age](#), [antisocial behavior](#), [life-course persistent group](#), [adolescence-limited group](#), [adult-onset offending](#)

**Subject:** [Criminology and Criminal Justice](#)

**Series:** [Oxford Handbooks](#)

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THE relationship between age and crime was observed in the early 1800s by Quetelet (1833). Since then many researchers studying the relationship between age and crime have observed that the aggregate pattern is such that criminal activity tends to peak in the late teens and declines throughout adulthood. Therefore, age is inversely related to criminality with younger people being more likely to be involved in crime. The observed relationship between age and crime raises, however, the question of whether the peak in the age–crime curve is a function of active offenders committing more crime during adolescence or a function of more individuals actively offending in the peak years?

Moffitt’s theory (Moffitt 1993; Moffitt et al. 1996; Moffitt 2006; Moffitt 2018) is an assimilation of two “robust but incongruous facts about age and antisocial behavior” (Moffitt 1994, p. 3). These are that research shows a strong continuity of antisocial behavior over time and that there is a huge peak in



delinquency and offending during adolescence. Moffitt considers that these two observations represent two very different groups of people. In the original conceptualization of the taxonomy (Moffitt 1993), the first is a group of people that exhibit a persistence of antisocial behaviors in one way or another at every stage of life, whereas the other is a group of individuals that only exhibit antisocial behaviors temporarily during adolescence. This led to the development of two theoretical explanations to account for continuity and discontinuity of individuals' antisocial behavior: the life-course persistent (LCP) and adolescence-limited (AL) models. The theory fits with Patterson et al. (1989) idea of early and late starters, but it expands considerably on this idea to include groups of those who are never antisocial (abstainers) and those who start out with antisocial behavior in childhood but desist by adolescence (low-level chronic). Given that the model is based on data representative of the general population, it also includes a group of individuals who do not meet the criteria for the other groups (unclassified).

p. 150 The organization of this chapter is as follows. Sections I to IV include descriptions of some of the main groupings in Moffitt's typology. The two main and most empirically tested typological groupings, the life-course persistent group and the adolescence-limited group, are discussed in Sections I and II, respectively. Section III includes a review of the evidence on a theoretically interesting grouping—those who abstain from antisocial and offending behavior. The debate regarding whether those who were originally thought to recover from early-onset antisocial behavior have childhood-limited antisocial behavior or exhibit low-level chronic antisocial behavior across the life course is the focus of Section IV. Section V discusses how the theory accounts for adult-onset offending, and Section VI considers whether there are gender differences that need to be accounted for by the theory.

## I. Life-Course persistent Antisocial Behavior

---

Life-course persistent (LCP) behavior is characterized by stability and continuity through varying manifestations of antisocial behavior across time, for example, “biting and hitting at four, shoplifting and truancy at ten, selling drugs and stealing cars at 16, robbery and rape at 22, and fraud and child abuse at 30” (Moffitt 1994, p. 12). Moffitt argues that there is also uniformity in the prevalence rates of various expressions of serious antisocial behavior, with many studies showing prevalence at around 5 to 10 percent. Longitudinal research suggests that the small proportion of people exhibiting antisocial behavior at each stage in the life course are actually the same group of life-course persistent people (Moffitt 1994, p.11). The 1993 taxonomy described life-course persistent offenders as those whose crimes persist well past the normative age of desistance, but how far into the life course such offenders continue antisocial activities is unclear. Some studies emphasize capacity for reform in old age (Laub and Sampson 2003), others emphasize antisocial acts by elderly individuals (Blokland, Nagin, and Nieuwebeerta 2005), but data are sparse because few cohorts have been followed beyond mid-life.

The first step in the life-course persistent trajectory, according to Moffitt's theory, is inherited or acquired neuropsychological deficits. Neuropsychological deficits can be acquired via a range of mechanisms including the absence of breastfeeding (Rogan and Gladen 1993; Golding, Rogers, and Emmett 1997; Quinn et al. 2001), pregnancy/birth problems (Arseneault et al. 2002), and maternal smoking (Raine 2002) and alcohol consumption (Streissguth et al. 1989) during pregnancy.

Moffitt cites research demonstrating that even minor neuropsychological deficits can result in a myriad of developmental problems that may contribute to dysfunctional parent-child relationships in even the most loving families (Moffitt 1994, p.15). Neuropsychological damage also leads to poor language development and self-control behaviors, and Moffitt (1994) observes that the link between verbal impairment and antisocial outcomes is one of the largest and most robust effects in the study of antisocial behavior.

p. 151 It is proposed that children with such deficits induce a series of failed parent–child interactions and that their difficult temperament contributes to a socialization environment that seems to exacerbate their difficulties (Moffitt 1994, p. 20). Over the life course a series of failed interactions leads to a growing repertoire of antisocial behaviors, and as the individual has learned few prosocial behaviors, the options for change are few (Moffitt 1993, p. 683). These individuals are more likely to be rejected by both adults and peers and as a result may withdraw or strike out preemptively, causing further social isolation.

Persistence of this antisocial behavior is perpetuated by the interaction between individuals' traits and the environmental reactions to them. Any opportunities for change in this cycle are often transformed into opportunities for continuity in antisocial behavior. These individuals, whose behavior consists of pathological antisocial behavior across the life course, are quite distinct from those whose behavior is short term and situational (Moffitt 1994, p. 29). It is this phenomenon, with antisocial behavior that is limited predominantly to the teen years, that Moffitt refers to as adolescence–limited antisocial behavior (1993, p. 676).

## II. Adolescence-Limited Antisocial Behavior

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To demonstrate this short–term antisocial behavior, Moffitt (1993, p. 676) cites English and American research that demonstrates that the huge peak in the rate of offenses in adolescence is due to an increase in prevalence of offenders rather than an increase in the rate of offending. The behavior of adolescents in this category is characterized by discontinuity, having never been antisocial during their childhood and being unlikely to remain antisocial into their adulthood (Moffitt 1993, p. 685). The decreasing age of biological maturity and increasing age of social maturity is responsible for adolescence–limited antisocial behavior.

A “maturity gap” is the result, with adolescents becoming “chronological hostages of a time warp between biological age and social age” (Moffitt 1994, p. 31). Consequently, adolescents trapped in the maturity gap are denied access to mature status, whereas the life–course persistent antisocial adolescents will be perceived as having attained maturity. The life–course persistent individuals will possibly have their own small business in the underground economy, have fathered or mothered children, and appear to be free of their family of origin (Moffitt 1994, p. 28). The mechanism then, through which previously non–antisocial adolescents become antisocial is through a process of social mimicry. The life–course persistent antisocial individuals are viewed by other teens as having access to a precious resource: mature status and the adolescence–limited individuals mimic their behaviors in an attempt to achieve this status.

p. 152 According to the theory, once adolescence–limited individuals have reached a stage where they can access legitimate forms of responsibility, for example, through marriage or entering the workforce, their antisocial behavior will cease. For them, the cost of antisocial behavior becomes too high and they will revert back to the prosocial behavior skills learned early in life. (Life–course persistent individuals, on the other hand, will use opportunities such as marriage or employment as new opportunities for antisocial behavior.) There is some evidence to suggest that this adolescence–onset group of individuals also has high levels of internalizing problems and life stress that may prevent this (Aguilar et al. 2000). There is a small number of adolescence–limited individuals who became trapped in a snare such as a drug addiction, imprisonment, teenage pregnancy, and/or interrupted education, which increases the likelihood of maintaining antisocial behavior across the life course (Moffitt 1993, p. 61). Empirical testing of this concept has shown that one–third of individuals identified as having an adolescent onset of antisocial behavior persisted with this antisocial behavior as young adults and that this continuity can in part be attributed to experiencing snares (McGee et al. 2015). Moreover, when the taxonomy was written, studied cohorts showed desistance by their early twenties, and thus the group was named “adolescence–limited,” but contemporary cohorts are

desisting older, possibly because signs of adulthood such as marriage, children, and independent living are now delayed until the thirties.

### III. Abstainers

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Moffitt (1996) recognizes that these theories of development would seem to indicate that every adolescent will engage in delinquency, and many self-report studies indicate that most adolescents do participate in some delinquent activities (Moffitt et al. 1996, 2001; Prior et al. 2000; Bor, McGee, and Fagan 2004). In spite of this, there are some individuals who refrain from delinquent behavior entirely. These individuals are categorized in Moffitt's typology as abstainers. She proposes that abstaining from antisocial behavior may be a result of pathological characteristics that exclude an individual from peer networks; skipping the maturity gap, through late puberty or early initiation into adult roles; or a lack of opportunities for social mimicry (Moffitt 1993, p. 695). However, analyses of the National Longitudinal Survey of Youth found that the abstainers were not depressed and had prosocial peers (Piquero, Brezina, and Turner 2005). Moffitt and colleagues' (2002) own analyses of the Dunedin data showed that although they were awkward in their teenage years, they grew into successful adults (age 26)—settling into marriage, well educated, with good jobs. Recent research by Mercer and colleagues (2016) somewhat reconciles these disparate findings using data from the Cambridge Study in Delinquent Development. They identified two different types of abstainers: those who are adaptive and characterized by high honesty and those who are maladaptive characterized by low popularity and low school achievement.

p. 153

### IV. Childhood-Limited Aggression or Low-Level Chronic (Formerly Recovery)

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Studies that followed participants only through childhood reported that some children with early-onset antisocial behavior seemed to recover, but now that studies have followed cohorts longer, these childhood recoveries can be observed to reappear in offending data as adults. Thus, another group of adolescents embedded in Moffitt's theory (2006) is the low-level chronic group (formerly identified as "recoveries"; Moffitt et al. 1996). This group (and the abstainer group) are of interest because they may hold the key to prevention (Moffitt et al. 1996, p. 402). Those categorized as low-level chronic are the individuals who seem to start on the life-course persistent trajectory during childhood and then by adolescence "have apparently spontaneously recovered" (Moffitt et al. 1996, p. 402). These individuals are not entirely free of conduct disorder in their teens, but they have not followed the predicted outcome. That is, they fail to make the criterion for serious self-reported delinquency and they have not had involvement in the justice system. The original theory offers little explanation of the causes of this outcome, and it is noted that these high-risk individuals need to be further researched to determine why they have outcomes that are less extreme than expected (Moffitt et al. 1996, p. 419).

In Moffitt's (2006) review of her theory, in light of the limited research conducted on the desistence in adolescence from early-onset antisocial behavior (Raine et al. 2005; Moffitt 2006), she argued that the term "recovery" was a misnomer. Instead she noted that those who were initially identified as having recovered actually show a pattern of persistence when examined in adulthood and argues that a more appropriate name for this group is "low-level chronic" (Moffitt 2006). The identification of a group with persistent but lower-level antisocial behavior is consistent with the findings of other studies (Nagin, Farrington, and Moffitt 1995; D'Unger et al. 1998; Fergusson, Horwood, and Nagin 2000). Some research suggests that most individuals first convicted as adults (adult-onset offenders) have childhood histories of antisocial behavior and risk factors characteristic of recoveries/low-level chronics (Beckley et al. 2016).

While Moffitt's reconsideration of her theory suggests that examining those individuals with an early onset of antisocial behavior in hope of finding recovery is futile, it is important to note that even within her data she found some individuals had truly recovered in adulthood (Moffitt 2006). While it was only a small proportion, she found that 15 percent of those in the recovery (low-level chronic) group were free of adjustment problems at age 26 (Moffitt 2006). As Wilson (1991) has highlighted, desisters can be found among even the most troubled youth, and predictors of this process are best studied from conception onward. Indeed, Veenstra and his colleagues (2009) have shown that recovery from antisocial behavior is possible and is accompanied by an absence of academic failure, peer rejection, and internalizing problems.

## V. How Does the Theory Account for Adult-Onset Offending?

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Two different explanations of adult-onset offending are embedded within Moffitt's (2006) theory, but it should be noted that these explanations would only apply to adult-onset offending that *was identified using official records*, with the assumption that there was prior offending that for some reason did not come to the attention of the criminal justice system. The first explanation, noted above, is that adult-onset offending could be the result of low-level chronic offending. The low-level chronic group (previously labeled the "recovery" group; Moffitt et al. 1996) includes individuals who are intermittent offenders from childhood through to adulthood (Moffitt 2006). Using official measures of offending, these individuals would be identified as adult-onset offenders if they were first detected by the criminal justice system as adults.

The other individuals who, within this theory, would account for those identified in analyses of official statistics as adult-onset offenders are those individuals who initially are identified as adolescence-limited self-reported offenders but who get caught in a snare (e.g. drug addiction) that prevents them from returning to the previous pro-social behaviors they learned as children (Moffitt 1993). Their ongoing offending would then lead to detection by the criminal justice system in adulthood. Within this perspective, a key question is why the childhood or adolescent offending was not detected or, alternatively, why official adult-onset offenders (who were offending previously) were not detected until adulthood.

Empirical testing has shown that adult-onset offending is sometimes an artifact of official measurement, but that adult onset offenders commit offenses that are less likely to be detected and commit different type of offenses, that require access to adult roles, compared to those who were first detected by the criminal justice system in adolescence (McGee and Farrington 2010). In examining whether a specific theory for adult offending is required, Beckley and colleagues (2016) found that, during adolescence, adult-onset offenders were more socially inhibited and had fewer delinquent peers. Once they reached adulthood, they had weaker social bonds, anticipated fewer informal sanctions, and self-reported more offenses. They conclude that existing developmental and life-course theories of crime adequately account for adult-onset offenders in existing accounts of onset and persistence.

## VI. Are There Important Gender Differences?

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p. 155 The evidence for the applicability of the theory to girls is mixed. Early research examining the pathways of females found support for a delayed adolescent-onset group of females ↪ but not the life-course persistent typology (Silverthorn and Frick 1999). One way to empirically identify different types of offenders is using latent class trajectory analysis and a review of studies using these analyses show fewer offending trajectories for female compared to samples (Piquero 2008). In contrast to earlier research, when examining females' trajectories of self-reported offending in the Pittsburgh Girls Study, researchers found a small group of high-rate, versatile offending girls who resemble the male group of life-course persistent offenders, but they did not find evidence for the adolescence-limited offenders (Ahonen et al. 2016). While the evidence shows that many of the risk factors for antisocial behavior and offending are similar for both males and females (Moffitt et al. 2001), it is clear that further research is needed on the gendered nature of developmental pathways of antisocial behavior and offending over the life course.

## VII. Summary

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Moffitt developed her theoretical perspective based on the robust yet incongruous empirical facts of the stability of antisocial behavior across the life course and the huge peak in delinquency and offending during adolescence. To explain this, she developed the life-course persistent and adolescence-limited typologies of antisocial behavior. Life-course persistent behavior is characterized by early neuropsychological damage, a history of failed social interactions, and the development of antisocial behavior at an early age. On the other hand, adolescence-limited antisocial behavior is believed to be the result of the maturity gap between biological maturity and social maturity. Adolescents are believed to overcome this maturity gap through mimicry of the behavior of the life-course persistent individual, who is viewed as already having the coveted access to the resources of social maturity.

Moffitt also states that there are individuals who abstain completely from antisocial behavior due to not experiencing the maturity gap through late onset of puberty and early onset of adult roles, possessing pathological characteristics that exclude them from peer networks, and the lack of opportunities for social mimicry. There are also individuals who begin on the life-course persistent trajectory and appear to recover by the time they reach adolescence but go on to have low-level chronic problems. This is an area that needs further research.

Empirical research tends to generally support the typologies proposed in Moffitt's theory (Kratzer and Hodgins 1999; Fergusson, Horwood, and Nagin 2000; Mazerolle et al. 2000; Moffitt et al. 2001). In addition to this, compared to other elements of the theory, very little research has been conducted into the characteristics of those individuals who abstain from antisocial and delinquent behavior and those who exhibit low-level chronic problem behavior. Overall, recent empirical tests of the background factors of both males and females generally support the proposals put forth in 1993 (for a summary see Moffitt 2006, 2018), but future research should examine the differences in gendered pathways of antisocial behavior and offending.

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# Racial Disparities in Juvenile Justice Referrals to Mental Health and Substance Abuse Services

**W**e know from recent research that juvenile justice populations frequently exhibit elevated rates of mental health and substance use disorders. To get a better understanding of how these needs are being met – and whether they are being met disproportionately by race and ethnicity – we reviewed and summarized the research literature examining referrals to mental health and substance abuse services from within the juvenile justice system.<sup>1</sup> This review was part of a larger review of research studies examining the racial and ethnic disparities that occur within the juvenile justice system at various contact points (e.g., arrest, referral to court, adjudication, secure confinement). We know that research over the past four decades on decision-making in the juvenile justice system has frequently shown evidence of racial and ethnic disparity. We also know that there are unmet mental health needs among youth in the juvenile justice system. What does the confluence of these two issues look like? The material that follows is drawn from our published article on this topic.<sup>1</sup>

## **MENTAL HEALTH NEEDS IN THE JUVENILE JUSTICE SYSTEM**

We start with the observation that youth involved in the juvenile justice system frequently exhibit elevated rates of substance use and mental health disorders. Many of the studies examining this issue have found

that over two-thirds of juvenile justice involved youth have a mental health diagnosis or need<sup>2</sup> and that over 20% have a mental health disorder that could be diagnosed as serious.<sup>3</sup> Common diagnoses include behavior disorders, conduct disorders, oppositional defiant disorders, antisocial behaviors, mood disorders, substance use disorders, anxiety disorders, and attention deficit/hyperactivity disorder. Many of these youth suffer from conditions resulting in more than one diagnosis.

Unfortunately, the juvenile justice system does not consistently and sufficiently address these mental health needs. Numerous studies have found that a large percentage of youth with mental health needs go untreated during their involvement with the juvenile justice system. For example, in her study of juvenile courts in one state, Carolyn Breda found that fewer than 4% of juvenile offenders were referred for mental health services.<sup>4</sup> Additionally, a 2005 study of youth in another state found that only 23% of youth diagnosed with a mental health disorder received any treatment.<sup>5</sup> Finally, a 2006 study of juvenile justice facilities nationally found that only 10% of youth with a severe mental health disorder received any emergency mental health services.<sup>6</sup>

## **RACIAL DISPARITIES IN THE JUVENILE JUSTICE SYSTEM**

In addition to youth with mental health needs, we also find that youth of color are overrepresented in the juvenile justice system. For example, in 2013 while the

national arrest rate for white youth was 26.0 arrests per 1,000 persons in the population, the arrest rate for African American youth was 63.6, nearly 2.5 times higher.<sup>7</sup> Typically, national data shows that once youth of color are arrested and referred to court, they subsequently go deeper into the juvenile justice system than white youth and are less likely to be diverted or given more lenient dispositions such as probation. As another example, in 2013 the residential placement rate for African American youth was 4.6 times greater than for white youth.<sup>8</sup> Although not as stark, similar patterns of disproportionate contact with the juvenile justice system exist for American Indian youth, Hispanic youth, and smaller ethnic groups.

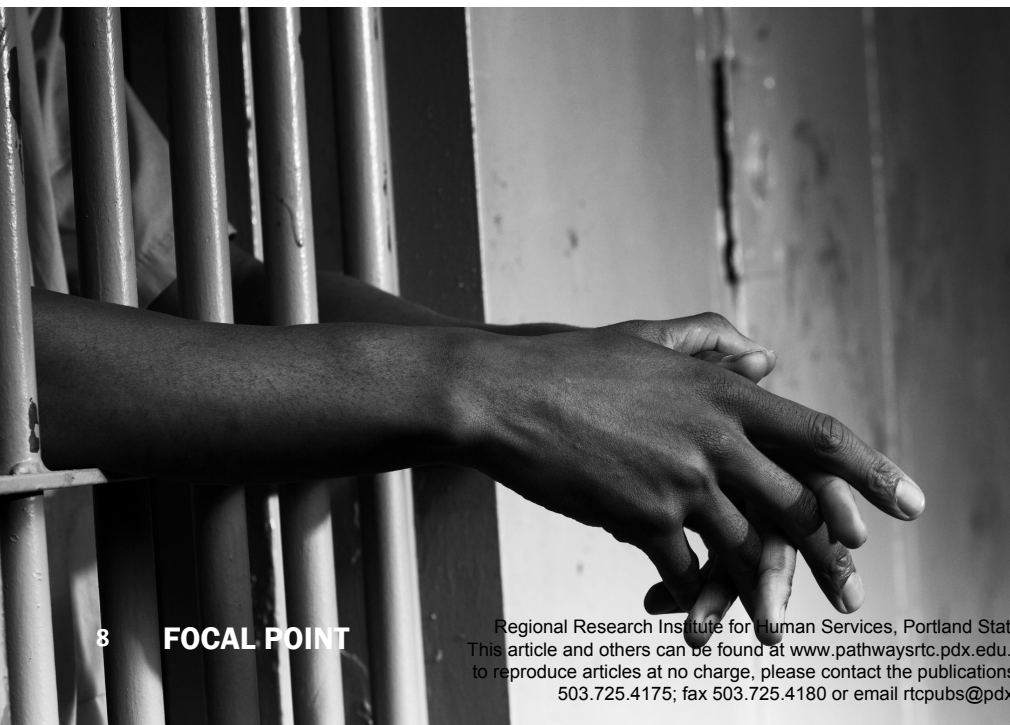
Several large-scale efforts have synthesized and analyzed the body of individual research studies on racial disparities in the juvenile justice system. Most of these studies examine whether disparities still exist after legal and extralegal factors are taken into account. In the first such study, Pope and Feyerherm identified 46 studies published between 1969 and 1989 and concluded that the majority of studies found some impact of race on decision-making.<sup>9</sup> They noted that the evidence suggested bias can occur at any stage of juvenile justice and, as minority youth progress further through the system, racial differences may accumulate and become more pronounced.

At least five subsequent reviews examined portions of the research literature between 1967 and 2014. Although each covered a slightly different set of research studies, the overall results were remarkably consistent. In the majority of well-designed research studies, racial and ethnic disparities may be found in many of the major

decision stages in the juvenile justice system and cannot be fully accounted for by differences in the behavior of the youth involved: disparities in the handling of youth far exceed any differences in the behavior of these youth. It is also interesting to note that some research studies found no disparities and that the patterns of disparities appear to differ from one community to another and from one contact point to another.

### **RACIAL DISPARITIES AMONG REFERRALS TO TREATMENT**

Given the disparities found in traditionally studied juvenile justice decision points (e.g., arrest, court referral, diversion, secure detention, petition, adjudication, secure confinement, probation, and transfer to adult court) and the fact that not all juveniles who need mental health services are treated in the juvenile justice system, are there also racial and ethnic disparities among referrals to mental health and substance abuse services? In our 2016 systematic literature review we found that a majority of studies published in the past 20 years found at least some race effect in the decision to refer youth to services.<sup>1</sup> Studies were included in our review if they examined the decision to provide juveniles with mental health or substance abuse services in the juvenile justice system, included race or ethnicity in the analysis, used quantitative methodology, and examined a sample from a state or local system in the United States. Of the 26 studies examined, 69% found at least some race effect disadvantaging youth of color while 31% found no race effect. To account for potential differences in mental health and substance abuse needs by race/ethnicity, 19 of these studies provided statistical controls for scores



*Once youth of color are arrested and referred to court, they subsequently go deeper into the juvenile justice system than white youth.*



*Disparities in the handling of youth far exceed any differences in the behavior of these youth.*

on screening and assessment tools, prior mental health or substance use treatment, or drug/alcohol-related offenses. Of these 19 studies, 63% found at least some race effect while 37% found no race effect.

For example, a study of detained youth in Indiana, which included statistical controls for gender, age, detention center site, and whether the youth had a positive score on a mental health screening instrument, found that both African-American and Hispanic youth were less likely than white youth to receive contact with a mental health clinician within 24 hours of detention center intake and to receive a referral to mental health services upon detention center discharge. A study of mental health treatment service delivery for youth in secure facilities in Maryland found that while only 11.9% of the African American youth who met the diagnostic criteria for a mental health disorder received treatment, 42.6% of the white youth who met the criteria received treatment. Another study of juveniles who were adjudicated delinquent in Pennsylvania found that the court was less likely to send African-American and Latino youth to a therapeutic program than white youth compared with a physical regime program or a traditional reform school.

Included in the 63% of studies that found at least some race effect were studies that reported mixed effects. For example, one study of a Missouri court found that although there was no race difference in the rates of referral for substance use disorders, white youth were more than twice as likely to receive a mental health treatment order as compared to African American youth. These researchers included statistical con-

trols for gender, age, legal variables, parental history of substance use and mental health disorders, peer influence, mental health status, substance use problems, learning disorders, and other personal issues.

On the other hand, 37% of the studies that controlled for mental health needs found no race effect. For example, a study of a county court in South Carolina found that race was not a significant predictor of admission to drug court after accounting for gender, age, legal variables, family status, and mental health history. Similarly, a study of youth processed through a Midwestern circuit court found that once all control variables – including assault history, history of abuse or neglect, behavior problems, learning disorder, negative attitude, and social environment – were introduced into the final model, race was not a significant factor.

## CONCLUSION

A preponderance of the literature finds that racial disparities in the juvenile justice system exist not only at traditionally studied juvenile justice system decision points such as referral to court and placement in a secure detention facility, but also among referrals to mental health and substance abuse services. While the rate at which mental health and behavioral health resources are used in juvenile justice settings is abysmally low in general, it is particularly low for African American youth and more generally low for all minority youth.

The net effect of these disparities in the operation of the justice system and in referral for mental health and substance issues is to push a greater volume of minority youth into punitive systems and a greater

volume of white youth into systems designed to deal non-punitively with their mental health and substance use problems. Resolving these inequities will require coordinated action from both sets of service providers: those in juvenile justice and those in the mental and behavioral health systems.

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*Resolving these inequities will require coordinated action from both those in the juvenile justice systems and in the mental and behavioral health systems.*

*Research and Program Briefs* are periodic publications aimed at improving policy and practice for youth with mental health disorders in contact with the juvenile justice system. This publication is supported by a grant from the **John D. and Catherine T. MacArthur Foundation**.

## Youth with Mental Health Disorders in the Juvenile Justice System: Results from a Multi-State Prevalence Study

Jennie L. Shufelt, M.S.  
Joseph J. Coccozza, Ph.D.

### Background

Over the last decade, concern has escalated over the number of youth with significant mental health needs involved with the juvenile justice system. The presence of these youth in the juvenile justice system poses significant challenges to the juvenile justice and mental health systems both at the policy and program level and is seen as presenting a major crisis for the juvenile justice system (Coalition for Juvenile Justice, 2000). Until recently, little has been known about the exact prevalence and types of mental health disorders among this population. According to a 1992 comprehensive review of the research literature, studies examining the prevalence of mental health disorders among justice-involved youth were methodologically weak and produced estimates that varied widely. This variation resulted from a number of factors, including inconsistent definitions of mental disorders, non-standardized measures, and problematic study designs (Coccozza, 1992). The lack of information about the mental health needs of justice-

involved youth has hindered the juvenile justice system's ability to understand the needs of the youth in its care and develop appropriate responses.

Significant steps forward have been made in recent years, particularly with respect to the development of standardized screening and assessment instruments tested for use with this population. These instruments represent an important advancement for research because they allow for comparisons among studies that utilize them, as well as among subpopulations within the juvenile justice system. Researchers have begun utilizing these tools, thereby capitalizing on the opportunities they present. Their use in research has expanded the knowledge base with respect to the prevalence of mental health disorders among justice-involved youth, and have yielded more consistent estimates, ranging from 65% to 70% among youth in residential juvenile justice facilities (Wasserman et al., 2002; Teplin et al., 2002). Research utilizing these instruments with non-residential juvenile justice populations (i.e. youth

at probation intake) has found mental health prevalence estimates of approximately 50% (Wasserman et al., 2005).

While this new research has overcome many of the limitations cited in the 1992 review, several issues remain. Many of these studies have drawn their sample from one region of the country or from one level of care within the juvenile justice system, such as just pre-adjudication youth in short-term detention centers. Therefore, it has been suggested that the high prevalence rates found in these studies may not be representative of the juvenile justice population nationwide and may instead be attributable to the particular geographic region or facility in which the study was conducted. Furthermore, these studies have been limited by the fact that they often contained very small samples of girls and certain ethnic minorities.

### Overview of Study

In response to the perceived need for new research to overcome these remaining limitations, the National Center for Mental Health and Juvenile Justice (NCMHJJ), in collaboration with the Council of Juvenile Correctional Administrators (CJCA), conducted the most comprehensive mental health prevalence study to date on youth involved with the juvenile justice system. The NCMHJJ prevalence study was funded by the Office of Juvenile Justice and Delinquency Prevention (OJJDP). This paper summarizes the results of the NCMHJJ study.

The primary goal of this research endeavor was to comprehensively examine the prevalence of mental health and substance use disorders among youth involved with the juvenile justice system by collecting information on youth from three previously understudied areas of the country. As a result, three states – Louisiana, Texas, and Washington – were selected to represent these understudied areas. In each state, data were collected on youth from three different juvenile justice settings: community-based programs, detention centers, and secure residential facilities. Overall, data were collected on over 1,400 youth from 29 different programs and facilities. In addition, girls and certain minority youth (Hispanics and Native Americans) were oversampled in an effort to improve the knowledge base regarding these understudied populations.

Additional information on the study methodology and sample characteristics is available upon request from the NCMHJJ.

### Prevalence of Mental Health and Substance Use Disorders

The data collected during this study clearly indicate that the majority (70.4%) of youth in the juvenile justice system meet criteria for at least one mental health disorder<sup>1</sup>. As shown in Table 1 below, the rate of mental health disorder found in this study is consistent with the findings of other recent studies.

Table 1. Comparison of Mental Health Prevalence Findings From Recent Juvenile Justice Studies

Authors (Year)	% with a Positive Diagnosis
NCMHJJ Prevalence Study (2006)	70.4%
Teplin et al. (2002)	69.0%
Wasserman et al. (2002)	68.5%
Wasserman et al. (2004)	67.2%

In addition, the results of this study indicate that youth in contact with the juvenile justice system experience high rates of disorder across the various types of mental health disorders. Disruptive disorders (46.5%) such as conduct disorder are most common, followed by substance use disorders (46.2%) such as alcohol abuse, anxiety disorders (34.4%) like obsessive-compulsive disorder, and mood disorders (18.3%) such as depression.

Questions have been raised around whether the high prevalence rates that have been found in recent studies are actually due to the fact that the criteria used to identify certain disruptive disorders (e.g., conduct disorder), which are the most common types of disorders among youth in the juvenile justice system, are very similar to the characteristics of delinquent youth in general. However,

<sup>1</sup> Mental health disorders were identified using the Diagnostic Interview Schedule for Children – Voice Version IV (Voice DISC-IV; Shaffer et.al, 2000). The Voice DISC-IV is a structured contingency-based interview designed to measure the presence of over 30 different psychiatric diagnoses common among adolescents. All analyses exclude Separation Anxiety Disorder.

upon analysis, it was evident that the high rate of these types of disorders does not account for the high rate of mental health disorders in general. This is because, even after removing conduct disorder from the analysis (i.e. calculating the prevalence of any mental health disorder except conduct disorder), 66.3% of youth still met criteria for a mental health disorder other than conduct disorder.

Similarly, it was possible that many of these youth were adjudicated for drug-related offenses and that, as a result, substance use diagnoses accounted for the high prevalence of disorder. However, after removing substance use disorders from the analysis, 61.8% of youth still met criteria for a mental health disorder other than a substance use disorder. In fact, even if both conduct disorder and substance use disorders are removed from the analysis, almost half (45.5%) of the youth were identified as having a mental health disorder. Clearly, neither conduct disorder nor substance use disorders by themselves adequately account for the high prevalence rate of mental illness found in this study.

### Comorbidity and Co-Occurring Disorders

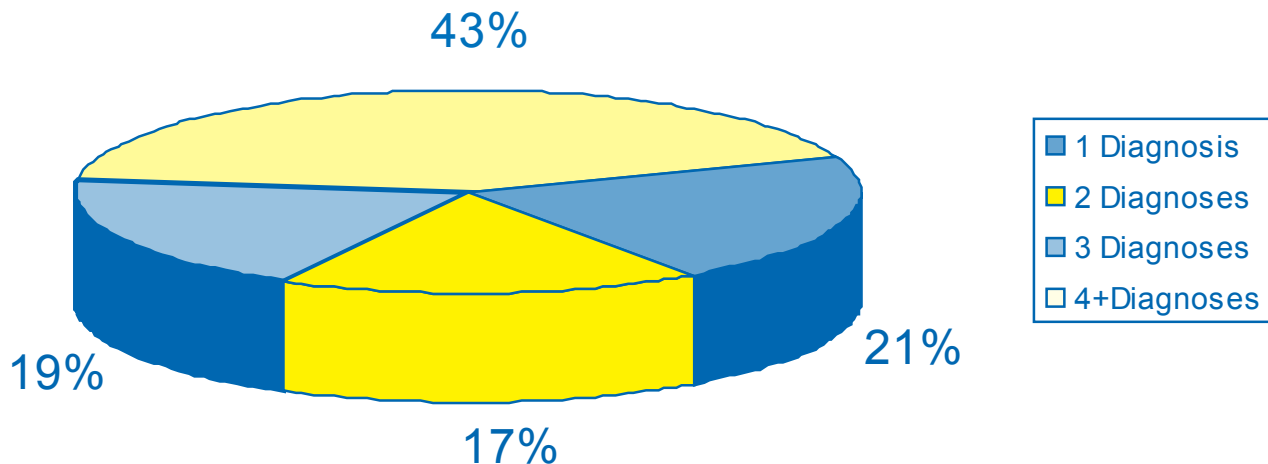
Another criticism of past research has been that the studies were only able to identify one diagnosis among youth. As a result, there was a lack of information about the extent to which youth experience multiple mental health disorders, or co-occurring mental health and substance use disorders. This study was designed to overcome this limitation by assessing the presence of multiple diagnoses.

In this study, the vast majority of youth who meet criteria for a DSM-IV diagnosis actually meet criteria for multiple disorders. In fact, 79% of youth who met criteria for at least one mental health disorder actually met criteria for two or more diagnoses. What is particularly striking is that over 60% of these youth were diagnosed with three or more mental health disorders. Figure 1 below depicts the number of diagnoses among youth with at least one disorder.

For many youth in the juvenile justice system, their mental health needs are significantly complicated by the presence of a co-occurring substance use disorder. In fact, among those youth with a mental health diagnosis, 60.8% also met criteria for a substance use disorder. Co-occurring substance use disorders were most frequent among youth with a disruptive disorder, followed by youth with a mood disorder.

Youth with comorbid and co-occurring disorders pose a unique challenge to the juvenile justice system. Not only is the intensity of their needs likely to be greater, but proper response to their multiple needs requires increased collaboration, continuity of care, and the ability to recruit and retain providers with the ability to treat multiple needs. This is particularly true for those youth with both mental health and substance use needs (Abram, Teplin, McClelland, & Dulcan, 2003).

Figure 1. Number of diagnoses among youth with at least one disorder.



## Gender Differences in the Prevalence of Mental Health Disorders

Over the past decade, the proportion of female offenders in the juvenile justice system has steadily risen (American Bar Association and National Bar Association, 2001). The growth of this population has brought with it new and unfamiliar challenges to the juvenile justice system. Justice-involved girls are at higher risk for mental health disorders than boys<sup>2</sup> (Wasserman, et. al., 2005). In this study, more than 80% of the girls in this sample met criteria for at least one disorder, in comparison to 67% of boys. Much of this difference is attributable to higher rates of internalizing disorders (i.e. anxiety and mood disorders) among girls. In contrast, girls and boys experience more comparable rates of disruptive disorders and substance use disorders. For many of these girls, histories of trauma further complicate the effective response on the part of the juvenile justice system (Hennessey, et. al. 2004). Figure 2 depicts the prevalence of anxiety, mood, disruptive and substance use disorders for males and females in this sample.

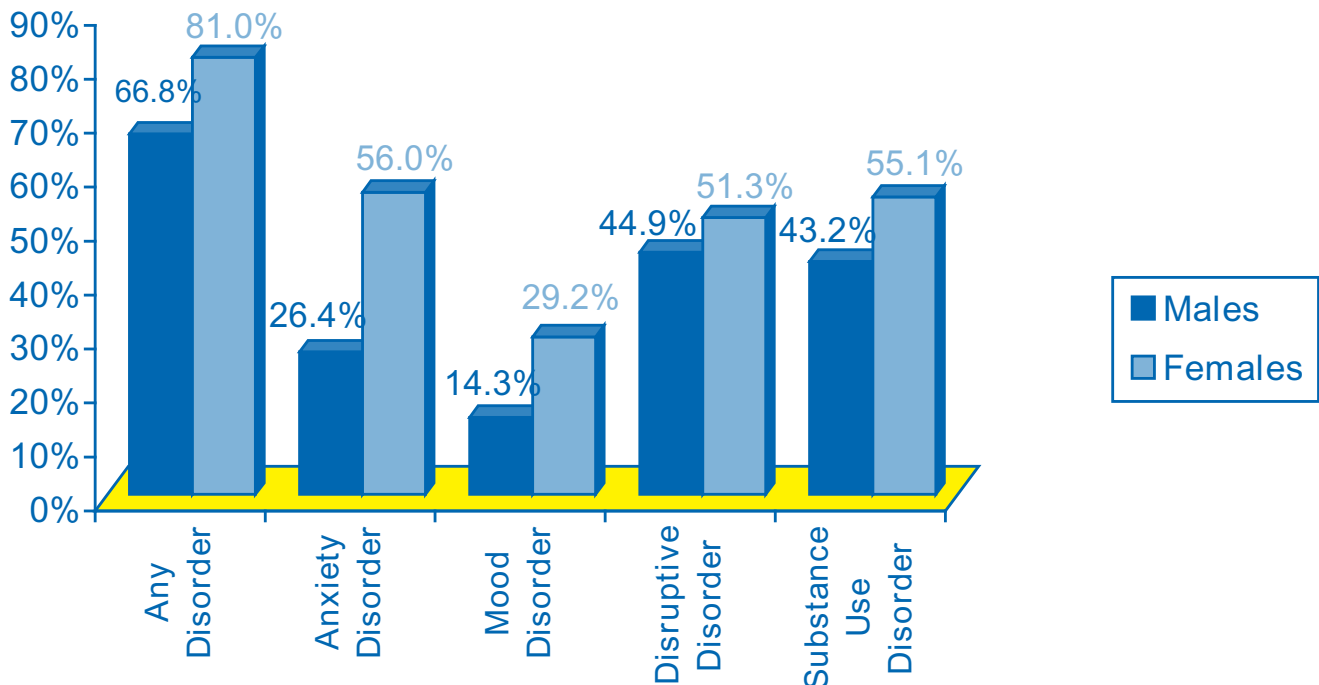
2 Controlling for age, race/ethnicity, type of facility, and state.

## Severe Mental Health Disorders

Severe mental disorders are those that are serious enough to require significant and immediate treatment. However, there is no standard operational definition of severe mental illness for youth. Definitions may be based on level of impairment, diagnosis, or service utilization (Narrow et al., 1998). As a result, there has been no clear picture of the exact prevalence of severe disorders among youth with mental health disorders in the juvenile justice system.

However, researchers have estimated that the prevalence of severe disorders among this population is approximately 20% (Cocozza & Skowrya, 2000). The results of this study suggest that the prevalence of severe mental illness (i.e. they meet criteria for certain severe disorders, or have been hospitalized for a mental disorder) may be even higher. Approximately 27% of the overall sample had a mental disorder severe enough to require significant and immediate treatment. This suggests that more than a quarter of youth should be receiving some form of mental health services while involved in the juvenile justice system.

Figure 2. Prevalence of mental health disorders among males and females in the juvenile justice system.





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## Conclusion

This study confirms the high rates of mental health disorders found by other recent studies and suggests that regardless of geographic area or type of juvenile justice facility, the vast majority of youth involved with the juvenile justice system, from 65% to 70%, have at least one diagnosable mental health disorder. Strikingly, over 60% of youth met criteria for three or more diagnoses. Girls are at significantly higher risk (80%) than boys (67%) for a mental health disorder, with girls demonstrating higher rates of internalizing disorders than boys. Substance use continues to be a major problem for many youth in the juvenile justice system, with 60.8% of youth with a mental health diagnosis also meeting criteria for a substance use disorder. This new information broadens the collective understanding of the prevalence of these disorders among the juvenile justice population, and can serve to help juvenile justice and mental health administrators and policy makers make more informed decisions about effective interventions for these youth. This multi-state study confirms the high rate of disorder found in earlier studies that often were limited to a particular site or level of care, and provides further support for the critical need for improved mental health services for justice involved youth. ■

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## **About the National Center for Mental Health and Juvenile Justice**

Recent findings show that large numbers of youth in the juvenile justice system have serious mental health disorders, with many also having a co-occurring substance use disorder. For many of these youth, effective treatment and diversion programs would result in better outcomes for the youth and their families and less recidivism back into the juvenile and criminal justice systems. Policy Research Associates has established the National Center for Mental Health and Juvenile Justice to highlight these issues. The Center has four key objectives:

- Create a national focus on youth with mental health disorders in contact with the juvenile justice system
- Serve as a national resource for the collection and dissemination of evidence-based and best practice information to improve services for these youth
- Conduct new research and evaluation to fill gaps in the existing knowledge base
- Foster systems and policy changes at the national, state and local levels to improve services for these youth

For more information about the Center, visit our website at [www.ncmhjj.com](http://www.ncmhjj.com).

**Joseph J. Coccozza, PhD**  
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### ***For more information...***

about this study, the following agencies and services may be helpful:

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# Psychiatric and Substance-Related Problems Predict Recidivism for First-Time Justice-Involved Youth

Marina Tolou-Shams, PhD, Johanna B. Folk, PhD, Evan D. Holloway, PhD, Catalina M. Ordorica, MEd, Emily F. Dauria, MPH, PhD, Kathleen Kemp, PhD, and Brandon D. L. Marshall, PhD

Justice-involved youth with clinically significant co-occurring psychiatric and substance-related problems are at increased risk for recidivism. Less is known about how psychiatric symptoms (i.e., internalizing and externalizing) and substance-related problems (i.e., alcohol and cannabis) interact to predict recidivism, especially at first court contact. Among 361 first-time justice-involved youth aged 12 to 18, we used nested multivariate negative binomial regression models to examine the association between psychiatric symptoms, substance-related problems and 24-month recidivism while accounting for demographic and legal covariates. Clinically significant externalizing symptoms and alcohol-related problems predicted recidivism. Moderation analyses revealed that alcohol-related problems drove recidivism for youth without clinically significant psychiatric symptoms and externalizing symptoms predicted recidivism, regardless of alcohol-related problems. After accounting for other predictors, Latinx, Black non-Latinx, and multiracial non-Latinx youth were more likely to recidivate at follow-up than White non-Latinx youth. Systematic screening, referral, and linkage to treatment for psychiatric and substance-related problems are needed to reduce recidivism risk among first-time justice-involved youth. **Differences in recidivism rates by race/ethnicity not attributable to behavioral health needs suggest it is imperative to concurrently deploy large-scale structural interventions designed to combat systemic racial bias and overrepresentation of ethnoracial minoritized youth within the juvenile justice system.**

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**Key words:** juvenile justice; mental health; racial disparities; recidivism; substance use

Arrest rates for youth under the age of 18 have declined over 50 percent in the last decade, with

approximately 700,000 youth arrested in 2019 compared with over 1.6 million in 2010.<sup>1</sup> Most youth arrests are due to property crimes and simple assault,<sup>1</sup> and Black and Latinx youth are arrested at disproportionately higher rates for the same crimes compared with their White peers.<sup>2</sup> Primary prevention efforts in the community (e.g., school-based interventions) have focused on developing, testing, and implementing large-scale, broad delinquency prevention interventions<sup>3</sup> (e.g., Pittsburgh Youth Study) to prevent youth from coming into contact with the justice system; however, empirically supported secondary prevention interventions to reduce recidivism for first-time justice-involved youth are lacking. Ongoing juvenile justice reform efforts focus on diverting youth from detention, and keeping youth with their families in the community with appropriate, best practice supports.

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To meet the goals of such reform, there is a growing need to identify and target mechanisms of change to reduce the risk of recidivism,<sup>4</sup> particularly for first-time justice-involved youth who are initially diverted from detention.

Substance use and related problems have been repeatedly identified as salient predictors of recidivism among both youth and adults.<sup>5–8</sup> Justice-involved youth report higher rates of lifetime and recent substance use<sup>8</sup> and misuse<sup>9</sup> compared with their nonjustice-involved peers. Of note, among first-time justice-involved youth ( $M = 14.5$  years), nearly 50 percent reported lifetime cannabis use, 80 percent of whom reported frequent cannabis use in the past four months.<sup>10</sup> Many youth endorsed lifetime alcohol use (30%), with most reporting recent use<sup>10</sup> (past 4 months). Comparisons of substance use by youth race and ethnicity have been conducted across a variety of justice system settings. In detention, White adolescents were more likely to have used substances compared with their Black peers.<sup>11,12</sup> Similarly, White youth were more likely to use substances compared with non-White peers referred to alternative to detention programs.<sup>13</sup> Substance use predicts recidivism among justice-involved youth after accounting for other factors, such as prior delinquency, gender identity, ethnicity, and age<sup>5,8</sup> and is, therefore, essential to consider in understanding and preventing recidivism.

Justice-involved youth also have high rates of psychiatric need, with rates of psychiatric diagnoses ranging from approximately 30 to 80 percent.<sup>12,14–18</sup> Justice-involved youth are commonly diagnosed with depressive,<sup>8,14,19</sup> posttraumatic stress,<sup>14,20</sup> externalizing<sup>12,14,21,22</sup> (e.g., attention deficit hyperactivity disorder, disruptive behavior disorder), and mood<sup>8,14</sup> disorders. Racial and ethnic differences in rates of psychiatric diagnoses have been documented among justice-involved youth, with some variability according to setting. In detention, White youth had significantly higher rates of any psychiatric disorder diagnosis than Black youth, including disruptive behavior and conduct disorders.<sup>12</sup> In residential facilities, Black youth were more likely than White and Latinx youth to be diagnosed with conduct disorder while White males were more likely to be diagnosed with ADHD, adjustment, anxiety, eating, and mood disorders than Black males.<sup>23</sup> Similarly, a single U.S. state sample of all justice-involved youth (including detained and community supervised youth) found Black youth were more likely to be diagnosed with disorders related to

aggression or impulse control compared with White youth.<sup>24</sup> Psychiatric symptoms have been documented as a driver of recidivism, specifically among youth on probation following release from detention.<sup>25</sup>

Psychiatric symptoms and substance-related problems cannot be considered in isolation, as rates of co-occurring disorders range from 21<sup>26</sup> to 61 percent<sup>17</sup> among justice-involved youth. As with psychiatric and substance use disorders more generally, rates of co-occurring disorders are particularly high for White youth.<sup>26</sup> Evidence suggests substance use moderates the association between youths' psychiatric symptoms and recidivism.<sup>27</sup> Further, among community-supervised justice-involved youth referred for a mental health evaluation, those with co-occurring psychiatric and substance use disorders were approximately six times more likely than their peers without dual diagnoses to be detained over a 12-month follow-up period.<sup>8</sup> Despite the well-documented psychiatric and substance-related needs of justice-involved youth,<sup>10</sup> less is known about the interplay of these needs and how they influence the legal trajectories of youth following first ever juvenile court contact. Disentangling the association of psychiatric symptoms and substance-use related problems with recidivism for youth at their first contact with the justice system, while critically considering the impact of race, ethnicity, sex, and age (i.e., static factors associated with recidivism) will be key to identifying the level (e.g., individual, structural) and type (e.g., substance use, co-occurring) of intervention that could keep youth at first court contact from future justice involvement.

### Study of Recidivism Predictors

The current study examined predictors of recidivism (i.e., number of new legal charges) among youth enrolled in Project EPICC (Epidemiological Project Involving Children in the Court), a two-year longitudinal study of first-time justice-involved youth.<sup>10</sup> Consistent with the approach taken by Tolou-Shams *et al.*,<sup>8</sup> we examine psychiatric symptoms and substance-related problems (specifically alcohol and cannabis related problems, henceforth referred to as substance-related problems) as predictors of recidivism while considering the impact of relevant demographic and legal history factors on recidivism. We hypothesized that substance-related problems, psychiatric symptoms, and their co-occurrence would predict youth recidivism (i.e., number of new legal charges) over the two-year follow-up period and that

ethnoracial minoritized youth would be disproportionately represented among youth who recidivate.

## Method

### Participants and Procedure

Participants were 361 first-time justice-involved youth and an involved caregiver. To be eligible for participation, youth had to: be between 12 and 18 years old, have been in contact with the court for the first time within the past 30 days, have either an open status (e.g., truancy) or delinquent petition (e.g., assault), be living in the community, and have an involved caregiver willing to participate. Study exclusion criteria included cognitive impairment that would impede ability to complete assessments, caregiver's unwillingness to participate, or if the caregiver and youth had not lived in the same household for at least the prior six months.

Participants were recruited through a large family court in the northeastern region of the United States. Potential participants received a study flyer with their court appointment date notification letter and were approached by research assistants at their first appointment to determine interest and eligibility. Interested youth and families were screened in a private setting at the court, and for those eligible, caregiver consent and youth assent were obtained off-site at the participant's home, private community space, or research lab. Court staff estimates and records indicated approximately 50 percent of the 4,800 juveniles seen at the court setting during the enrollment period were potentially eligible. Youth and caregiver assessments (less than two hours in duration) were conducted using tablet-based, audio-assisted computerized assessment<sup>26</sup> in English and Spanish (caregiver only). Follow-up assessments were conducted every four months postbaseline for 24 months. Additional study methods are reported in Tolou-Shams *et al.*<sup>10</sup> The current report uses data from the baseline assessment and official court records of recidivism across the 24-month follow-up period. The Principal Investigator's university and collaborating sites' Institutional Review Boards (and Office for Human Research Protections) approved all study procedures.

### Measures

#### Demographic Characteristics

Youth and caregiver age, sex, race, and ethnicity were assessed at baseline. Caregivers also reported

whether the youth had ever been placed outside of the home (e.g., foster care, group home) or hospitalized on an inpatient psychiatric unit.

#### Youth Psychiatric Symptoms

Youth internalizing and externalizing symptoms were assessed using the Behavior Assessment System for Children, Second Edition<sup>29</sup> (BASC-2). Prior research suggests that, whereas adolescents tend to capture and report their internal states accurately,<sup>30</sup> their reports on externalizing behaviors (e.g., oppositional behavior) tend to be less reliable.<sup>31,32</sup> We therefore used adolescent self-report of internalizing symptoms and caregiver report for externalizing symptoms. The Internalizing composite scale is a broad index of inwardly directed distress and combines seven subscales: Atypicality (9 items; e.g., "I see weird things"), Locus of Control (9 items; e.g., "What I want never seems to matter"), Social Stress (10 items; e.g., "I feel out of place around people"), Anxiety (13 items; e.g., "I worry but I don't know why"), Depression (12 items; e.g., "I feel depressed"), Sense of Inadequacy (10 items; e.g., "I fail at things"), and Somatization (7 items; e.g., "I often have headaches") subscales. Responses were captured using true/false responses and 4-point Likert scales (1 = *never* to 4 = *almost always*). The Externalizing composite scale consists of the Hyperactivity (8 items; e.g., "Acts without thinking"), Aggression (10 items; e.g., "Threatens to hurt others"), and Conduct Problems (14 items; e.g., "Gets into trouble") subscales and is characterized by disruptive behavior problems such as aggression, hyperactivity, and delinquency. Caregivers responded to items on 4-point Likert scales (1 = *never* to 4 = *almost always*). The sum of points for each composite scale provided a raw score, which was then converted to a *t*-score (standardized scores with a mean of 50 and standard deviation of 10) based on a general adolescent sample; scores were dichotomized to reflect clinically significant symptoms, reflected by *t*-scores greater than or equal to 70.

#### Youth Substance-Related Problems

Substance-related problems were assessed using the 24-item Brief Young Adult Alcohol Consequences Questionnaire<sup>33</sup> ( $\alpha = .86$ ) and the 21-item Brief Marijuana Consequences Scale<sup>34</sup> ( $\alpha = .83$ ). For each measure, youth responded yes (1) or no (0) to statements describing typical consequences of substance use

(e.g., “I have taken foolish risks when I have been drinking” for alcohol consequences; “The quality of my work or schoolwork has suffered because of my marijuana use” for cannabis consequences). Overall scores on both scales were sums of all items endorsed. Higher scores suggested more severe alcohol- or cannabis-related problems.

### Recidivism

Recidivism was operationalized as the total number of new charges, per official court records, across the 24-month follow-up period (range = 0-16 across the 24 months; range = 0-10 across each 4-month period).

### Plan of Analysis

Preliminary analyses consisted of descriptive statistics and examining bivariate associations between youth demographic (age, gender, race/ethnicity, history of out-of-home placement), legal (status versus delinquent offense at first court contact), psychiatric (history of inpatient hospitalization, clinically significant internalizing symptoms, clinically significant externalizing symptoms), and substance (alcohol- and cannabis-related problems) factors with recidivism. The alcohol- and cannabis-related problems variables were highly kurtotic and were therefore log-transformed prior to analysis to normalize the distributions. Due to overdispersion in the recidivism variable (i.e., the conditional variance was greater than the conditional mean), negative binomial regression was used for all analyses involving this outcome. Primary analyses consisted of a stepwise comparison of nested models (model 1: demographic; model 2: legal; model 3: psychiatric; model 4: substance-related problems) predicting recidivism. Secondary analyses were conducted to understand the implications of comorbidity by examining interactions between youth psychiatric symptoms and substance-related problems to predict recidivism.

## Results

### Sample Characteristics

#### Demographics

Youth were on average 14.6 years old ( $SD = 1.5$ , range = 12-18) and 56.0 percent male. The majority were ethnorracial minoritized youth (33.0% White non-Latinx, 11.4% Black non-Latinx, 7.8% other non-Latinx, 6.9% multi-racial non-Latinx, 41.0% Latinx), and 51.0 percent had initial system contact for

a delinquent offense. Additional descriptive statistics are presented in Table 1. Caregivers were predominantly female (86.7%) and biological parents (92.8%), on average 41.0 years old ( $SD = 7.3$  years), and the majority identified as a member of an ethnorracial minoritized group (43.9% White non-Latinx, 8.9% Black non-Latinx, 9.7% other non-Latinx, 4.4% multi-racial non-Latinx, 33.1% Latinx). Approximately two-thirds of caregivers (63.6%) reported an annual household income below \$30,000, with an average of 3.8 people dependent upon this income; 64.8 percent reported receiving public assistance (e.g., food stamps, Supplemental Nutrition Assistance Program [SNAP], Women, Infants, and Children [WIC], Supplemental Security Income [SSI]).

### Psychiatric Symptoms and Substance Use

Youth in the current sample exhibited a range of behavioral health needs. Regarding psychiatric symptoms, 18.3 percent of youth were in the clinical range for externalizing problems and 14.1 percent for internalizing problems; 10.2 percent had a lifetime history of out-of-home placement and 12.7 percent of inpatient psychiatric hospitalization. Overall, youth reported low levels of problems related to use of alcohol ( $M = .89$ ,  $SD = 2.39$ , range = 0-13; 81.4% reported no consequences) and cannabis ( $M = 1.24$ ,  $SD = 2.58$ , range = 0-21; 67.3% reported no consequences).

### Recidivism

The rate of recidivism was 35.7 percent ( $n = 129$ ), with participants recidivating, on average, once during the 24-month follow-up period ( $SD = 2.27$ ); most ( $n = 232$ , 64.3%) had zero new charges (see Fig. 1).

### Attrition

Although 401 youth-caregiver dyads were enrolled for longitudinal follow-up in the parent study,<sup>10</sup> the current sample was restricted to the 361 (90.0%) with complete data on key predictors of recidivism. Youth included versus excluded (due to missing data) from analyses did not differ on key demographic and historical factors (i.e., age, gender, race, ethnicity, lifetime history of out-of-home placement or psychiatric hospitalization), psychiatric symptoms, or alcohol-related problems. Youth included in the analytic sample reported significantly more cannabis-

**Table 1** Descriptive Statistics of the Total Sample and Stratified by Recidivism Status

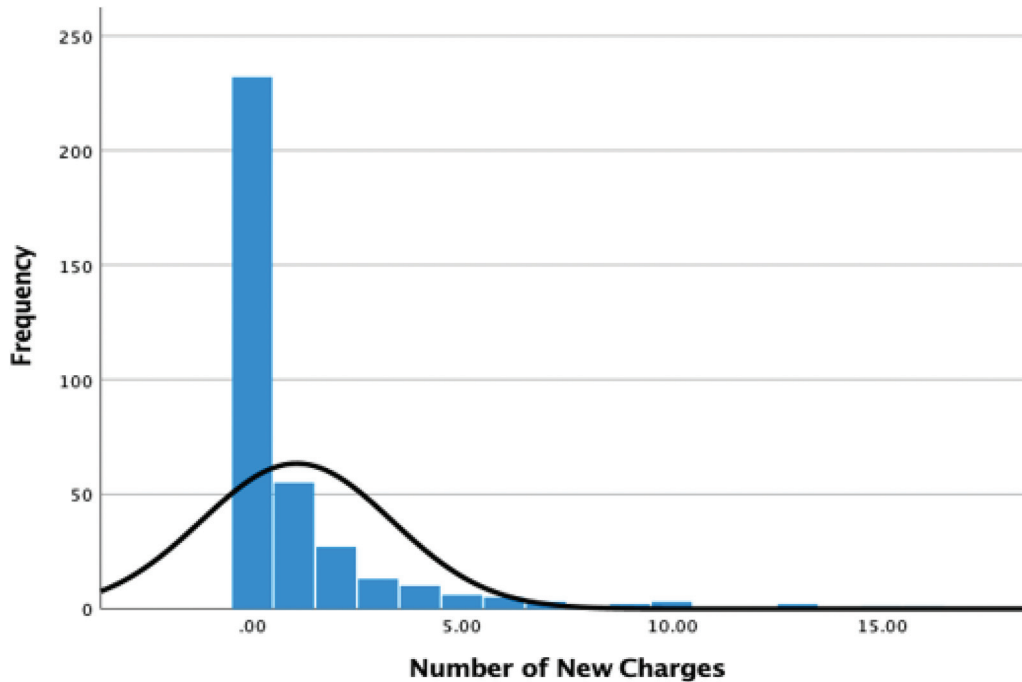
Variable	Total Sample ( <i>N</i> = 361) <i>M</i> ( <i>SD</i> )/%	Youth Who Recidivated ( <i>n</i> = 129) <i>M</i> ( <i>SD</i> )/(%)	Youth Who Did Not Recidivate ( <i>n</i> = 232) <i>M</i> ( <i>SD</i> )/(%)
<b>Demographic Factors</b>			
Sex (Male)	56.0%	60.5%	53.4%
Age	14.57 (1.54)	14.49 (1.55)	14.62 (1.54)
<b>Race/Ethnicity</b>			
White non-Latinx	33.0%	28.7%	35.3%
Black non-Latinx	11.4%	10.9%	11.6%
Other non-Latinx	7.8%	6.2%	8.6%
Multi-racial non-Latinx	6.9%	8.5%	6.0%
Latinx	41.0%	45.7%	38.4%
Out-of-home placement	10.2%	12.4%	9.1%
<b>Legal Factors</b>			
Offense Type (Delinquent)	51.0%	63.6%	44.0%
<b>Psychiatric Factors</b>			
Inpatient Hospitalization	12.7%	14.0%	12.1%
Internalizing Problems (Clinical)	14.1%	13.2%	21.2%
Externalizing Problems (Clinical)	18.3%	26.4%	19.8%
<b>Substance Use Factors</b>			
Alcohol-Related Problems	0.89 (2.39)	1.16 (2.79)	0.75 (2.13)
Cannabis-Related Problems	1.24 (2.58)	1.64 (3.23)	1.02 (2.12)

related problems,  $t(30.49) = -2.391, p = .023$ , than youth who were excluded.

**Bivariate Analyses**

Bivariate negative binomial regressions were used to examine the associations between youth demo-

graphic, legal, psychiatric, and substance use factors with recidivism. Demographic factors associated with recidivism included identifying as Latinx compared with White non-Latinx ( $B = .54, p = .039$ ) and reporting lifetime history of out-of-home placement ( $B = .68, p = .053$ ). Identifying as male



**Figure 1.** Distribution of number of new charges during two-year follow-up period.

( $B = -.40, p = .076$ ) and Black non-Latinx ( $B = .70, p = .059$ ) was marginally associated with recidivism. Age ( $B = -.09, p = .232$ ) was unrelated to recidivism. First-time contact as a delinquent (versus status) offense ( $B = .83, p < .001$ ) was associated with recidivism. Regarding psychiatric factors, clinically significant levels of externalizing symptoms ( $B = .73, p = .004$ ) were associated with greater likelihood of recidivism whereas clinically significant internalizing symptoms ( $B = -.99, p = .005$ ) predicted lower likelihood of recidivism. History of inpatient psychiatric hospitalization ( $B = .53, p = .098$ ) was marginally associated with increased risk for recidivism. Regarding substance use, greater cannabis use-related problems ( $B = .67, p = .047$ ) predicted recidivism and alcohol-related problems ( $B = .64, p = .074$ ) marginally predicted recidivism.

### Primary Analyses

Results of multivariate negative binomial regression analyses are presented in Table 2. The final step of the model (model 4) included all demographic, legal, psychiatric, and substance use factors ( $p < .10$  at bivariate level). A number of significant demographic predictors emerged. Males recidivated more than females ( $B = -.48, p = .035$ ); Black non-Latinx ( $B = .96, p = .009$ ), Latinx ( $B = .63, p = .004$ ), and multi-racial non-Latinx ( $B = 1.12, p = .008$ ) youth recidivated more than White non-Latinx youth; and age was inversely related to recidivism ( $B = -.22, p = .004$ ). Youth in first-time contact for a delinquent offense recidivated more than those with a status offense ( $B = .81, p = .001$ ). As in the bivariate analyses, internalizing problems were negatively related to recidivism ( $B = -.75, p = .033$ ) and externalizing problems were positively related ( $B = .54, p = .037$ ). More problems associated with alcohol ( $B = 1.17, p = .002$ ), but not cannabis, were positively related to recidivism.

### Secondary Analyses

Four additional multivariate negative binomial regression models were conducted to examine the interaction between psychiatric (internalizing and externalizing) and substance use (alcohol- and cannabis-related problems) factors (Table 3). Demographic, legal, psychiatric, and substance use factors were parallel to those included in the final multivariate model. Interactions emerged between alcohol-related

problems and both internalizing ( $B = -1.50, p = .065$ ) and externalizing ( $B = -1.29, p = .030$ ) problems (see Figure 2). More alcohol-related problems increased risk of accruing more charges for youth in the nonclinical range on internalizing problems. Youth with clinically significant externalizing problems were at high-risk of recidivism regardless of alcohol-related problems, but more alcohol-related problems increased risk of recidivism for youth in the nonclinical range for externalizing problems. There were no significant interactions between youth internalizing or externalizing symptoms and cannabis-related problems.

### Discussion

In this sample of first-time justice-involved youth, approximately one-third recidivated, many of whom accrued multiple new charges over the 24-month period, suggesting recidivism risk screening and intervention for this diversion population is warranted. Consistent with prior research and study hypotheses, clinically significant internalizing symptoms predicted lower likelihood of recidivism and externalizing symptoms predicted greater likelihood of recidivism, after accounting for a range of demographic and other known factors associated with recidivism. Past meta-analysis findings revealed a similar pattern for externalizing disorders, though internalizing disorders were associated with lower risk of recidivism only for females.<sup>35</sup>

Our findings suggest that for first-time justice-involved youth, externalizing symptoms and alcohol-related problems are critical treatment targets for reducing recidivism. Conversely, internalizing symptoms were associated with lower recidivism risk suggesting these symptoms may be protective against future justice involvement, perhaps because these youth are more socially isolated, withdrawn, and anxious and, therefore, not engaging in behaviors that could potentially lead to justice contact. Furthermore, the association between alcohol-related problems and recidivism was particularly strong for youth with non-clinical levels of externalizing symptoms; this suggests a need to integrate substance use and psychiatric symptom screening and assessment results to fully understand first-time justice-involved youth's risk for recidivism.

Ultimately, these findings support the implementation of empirically supported screening practices to inform service referrals to appropriately matched and



**Table 2** Results of Stepwise Regression Models Predicting Recidivism

	Model 1			Model 2			Model 3			Model 4		
	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>
<b>Demographic Factors</b>												
Sex (Male)	-0.46 (0.24)	-0.92, 0.01	3.71 <sup>†</sup>	-0.39 (0.23)	-0.84, 0.06	2.89 <sup>†</sup>	-0.29 (0.23)	-0.74, 0.16	1.61	-0.48 (0.23)	-0.93, -0.03	4.44*
Age	-0.12 (0.08)	-0.27, 0.02	2.67	-0.17 (0.74)	-0.31, -0.02	5.22*	-0.13 (0.07)	-0.28, 0.01	3.16 <sup>†</sup>	-0.22 (0.07)	-0.36, -0.07	8.47**
<b>Race/Ethnicity<sup>a</sup></b>												
Black non-Latinx	0.82 (0.38)	0.08, 1.56	4.70*	0.68 (0.37)	-0.05, 1.40	3.35 <sup>†</sup>	0.72 (0.36)	0.01, 1.43	3.93*	0.96 (0.37)	0.24, 1.68	6.82**
Other non-Latinx	-0.46 (0.48)	-1.40, 0.49	0.90	-0.53 (0.48)	-1.47, 0.40	1.25	-0.46 (0.47)	-1.38, 0.46	0.97	-0.08 (0.47)	-1.01, 0.84	0.03
Multi-racial non-Latinx	0.54 (0.45)	-0.33, 1.42	1.49	0.76 (0.44)	-0.09, 1.62	3.06 <sup>†</sup>	0.78 (0.43)	-0.07, 1.62	3.27 <sup>†</sup>	1.12 (0.43)	0.29, 1.96	6.94**
Latinx	0.50 (0.26)	-0.00, 1.01	3.83*	0.30 (0.26)	-0.21, 0.81	1.34	0.33 (0.26)	-0.17, 0.83	1.68	0.63 (0.26)	0.12, 1.13	5.96*
Out-of-home placement	0.53 (0.35)	-0.15, 1.20	2.32	0.35 (0.34)	-0.32, 1.02	1.05	0.29 (0.34)	-0.37, 0.95	0.74	0.37 (0.32)	-0.27, 1.00	1.26
<b>Legal Factors</b>												
Offense Type (Delinquent)	-	-	-	0.84 (0.23)	0.38, 1.30	12.87***	0.67 (0.24)	0.20, 1.13	7.91**	0.81 (0.23)	0.35, 1.27	11.99**
<b>Psychiatric Factors</b>												
Inpatient Hospitalization	-	-	-	-	-	-	0.10 (0.33)	-0.55, 0.74	0.09	0.17 (0.32)	-0.46, 0.79	0.27
Internalizing Problems	-	-	-	-	-	-	-0.78 (0.35)	-1.47, -0.09	4.91*	-0.75 (0.35)	-1.44, -0.06	4.54*
Externalizing Problems	-	-	-	-	-	-	0.54 (0.26)	0.03, 1.06	4.25*	0.54 (0.26)	0.03, 1.05	4.37*
<b>Substance Use Factors</b>												
Alcohol-Related Problems	-	-	-	-	-	-	-	-	-	1.17 (0.39)	0.42, 1.93	9.29**
Cannabis-Related Problems	-	-	-	-	-	-	-	-	-	0.43 (0.36)	-0.28, 1.14	1.43
<b>Model Fit</b>												
Deviance	275.25			277.34			280.96			280.01		
Pearson X <sup>2</sup>	382.30			454.52			477.70			323.71		
df	352			351			348			346		

Note. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; <sup>a</sup>Reference group=White, non-Latinx.

**Recidivism For First-Time Justice-Involved Youth**

**Table 3** Results of Interaction Models Examining the Effects of Co-Occurring Mental Health and Substance Use Factors on Recidivism

	Model 1			Model 2			Model 3			Model 4		
	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>	B (SE)	95% CI	X <sup>2</sup>
<b>Demographic Factors</b>												
Sex (Male)	-0.45 (0.18)	-0.79, -0.10	6.24*	-0.43 (0.18)	-0.78, -0.08	5.79*	-0.44 (0.18)	-0.79, -0.09	6.08*	-0.44 (0.18)	-0.78, -0.09	6.04*
Age	-0.21 (0.06)	-0.32, -0.09	12.52***	-0.22 (0.06)	-0.34, -0.11	14.11***	-0.21 (0.06)	-0.33, -0.10	12.88***	-0.21 (0.06)	-0.33, -0.10	13.04***
<b>Race/Ethnicity<sup>a</sup></b>												
Black, non-Latinx	0.95 (0.28)	0.40, 1.50	11.32***	0.93 (0.28)	0.38, 1.48	10.81**	0.93 (0.28)	0.38, 1.48	11.05***	0.93 (0.28)	0.38, 1.48	10.81**
Other, non-Latinx	-0.09 (0.39)	-0.86, 0.69	0.47	-0.10 (0.39)	-0.87, 0.68	0.06	-0.12 (0.39)	-0.89, 0.65	0.09	-0.12 (0.39)	-0.90, 0.65	0.10
Multi-racial, non-Latinx	1.09 (0.33)	0.44, 1.74	10.84**	1.05 (0.33)	0.40, 1.70	10.11**	1.05 (0.33)	0.40, 1.70	10.10**	1.05 (0.33)	0.40, 1.69	10.09**
Latinx	0.67 (0.20)	0.27, 1.07	10.68**	0.66 (0.20)	0.26, 1.06	10.59**	0.64 (0.20)	0.24, 1.04	9.90**	0.63 (0.20)	0.24, 1.03	9.80**
Out-of-home placement	0.39 (0.25)	-0.09, 0.87	2.49	0.39 (0.25)	-0.09, 0.87	2.51	0.39 (0.25)	-0.09, 0.87	2.53	0.39 (0.25)	-0.09, 0.87	2.53
<b>Legal Factors</b>												
Offense Type (Delinquent)	0.77 (0.18)	0.41, 1.13	17.93***	0.79 (0.18)	0.43, 1.15	18.61***	0.76 (0.18)	0.40, 1.11	17.43***	0.75 (0.18)	0.40, 1.11	17.14***
<b>Psychiatric Factors</b>												
Inpatient Hospitalization	0.23 (0.24)	-0.24, 0.71	0.92	0.20 (0.24)	-0.28, 0.68	0.65	0.22 (0.24)	-0.26, 0.70	0.82	0.22 (0.24)	-0.26, 0.70	0.78
Internalizing Problems	-0.78 (0.29)	-1.35, 0.21	7.25**	-0.88 (0.29)	-1.45, -0.31	9.07**	-0.85 (0.30)	-1.43, -0.27	8.17**	-0.88 (0.29)	-1.45, -0.31	9.05**
Externalizing Problems	0.54 (0.20)	0.16, 0.93	7.74**	0.56 (0.19)	0.18, 0.94	8.34**	0.55 (0.19)	0.17, 0.93	8.02**	0.56 (0.20)	0.17, 0.95	8.07**
<b>Substance Use Factors</b>												
Alcohol-Related Problems	1.27 (0.32)	0.65, 1.90	16.02***	1.40 (0.33)	0.75, 2.06	17.58***	1.12 (0.31)	0.52, 1.72	13.48***	1.10 (0.31)	0.50, 1.70	12.98***
Cannabis-Related Problems	0.46 (0.29)	-0.10, 1.02	2.58	0.40 (0.29)	-0.17, 0.96	1.91	0.44 (0.29)	-0.14, 1.02	2.25	0.45 (0.32)	-0.17, 1.08	2.03
<b>Interaction Terms</b>												
Internalizing × Alcohol	-1.50 (0.81)	-3.09, 0.09	3.40 <sup>†</sup>	-	-	-	-	-	-	-	-	-
Externalizing × Alcohol	-	-	-	-1.29 (0.59)	-2.45, -0.12	4.70*	-	-	-	-	-	-
Internalizing × Cannabis	-	-	-	-	-	-	-0.23 (0.76)	-1.73, 1.26	0.09	-	-	-
Externalizing × Cannabis	-	-	-	-	-	-	-	-	-	-0.14 (0.58)	-1.29, 1.00	0.06
<b>Model Fit</b>												
Deviance	400.63			399.78			404.30			404.33		
Pearson X <sup>2</sup>	494.88			494.85			520.67			520.76		
df	346			346			346			346		

Note. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; <sup>a</sup>Reference group=White, non-Latinx.

tailored interventions within the juvenile justice system to reduce the likelihood of continued juvenile justice involvement. Furthermore, substance use problems and co-occurring mental health and substance use problems have been associated with increased risk for re-arrest and re-incarceration, respectively, among justice-involved adults,<sup>36,37</sup> suggesting the relationship between substance use and future justice system involvement persists into adulthood.

Substance use and related problems also drive recidivism and must be incorporated into clinical screening and referral to intervention practices. Alcohol-related problems increased the likelihood of recidivism for youth who did not report clinically significant psychiatric symptoms; however, youth with clinically significant externalizing symptoms were more likely to recidivate, regardless of alcohol-related problems. Consistent with prior research in the same jurisdiction,<sup>8</sup> among other community-based justice-involved youth samples<sup>38</sup> and detained youth,<sup>39</sup> cannabis-related problems were more prevalent in our sample than alcohol-related problems. In multivariate analyses, however, only alcohol-related problems predicted recidivism, suggesting it should not be overlooked as a relevant target for recidivism reduction.

Finally, race, ethnicity, gender identity, and age were also associated with recidivism in this sample, after accounting for the influence of offense type, psychiatric symptoms, and substance-related problems on recidivism. Consistent with extant literature, females were less likely to recidivate than males<sup>40-42</sup> and participants who were younger at first-time justice contact were more likely to recidivate over the subsequent 24 months.<sup>43,44</sup> Non-Latinx Black, non-Latinx multiracial, and Latinx youth had higher rates of recidivism than non-Latinx White youth. Such findings are consistent with a wealth of evidence that youth of color are disproportionately placed into contact with the justice system at all intercepts, from arrest through sentencing.<sup>45,46</sup> These findings highlight the impact of institutionalized racism on trajectories of justice involvement, beginning at the point of first contact when diversion from initial detention occurs. Findings also correspond with the notion that the juvenile justice system has become a *de facto* behavioral health system of care for ethnoracial minoritized youth because of limited access to community-based substance use prevention and treatment services for communities of color.<sup>47</sup>

Our study represents a call to action for future research to incorporate and critically consider the complex interplay of systemic factors, such as racism, that can contribute to risk of recidivism along with individual modifiable factors. To effectively reduce likelihood of recidivism for first-time justice involved youth, individual-level interventions to screen, assess, and treat co-occurring psychiatric and substance use needs, implemented concurrently with the development of effective structural-level interventions (e.g., reducing police surveillance in Black neighborhoods, academic-public partnerships, increasing access to community-based substance use and mental health services) to reduce overrepresentation of ethnoracial minoritized youth, are warranted. For example, White justice-involved youth are generally more likely to be diagnosed with co-occurring disorders<sup>26</sup> yet have lower rates of recidivism; therefore, it is unclear whether treating externalizing and alcohol-related problems would reduce overrepresentation of ethnoracial minoritized youth, particularly in the absence of additional structural-level interventions.

### Practice Implications

The current results have a number of implications for screening, assessment, risk management, and case planning decisions for justice-involved youth. Consistent with best practices,<sup>48</sup> the current findings highlight the importance of screening for psychiatric symptoms and substance-related problems at initial court contact to identify youth in need of behavioral health treatment. Referrals based on screening alone, however, are ineffectual in engaging youth in services;<sup>49</sup> yet, there is growing evidence when justice-involved youth are referred to services that are matched with identified needs, recidivism risk is reduced.<sup>4,50</sup> Furthermore, access to needed interventions<sup>51</sup> and implementation of novel and culturally responsive interventions to engage youth and families in services<sup>52</sup> are essential to ensure receipt of needed treatment. There is a need to study the effectiveness of practice models that implement and embed, for example, brief substance use and mental health interventions (e.g., Family Check-Up)<sup>53</sup> at time of first court contact as well as practice models that incorporate family navigator services that bridge the justice system and families to community-based behavioral health providers.<sup>54</sup>

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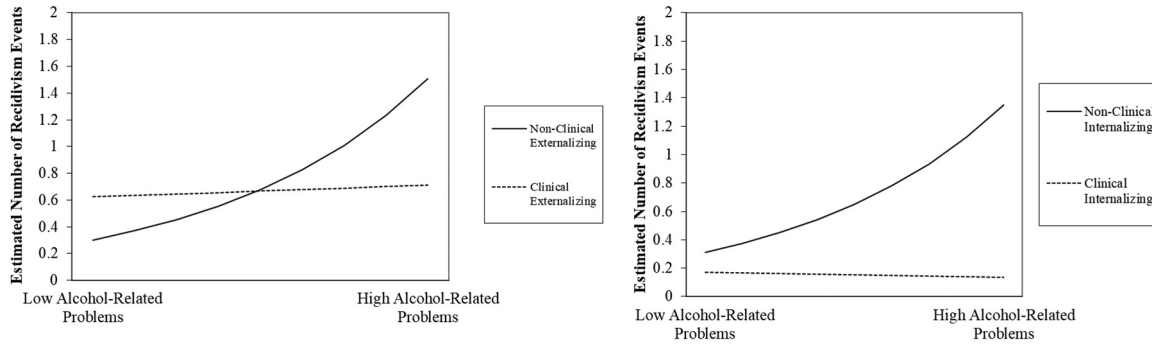


Figure 2. Interaction between psychiatric symptoms and alcohol related problems.

### Strengths, Limitations, Future Directions

The current study has a number of strengths, including the prospective design, collection of data from multiple sources (i.e., youth report, caregiver report, and official records), and a sample including understudied groups (i.e., females, status offenders). There are some limitations to the current study that can be addressed with future research. First, youth in the current sample were recruited from a single family court, so findings should be replicated in other jurisdictions. Second, predictors of recidivism were self-reported data collected in the context of a research study conducted in the court setting, which may have led to underreporting of psychiatric symptoms or substance-related problems out of concern of court-related consequences; however, reported rates in both domains are high and consistent with prior research and are therefore likely to reflect accurate response patterns. Future recidivism risk studies of first-time justice-involved youth might consider incorporating a risk-needs-responsivity framework<sup>55</sup> that examines multiple other criminogenic needs and responsivity factors not included in the current analyses to more holistically understand recidivism risk and need for intervention. Third, our study was underpowered to examine differences in predictive associations within specific racial or ethnic subgroups because of sample size. Future research should explore whether alcohol use and externalizing symptoms, as well as their co-occurrence, predict recidivism at the same rate for Black and Latinx youth as white youth. Relatedly, future research should examine whether effective treatment of externalizing symptoms and alcohol use reduces inequities in future legal system contact. Finally, the current analyses did not examine structural-level mechanisms that place ethnoracial minoritized youth at increased

risk for future court involvement, after controlling for the influence of psychiatric symptoms and substance-related problems. We acknowledge that our findings are limited to examining the relationship between the social construct of ethnoracial categories and recidivism without measures of individual, institutional, or structural racism. Future research should explore ways in which factors such as police bias, institutionalized racism, stigma, and perceived discrimination affect ethnoracial minoritized youths' risk for recidivism and develop system-wide interventions to actively combat those mechanisms.

### Conclusion

Externalizing symptoms and alcohol-related problems were the most salient factors associated with recidivism risk for a sample of justice-involved youth at first court contact. Systematic screening and assessment of these factors and connection to treatment is an essential component of early intervention initiatives designed to reduce the risk of continued justice involvement.

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# Environmental influences on the pace of brain development

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**Abstract** | Childhood socio-economic status (SES), a measure of the availability of material and social resources, is one of the strongest predictors of lifelong well-being. Here we review evidence that experiences associated with childhood SES affect not only the outcome but also the pace of brain development. We argue that higher childhood SES is associated with protracted structural brain development and a prolonged trajectory of functional network segregation, ultimately leading to more efficient cortical networks in adulthood. We hypothesize that greater exposure to chronic stress accelerates brain maturation, whereas greater access to novel positive experiences decelerates maturation. We discuss the impact of variation in the pace of brain development on plasticity and learning. We provide a generative theoretical framework to catalyse future basic science and translational research on environmental influences on brain development.

Children's early experiences are associated with important later-life outcomes, including their earnings<sup>1</sup>, educational attainment<sup>2</sup>, physical well-being<sup>3</sup> and mental health<sup>4</sup>. How are children's experiences embedded in their developing brains to broaden, or constrain, their opportunities to live happy and healthy lives? Much of what we know about links between early experiences and adult outcomes has come from research on socio-economic status (SES). A multidimensional construct, SES is typically measured at the household level (for example, parental income, education or occupation) or the neighbourhood level (for instance, neighbourhood crime rate, poverty levels or median income). Higher SES is associated with lower exposure to stress, and with greater access to cognitive enrichment, such as high-quality education, child-directed language, books and toys. Variation in childhood SES has been associated with variation in measures of brain structure and function<sup>5–8</sup>. However, surprisingly little is known about whether and how experiences associated with childhood SES affect the trajectory of brain maturation.

Here, we synthesize evidence that experiences associated with childhood SES affect not only the outcome, but also the

pace of brain development, and consider the implications of early brain development for plasticity in childhood. We focus on whole-brain cortical measures of structure and function because, as a broad and multidimensional construct, SES probably exerts effects on a complex constellation of brain regions and their connections. We highlight the few longitudinal studies on SES and brain development but, because these studies are rare, we also draw on cross-sectional studies of relationships between SES and brain structure and function across development<sup>9</sup>. We consider how experiences, including stress, cognitive enrichment and environmental variability, influence brain maturation and plasticity. We close by outlining promising future directions for research on how children's early experiences lead to disparities in later-life outcomes.

## Structural brain development

**Cortical thickness.** Cortical thickness increases in the prenatal and immediate postnatal period, driven by dendritic and axonal growth as well as synaptogenesis<sup>10</sup>. Peak synaptic density and peak cortical thickness are reached at different times across the brain, with sensory regions showing faster development and earlier

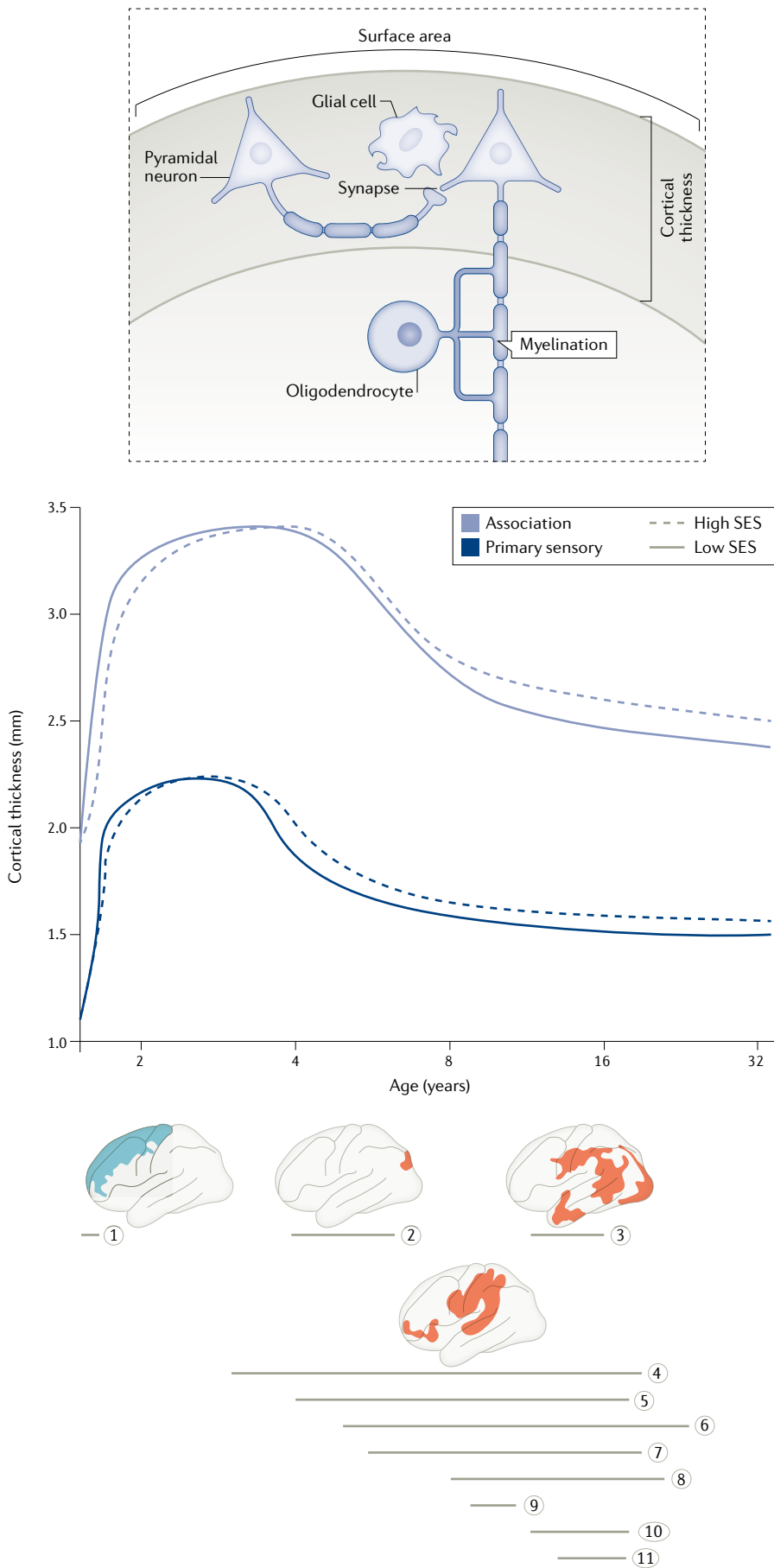
peaks, and association regions showing slower developmental trajectories<sup>11,12</sup> (FIG. 1). The cortex thickens before 2 years of age, before undergoing widespread thinning across a protracted period starting between 2 and 5 years of age, and continuing through adolescence and early adulthood. Thinning is attributed to both regressive (synaptic pruning) and progressive (myelination) processes<sup>13,14</sup>. In adulthood, a thicker cortex is associated with larger, more complex pyramidal neurons<sup>15</sup>. Cortical surface area increases during childhood and into early adolescence, with the greatest increases occurring first in sensory areas, and latest in association areas<sup>16,17</sup>.

Children and adolescents from higher-SES environments generally have thicker cortex than those from lower-SES environments<sup>8,18–20</sup>, but there is evidence that relationships between SES and cortical thickness vary with age (FIG. 1). In the first postnatal year, when the cortex rapidly thickens, higher paternal education is associated with thinner cortex, particularly in the frontal lobes<sup>21</sup>. This pattern is suggestive of more prolonged maturational processes in infants from higher-SES backgrounds. Later in development, in youth aged 3–20 years, SES moderates the negative relationship between age and cortical thickness such that youth from lower-SES backgrounds show a steeper curvilinear decrease in cortical thickness at a younger age than do youth from higher-SES backgrounds<sup>22,23</sup>. Adolescents aged 12–18 years in low-income households show a steeper curvilinear relationship between age and cortical thickness than do adolescents in high-income households<sup>24</sup>. For females, but not males, in low-income households, living in high-inequality neighbourhoods is again associated with a steeper negative relationship between age and cortical thickness<sup>24</sup>. This evidence is consistent with the hypothesis that lower SES is associated with accelerated cortical thinning throughout childhood and adolescence. However, not all findings align with this hypothesis. Two recent studies examined youth aged 5–25 years<sup>25</sup> and 14–19 years<sup>26</sup> and did not find that SES moderated relationships between age and cortical thickness, although the former study reported positive correlations between SES

**Fig. 1 | Associations between socio-economic status and cortical thickness.** Trajectories shown in light and dark blue are conceptual, based on findings interpolated across multiple studies. Horizontal grey lines represent the age ranges of individual studies, as shown on the horizontal axis. Brain regions shown in blue indicate negative relationships between socio-economic status (SES) and cortical thickness (REF.<sup>21</sup> corresponds to grey line 1). Brain regions shown in red indicate positive relationships between SES and cortical thickness (grey line 2, REF.<sup>19</sup>; grey line 3, REF.<sup>8</sup>; grey line 4, REF.<sup>22</sup>; grey line 5, REF.<sup>18</sup>; grey line 6, REF.<sup>25</sup>; grey line 7, REF.<sup>107</sup>; grey line 8, REF.<sup>36</sup>; grey line 9, REF.<sup>20</sup>; grey line 10, REF.<sup>24</sup>; grey line 11, REF.<sup>26</sup>). These curves are consistent with more modest main effects of SES on cortical thickness when averaging is done across large age ranges than when small age ranges are focused upon. The inset shows a schematic of potential cellular underpinnings of cortical thickness as measured by MRI: glial number and size, neuron number and size, synaptic complexity and myelination<sup>14–16</sup>. Cells are enlarged relative to cortical thickness to show detail. Brain image corresponding to grey line 1 adapted with permission from REF.<sup>21</sup>, OUP. Brain image corresponding to grey line 2 adapted with permission from REF.<sup>19</sup>, CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>). Brain image corresponding to grey line 3 adapted with permission from REF.<sup>8</sup>, Sage Publishing. Brain image corresponding to grey line 4 adapted with permission from REF.<sup>22</sup>, CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>).

and cortical thickness. However, examining a large age range such as 5–25 years might obscure interaction effects that vary over the course of development, and SES-related variability in the rate of cortical thinning during late adolescence when thinning has slowed may be minimal (FIG. 1). In addition, neither study examined non-linear relationships between age and cortical thickness moderated by SES.

**Surface area.** Fewer studies have examined associations between SES and cortical surface area development. In infancy, surface area is not related to parental education or income<sup>21</sup>. In late childhood and adolescence, however, higher SES is associated with greater surface area<sup>25–27</sup>. In an analysis of the Pediatric Imaging, Neurocognition, and Genetics (PING) dataset, researchers applied sample weights to structural brain imaging data collected from children aged 3–18 years to create a ‘weighted sample’ approximating the distribution of SES, race/ethnicity and sex in the US population. When the researchers used the weighted sample to examine associations between surface area and age, the surface area peak shifted earlier as compared with the unweighted sample,





consistent with an interpretation of earlier or faster brain maturation in children from lower-SES backgrounds, who were under-represented in the original sample<sup>28</sup>. In a recent longitudinal study of adolescents, higher SES was associated with a smaller decline in total surface area between 14 and 19 years of age<sup>26</sup>.

**Cellular underpinnings.** The cellular processes that underlie cortical thickness and surface area measures obtained with MRI are still under active investigation. As noted already, cortical thickness is positively associated with synaptic density, and is negatively associated with myelination<sup>14,15</sup>. One possibility is that experiences associated with low SES drive earlier curtailment of synaptic proliferation and a subsequently decreased range for optimal synaptic pruning and wiring of functional networks. Computational models of synaptic proliferation suggest that synaptic overgrowth and then pruning of weak synapses maximizes network performance, given the metabolic constraints of the brain<sup>29</sup>. In biologically motivated models of network development, delaying synaptogenesis in higher-order layers of a network leads to greater energy efficiency and faster learning after development<sup>30</sup>. Moreover, networks with more initial connections are better able to learn than networks with fewer initial connections<sup>31</sup>. Computational models of synaptic proliferation and subsequent pruning early in development have identified a trade-off between rapid development, which enables earlier independence and less parental input, and optimal adult neural performance<sup>32</sup>. SES-associated differences in early synaptic proliferation would affect the development of functional connectivity, which we examine in the following section.

## Functional network development

A key goal of brain development is to establish efficient, specialized cortical systems. Functional activation of specific systems can be studied by imaging individuals performing well-designed tasks, but SES-associated differences in task accuracy and the interpretation of stimuli can affect conclusions about the underlying anatomy<sup>33</sup>. By contrast, data collected when participants relax inside the scanner — that is, resting-state functional MRI (rs-fMRI) data — can be used to study all systems simultaneously without task confounds<sup>34</sup>. Components of a functional system show statistically similar patterns of fluctuations in blood oxygenation, commonly referred to as functional connectivity<sup>35</sup>.

Resting-state analyses have generated conflicting answers to the question of whether higher SES is associated with faster functional maturation. One compelling study integrated grey and white matter structure with regional rs-fMRI measures to develop a model to classify individuals' ages. It was found that individuals aged 8–22 years from lower-SES backgrounds were more likely to be classified as adults than their higher-SES counterparts<sup>36</sup>. Other rs-fMRI studies also suggest that lower SES is associated with faster functional development: in youth aged 6–17 years, lower SES was associated with weaker connectivity in corticostriatal connections that typically showed decreases in strength with age over development<sup>37,38</sup>. However, some studies have found the opposite pattern: higher SES has been associated with greater functional connectivity between limbic regions that typically show age-related increases in functional connectivity over development<sup>39–41</sup>. These studies largely examined patterns of regional metrics or connectivity between specific sets of regions rather than testing for broad effects of SES on the pace of network development throughout the brain. However, region-to-region connectivity can be strengthened by repeated co-activation, just as cells that fire together will wire together. Therefore, it is difficult to infer broad developmental processes from examining links between specific regions<sup>42</sup>.

Newer approaches to analysing rs-fMRI data are computationally better suited to test the hypothesis that higher childhood SES is associated with protracted development of functional networks across the entire cortex. A network science approach, in particular, represents the brain as a collection of nodes (regions) and edges (connections), enabling us to address the whole-brain pattern of connectivity<sup>43,44</sup>. The resulting network architecture can then be quantitatively characterized with use of tools from graph theory to identify key properties relevant to maturation<sup>45</sup>. Two such properties are segregation and integration, both of which change during development<sup>46</sup>. Segregation quantifies the presence of groups or subnetworks of densely interconnected nodes in a network, whereas integration assesses the extent to which information can be rapidly combined from distributed regions<sup>43</sup>. Integration has a distinct meaning when one is interpreting diffusion data compared with when one is interpreting functional data<sup>47</sup> (BOX 1). Together, integration and segregation constitute the unique property of small-worldness

found in adult brain networks: the perhaps counterintuitive presence of high levels of both segregation and integration at many different scales (see REF.<sup>48</sup> for a recent review). Given the associations between functional network segregation at rest and cognitive abilities<sup>35,49</sup>, and that most research on SES and functional network development has examined segregation rather than integration, we focus specifically here on measures of functional network segregation.

Segregation in brain networks changes markedly over development, and can be measured at several scales. One measure of segregation at the nodal level is the clustering coefficient, which quantifies the connectivity in a node's immediate neighbourhood. At the mesoscale and global levels, modularity captures the extent to which a network can be divided into distinct subnetworks or modules, and system segregation captures the extent to which systems within a functional network are distinctly partitioned<sup>55</sup>. A coarse proxy for system segregation is within-system connectivity.

Studies of prenatal development show that a segregated network structure is present even in utero, with modular subnetworks that coarsely resemble those found in adults<sup>50,51</sup>. Inter-regional variation in the width of time windows of synaptogenesis during prenatal and early postnatal development (for example, as seen in REF.<sup>11</sup>) gives rise to the highly connected hub nodes and modular structure seen in adult brain networks<sup>52,53</sup>. Similarly to structural brain development<sup>11,12</sup>, functional subnetworks underlying sensory systems become established at an earlier age than do the subnetworks underlying association systems<sup>54,55</sup>. Mesoscale segregation increases with age later in childhood and adolescence, probably reflecting the refinement of network architecture; higher-order association systems in particular become more segregated with development<sup>49,56</sup> (although some studies do not find positive associations between age and segregation during adolescence, perhaps owing to differences in age range and node or edge definitions; see REF.<sup>57</sup>). Maturation at the cellular level probably gives rise to these macroscale developmental changes. Inhibitory interneurons have a role in limiting resting-state functional connectivity and establishing the boundaries between brain regions that are necessary for network segregation<sup>58</sup>. In addition, connection strength is associated with microscale properties of connected brain regions, including the size and complexity of layer III pyramidal neurons<sup>59,60</sup>, cytoarchitectonic similarity<sup>61</sup> and excitatory–inhibitory receptor balance<sup>62</sup>.

Only a few studies have examined associations between SES and functional brain development using a network science approach (FIG. 2), and these studies have used different measures of segregation. Although the use of different measures of segregation at different scales makes an overarching pattern difficult to interpret, here we draw upon existing studies to sketch a theoretical model for future work to detail. One study<sup>63</sup> of infants less than 1-year-old found marginally significant associations between higher SES and both similarity to adult systems and within-system connectivity, a proxy for system segregation. The study's authors interpret these observations as indicative that greater maturation is associated with higher SES. However, the significant associations were found only at 6 months of age and not at the other time points examined (1, 3, 9 or 12 months). In another study, youth aged 8–22 years from high-SES neighbourhoods show a stronger association between age and local segregation — clustering — than

did youth from low-SES neighbourhoods<sup>64</sup>. Although the study authors also examined a mesoscale measure of segregation, namely modularity, the moderating effect of SES on associations between age and modularity was accounted for by local segregation, suggesting that the fundamental driver was variation in local network topology. Specifically, during late childhood, youth from high-SES neighbourhoods showed lower local cortical functional segregation than did youth from low-SES neighbourhoods. However, youth from high-SES neighbourhoods showed a steeper positive relationship between segregation and age during adolescence, such that by their early 20s, they showed greater functional network segregation than youth from low-SES neighbourhoods. Another study of individuals in a similar age range (6–17 years) revealed an interaction between household and neighbourhood SES, such that among youth in low-SES neighbourhoods, higher household SES is associated with greater local functional network segregation

(assessed by the clustering coefficient) in the prefrontal cortex<sup>65</sup>. The available evidence is consistent with the hypothesis that higher SES is associated with more protracted functional network development, with youth from high-SES backgrounds showing more widespread connectivity and thus lower segregation early in development, before the rapid development of a more segregated network architecture that continues into adulthood<sup>10,11</sup>.

In sum, these studies suggest that the effects of SES on structural development may be reflected in functional development, such that the extended period of structural development associated with high SES gives rise to a longer, slower trajectory of functional network segregation during development, leading to greater segregation. Although longitudinal studies with consistent measures of functional network organization necessary to strictly test these hypotheses do not yet exist, we draw upon existing work to sketch a theoretical model for future work. Lower SES is associated with faster thinning and blunted functional remodelling during childhood and adolescence. In late adolescence and young adulthood, individuals from higher-SES backgrounds show greater cortical thickness and greater segregation than do individuals from lower-SES backgrounds, perhaps as a result of differences in maturation rate. The findings described above also suggest that associations between SES and functional network segregation might follow a progression from local to global across the lifespan, with associations in childhood and early adolescence evident at the local level, and associations at the mesoscale and global level visible later in life. However, more work is needed to understand whether there are truly differing associations at different scales, as few studies thus far have examined multiple measures of segregation in conjunction.

We now turn to two of the most well-studied putative mechanisms underlying SES-associated differences in brain development: stress and cognitive enrichment<sup>5,66</sup>. Previous conceptual models have organized variation in early experiences along dimensions of threat (similar to stress) and deprivation (the opposite of cognitive enrichment)<sup>67–69</sup>. We review these factors as possible contributors to the effects of SES on the pace of brain development.

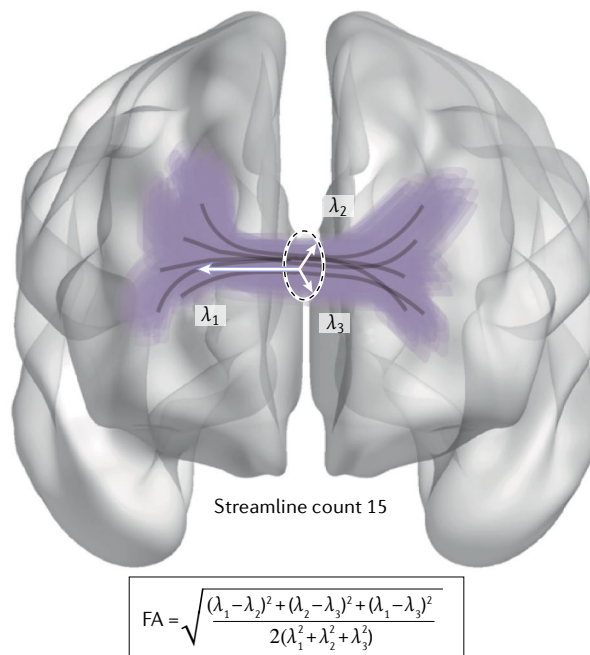
### Stress

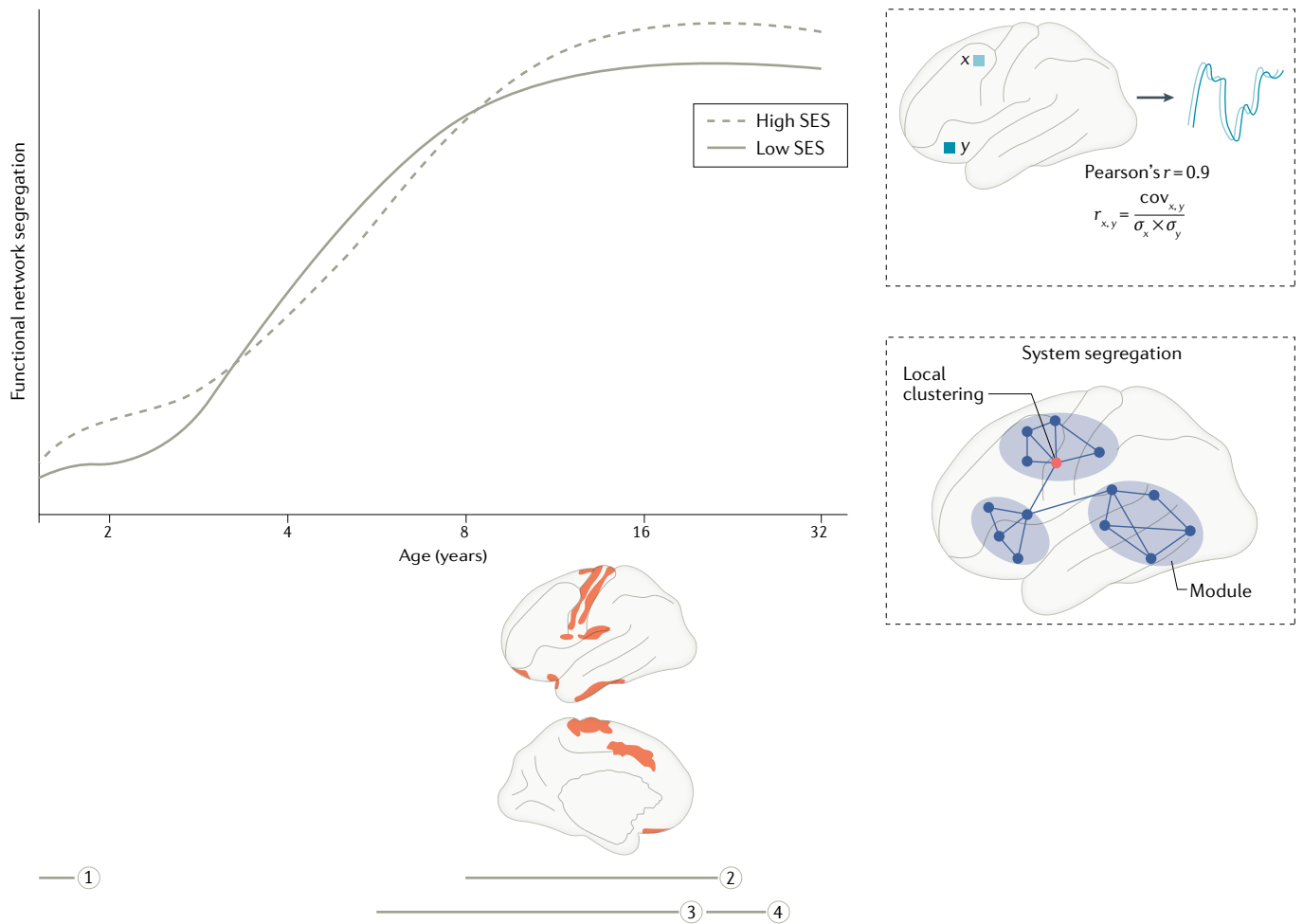
Lower SES is consistently associated with greater chronic stress<sup>70</sup>, and prior work extensively reviewed the links between SES and multiple conceptualizations

#### Box 1 | Environmental effects on white matter development

If lower socio-economic status (SES) is associated with accelerated brain maturation, we would expect to see differences in the pace of brain maturation reflected in diffusion-based measures of white matter; however, few studies have examined this topic. Typically, studies examining white matter tend to consider fractional anisotropy (FA): the degree of restricted diffusion in a principal direction ( $\lambda_1$ ) compared with orthogonal directions ( $\lambda_2$  and  $\lambda_3$ ; see the figure). FA is generally interpreted as a measure of the integrity of a white matter fibre tract. Streamline count is a measure of how many 'fibres' can be reconstructed between two brain regions<sup>213</sup>. Structural brain networks can be constructed from measures of regional streamline count or diffusion scalar values averaged along a tract, such as FA.

FA increases steeply in the first few years of life and then more slowly throughout childhood and adolescence<sup>214,215</sup>. In developmental studies, group differences in white matter integrity between children from high-SES backgrounds and children from low-SES backgrounds have been identified across various ages, consistently showing that higher SES is associated with higher FA in early childhood (4–7 years)<sup>216</sup>, in middle childhood (8–10 years)<sup>217</sup>, through adolescence (6–19 years and 17–23 years)<sup>107,218</sup> and into young adulthood (18–27 years)<sup>219</sup>. Children from higher-SES environments show higher global efficiency of their structural brain networks, indicating that their white matter has many short paths between regions, suggestive of relatively greater integration than in networks of children from lower-SES backgrounds<sup>220</sup>. However, none of these developmental studies examined age–SES interactions. Importantly, measures of FA are related to both axon coherence (compact bundling of several axons in a similar orientation) and myelination, and may also conflate experience-expectant (age-related) myelination with experience-dependent myelination, impairing our ability to detect environmental influences on the rate of maturation.





**Fig. 2 | Associations between socio-economic status and functional brain network segregation.** Trajectories shown in solid and dashed grey lines are conceptual, based on findings interpolated across multiple studies. Horizontal grey lines represent the age ranges of individual studies, as shown on the horizontal axis (grey line 1, REF.<sup>63</sup>; grey line 2, REF.<sup>64</sup>; grey line 3; REF.<sup>65</sup>; grey line 4, REF.<sup>196</sup>). Brain regions shown in red indicate socio-economic status (SES)-associated differences in functional network segregation, with adolescents from higher-SES backgrounds showing

stronger positive associations between age and segregation. Curves are drawn to be consistent with functional network segregation across the studies shown; the studies used a range of measures of segregation, as illustrated in the bottom-right inset. The top-right inset illustrates a common metric of functional connectivity used to estimate functional brain networks: the Pearson product-moment correlation coefficient. Brain images in the lower part of the figure adapted with permission from REF.<sup>64</sup>, OUP.

of stress<sup>68,71–75</sup>. There are at least three mechanisms by which chronic stress exposure could accelerate brain development. The first is that repeated use of stress-detection and stress-regulation circuitry, including the amygdala and medial prefrontal cortex, could lead to faster maturation of that circuitry<sup>76,77</sup>. The second is that stress could cause faster ageing of the entire body by increasing glucocorticoid levels and allostatic load (physiological wear and tear) and by promoting activation of inflammatory processes<sup>78</sup>. These same physiological processes can be activated by other experiences associated with lower SES, including exposure to environmental toxins (such as lead or air pollution)<sup>79</sup>, poorer sleep quality<sup>80</sup> and less opportunity for physical activity<sup>81–84</sup>. Stress is associated

with accelerated cellular ageing, marked by changes in epigenetic processes such as methylation<sup>85,86</sup>, which are detectable in childhood<sup>87,88</sup>. Individuals from lower-SES backgrounds tend to enter puberty earlier, and this effect is driven most strongly by experiences of threat<sup>89–92</sup>. Earlier puberty in turn might also accelerate brain maturation. One study found that the expression of the genes encoding the glucocorticoid receptor and the androgen receptor explained the most variance in cortical thinning in low-income female adolescents living in high-inequality neighbourhoods, suggestive of links between stress and both accelerated puberty and cortical thinning<sup>24</sup>. A third possible mechanism by which chronic stress may accelerate brain development is that young individuals process threat as

an overall signal of lack of protection and support — that is, they receive cues that the environment requires maturity — and this triggers adaptive top-down processes that cause development to proceed more quickly. This was recently termed the ‘developmental support hypothesis’ (see REF.<sup>93</sup>), and aligns with much evolutionary life-history research, including cross-species findings that parental investment is associated with slower maturation<sup>93–95</sup>. Understanding which, if any, of these mechanisms affect the pace of brain development is essential for determining when and how it might be possible to intervene.

Animal models of early-life stress allow us to address issues of causality that cannot be examined in humans. The animal paradigm most analogous to the economic

deprivation and stress associated with SES is the limited bedding and nesting model in rodents, which involves limiting the dam's access to sufficient bedding and nesting material. Although the limited bedding paradigm fails to capture many of the social, emotional and cognitive aspects of being raised in a low-SES environment, this constraint does result in fragmented and unpredictable nurturing behaviours and increased glucocorticoid release in the pups<sup>96,97</sup>. Offspring of the dams exposed to this paradigm show earlier declines in the levels of markers of postnatal neurogenesis in the hippocampus, earlier increases in the levels of markers of synaptic maturity, earlier increases in the level of myelin basic protein and impairments in cognitive function<sup>98–100</sup>. They also show an initial increase in neuronal proliferation in the hippocampus in early life, but at later times show reduced numbers of neurons and reduced hippocampal volume, suggestive of an earlier peak in neurogenesis<sup>101</sup>. Prefrontal areas and the hippocampus show reduced spine density following exposure to this paradigm in the early postnatal period. These changes are associated with impairments in cognitive function<sup>102,103</sup> that are prevented by blocking the effect of corticotropin-releasing hormone, a stress-linked neuropeptide,

immediately following exposure to this paradigm. This finding is consistent with a large body of work showing that some effects of the early environment are modulated by glucocorticoids<sup>85,104</sup>. We now turn to the question of whether SES differences in cognitive enrichment or deprivation also drive differences in the pace of brain development.

### Cognitive enrichment

Exposure to a complex environment with a variety of experiences and diverse learning materials is known as cognitive enrichment. The absence of cognitive enrichment is considered deprivation<sup>67,68</sup>. Children growing up in higher-SES homes tend to be exposed to more complex and cognitively stimulating environments<sup>105</sup>, and cognitive enrichment is associated with improved cognition in youth independent of stress exposures<sup>69,106–108</sup>. In one study, cognitive stimulation also mediated associations between SES and cortical thickness in prefrontal areas<sup>107</sup>, highlighting its potential role as a mechanism of the influence of SES on brain development in childhood. Recapitulating these findings, SES-associated differences in children's cognitive function have been reported to be mediated by cognitive enrichment in the home<sup>109</sup>.

Some models suggest that the absence of cognitive enrichment in specific domains leads to accelerated synaptic pruning in brain regions that process complex cognitive and social stimuli<sup>67,68</sup>. The converse of this argument is that specific cognitive inputs might delay synaptic pruning in relevant brain circuitry.

As in studies of stress, animal models allow us to investigate the causal influence of cognitive enrichment on brain development. Environmental enrichment paradigms typically have two main components: novel objects and novel social partners. Environmental enrichment in both juveniles and adult animals has been shown to lead to increased cortical thickness<sup>110,111</sup>, driven by increases in dendritic volume and branching<sup>112,113</sup>, dendritic spine count<sup>112,114</sup>, synaptogenesis and glial proliferation<sup>115,116</sup> (reviewed in REF.<sup>117</sup>). As little as 4 days of enrichment produces measurable changes in cortical thickness in rodents<sup>118,119</sup>, and longer exposure is associated with longer retention of increased thickness after return to a standard environment<sup>120</sup>. Enrichment may also affect cortical surface area, but it is not commonly measured<sup>121</sup>. Increased synaptogenesis, glial proliferation and dendritic plasticity could indicate a prolonged period of maturation leading to more complex brain circuitry, as computational models that suggest early synaptic overgrowth and overall slower development are advantageous for adult network abilities<sup>32,122</sup>. In sum, there is some evidence that children's early experiences of stress and cognitive enrichment influence the pace of brain development.

### Consequences for plasticity

Understanding how children's experiences affect the pace of brain maturation has consequences for understanding brain plasticity. Brain plasticity can be conceptualized in two ways: as a process and as a potential. The process of brain plasticity, including long-term potentiation and other structural and functional changes in response to experience, occurs throughout life. However, the brain's plasticity as potential for change varies with age. Developmental processes, including myelination, inhibition and the formation of perineuronal nets (PNNs; lattice-like extracellular structures that wrap neurons and act as a physical brake on plasticity) decrease the brain's ability to change as children get older<sup>123,124</sup> (BOX 2). If brain development proceeds more quickly in children from low-SES backgrounds, windows of high plasticity could also close

#### Box 2 | Cellular and molecular mechanisms of plasticity

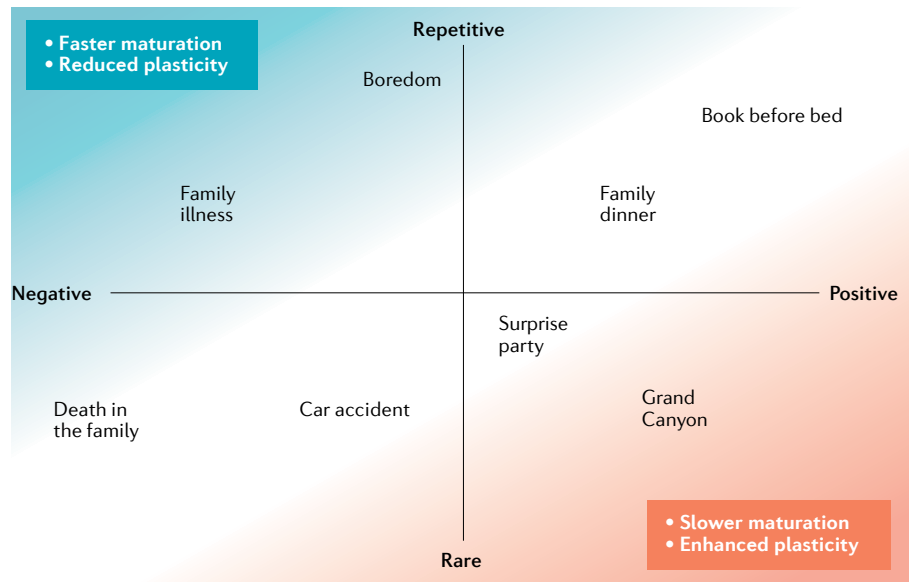
In animal models, the study of critical or sensitive periods, windows of heightened plasticity when brain development depends on specific expected environmental inputs, has yielded insight into the mechanisms of the regulation of plasticity, summarized in the table along with neuroimaging measures well suited to track these mechanisms<sup>123,221</sup>. Excitatory–inhibitory circuit balance, driven by the maturation of parvalbumin-positive (PV<sup>+</sup>) inhibitory interneurons, leads to periods of heightened plasticity, and molecular 'brake'-like regulators limit plasticity later in development<sup>222</sup>. Accumulation of regulators such as the homeobox protein OTX2 and brain-derived neurotrophic factor (BDNF) trigger the maturation of PV<sup>+</sup> neurons and opening of periods of heightened plasticity<sup>124</sup>. Subsequently, brake-like factors such as perineuronal nets and myelin maintain the closure of periods of heightened plasticity, stabilizing neural circuitry to limit rewiring during adulthood. In humans, these brake-like factors accumulate during development in parallel with the progression of structural changes such as cortical thinning, first in primary sensory and motor areas and later in higher-order association areas<sup>223–227</sup>. Neuromodulators such as dopamine, acetylcholine and serotonin can upregulate plasticity even once structural brakes are in place<sup>143,222,228</sup>.

Cellular or molecular measure	Neuroimaging measure
Excitation–inhibition balance	Magnetic resonance spectroscopy, glutamate chemical exchange saturation transfer, GABA chemical exchange saturation transfer
Extracellular matrix organization (including perineuronal nets)	Multicompartment diffusion imaging (for example, neurite orientation dispersion and density imaging or soma and neurite density imaging)
Myelin	Fractional anisotropy or mean diffusivity from diffusion imaging; multicompartment diffusion imaging; T1-weighted to T2-weighted ratio; magnetization transfer; quantitative MRI
Levels of neurotransmitters (such as dopamine, acetylcholine or serotonin)	Positron emission tomography, functional MRI or resting-state functional MRI of neuromodulatory nuclei

more quickly in these children, reducing the brain's sensitivity to future experiences. In this section, we review evidence from animal models that experiences of stress and cognitive enrichment affect plasticity. Most of this research was done in adult animals, but the results suggest that these experiences would affect plasticity during development as well.

Studies in animal models have broadly shown that early-life stress decreases synaptic plasticity and promotes the developmental processes that reduce plasticity (such as inhibition and myelination). Offspring of dams exposed to the limited-bedding paradigm show earlier increases in the levels of markers of synaptic maturity, earlier increases in the level of myelin basic protein, an increased number of PNNs and reductions in adult synaptic plasticity, accompanied by impairments in cognitive function, compared with control offspring<sup>98,99,101,125</sup>. The limited-bedding paradigm also causes reduced spine plasticity in the offspring's prefrontal cortex and hippocampus<sup>102,103</sup>. Increased myelination is not always observed following early-life stress: one study found that early social isolation leads to a decrease in myelination in the prefrontal cortex<sup>126</sup>. Therefore, the impact of stress on myelination may depend on the type of stressor and the brain area examined. There are also indirect links between early-life stress and plasticity: early-life stress accelerates pubertal timing (age of onset of pubertal development or age at menarche), and ovarian hormones increase cortical inhibition<sup>92,127,128</sup>. Studies of stress on plasticity in humans are rare. One study of post-mortem brains found that individuals who were exposed to child abuse had increased numbers of mature myelinating oligodendrocytes in the ventral medial prefrontal cortex<sup>129</sup>. Another study used neuroimaging to show that veterans with post-traumatic stress disorder had higher T1-weighted/T2-weighted MRI signal, a marker of myelination, in the hippocampus<sup>130</sup>. Both studies are consistent with the hypothesis that stress increases myelination, and may thereby limit plasticity.

Environmental-enrichment paradigms prolong and enhance plasticity. Enrichment during the juvenile period decreases the number of PNNs<sup>131</sup>, enhances synaptic plasticity in the form of long-term potentiation and depression<sup>132</sup> and influences parvalbumin-positive neuron expression<sup>131,133,134</sup>. In adulthood, enrichment keeps inhibition at juvenile levels, prolonging early periods of plasticity<sup>135–137</sup>.



**Fig. 3 | Integrative theory: childhood experiences affect the pace of brain development.** According to our model, experiences that are chronic or repetitive and negative encourage faster maturation and increase allostatic load, potentially restricting plasticity. Experiences that are rare and positive, triggering surprise and awe, are associated with strong neurochemical signals to delay maturational processes and enhance plasticity. Experiences in the other quadrants (rare and negative, or repetitive and positive) are predicted to have smaller effects on the global pace of maturation.

Enrichment paradigms can also enhance plasticity in adults long past juvenile critical periods<sup>138</sup> by reducing inhibition<sup>137,139</sup>, decreasing PNN stability<sup>139–141</sup> or increasing myelin remodelling<sup>142</sup>, all potent contributors to plasticity. Environmental enrichment increases neuronal secretion of the cytokine interleukin-33 (IL-33), which signals to microglia to engulf PNNs, increasing synaptic plasticity<sup>141</sup>. Environmental enrichment also enhances levels of neurotransmitters, including noradrenaline, dopamine and serotonin, which increase cortical plasticity and facilitate cortical remodelling<sup>143–146</sup>. Mice lacking the dopamine D2 receptor or the dopamine D4 receptor fail to benefit in longevity from enriched environments<sup>147,148</sup>. The social interaction component of an enriched environment increases release of oxytocin, which enhances plasticity<sup>149</sup> and protects against stress-related changes in plasticity<sup>150,151</sup>. To our knowledge, studies examining the impact of cognitive enrichment on plasticity in humans do not yet exist.

Stress and cognitive enrichment broadly capture the valence of experiences: stressful experiences are negative and should be avoided, whereas environmental enrichment paradigms are designed to be positive and rewarding. However, valence is not the only salient property of such experiences. The timing of experiences also has implications for plasticity (FIG. 3). Repeated exposure to the same experience should signal that

the experience is more likely to occur consistently in the future, and that the brain should optimize to respond to it, even at a cost to plasticity. Experience-dependent myelination and PNN formation are two potential mechanisms by which repeated activation of brain circuitry might lead to reduced plasticity<sup>124</sup>.

Empirical evidence in humans supports the theory that rote practice accelerates maturation of specific brain circuits. In adults, after several weeks of repetitive task practice, functional systems involved in the task become more segregated from each other<sup>152–154</sup>, mimicking network segregation during development<sup>49,56</sup>. Similarly, working memory training in young children aged 4–6 years results in changes in attention-related brain activity that resemble those that occur with maturation<sup>155</sup>. Thus, some brain systems may mature more quickly in high-SES environments if they process experiences that are more common in these environments. For example, repetitive use of language systems will lead to stronger connections between language-processing regions<sup>156,157</sup>. By contrast, rare experiences should signal that the environment is still changing and that plasticity is beneficial. Gopnik<sup>158</sup> has argued that humans have extended childhoods to allow there to be a “turbo-powered super sensitive period” to accommodate our unpredictable environments. Computational evolutionary models suggest that children with more

variable experiences, regardless of the valence of these experiences, reduce their estimate of uncertainty about the environment later, and hence lose plasticity later than do children who experience less-variable environments<sup>159–161</sup>. Environmental variability may also be intrinsically rewarding, increasing dopamine levels, thereby boosting plasticity<sup>162–164</sup>.

We expect the valence and timing of experiences to interact. We suggest a model that predicts that experiences that are both negative and chronic or repeated are the most likely to accelerate brain development and reduce plasticity. Repeated exposure to negative experiences would lead to maturation of the networks that process these experiences, and would augment glucocorticoid levels, allostatic load and inflammatory processes that age the entire body. By contrast, experiences that are positive and rare are predicted by our model to be the most likely to decelerate brain development and enhance plasticity. The hormonal and neurochemical sequelae of positive experiences are not as well studied as those of negative experiences, but awe and surprise have been associated with the release of neurotransmitters associated with enhanced plasticity, including dopamine and acetylcholine<sup>165,166</sup>. Positive social interactions lead to oxytocin release, which has also been shown to enhance plasticity<sup>167</sup>. We expect that experiences that are negative and rare, such as acute traumas, may not necessarily have major impacts on the rate of global maturation, but that specific aspects of those experiences, such as their developmental timing, severity and broader context, may be important in determining their impact on development and plasticity. Similarly, experiences that are positive and repeated may not necessarily broadly impact the rate of global maturation. Indeed, some evidence suggests that in humans cognitive enrichment (or its converse, deprivation) has little effect on the pace of cellular ageing or pubertal timing<sup>92</sup>. Future empirical work will help us refine a model of how specific aspects of early experiences alter the pace of brain development, with consequences for cognition and learning.

### Future directions and conclusions

In this Perspective, we have considered evidence that experiences associated with childhood SES affect not only the outcome but also the pace of brain development, with potential influences on brain plasticity throughout life. We argue that low exposure to stress and high exposure to novel positive experiences promote protracted structural

brain development, which gives rise to a later, longer trajectory of functional network segregation, ultimately leading to more efficient cortical networks in adulthood.

However, this model is based on incomplete data. Studies to date have not been fully representative of human diversity, focusing primarily on Western populations with nutritional excess<sup>168–170</sup>. Studies have also been limited by methodological challenges, cross-sectional samples, lack of connection to adult research and correlational designs. Below, we discuss promising approaches to overcome these limitations and directly test our hypotheses in future research.

Methodological advances are necessary to fully understand how early experiences affect the pace of brain development. The application of network methods to developmental data is still in its infancy, as researchers take on the challenge of describing nodes and edges of brain networks in a biologically accurate and meaningful way<sup>171,172</sup>. Studies have used many different measures of segregation to characterize functional brain networks, and it will be crucial for future research to examine how different measures relate to each other and to SES over development. The field has also become increasingly aware of how methodological decisions, including correcting for head motion<sup>173–176</sup> and physiological artefacts<sup>177–179</sup>, affect study conclusions, and thus affect our ability to make inferences across sets of studies. New methods are also needed for integrating structural and functional brain data. Few articles have examined both functional and structural brain development in the context of SES, and little is known about the relative ordering of trajectories of cortical thinning, white matter development and functional network segregation. Recent work has attempted to link changes in structure to changes in function<sup>54,180</sup>, but the sequence of developmental progression, let alone environmental influences on that sequence, remains murky. Another area for future work involves linking histology and electrophysiology data to structural and functional MRI findings in animal models to facilitate translation to human work. Such an effort would enable us to test how early-life experiences influence cellular developmental processes, including myelination and inhibition, that give rise to macro-level measures, including cortical thickness, surface area and network segregation.

Many of the studies reviewed herein are cross-sectional. Cross-sectional data have inherent limitations when developmental

processes are being examined, foremost among them the inability to infer the shape of developmental trajectories<sup>9</sup>. Cross-sectional studies cannot establish temporal precedence and, if sampling is non-random, associations with age may be driven by the characteristics of the sample rather than by age<sup>181,182</sup>. Longitudinal studies, such as the Adolescent Brain Cognitive Development (ABCD) study<sup>183,184</sup> and the upcoming HEALThy Brain and Child Development (HBCD) study<sup>185</sup>, will be necessary to fully understand how early environments influence trajectories of functional and structural brain development<sup>182,186</sup>. Data from these longitudinal studies will enable us to examine whether changes in brain structure correspond to changes in functional network segregation, and whether measures of the early environment predict earlier or later peaks in these trajectories.

An important future direction is determining whether SES effects on early brain maturation set the stage for early brain ageing<sup>3,187,188</sup>. There is initial evidence from a prospective study that traces of childhood SES are still present in the brain structure of young adults aged 23–25 years, even when adulthood SES is controlled for<sup>189</sup>. We do not yet know whether this is also true of older adults, but studies suggest that cognitive enrichment might be important: cognitive stimulation in childhood is associated with larger brain volumes<sup>190</sup> and better cognition in old age<sup>191</sup> when adulthood SES is controlled for. Furthermore, a longitudinal study showed that higher levels of early cognitive stimulation are associated with slower cognitive decline and less neuropathology with ageing<sup>192</sup>. Studies examining adulthood SES and brain structure and function find results that are broadly consistent with the theoretical framework we outline in this Perspective<sup>193–196</sup>. In one study, adults from higher-SES backgrounds showed a weaker negative association between segregation and age than did adults from lower-SES backgrounds, consistent with an interpretation of a slower decline in functional network organization in higher-SES adults<sup>197</sup>. Associations with adulthood SES were stronger than associations with childhood SES; however, because adulthood SES and childhood SES are correlated, these factors can be difficult to disentangle. Childhood SES is difficult to measure in an ageing sample because of recall biases<sup>198</sup>. Relationships between parental education and childhood experiences may also have been different

when today's 80-year-olds were children from how they are for today's 6-year-olds, making retrospective report of SES in adults difficult to map to current developmental research. In addition, low-SES populations may be poorly represented in ageing research, owing to lower-life expectancy<sup>187</sup> and higher prevalence of other diseases and health issues that would exclude these populations from studies of healthy ageing<sup>3,188</sup>. Ideally, future studies will follow individuals from birth to old age, although this may be more feasible in animal models (for example, as in REF.<sup>199</sup>).

Although longitudinal observational studies are useful, intervention studies are necessary to directly test whether children's early experiences cause slower or faster brain development. Future work should test whether cognitive enrichment in humans leads to changes in the pace of brain development, and whether the timing of enrichment influences these effects. Although we cannot evaluate the impact of creating early stressful experiences for children, we can learn from the effect of naturally occurring stressors. The emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as a global public health crisis has resulted in an unforeseen natural experiment on how the timing — that is, the age of children when it occurred — and the severity of a stressor affect the pace of children's maturation. However, the effect of the stress has been non-random, as the crisis has disproportionately affected lower-income communities and people from minority racial or ethnic groups and other marginalized populations<sup>200,201</sup>. Following the brain development of children who lived through this period will yield insight into the importance of stress timing on the rate of maturation.

It is possible to investigate causal effects of cognitive enrichment by studying educational interventions. Education is broadly beneficial for children's development, leading to increased cognitive ability, and better health and wellness throughout life<sup>202,203</sup>. Both the type and the timing of education could influence brain plasticity. Rote practice is likely to drive faster maturation of the brain systems involved, which would be beneficial for the task practised (for example, reading and writing), but it could compromise the ability to learn novel tasks. By contrast, rich and varied experiences that capture children's attention and enhance their motivation, boosting levels of acetylcholine and dopamine, could decelerate the rate of

brain maturation. Our model also predicts that educational experiences earlier in childhood will have a bigger effect on brain development and plasticity than experiences later in childhood, by changing the trajectory of maturation. Evidence for the efficacy of early interventions, such as from the Abecedarian Project and the Perry Preschool Program, is broadly consistent with this hypothesis<sup>204,205</sup>; however, direct comparisons of the same curricula at different ages are rare, and thus the neural outcomes of changing the timing of such interventions are not yet known. Determining the consequences of educational strategies for the pace of brain maturation is an important area of future research.

In conclusion, disparate strands of evidence from neuroscience, psychology and medicine are consistent with a model in which the early environment affects not only the outcome but also the pace of human brain development. We propose that high stress and low cognitive enrichment accelerate developmental changes in cortical thickness and surface area, and shift the trajectory and amplitude of functional network segregation across development. We argue that changes in the pace of brain development also affect plasticity during development. Our work provides a generative theoretical framework for research on links between childhood experiences and brain changes over the lifespan, and reinforces the pressing need to elucidate changes in early development that lead to disparities in later-life outcomes. If we can develop new screening tools to detect accelerated development, we will be better able to implement educational and other interventions earlier, and prevent cascading consequences of early maturation for mental and physical health.

### Citation diversity statement

Recent work in neuroscience and other fields has identified a bias in citation practices such that articles authored by women and scholars from minority racial or ethnic groups are undercited relative to the number of such articles in the field<sup>206–208</sup>. The expected gender proportions in reference lists of five top neuroscience journals as reported by Dworkin et al. were 6.7% for woman (first author)/woman (last author), 9.4% for man/woman, 25.5% for woman/man and 58.4% for man/man<sup>209</sup>. Inclusion of citation diversity statements has been proposed as a way of increasing transparency surrounding citation practice<sup>210,211</sup>. We obtained the predicted

gender of the first and last authors of each reference by using databases that store the probability of a name belonging to a woman or man, and classifying as 'unknown' any names with under 70% predicted accuracy<sup>209,212</sup>. Excluding self-citations of the authors of the current Perspective, for our references the proportions are 26% woman (first author)/woman (last author), 20% man/woman, 21% woman/man and 33% man/man. This method is limited in that the databases used may not, in every case, be indicative of gender identity, and in that it does not account for intersex, non-binary or transgender people. In addition, the expected proportions above were calculated across all neuroscience subfields, and may differ for particular subfields, such as developmental neuroscience. We look forward to future work to better understand how to support equitable practices in science.

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Article

# Mental Illness and Juvenile Offenders

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**Abstract:** Within the past decade, reliance on the juvenile justice system to meet the needs of juvenile offenders with mental health concerns has increased. Due to this tendency, research has been conducted on the effectiveness of various intervention and treatment programs/approaches with varied success. Recent literature suggests that because of interrelated problems involved for youth in the juvenile justice system with mental health issues, a dynamic system of care that extends beyond mere treatment within the juvenile justice system is the most promising. The authors provide a brief overview of the extent to which delinquency and mental illness co-occur; why treatment for these individuals requires a system of care; intervention models; and the juvenile justice systems role in providing mental health services to delinquent youth. Current and future advancements and implications for practitioners are provided.

**Keywords:** juvenile justice; adolescent; mental illness; treatment programs

## 1. Introduction

The juvenile justice (detention, probation, youth corrections facilities, *etc.*) system is currently faced with the task of providing mental health assessments and treatment services for its youth, as there is greater reliance on the juvenile justice system to do so. According to Garascia (2005), the juvenile justice system was originally both a rehabilitative and preventative approach, emphasizing the needs and rights of children over the appeal to punish them [1]. In accordance with The Juvenile Justice and Delinquency Prevention Act of 1974, the ultimate goal of juvenile justice was to divert youth from the formal, punitive processing of the adult justice system. This in turn resulted in the use of community-based programs rather than large institutions. The 1980s to the 1990s presented an interesting shift in the justice system's treatment of juvenile offenders. Prior to the 1980s, juveniles were seen as rehabilitative; however, due to a short-lived surge in violent delinquency, protecting the community became the primary goal [2–4]. Consequently, the juvenile justice system developed an approach that uses a punishment/criminalization perspective over a rehabilitative/medicalization perspective [2,3,5]. Similar to the zero-tolerance attitude of the education system, in the early 1990s more than half of the states in the U.S. made revisions that allowed for juvenile offenders to be easily prosecuted in the adult criminal court and began to pass more punitive laws to address adolescent crime [2,6]. Although youth have committed violent and nonviolent crimes at a lower rate in the past few decades, Harms (2002) posits that the number of youth processed via the juvenile justice system has increased [7]. In 1960 approximately 1,100 delinquency cases were processed daily, while in 2009 juvenile courts handled about 4000 delinquency cases daily, and in 2013, approximately 2900 delinquency cases were processed daily [8]. The National Juvenile Justice Council (NJJC) estimates that the number of delinquency cases increased 30% between 1985 and 2009, however there was a 9%

decrease between 1985 and 2013 [8]. More specifically, delinquency caseloads involving drug offenses, person offenses, and public order offenses increased, while property offense cases decreased between 1985 and 2013 [8]. The number of delinquency cases involving detention peaked in 2002, but decreased 44% through 2013 to the lowest level since 1985 [8]. According to the NJJC, despite the decrease in the volume of delinquency cases involving detention, the proportion of cases detained was larger in 2013 (21%) than in 1985 (19%). Between 1985 and 2013, the likelihood that a delinquency case would be handled informally (without petition for adjudication) decreased [8]. Although there was an intermediary increase, 31% of all delinquency cases resulted in either adjudication or waiver to criminal court in 2013, much similar to the 30% of all cases in 1985 [8]. It appears that some efforts have been made in the most recent years to decrease the number of youth cases processed in the juvenile justice system; however, this may be done by processing cases more informally or transferring cases to adult court.

Greenwood (2008) posits that it would be more economically practical if the focus was placed on preventing juveniles from becoming adult criminals [9]. In recent years it has become more apparent that although incarceration and detainment is necessary for a small percent of juveniles, long-term confinement experiences tend to do more harm than good, often leading to continued offending and recidivism [10–14]. In contrast, community-based alternatives have been found to decrease re-offending, even for youth who commit serious and violent crimes [11,15]. During the 1990s, most states saw a reduction in the availability of public mental health services for children. Many communities began using the juvenile justice system to try to fill the gap caused by the decrease availability [11]. Additionally, public opinion regarding the US juvenile justice system has been shifting again from a punitive approach toward a rehabilitative model of care, mirroring the shift of the juvenile courts in recent years [10,11]. However, instead of focusing on community-based provision of services, an increased reliance on youth corrections systems to care for the mental health or other specialized needs of youth offenders has developed [11,16].

Trupin and Boesky (1999) note that as this shift occurred, many juvenile justice systems were left unequipped to deal with the acute needs of youth with mental health disorders [17]. Investigations by the United States Department of Justice (USDJ), have documented that the typically offered mental health services for youth in juvenile justice is often inadequate or unavailable [18]. The Federal Advisory Committee on Juvenile Justice (2011) reports that barriers to providing adequate services include, insufficient resources, inadequate administrative capacity, lack of appropriate staffing, and lack of training for staff [19]. Due to the lack of research, inadequate models of care, insufficient policy development, ineffective experience and training of staff, and inadequate practice, juvenile correction personnel are quite hindered in being able to provide adequate services to youth offenders with mental health concerns.

To continue the shift toward juvenile offender rehabilitation, how systems of care intervene is of greatest import. There are generally four public systems that may respond when adolescents have problems affecting their welfare. These four systems concentrate in education, child protection, juvenile justice, and mental health [10,11]. Each of these systems has its own avenue or path for which an individual can gain entrance into the system—that is when the adolescent's need fits the capabilities and objectives of the system. Recently, communities have begun to acknowledge that this model of separate service delivery does not consistently address the nature of adolescents' needs [10,11]. Problems arise in effective treatment of adolescent offenders because many need services of more than one, if not all four, of the public systems of care at once. According to Grisso (2008), this is generally due to the fact that youths' problems have interrelated causes and maintaining factors [11].

## 2. Mental Health Concerns for Youth in the Juvenile Justice System

The prevalence rate of youth with mental disorders within the juvenile justice system is found to be consistently higher than those within the general population of adolescents [20]. Estimates reveal that approximately 50 to 75 percent of the 2 million youth encountering the juvenile justice system

meet criteria for a mental health disorder [6,16,21–23]. Approximately 40 to 80 percent of incarcerated juveniles have at least one diagnosable mental health disorder [16,24–27]. Two-thirds of males and three-quarters of females in previous studies of juvenile offender detention facilities, were found to meet criteria for at least one mental health disorder [26,28–30]. An additional one-tenth also met criteria for a substance use disorder [26,28–30].

Numerous comprehensive studies have indicated that there are certain types of mental disorders common among youth offenders, and that some of the symptoms increase youths risk of engaging in aggressive behaviors [16,26,31–33]. Additionally, risk of aggression is increased for many specific disorders and comorbid disorders because the emotional symptoms (*i.e.*, anger) and self-regulatory symptoms (impulsivity) tend to increase the risk [10,16,26,31]. Commonly found mental health disorders in youth offenders include, affective disorders (major depression, persistent depression, and manic episodes), psychotic disorders, anxiety disorders (panic, separation anxiety, generalized anxiety, obsessive-compulsive disorder, and post-traumatic stress disorder), disruptive behavior disorders (conduct, oppositional defiant disorder, and attention-deficit hyperactivity disorder), and substance use disorders [11,30,34]. Of youth involved with the juvenile justice system, estimates suggest that approximately 15% to 30% have diagnoses of depression or dysthymia (pervasive depressive disorder) [35], 13% to 30% have diagnoses of attention-deficit/hyperactivity disorder, 3%–7% have diagnoses of bipolar disorder [16,36], and 11% to 32% have diagnoses of posttraumatic stress disorder [37]. Grisso (2008) also noted that both conduct disorder and substance use disorders are quite prevalent in youth in juvenile courts [11].

Heilbrun, Lee, and Cottle (2005) indicate that understanding the link between mental health difficulties and youthful offending is important in considering treatment response, as there is growing evidence that mental health difficulties are linked directly and indirectly to later offending behavior and delinquency [38]. Youth with mood disorders are more likely to display anger, irritability and hostility [39–41]. Mood disorders, mostly depression, occur in about 10%–25% of youth in the juvenile justice system [16,26,31]. The irritable mood that often accompanies depressive disorders increases youths' probability of inciting angry responses from others, thereby increasing their risk of engaging in more physically aggressive acts that get them arrested [11,42,43]. In custody, the adolescent's mood disorder may increase the risk of altercations with others or increase the risk of anger at oneself, resulting in self-injurious behaviors [11]. Typically, anxiety disorders in youth result in less aggressive behaviors with the exception of posttraumatic stress disorder (PTSD) [44]. Children and adolescents with PTSD are liable to respond to perceived threats aggressively and unexpectedly [44]. Psychotic disorders are rarely seen prior to early adulthood and rare in juvenile justice settings [11,32]. Nonetheless, some youth may display psychotic-like symptoms that are possible expressions of an early form of a psychotic disorder. However, Connor (2002) acknowledges that there is not much evidentiary support for claims that youth with evolving psychosis are a greater threat of aggression or harm than any other youth [32].

Grisso (2008) indicates that research has provided substantial evidence that youth with disruptive behavior disorders (conduct disorder, oppositional defiant disorder, and intermittent explosive disorder) display more physically aggressive behavior [10]. Additionally, the comorbidity of conduct disorder and attention-deficit/hyperactivity disorder (ADHD) has been linked to chronic and repeat offending during adolescence [45–47]. There is also substantial evidence for a relationship between substance use disorders and delinquency, as well as continued aggression into adulthood for substance abusing youth [28,48]. According to Angold and Costello (1993), co-morbidity, or the presence of more than one mental disorder, is common among adolescents with mental disorders [49], and approximately two-thirds of juvenile offenders meet the criteria for two or more disorders [45–47,50].

The high prevalence of mental disorders within the juvenile justice system does not necessitate a need for treatment, but emphasizes the need for different levels of mental health care with varying treatment options. Some youth who meet criteria for a disorder experience their disorder temporarily and only need emergency services. Others, approximately 10%, represent a group of youth with

chronic mental health needs who will likely need clinical care well into adulthood [51]. Some youth function well despite their symptoms, while others present limited functionality. Regardless of the diagnosis, youth will present within the juvenile justice system differently, with different mental health needs requiring differing levels of care. This individuality requires an effective screening and assessment processes, as well as varied effective treatment options. This task is weighty for one system of care to provide fully.

### 3. Treatment Models

There is a multitude of evidence for the benefits of treating youth in acute distress due to mental illness. According to Grisso (2008), the most common and effective treatments include professional clinical care, psychopharmacology as needed, and the structuring of an environment to protect youth as well as reduce stress while in crisis [11]. Several types of psychotherapy and psychosocial interventions available for youth with mental disorders actually focus on youth with both mental health difficulties and delinquent behaviors. While evidence is limited for the efficacy and effectiveness of some approaches, there are a few specific therapeutic models with promising evidence for their effectiveness with youth offenders with mental disorders.

#### 3.1. Cognitive-Behavioral Interventions

Several studies have demonstrated that CBT is effective for reducing future delinquency for youth with various depressive and anxiety disorders [52–54]. Cognitive-Behavioral therapy (CBT) teaches youth awareness of social cues and promotes delaying, problem solving, and nonaggressive responding strategies. Cognitive-behavioral approaches are particularly effective with juvenile offenders. According to the National Mental Health Association (2004), this approach is quite effective for youth involved in the legal system as it is structured and focused on triggers of disruptive or aggressive behavior [55]. CBT has been used to address a variety of issues including interpersonal, problem solving, anger management, and social skills in individual or group treatment models [55]. Reductions in recidivism of up to 50 percent have been demonstrated in research studies [55]. Thinking For a Change (TFAC) is a cognitive behavioral intervention developed by Glick, Bush, and Taymans (2001). The program aims to restructure juvenile offenders' thinking and teach pro-social cognitive skills by incorporating various cognitive approaches. Administered in a weekly small group for approximately two hours, the curriculum is comprised of 22 lessons focused on problem solving. Although evidence suggests that intensive cognitive behavioral skills training is quite helpful, Shelton (2005) found that programs that incorporate these treatment options are not the norm in most jurisdictions [54]. She purports that young offenders are often placed in programs modeled after those designed for adults. Another issue may be the adaptation of treatment interventions originally developed in outpatient or community settings, yet being used in secure or residential settings. While adapting treatment interventions for use in a different setting is common and often helpful, outcome data and research should be conducted to inform treatment effectiveness regarding the treatment's intended use in the different setting.

#### 3.2. Integrated Co-Occurring Treatment Model

According to Cleminshaw, Sheppler, and Newman, the Integrated Co-occurring Treatment (ICT) model for youth is an integrated treatment program, and is a component model of care that uses treatment and service elements that are effective with similar populations but adapted to the specialized needs of youth with co-occurring mental health and substance abuse disorders [56]. It is currently utilized by a number of evidenced-based practices (*i.e.*, Multisystemic Therapy, Multidimensional Family Therapy, and Functional Family Therapy). ICT uses a stage progression treatment approach (engagement, persuasion, active treatment, and relapse prevention) and engages motivational interviewing as a method to facilitate readiness for change [56]. Multisystemic therapy, Functional Family therapy, and Multidimensional Treatment Foster Care, are promising or effective

treatments used for youth within the justice system [10,57,58]. These modalities incorporate aspects of treating juvenile offenders that Underwood and colleagues [59,60] have identified as beneficial and preventative when provided by the justice system. The following section provides an overview of programs being implemented in order to provide effective treatment for juvenile offenders with mental health concerns.

### 3.3. Functional Family Therapy

Functional Family therapy (FFT), a brief family-centered approach, was developed in the 1960s in response to multi-need youth and families. Functional Family Therapy is often used for youth ages 11 to 18 at risk for and/or presenting with delinquency, violence, substance use, conduct disorder, oppositional defiant disorder, or disruptive behavior disorders [54]. One study found that youth receiving FFT had a 25 percent re-arrest rate, compared to a 45–70 percent re-arrest rate for those seen in juvenile court, or who had either no treatment or eclectic [54]. According to the national Mental Health Association (2004) a five-year follow-up study found that less than 10 percent of youth receiving FFT *versus* 60 percent of youth seen in juvenile court had subsequent arrests. While FFT has been shown to be an effective model for reducing recidivism, research also indicates that the training of behavioral health providers in the FFT model is essential [54].

### 3.4. Family Integrative Transition

The Family Integrative Transition (FIT) program combines empirically supported interventions such as, Multisystemic Therapy, Motivational Enhancement therapy (MET), Relapse Prevention, and Dialectical Behavior therapy (DBT). Aos (2004) described this rigorous treatment intervention as beginning two months prior to the juvenile's release date and continuing for four to six months as the juvenile adjust to re-entry into the community [61]. The goal of FIT is to help youth generalize the skills learned while incarcerated to their daily lives within the community [62,63]. The FIT program is manualized, family-oriented, and community-based. The Juvenile Rehabilitation Administration (2002) indicates that the program was designed to address risk and protective factors of adjudicated youth with comorbid mental health and substance use disorders [62]. Evaluation research found that for those who participated in FIT, there was a 27 percent recidivism rate compared to 40 percent for non-participants [61].

### 3.5. Multisystemic Therapy

One of the best available treatment approaches for juvenile offenders with mental health treatment needs as indicated by empirical literature is Multisystemic Therapy (MST). An intensive, multi-modal, family-based approach, MST fits treatment with identified causal factors and correlating factors of delinquency and substance use [55]. Extant literature lends support for the effectiveness of MST with juveniles who have emotional and behavioral problems [55]. Studies have demonstrated reductions as high as 70 percent in rates of re-arrest, reductions in out-of-home placements up to 64 percent, improvements in familial functioning, and decreases in mental health concerns for serious juvenile offenders [55]. Timmons-Mitchell *et al.*, (2006), found that that the use of MST produced significant reductions in rearrests and improvements in four areas of functioning measured by the Child and Adolescent Functional Assessment scale at 18 months and 6 months' post treatment [64]. This study used a real-world mental health setting with juvenile justice involved youth, further supporting the claim that community-based treatment may best fit the needs of delinquent youth with mental health difficulties. A meta-analysis of MST outcome studies [65] found that effect sizes of MST efficacy studies tend to be quite larger than MST effectiveness studies [66–68].

### 3.6. Wraparound Approach

Burns and Goldman (1999) define wraparound as a "philosophy of care that includes a definable planning process involving the child and family that results in a unique set of community



services and natural supports individualized for that child and family to achieve a positive set of outcomes” ([69], p. 10). This framework lends better treatment support for the notion that youth with complex emotional or behavioral problems are often involved in more than one system of care. Wraparound services link the youth’s strengths and needs to services and supports within his or her community. The wraparound process is related to the system-of-care framework. Generated by the Child and Adolescent Service System Program (CASSP), Systems-of care are comprehensive programs that use a coordinated network of mental health and other support services to meet the evolving needs of children and adolescents with severe emotional problems [69]. Research shows that the wraparound process is challenging, yet promising in treating the mental and emotional needs of youth in the justice system. The Wraparound Milwaukee program is excelling in its collaborative efforts. The program has successfully integrated juvenile justice, mental health, child welfare, and education systems to provide services to youth. Additionally, each youth receives an individually tailored treatment plans. Outcome evaluations revealed a 60 percent reduction in the use of residential treatment and an 80 percent decrease in psychiatric hospitalization [70]. Suter and Bruns (2009) meta-analysis examining the effectiveness of wraparound processes revealed quite a few gaps in research that limit the capacity to claim wraparound services as an effective treatment despite its promise [71]. As they included only experimental and quasi-experimental designs, there were only seven controlled outcome studies. The researchers found that effect sizes were positive and significant, but small when examining specific outcomes. Juvenile-justice related outcomes (not defined) was also significant but small in effect size [72]. Essentially, the results indicate that there is a real difference between those receiving wraparound care *versus* those who are not; however, the magnitude of these differences is quite small when studying specific outcomes. This finding indicates the necessity for careful comparison of treatment services with a larger sample size, and very specific and valid definitions and measures of outcomes. While wraparound programs could make positive impacts, Suter and Brun [71] caution that research studies have been limited by study designs, comparability among groups, and unreported levels of attrition. As such, it does not meet the criteria of an evidence-based treatment as of yet [71].

### 3.7. Multidimensional Treatment Foster Care

Multidimensional Treatment Foster Care (MTFC) is an alternative to group, residential, secure-care, or hospitalization treatment for adolescents with severe and chronic emotional and behavioral disorders [54]. Adolescents are placed with trained, local, and supervised families for approximately six to nine months. Throughout the MTFC placement, family therapy is also conducted. According to the National Mental Health Association (2004), outcome research regarding MTFC programs has demonstrated that youth spent 60 percent fewer days incarcerated than those not receiving services, and also had significantly fewer arrests [54]. Chamberlain *et al.* (2007) and Leve, Chamberlain, and Reid (2005) found that results from prior studies of girls support the efficacy of MTFC relative to services as usual (group care intervention) on targeted outcomes such as, criminal referrals, days in locked setting, self-reported delinquency, and deviant peer affiliation [71,72]. MTFC also proved efficacious for non-targeted outcomes such as, pregnancy, school attendance, and completion of homework [73,74]. Harold and colleagues (2013) found the MTFC decelerated girl’s depressive symptoms and showed greater benefits for girls with higher levels of initial depressive symptoms [75,76].

### 3.8. Crisis Intervention Teams

Douglas and Lurigio (2010) discussed one of the newest, specialized law enforcement programs in the US—Crisis Intervention Teams (CITs) for youth with mental illness [77]. The development of J-CITs (juvenile-crisis intervention teams) was a response to the fragmented and often inadequate behavioral health services for youth across the educational, juvenile justice, and mental health systems [77]. While the number of adolescents diagnosed with mental illness has risen in the United States, a large amount of youth are never diagnosed or never treated [77]. Specifically, CIT programs were developed

by communities in order to address the school to prison pipeline, allowing for the diversion and referral of adolescents with mental disorders for services. Doulas and Lurigio (2010) examined three programs in Denver, Chicago, and San Antonio in the early stages of implementation. Initial findings indicate the need and utility of such programs [77]. Children in Crisis (CIC) Denver, implemented by the police department in 2010, aims to recognize mental illness, and offer resources to provide follow-up care for youth in distress. Police first deescalate the crisis and then refer the youth for services. CIC training includes information on trauma and adolescence, how to approach traumatized youths, developmental milestones, common mental illnesses among adolescents, response tactics during calls, and the nature of psychiatric emergencies [77]. Officers are also assisted in how to interact with youth with developmental disabilities via a role-playing component. Studies evaluating the CIC process and outcomes are necessary [77].

The most effective treatment models that have demonstrated delinquency-reducing benefits for youth with mental disorders include Functional Family Therapy, Treatment Foster Care, and Multisystemic therapy. Interestingly, all of these therapeutic models are similar in that they involve families and youth, are community-based, and deal with problem behaviors and stresses as a systemic family unit. Essentially these treatment models represent an integrated system of care. Grisso (2008) noted the aforementioned interventions are the few that have demonstrably reduced recidivism of youth with mental disorders [11]. Research regarding each of the mentioned models is lacking with regards to efficacy and effectiveness, as many of the studies reveal problems with study design, small effect sizes, and other confounding variables. However, the greatest issue related to treating juvenile offenders with mental disorders does not appear to be limited evidence-based or effective treatments, as much as how and where these treatment models should be provided in order to be most efficacious. Cuellar, Markowitz and Libby (2004) found that youth in foster care who received community-based services had lower subsequent rates of pretrial detention center admissions [78]. Additionally, adjudicated youth with mental disorders who were diverted from institutional placement and received services in the community had significantly fewer arrests than similar youth who received no treatment, according to Cuellar, McReynolds, and Wasserman (2005) [79].

#### 4. Response to Treatment Needs

Responses to the needs of youth with mental disorders in the juvenile justice system often focuses on generating more treatment services within the juvenile justice system [11]. Grisso (2008) suggests that these youths would benefit more by defining what is meant by treatment and by avoiding dependence on the juvenile justice system to respond to broad issues such as adolescent mental health and crime [11]. Current reasoning and research posits that the role of the juvenile justice system should be concentrated, narrow, and based on collaboration with the broader community to meet the needs of youth with mental health disorders [11]. To a certain degree it makes sense that the juvenile justice system would be where society focuses efforts to treat delinquent youth with mental disorders; however, this practice can be detrimental to the youth and create an economic strain on funding within the juvenile justice system.

Putting so much of the community's limited mental health resources into juvenile justice programs generates the opportunity to criminalize youth with mental health difficulties, or place youth in the most restrictive form of care in order to get them the best resources. Consequently, if funding for children's mental health services are limited and allocated to the juvenile justice system, then the community's ability to develop varied community-based services is limited. As a result, and as has been seen historically in the juvenile justice system, when community-based services are reduced, more youth are referred to the juvenile justice system [80]. Tonry and Moore (1998) posit that when youth must be placed in more restrictive settings in order to receive basic mental health services, the likelihood of future delinquency increases, as does criminal behavior and arrests as adults [81].

Legal considerations restrict treatment options for youth arrested and detained. Pretrial detention centers are required to provide emergency mental health services for youth in crises; however,

the juvenile justice system cannot impose rehabilitative or longer-range mental health interventions until a youth is adjudicated, or comes under the custody of the juvenile justice system. Clinical considerations also suggest that the juvenile justice system may not be able to adequately treat all delinquent youth with mental health needs. Grisso (2008) posits that it is possible that some delinquent youth with mental disorders might be rehabilitated within the structure and guidance of properly operated, secure-care facilities, but trust and caring, essential components of a therapeutic relationship, are difficult to maintain when the therapist is viewed as part of the system that restricts youth's liberty [11]. In fact, some treatments performed in secure care facilities can be counterproductive. Group therapies involving youth exhibiting many antisocial behaviors sometimes have negative effects on peers with less antisocial behaviors [82]. Additionally, Lipsey and Wilson (1998) suggest that considerable evidence indicates that rehabilitation methods in secure settings like behavior modification effectively change behavior within the setting, but the skills do not transfer well to the community setting of the youth [83].

Recently, how to best respond to delinquent youth with mental disorders has begun to focus on a community system of care that integrates services across child mental health, child protection, education, and juvenile justice agencies. Many youths have multiple needs that require services from more than one agency. Although a youth may receive services from various agencies, there is often a lack of coordination between the systems of care that creates conflict, inefficiency, frustration, and sometimes harm. A community system of care seeks to improve cross-agency referral and collaboration, and possibly even cost-sharing for the development of uncommon services [11,84,85]. Nationwide, many communities have generated and employed community systems of care. In these systems, treatment of juvenile offenders with mental health needs is the responsibility of each agency of care, not merely the juvenile justice system. Grisso (2008) concludes that this collaboration allows for the juvenile justice system to divert many youths from entering detention centers with the ability and capacity to refer them to community programs and to develop better aftercare plans for youth reintegrating into the community [11]. Duchnowski, Kutash, and Friedman (2002) found that initial research has documented benefits of community systems of care with regard to both economic and child welfare outcomes, as well as reductions in recidivism [86]. As the mental health needs of delinquent youth become the collective responsibility of the community, then the role that the juvenile justice system plays must be redefined.

## 5. The Role of the Juvenile Justice System

Grisso (2004) posits that the role of the juvenile justice system would still be considerable, but more focused and limited than if it were the sole provider of mental health services for juvenile offenders [87]. Also, the primary role of the juvenile justice system would vary at different stages in processing youth offenders. The first stage is the youth's arrest and referral to juvenile court. At this stage the primary role should be to identify youth with mental disorders who can be diverted from processing to the community where treatment services are based rather than remaining in pretrial detention or proceeding to full juvenile justice processing [11,60]. This diversion is readily feasible with youth referred to detention centers for minor offenses or those who present with no danger to others. Many youths with mental health needs could be diverted from formal juvenile justice processing if their mental health problems were identified at this early stage and if policies and system-of-care options (foster and shelter care services) were in place.

During stage two, the pretrial detention, the juvenile justice systems should maintain the emergency service provision obligation for youth awaiting trial, however, this should generally be the extent of the juvenile justice systems role. All detention centers should have the capacity to respond to mental health emergencies (*i.e.*, suicide risk, symptom escalation), but do not necessarily need to have mental health professionals always on staff. This would require facilities to have clear staff procedures for responding to youth emergency needs, access to clinical consultants, and arrangements for rapid transfer to psychiatric facilities, according to Grisso (2008) [11]. The procedure may look similar to

the aforementioned crisis intervention teams (CITs). Despite the high prevalence of mental disorders in pretrial detention centers, approximately 25% to 30% of detained youth with mental disorders actually receive treatment while in detention [88]. Much more research is required to determine the level of need in detention centers based on symptom levels of youths' mental disorders as opposed to merely diagnosis.

According to Grisso (2008), stage three is the assessment for dispositional treatment planning stage [11]. When youth are adjudicated, the courts tend determine the appropriate placement for rehabilitation. Screening at this time also requires identifying mental health needs, however, the purpose is to specify types of longer-term mental health treatments for their rehabilitation plan. Assessment at this stage should help identify youth with mental disorders who, despite being adjudicated, might benefit from rehabilitation in non-secure community placements where they might benefit from a variety of mental health services typically unavailable in secure-care [11,89].

Grisso (2008) suggests that stage four of processing in the juvenile justice system is for youth placed in secure care or transitioning out of a secure facility into the community [11]. The juvenile justice system can meet the mental health needs of youth in secure care by buying psychiatric consultation services or by hiring mental health professionals to provide psychosocial interventions. For the small percent of youth with serious, chronic, and persistent mental disorders too disturbed to function within the structure of most youth secure-care programs, specialized "clinical units" are sometimes developed. On these units, youth with serious, disruptive mental disorders may be separated from the general youth correctional population and or receive specialized clinical services from fulltime mental health professionals. Ideally, a model that blends the resources of the juvenile justice system and the child mental health system to operate and staff such facilities would be most advantageous. Grisso (2008) acknowledged that such facilities exist in some states, but they have not been "modeled" or studied in a way that would allow for their systematic development nationwide [11]. New issues may arise when youth are released from secure care back into the community.

Across the United States, several states have generated and implemented programs within their juvenile justice system structures that address the mental health concerns of youth offenders. Many of these programs implement some aspects of the aforementioned recommendations presented by Underwood and colleagues [59,60]. Arizona, California, Colorado, and New Hampshire have all established courtroom procedures enabling legal personnel to request mental health screenings for juveniles involved in delinquency proceedings, while other jurisdictions have created specialized courts to serve youth with mental health needs [70]. Some states have community-based treatment programs for juveniles that do not pose a danger to public safety and for whom detention may exacerbate their psychological disorder [70]. Additionally, assessment with diversion at the early stage in the juvenile justice process is a promising prevention intervention [70]. Diversion programs have been implemented in many jurisdictions so that juveniles may complete certain requirements as opposed to being processed for adjudication [70]. An important part of a comprehensive approach entails providing juveniles with access to mental health services after being released from secure care facilities [59,70]. Legislation in Virginia and Texas requires Juvenile Justice to establish regulations for continuity of care regarding mental health, substance use, and other therapeutic treatments for youth re-entering the community post-commitment or detainment [70].

## 6. Current and Future Advancements

According to Grisso (2008), compared to youth without mental disorders, youth with mental disorders commit only a minority of a community's delinquencies, but they have a greater risk of offending and re-offending than youth on average [11]. A great deal more research is necessary in order to speak confidently about the best policies for responding to the mental health needs of youth offenders; however, certain directions for appropriate policies are evident. The shift of the juvenile justice system as whole towards a more rehabilitative *versus* punitive model of care appears to be in the right direction. The role of the juvenile justice system in meeting the mental health needs of youth

offenders must become more focused and limited, yet collaborative with the child protection, education, and child welfare agencies. Instead of focusing on generating more evidence-based treatments to be used within the juvenile justice system, research seems to suggest that diversion programs and more community-based treatment services would be most beneficial to youth delinquents with mental health difficulties. In order to develop and implement such services; a very clear and standardized screening and assessment process is required. Evidence-based screening and assessment tools should be used universally at the aforementioned decision points in juvenile processing to identify youth with mental health needs. Additionally, every juvenile justice intake (assessment center) and detention program should document and archive screening and assessment results to provide data needed for system planning and resource development, especially for those specific to the communities from which youth come. Also, it seems that prioritizing educating personnel about mental health problems of youth, will also likely improve the system's ability to identify and respond appropriately to such needs. Because of the multiple needs that delinquent youth with mental disorders present with, all policies should be united by an overarching approach that reduces the political distance and boundaries among existing child welfare systems.

## 7. Conclusions

In recent years it has become apparent that incarceration and detainment, while necessary for a small portion of juveniles, tends to have more detrimental effects including continued offending and recidivism. From an economical and long-term benefit standpoint, community-based alternatives have been found to be more successful with rehabilitating youth, even for youth who commit serious and violent crimes. To this end, an integrated system of care (education, child protection, juvenile justice, and mental health) must intervene in juvenile cases in a collaborative manner in order to meet the interrelated needs of each individual youth. Diagnoses aside, youth present within the juvenile justice system, requiring different levels of care. As such, rehabilitation requires an effective screening and assessment process with varied treatment options. CBT, ICT, FFT, FIT, MST, MTFC, and Wraparound treatment models are identified as effective treatment models for juvenile offenders. The models of treatment are most effective when they involve, thoroughly trained professionals, families and youth, are community-based, and deal with problem behaviors and stresses as a systemic unit. Research indicates that the mental health needs of delinquent youth must become the collective responsibility of the community, thus requiring a redefinition of role played by the juvenile justice system. This role should be concentrated, narrow, and based on collaboration with the broader community to meet the needs of offending youth with mental health disorders. The use of Juvenile Crisis Intervention Teams in some states is an initial step in diverting and referring youth offenders to resources within the community. The initial role of the juvenile justice system should be in identifying mental health needs and diverting youth to the community. At different points throughout the processing of juvenile offenders, the juvenile justice systems role should include assessment with the purpose of identifying needs and formulating rehabilitation plans that include varied treatment options. For youth placed in secure-care or for youth transitioning to the community, most effective models of treatment will include psychosocial interventions carried out by mental health professionals and an after-care plan with services to help the youth offender transfer and maintain learned skills. As opposed to focusing resources on creating new interventions within the juvenile justice system, the literature indicates that redefining the roles of the juvenile justice, education, mental health, and child protection systems to be a systematic and collaborative unit of care will be more effective in rehabilitating youth offenders.

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# Factors Associated with Successful Completion of Juvenile Mental Health Court

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Justice-involved youth experience a high number of mental health symptoms. There has been an increased effort to address the mental health needs of these youth through specialized juvenile mental health courts (JMHC). To date, there have been few studies that examined characteristics related to successful completion of a JMHC program. This study is a retrospective case file review of 99 individuals ages 10 to 18 years who were involved in a JMHC program. Information collected included educational history, parental factors, psychiatric and abuse history, legal history, risk of removal from home, and risk and protective factors from the Structured Assessment of Violence Risk in Youth (SAVRY) measure. The primary outcome was successful completion of the program. Forty-eight participants (48.5%) successfully completed the program. Neglect, removal from the home, new charges, probation violation, and number of previous charges were negatively associated with successful completion. Positive attitude toward intervention was positively associated with successful completion. Measures that juvenile justice systems may use, such as the SAVRY risk factors and abuse and neglect screens, were not associated with completion. More studies are needed to identify factors associated with successful completion of a JMHC program and to develop interventions to improve outcomes.

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**Key words:** juvenile; mental health court; probation; juvenile court; diversion

In the United States, a large population of youth are involved with the juvenile justice system, with 728,280 arrests of persons younger than eighteen years in 2018.<sup>1</sup> Multiple studies have established that justice-involved youth have higher rates of maltreatment history and mental health diagnoses than the general youth population.<sup>2–5</sup> Up to 100 percent of justice-involved youth report criteria consistent with at least one mental health diagnosis,<sup>6</sup> and many have multiple mental health diagnoses. Drerup and colleagues identified criteria for one mental health diagnosis in 92 percent of male youth

and 97 percent of female youth involved in the juvenile justice system.<sup>7</sup> In the same study, 34 percent of males and 60 percent of females met criteria for three or more mental health diagnoses.

Justice-involved youth have high rates of maltreatment history compared with that of the general population.<sup>2–5</sup> More than 67 percent of males and more than 75 percent of females involved in the juvenile justice system report a history of physical abuse, and more than 10 percent of males and 40 percent of females report a history of sexual abuse.<sup>2</sup> Rates of neglect among justice-involved youth are also higher than the general population, with 30 percent of justice-involved youth having a history of neglect.<sup>3,8</sup> A history of maltreatment in the form of neglect may also confer increased risk of becoming involved in the justice system compared with experiencing physical or sexual abuse.<sup>8,9</sup>

Justice-involved youth with histories of trauma experience an average of five distinct traumas, with the majority of those occurring in the first five years of life.<sup>3</sup> In a study of 350 youth involved in family

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court, juvenile detention, residential facilities, and juvenile court, 94 percent reported a history of one or more traumas, defined as natural disasters, serious motor vehicle accidents, the unexpected death of a loved one, being the victim of a mugging or robbery, assault resulting in bodily harm, childhood physical and sexual abuse, and witnessing other disturbing, terrifying, or distressing events. Of this overall population, 45.7 percent met criteria for posttraumatic stress disorder (PTSD).<sup>9,10</sup> Burke *et al.*<sup>5</sup> found that while three quarters of 75 studied youth had evidence of a mood, anxiety, or behavioral health disorder at first contact with the juvenile court, only about 20 percent of justice-involved youth accessed mental health services over a three-year period. A diagnosis of Oppositional Defiant Disorder was most likely to precipitate contact with mental health services, and justice-involved youth meeting criteria for depression, anxiety disorders, and attention deficit hyperactivity disorder (ADHD) were less likely to have accessed mental health services.<sup>5</sup> Eighty-five percent of justice-involved youth reported at least one barrier to accessing mental health services. Most frequent barriers included the belief that the problem will resolve on its own, uncertainty of where to find help, difficulty in accessing help, fear of others' perception, and cost.<sup>11</sup> Brady and colleagues have outlined "structurally embedded stressors" in school, community, and home environments (such as socioeconomic stressors and inadequate access to care) as contributing factors for development of symptoms that manifest as externalizing behavior. Lack of resources often leads systems to focus on response to the externalizing symptoms rather than conceptualizing the etiology of those symptoms.<sup>12</sup> This approach may be more likely to result in punitive responses rather than treatment interventions at a systemic level.

Family and social modeling may also mitigate or exacerbate depressive symptoms for justice-involved youth. Family support has been shown to reduce the report of depressive symptoms.<sup>13</sup> Even nonparent family members (especially siblings and extended family) are important emotional supports for teens.<sup>14</sup> Children receiving mental health services in the community are more likely to become justice-involved if their living situation is disrupted<sup>15</sup> and to have more significant justice involvement as the number of their living transitions increases. Delinquency in adolescents with depression has also been associated with

affiliation with other justice-involved youth and lack of prosocial involvement.<sup>16</sup>

Because of the large number of mental health diagnoses in the justice-involved youth population, there has been an increased effort to address the mental health needs of these youth. In a review by Lyons, *et al.* on the effect of linkage to mental health services on overall functioning and recidivism, 75 percent of eligible youth were successfully linked to mental health services, with subsequent improvement of depression, anxiety, and psychosis symptoms.<sup>17</sup> Youth also demonstrated improved functioning in family and school settings and fewer dangerous behaviors.<sup>17</sup> Recidivism was also reduced, with only 42 percent of youth who were linked to mental health services having another arrest, compared with 72 percent of all arrested youth.<sup>17</sup>

An increasingly popular method of addressing the mental health needs of justice-involved youth is the development of a Juvenile Mental Health Court (JMHC). The first JMHC in the United States was established in 1998 in Pennsylvania; by 2012, there were at least 41 JMHCs in 15 states.<sup>18</sup> In 2020, the GAINS Center noted there were 56 JMHCs in 17 states.<sup>19</sup> The programs are usually run through a juvenile court, or a probation agency, or a combination of the two.<sup>18</sup> The most common diagnoses of youth involved in JMHC are bipolar disorder, depressive disorder, and ADHD, and about half of the JMHCs allow all youth with a mental health diagnosis to participate.<sup>18</sup> Most JMHCs include both felony and misdemeanor charges.<sup>18</sup> There are a number of characteristics that are common to nearly all JMHCs, which include: a regularly-scheduled special docket; less formal interaction style; age-appropriate screening and assessment for mental health, substance use, and trauma; team management of treatment and supervision; system-wide accountability; use of graduated incentives and sanctions; and defined criteria for success.<sup>20</sup> The incentives most commonly used are gifts cards or other gifts, praise by the judge or probation officer, reduction in court hearings, and dismissal of charges.<sup>18</sup> The most common sanctions are increased supervision, placement in detention, community service, and other tasks like writing essays.<sup>18</sup> The JMHC facilitates access to mental health services, including individual outpatient treatment, family therapy, and case management, and guardian participation is almost always required.<sup>18</sup> The average amount of time spent in a JMHC program is one year.<sup>18</sup> Studies that have

examined outcomes for JMHCs have found that youth who participate in a JMHC have lower recidivism rates.<sup>21–24</sup> There are data suggesting a reduction in mental health symptoms for those who participate in a JMHC.<sup>23</sup>

Despite the growing number of JMHCs, to date few studies have examined characteristics related to successful completion of a JMHC program. Reported rates of successful completion of JMHC programs range from 48 to 56 percent,<sup>22,23</sup> although differing characteristics of these courts make comparisons more difficult. Heretick and Russell examined factors related to successful completion of a JMHC in Colorado and found that the number of court reviews and new charges while participating in the JMHC were statistically significant predictors of failure to complete the program.<sup>21</sup> A study of characteristics related to success and failure in a juvenile drug court, a similar type of juvenile diversion program, found 46 percent of the youth successfully completed the juvenile drug court program.<sup>25</sup> Youth with a higher number of prior offenses, more negative and antisocial attitudes, or a lifetime history of child abuse (not further defined) were less likely to successfully complete the program.<sup>25</sup>

The aims of this study are twofold. First, the study is descriptive, with the aim of characterizing the risk and protective factors of youth who had been detained and met criteria for involvement in a JMHC. The second aim is to determine which characteristics are predictive of successful completion of the JMHC probationary period. Success is defined as completion of the probationary requirements and dismissal from the JMHC. Failure is defined as termination of probation with subsequent removal to state custody. We hypothesized that youth who were at risk for commitment to state secure facilities based on a screening form at the outset of their probationary period would have lower successful completion rates compared with those youth who did not screen positive for risk for removal to state custody.

### Methods

In 2005, a juvenile court serving a population of approximately 250,000 established a specialized court for juveniles with serious mental illnesses or developmental disabilities who commit delinquent acts. The purpose of this specialized court is to utilize a treatment-oriented disposition whenever possible, ensuring that the specific needs of juveniles with

serious mental illness or cognitive disability are addressed appropriately while ensuring community safety and reducing the risk of recidivism. Juveniles adjudicated Delinquent or a child of a Family in Need of Services (FINS) and who are diagnosed with serious mental illness or cognitive disability are eligible for the program. Qualifying diagnoses include mood disorders, psychotic disorders, anxiety disorders, intellectual disability, autism spectrum disorders, and brain syndromes (including severe head injury). Youth with attention deficit hyperactivity disorder, oppositional defiant disorder, or conduct disorder alone do not qualify for inclusion in the JMHC. Individuals with substance use disorder as a single or most prominent diagnosis are excluded and referred to the local juvenile drug court.

The presiding judge, the prosecuting attorney, the defense attorney, the probation officer, and juvenile detention staff have the authority to refer youth for JMHC screening. Upon referral, the court's mental health coordinator conducts an assessment which includes The Massachusetts Youth Screening Instrument—Version 2<sup>26</sup> clinical interviews with the youth and family and review of historical documentation provided by outside mental health professionals, school representatives, and family members. If the mental health coordinator deems the youth potentially eligible for the JMHC, the youth is referred to a licensed clinical psychologist or psychiatrist for diagnostic evaluation. If assessments support placement in the specialized probation program, a treatment plan is presented to the JMHC judge. The JMHC charter requires that treatment plans embrace a wraparound philosophy that is strength-based, culturally relevant, and delivered in the least restrictive environment that ensures individual and community safety. Treatment plans might include individual therapy, family therapy, group therapy, emergency crisis services, medication management, educational support, family respite, skills building, and recreation programs. Therapies available include Multisystemic Therapy, Functional Family Therapy, and trauma-focused therapies. While involved in the JMHC, youth meet regularly with probation officers with a background in counseling and a master's level education. Probation officers meet face-to-face with each child at least once a week, maintain frequent contact with family, other natural supports, and the treatment team. Probation officers are available 24 hours a day and collaborate with the treatment team to de-escalate

crises and enhance the stability in the child’s environment. A licensed Master’s level social worker, with a background in counseling, supervises the unit and provides guidance for treatment plans with a focus on cross-system collaboration and promotion of evidence-based interventions.

This study is a retrospective case file review of 99 individuals who participated in the JMHC program. All JMHC participants aged 10 to 18 were included, except for those admitted to an inpatient psychiatric facility at the time of the study. This study was approved by the Institutional Review Board at Louisiana State University Health Sciences Center, Shreveport, Louisiana and approved by Caddo Parish.

**Measures**

Information was collected by review of JMHC files, which included educational history, parental factors, psychiatric and abuse history, legal history, risk of removal from home, and risk and protective factors determined by the Structured Assessment of Violence Risk in Youth (SAVRY) measure.<sup>27</sup> A list of items assessed on the SAVRY measure can be seen in Table 1. Risk of removal from the home was captured on the Title IV-E Social Security Act Foster Care Eligibility Form (Figure 1) completed by juvenile court staff for each youth. The Title IV-E Form queried for abuse and neglect risk factors resulting in an “at risk” or “not at risk” determination. The SAVRY is a validated measure that is composed of 24 items in the three risk domains of Historical Risk Factors (10 items), Social/Contextual Risk Factors (6 items), and Individual/Clinical Factors (8 items). The risk factors are rated as high, medium, or low risk. SAVRY risk factor scores were determined by quantifying each item (absent = 0, moderate = 1, high = 2) and adding all items. The measure also includes the presence or absence of six Protective Factors, which were summed for a total Protective Factor score. Each risk and protective factor’s relationship to successful disposition was also analyzed individually.

Psychiatric history included number of psychiatric diagnoses, number of psychotropic medications, and pertinent history, including suicidal behaviors, non-suicidal self-injury, psychiatric inpatient treatment, psychiatric outpatient treatment, and psychotherapy. Maltreatment history included history of physical abuse, sexual assault, neglect, past referral to

**Table 1** SAVRY Risk Factors

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Historical Factors
History of violence
History of nonviolent offending
Early initiation of violence
Past supervision/intervention failures
History of self-harm or suicide attempts
Exposure to violence in the home
Childhood history of maltreatment
Parent/caregiver criminality
Early caregiver disruption
Poor school achievement
Social/contextual factors
Peer delinquency
Peer rejection
Stress and poor coping
Poor parental management
Lack of personal/social support
Community disorganization
Individual/clinical factors
Negative attitudes
Risk taking/impulsivity
Substance use difficulties
Anger management problems
Low empathy/remorse
Attention deficit/hyperactivity
Poor compliance
Low interest/commitment to school

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Department of Child and Family Services (DCFS), and history of removal from the home.

Educational factors included history of special education, repeated grade, poor attendance, or placement at an alternative school. Parental factors included parental marital status, parental substance use, parental incarceration history, presence of parental mental illness, and whether both parents had graduated from high school. If participants were adopted, characteristics of adoptive parents were used. Legal history included number of previous charges, the presence of new charges during probation, and the presence of a probation violation. An “at risk” determination on the Title IV-E Form indicated that the individual was at risk for removal to state custody.

The primary outcome of this study is disposition from the JMHC program, with the outcome of interest being successful completion of the JMHC program. Successful completion is defined as release from probation after fulfillment of probation requirements. Lack of successful completion is defined as being removed to state custody or any other disposition, which included transfer to adult court for new charges, moving, or aging out of the program.

## Successful Completion of Juvenile Mental Health Court

Employee Name: _____		Phone: _____	
Parish: _____		Date: _____	
<b>Title IV-E Candidacy Pre-Screen Form</b>			
Child's Name: _____		DOB: _____	Case #: _____
<b>Screening Tools &amp; Documentation</b>			
___ Risk/Need Assessment		___ PDR/Social Investigation/Psychological Assessment	
___ Case Staffing		___ Collateral Reports (Police, School, etc)	
___ Self Report, Parental Statement		___ Other: _____	
___ Case Notes Dated:			
<b>Please check the issues below that cause the child to be at imminent risk of being removed from their home. Please check <u>all</u> that apply:</b>			
1	The guardians are enabling the child's actions - the child is participating in behaviors that place him/her at risk of harm and the guardian fails to work to prevent the behaviors.		11 The child's guardian(s) substance abuse (alcohol or drug) puts the child at risk of harm.
2	The guardian(s) are not supervising the child on a regular basis and are frequently absent from the home. As a result the child is left to participate in behaviors that places him/her at risk of harm (burglaries, drugs, etc.)		12 The guardian(s) refuse to report the child as a runaway and as a result, the child is left unsupervised for days, commits new offenses or engages in risky behavior.
3	The guardian(s) are aware of continuous substance abuse and the child continues to test positive. The guardian(s) either refuse to participate or transport the child to treatment		13 The guardian(s) refuse to provide transportation to appts/services. As a result, the child's behavior continues to escalate; therefore, placing the child at risk of harm.
4	The guardian(s) are allowing the child to associate with inappropriate individuals (sex offenders, drug users, felons). As a result the child's safety is at risk.		14 Due to physical or mental illness, the guardian(s) cannot provide suitable care or supervision of the child.
5	The guardian(s) have gang affiliation and associate with known gang members. As a result the child is participating in gang activities that put the child's safety at risk.		15 The guardian(s) fail to make attempts to obtain current insurance for a special needs child. The failure to receive the necessary medication results in behaviors by the child that place him/her at risk
6	The guardian(s) allow or fail to prevent the child from participating in unsafe activities such as driving without a license, possessing dangerous weapons, etc.		16 The child's guardian(s) are encouraging the child to participate in criminal activity for monetary gain.
7	The child has mental health needs and the guardian(s) are unable to control his/her behaviors which places the child at risk of harm.		17 The child suffers from neglect (medical, emotional or physical) or negligent supervision by the guardian(s). *See examples of neglect on directions sheet.
8	The guardian(s) lack the necessary parenting skills to deal with the child's behavior. For example, the police have been called to the home as a result of physical assaults between the guardian(s) and child.		18 The child is witnessing domestic violence in the home and the child is becoming assaultive.
9	The child has attempted suicide or is threatening to commit suicide. The guardian(s) refuse to provide the child psychiatric care.		19 The child reports abandonment by a guardian(s).
10	The child has been reported as a victim of physical, emotional or sexual abuse.		20 The child has been identified as a labor or sex trafficking victim or at risk of being a potential labor or sex trafficking victim.
Additional comments by Parish Employee:			
<b>If <u>ANY ONE</u> of the above issues are selected, please forward the above marked screening tools, service plan and pre-screen form to OJJ.</b>			
<i>This section for use by the OJJ Title IV-E Specialist:</i>			
___ Based on the above information this juvenile has been determined to be at imminent risk of foster care placement, absent preventative preplacement, intervention services.			
___ Juvenile is not a foster care candidate.			
OJJ Signature: _____		Date: _____	
___ Initial Determination		___ Six Month Redetermination	

Figure 1. Title IV-E Form.

### Statistical Analysis

We examined the association between successful disposition and the following factors: demographic variables (age, gender, race), psychiatric history, school history, parental history, legal history, and SAVRY scores.

Data were summarized as mean (standard deviation) or median (inter-quartile range) and frequency

(percentage), as appropriate. Differences between groups were assessed using two-sided *t* test or Wilcoxon rank sum for the analysis of continuous variables. For the analysis of categorical variables, chi-square test or Fisher's exact test, as appropriate, was used.

To test the strength and direction of the association between each single predictor and the outcome

**Table 2** Sample Characteristics by Disposition

	Total Population (n = 99)	Successful Completion		p-Value*
		No (n = 51)	Yes (n = 48)	
Age, mean (SD)	13.89 (1.64)	13.86 (1.34)	13.93 (1.91)	0.822
Gender, n (%)				0.720
Female	41 (41.41)	22 (43.14)	19 (39.58)	
Male	58 (58.59)	29 (56.86)	29 (60.42)	
Ethnicity, n (%)				0.165
Black	57 (57.58)	34 (66.67)	23 (47.92)	
White	35 (35.35)	15 (29.41)	20 (41.67)	
Biracial	6 (6.06)	2 (3.92)	4 (8.33)	
Hispanic	1 (1.01)	0 (0)	1 (2.08)	
Mental Health History, n (%)				
History of suicidal ideation, n (%)	63 (64.3)	32 (64)	31 (64.6)	0.540
History of psych inpatient treatment, n (%)	82 (82.8)	44 (86.3)	38 (79.2)	0.951
History of psych outpatient treatment, n (%)	79 (79.8)	42 (82.4)	37 (77.1)	0.348
History of therapy, n (%)	75 (75.8)	38 (74.5)	37 (77.1)	0.513
Number of diagnoses, mean (SD)	4.69 (2.41)	4.86 (2.22)	4.5 (2.6)	0.457
Number of prescriptions, median (IQR)	4 (2–6)	4 (3–6)	4 (2–7)	0.582
Maltreatment History, n (%)				
Victim of abuse, n (%)	35 (35.4)	20 (39.2)	15 (31.3)	0.765
Victim of sexual assault, n (%)	40 (40.4)	17 (33.3)	23 (47.9)	0.407
<b>Victim of neglect, n (%)</b>	<b>28 (28.6)</b>	<b>21 (41.2)</b>	<b>7 (14.9)</b>	<b>0.006</b>
Past DCFS referral, n (%)	66 (66.7)	33 (64.7)	33 (68.8)	0.669
<b>History of removal from home, n (%)</b>	<b>33 (33.3)</b>	<b>22 (43.1)</b>	<b>11 (22.9)</b>	<b>0.032</b>
Title IV-E, n (%)	85 (85.86)	43 (84.31)	42 (87.5)	0.649
Education History, n (%)				
Special education, n (%)	43 (43.4)	16 (31.4)	17 (35.4)	0.669
Repeat grade, n (%)	66 (66.7)	34 (66.7)	32 (66.7)	>0.999
Poor attendance, n (%)	60 (60.6)	31 (60.8)	29 (60.4)	0.970
Alternative school, n (%)	43 (43.4)	26 (51)	17 (35.4)	0.118
Parental factors, n (%)				
Parent marital status, n (%)				0.631
Married	9 (9.09)	4 (7.84)	5 (10.42)	
Never married	35 (35.35)	19 (37.25)	16 (33.33)	
Separated	12 (12.12)	5 (9.8)	7 (14.58)	
Divorced	30 (30.3)	14 (27.45)	16 (33.33)	
Parent substance use, n (%)	59 (59.6)	31 (60.8)	28 (58.3)	0.839
Both parents graduated high school, n (%)	58 (58.6)	31 (60.8)	27 (56.3)	0.686
Parent incarceration history, n (%)	50 (50.5)	27 (52.9)	23 (47.9)	0.689
Parent mental illness, n (%)	60 (60.6)	32 (62.7)	28 (58.3)	0.685
Legal History, n (%)				
<b>New charges, n (%)</b>	<b>48 (48.48)</b>	<b>32 (62.75)</b>	<b>16 (33.33)</b>	<b>0.003</b>
<b>Probation violation, n (%)</b>	<b>67 (67.68)</b>	<b>41 (80.39)</b>	<b>26 (54.17)</b>	<b>0.005</b>
<b>Number of previous charges, median (IQR)</b>	<b>1 (1–3)</b>	<b>2 (1–4)</b>	<b>1 (1–2)</b>	<b>0.005</b>

\*Statistically significant findings bolded.

variable (successful completion), three analyses were conducted. Because of the number of predictors, an unadjusted analysis (univariate logistic regression) was conducted to identify the significant variables to retain in the multivariate logistic regression. Based on the likelihood ratio test outcomes of the univariate logistic regression analysis, the variables with  $p < .05$  were selected to be included in the multivariate logistic regression. Next, all the predictors were entered at once to test the associations when all variables are working together (Model 1). Model 1 tests the relationship of the predictors to

each other and the outcome variable. After that, multiple regression with a stepwise logistic regression model was conducted to identify redundant variables in the multivariate modeling (Model 2). In Model 2, the regression is done many times, each time removing the weakest correlated variable. At the end, the remaining variables are those that explain the relationship best. Significance level was set at .05. All statistical analyses were performed using STATA 15.1 (StataCorp, College Station, TX).

## Successful Completion of Juvenile Mental Health Court

**Table 3** Comparison of SAVRY Total Scores by Disposition

	Successful Completion				p-Value
	No (n = 51)		Yes (n = 48)		
	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	
SAVRY risk total	18 (7.33)	18 (12–23)	18.39 (8.14)	19 (11.5–25)	0.799
Historical factors	7.01 (3.68)	7 (4–10)	7.27 (3.82)	7 (4.5–10)	0.740
Social factors	4.29 (2.33)	4 (3–6)	4.5 (2.71)	4 (2–6)	0.686
Individual factors	6.68 (3.59)	6 (4–9)	6.62 (3.11)	7 (5–8.5)	0.928
Protective factors	2.82 (2.07)	3 (1–5)	3.2 (1.85)	3 (2–5)	0.334

SD, Standard Deviation; IQR, Inter-Quartile Range.

### Results

Sample characteristics of study participants and the proportion of each characteristic within the successful and unsuccessful groups are shown in Table 2. Forty-one percent of those who did not successfully complete had a history of neglect compared with 14.9 percent of those who successfully completed ( $p = .006$ ). The groups had no differences in documented history of referral to Child Protective Services (CPS); 43 percent of participants who were not successful, however, had a history of removal from the home by CPS, compared with 22.9 percent of those who successfully completed the program ( $p = .032$ ). Participants who were unsuccessful also had larger numbers of previous charges ( $p = .005$ ), obtained more new charges during the program ( $p = .003$ ), and had a higher rate of probation violations ( $p = .005$ ).

As shown in Table 3, total SAVRY risk scores and total subcategory risk scores (historical, social, and individual) were high for both groups and protective category scores were low for both groups. Because these scores did not indicate any significant differences between groups, total and subcategory scores were not included in the model for further analysis. Individual SAVRY risk factors within these subcategories also indicated no significant differences between the two groups. Both groups demonstrated

high rates of poor school achievement and social/contextual factors such as stress and poor coping, lack of personal/social support, and community disorganization. In addition, highly-reported individual risk factors for both groups included risk taking/impulsivity, anger management problems, and attention deficit/hyperactivity symptoms. As shown in Table 4, one protective factor, positive attitude toward intervention, was found to be significantly positively associated with successful completion of the program ( $p = .008$ ).

Table 5 shows the unadjusted and adjusted odds ratios with their corresponding 95 percent confidence interval and  $p$  values. In the initial multivariate regression model (Model 1), only the number of previous charges was found to be significantly associated with the outcome variable (successful completion). Each additional previous charge significantly decreased the odds of successful completion (aOR: .68, 95% CI .50–.91,  $p = .011$ ). In Model 2, being a victim of neglect and number of previous charges were found to be significantly associated with lack of successful completion. For victims of neglect, the odds of successful completion were significantly lower (aOR: .32, 95% CI .11–.93,  $p = .037$ ). In Model 2, new charges during the program approached significance demonstrating lower odds of successful completion (aOR: .4, 95% CI .16–.99,  $p = .050$ ). We identified

**Table 4** Comparison of Individual SAVRY Protective Factors by Disposition

	Successful Completion		p-Value*
	No (n = 51)	Yes (n = 48)	
Prosocial involvement, n (%)	14 (27.5)	12 (25)	0.782
Strong social support, n (%)	28 (54.9)	24 (50)	0.625
Strong attachments and bonds, n (%)	32 (62.7)	31 (64.6)	0.849
<b>Positive attitude towards intervention, n (%)</b>	<b>25 (49)</b>	<b>36 (75)</b>	<b>0.008</b>
Strong commitment to school, n (%)	19 (37.3)	20 (41.7)	0.653
Resilient personality, n (%)	26 (51)	31 (64.6)	0.171

\*Statistically significant findings bolded.



**Table 5** Odds Ratios by Successful Disposition

	Or (95% CI)	p-Value*	Model 1		Model 2	
			aOR (95% CI)	p-Value*	aOR (95% CI)	p-Value*
<b>Victim of neglect</b>	<b>0.25 (0.09–0.66)</b>	<b>&lt;0.001</b>	0.46 (0.14–1.43)	0.182	<b>0.32 (0.11–0.93)</b>	<b>0.037</b>
History of removal from home	0.39 (0.16–0.93)	0.03	0.5 (0.17–1.43)	0.200	–	–
<b>Number of previous charges</b>	<b>0.64 (0.48–0.86)</b>	<b>&lt;0.001</b>	<b>0.73 (0.54–0.98)</b>	<b>0.042</b>	<b>0.68 (0.50–0.91)</b>	<b>0.011</b>
<b>New charges</b>	<b>0.29 (0.12–0.67)</b>	<b>&lt;0.001</b>	0.5 (0.17–1.47)	0.212	<b>0.4 (0.16–0.99)</b>	<b>0.050</b>
Probation violation	0.28 (0.11–0.7)	0.03	0.58 (0.18–1.82)	0.354	–	–
Positive attitude toward intervention	3.12 (1.33–7.32)	0.007	2.63 (0.98–7.04)	0.053	–	–
Number of observations			98		98	
df			7		4	
AIC			122.69		122.28	
BIC			140.78		132.61	

\*Statistically significant findings bolded.

OR, Unadjusted odds ratio; aOR, Adjusted odds ratio; CI, Confidence Interval; df, degrees of freedom; AIC, Akaike information criterion; BIC, Bayesian information criterion; Model 1: multivariate logistic regression model; Model 2: stepwise logistic regression model.

the best multivariate model by comparing the Akaike information criterion<sup>28</sup> (AIC) of the models. In AIC comparison, a lower value indicates the better model. We found that Model 2, with AIC = 122.28, *df* = 4, was more efficient compared with Model 1, with AIC = 122.69, *df* = 7, and best explains the relationship.

**Limitations**

The main limitation of our study is the nonstandardized nature of the case file data. The initial information was gathered by multiple providers and staff in narrative form, which was subsequently interpreted and categorized by the research team. Any conflicting information present was coded by researcher judgment. For parental factors, the court typically collected the characteristics of adoptive parents rather than those of biological parents. The files contained only scattered references to biological parents, so the variables are more consistent with environmental influences than biological. Information that was not present in the file was coded as negative, which likely resulted in under reporting of some variables. A significant limitation of this study was the inability to capture the hours of interaction between the assigned probation officer and the youth and their families or the impact of those relationships. These relationships were highly individualized as was the response to probation violations and new charges. Additional sanctions and removal to state custody often came down to a collaborative decision between the juvenile court judge and the assigned probation officer.

**Discussion**

The rate of successful completion in this study (48.5%) was comparable with the 46 percent successful

completion rate in the juvenile drug court study.<sup>25</sup> Also as in that study, we found that a history of neglect, removal from the home, and a higher number of previous charges were associated with lack of successful completion of the program and eventual removal to state custody. These are static risk factors that may correlate with less familial support and supervision and may indicate the need for targeted interventions with increased intensity of family support and engagement at the outset of JMHC involvement. Having new charges or probation violations during JMHC were significant risk factors for court failure that might be modified with increased family engagement and supervision. Having a positive attitude toward intervention correlated with successful completion of the program and could also be a target for modification during the probation period for both the family support system and the youth. Having a caregiver who is unable to engage in the requirements of a JMHC and unable or limited in ability to promote and support youth attendance and engagement in treatment may lessen a youth’s positive attitude toward intervention and lessen engagement in therapeutic aspects of the diversion court. In addition, prior involvement in the court system without a treatment focus (such as exists in the JMHC) may bias the caregiver and child against a positive attitude toward intervention through a justice-sponsored mechanism.

Previous involvement with mental health treatment was not correlated with rates of program completion. Youth involved in the JMHC had significant history of prior inpatient and outpatient psychiatric treatment. Standard treatment for these high-risk youth may not be protective against involvement with the juvenile justice system. Files in this study indicated less frequent, but still considerable, physical

(35%) or sexual (40%) assault history than previous studies of justice-involved youth. Yet more than two-thirds of participants had a history of referral to child protective services. These youth would likely have been candidates for trauma-related services and would have benefited from trauma-informed care earlier in their lives.

The measures that the jurisdiction in our study and other systems relied on for prediction of successful completion were not found to effectively predict program disposition. The Title IV-E form, which was used in the jurisdiction in our study to predict risk of removal to state secure facilities, was not predictive of success or failure in the program. The Title IV-E is a foster care eligibility form evaluating risk of removal from home, and a large number of youth in this study, whether they successfully completed or not, screened positive on this form. The process for determining eligibility for foster care changed in the state, and thus the Title IV-E form is no longer in use.

The SAVRY measure also did not reveal any relationship between its listed risk factors and participants' successful completion of the program or violent behaviors during the program. Similarly, the predictive value was limited because the majority of the youth involved in this study screened as high risk. It is also likely that while the SAVRY is a validated measure to predict future violence, it may not predict recidivism or violence after intervention.

Future studies could look more closely at type, duration, and compliance with evidence-based mental health treatments and any correlation with positive attitude toward intervention and successful completion of a youth diversion program. Future study should attempt to correlate a history of violent charges or novel violent charges while involved in a JMHC with initial SAVRY scores and with successful completion of the JMHC to better elucidate the role of the SAVRY instrument in the JMHC. Educational data obtained in this study also indicate opportunities for screening and early intervention. More than two thirds of the participants in this study repeated a grade in school, but fewer than half were receiving special education services. Truancy was also a common occurrence for youth involved in this JMHC. The school setting may be the ideal location for early mental health screening and to assure that those students who have a pattern of truancy or grade

failures are screened for mental health distress and need for special education services.

Juvenile Mental Health Courts are an increasingly popular method for linking justice-involved youth with mental health services and deserve more study to identify the most effective application and greatest chance of success for our most vulnerable youth. Once youth are involved in a diversion or probation program, implementing a wrap-around services approach (including support for family and home life, educational supports, and linkage with community-based supports and interventions) may improve positive attitude toward intervention and lessen the opportunity for new charges and probation violations, which could correlate with improved rates of successful completion of a JMHC program and reduced recidivism.

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## Trajectories of Substance Use Disorder in Youth After Detention: A 12-Year Longitudinal Study

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### Abstract

**Objective**—Identify trajectories of substance use disorders (SUDs) in youth during the 12 years after detention, and how gender, race/ethnicity, and age at baseline predict trajectories.

**Method**—As part of the Northwestern Juvenile Project, a longitudinal study of 1,829 youth randomly sampled from detention in Chicago, Illinois, 1995–1998, participants were re-interviewed in the community or correctional facilities up to 9 times over 12 years. Independent

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interviewers assessed SUDs using the Diagnostic Interview Schedule for Children 2.3 (baseline) and the Diagnostic Interview Schedule IV (follow-ups). Primary outcome was a mutually exclusive 5-category typology of disorder: no SUD, alcohol alone, marijuana alone, comorbid alcohol and marijuana, or “other” illicit (“hard”) drug. We estimated trajectories using growth mixture models with a 3-category ordinal variable derived from the typology.

**Results**—During the 12-year follow-up, 19.6% of youth did not have an SUD. The remaining 81.4% were in 3 trajectory classes. Class 1 (24.5%), a bell-shaped trajectory, peaked 5 years after baseline when 42.7% had an SUD and 12.5% had comorbid/“other” illicit drug disorders. Class 2 (41.3%) had higher prevalence of SUD at baseline (73.8%). Although prevalence decreased over time, 23.5% had an SUD 12 years later. Class 3 (14.6%), the most serious and persistent trajectory, had the highest prevalence of comorbid/“other” illicit drug disorders—52.1% at baseline and 17.4% 12 years later. Males, Hispanics, non-Hispanic whites, and youth who were older at baseline (detention) had the worst outcomes.

**Conclusion**—Gender, race/ethnicity, and age at detention predict trajectories of SUDs in delinquent youth. Findings provide an empirical basis for child psychiatry to address health disparities and improve prevention.

### Keywords

substance use disorders; trajectories; high-risk youth; delinquents; longitudinal

## INTRODUCTION

Substance abuse is common and persistent in delinquent youth. Among youth in the juvenile justice system, more than 90% report using illicit drugs<sup>1</sup> and as many as three-quarters of males and females<sup>2–4</sup> have a substance use disorder (SUD). Prevalence remains high as youth age: 5 years after detention, more than 30% of males and 20% of females have an SUD.<sup>5</sup> By the median age of 28 years, 91.3% of males and 78.5% of females have ever had an SUD.<sup>6</sup> Substance abuse in adolescence can have lifelong consequences.<sup>7</sup> It predicts substance abuse later in life and among delinquent youth is also associated with recidivism,<sup>8,9</sup> sexually transmitted diseases,<sup>10</sup> psychiatric comorbidity, and early violent death.<sup>11–13</sup>

Although informative, most longitudinal studies provide few data about patterns of substance abuse over time. For example, a study may find that 30% of participants have marijuana use disorder at Time 1 and at Time 2. But, are these the same people? For some youth, substance abuse is limited to adolescence; for others, it may begin in adulthood.

Trajectory analysis addresses this limitation by identifying subgroups of people who share similar patterns (trajectories) of substance abuse over time. Trajectory analysis identifies (1) the most common patterns of substance abuse as youth age and (2) variables—such as gender and race/ethnicity—that predict trajectories. Trajectory analysis thus addresses critical questions: Are there subgroups whose substance abuse increases over time (escalation)? Whose substance abuse decreases (desistance)? Do gender and race/ethnicity predict escalation and desistance?

Many studies of general population youth have examined trajectories of marijuana use and heavy drinking.<sup>14–22</sup> Among studies of marijuana use, a common trajectory is “abstainers” (approximately 45% of youth).<sup>17,18,20</sup> “Occasional” marijuana users comprise approximately 30% of youth,<sup>17,20</sup> and several studies<sup>16–18,20,22</sup> identified 2% to 12% of youth as “early” marijuana users. Among studies of heavy or binge drinking, a common trajectory is “abstainers” or “infrequent” users (approximately 30%–50% of youth).<sup>14,20,21</sup> Several studies identified groups (8%–15% of youth)<sup>14,20,21</sup> whose heavy drinking peaked in their teens and early 20s, and 10% to 15% of youth<sup>14,20</sup> were classified as “increasers.”

Findings, however, are not generalizable to youth in the juvenile justice system for two reasons. First, the demographic characteristics of youth in detention differ from those in the general population.<sup>23</sup> Youth in detention are disproportionately poor, and racial/ethnic minorities are overrepresented.<sup>23–27</sup> Second, delinquent youth are systematically underrepresented in general population studies, which typically sample from schools or use household surveys. Even studies of “high-risk” youth (e.g., children of alcoholics<sup>28,29</sup> or those living in high-crime neighborhoods<sup>30</sup>) provide little information about delinquent youth. Although these studies would have included delinquent youth, none distinguished between youth with and without histories of delinquency. (Summary tables of these studies are available on request.)

To our knowledge, only one study of delinquent youth (Pathways to Desistance) examined trajectories of substance abuse.<sup>31</sup> This investigation, sampling only serious juvenile offenders, found that substance use had initiated by 15 years of age and that frequency of both alcohol and marijuana use increased between 15 and 20 years of age.<sup>31</sup> However, the trajectory analysis has several limitations: (1) participants were followed up for only 3 years; (2) serious offenders constitute a small fraction of youth processed through the juvenile justice system; (3) the analysis excluded females, who comprise an increasing proportion of youth in the juvenile justice system; and (4) the study focused only on substance use, not disorder. Definitions of substance use vary widely, may not differentiate experimentation from problematic use, and are difficult to compare across studies.

In sum, no comprehensive study has examined trajectories of substance disorder in delinquent youth. This omission is critical for two reasons. First, because juvenile detainees have a median length of stay of 15 days,<sup>32</sup> delinquent youth with SUDs become a community public health problem when they are released. Second, data on gender and racial/ethnic differences are needed to address health disparities and improve prevention and treatment. More than any other racial/ethnic group, African Americans are disproportionately incarcerated,<sup>23</sup> comprising approximately 14% of the general population<sup>33</sup> but approximately 40% of youth and young adults in corrections.<sup>34,35</sup> Females represent a growing proportion of youth in the juvenile justice system,<sup>23</sup> comprising 27.9% of youth processed in juvenile court<sup>34</sup> and 13.6% of incarcerated youth.<sup>34</sup>

We present data from the Northwestern Juvenile Project, the first large-scale study of psychiatric disorders in youth after they leave detention. The sample is large (N=1,829), is racially/ethnically diverse, and includes males and females. This is the first paper to examine trajectories of SUDs. We have two goals: (1) to identify trajectories of SUDs during the 12

years after detention (median age, 28 years) and (2) to examine how age at detention, gender, and race/ethnicity predict trajectories of SUDs.

## METHOD

We summarize the information from the Northwestern Juvenile Project most relevant to this study. Additional information is available in Supplement 1 (available online) and is published elsewhere.<sup>2,5,6</sup>

### Sample and Procedures

We recruited a stratified random sample of 1,829 youth at intake to the Cook County Juvenile Temporary Detention Center (CCJTDC) in Chicago, Illinois, from November 20, 1995, through June 14, 1998, who were awaiting the adjudication or disposition of their case. The CCJTDC is used for pretrial detention and for offenders sentenced for fewer than 30 days. To ensure adequate representation of key subgroups, we stratified our sample by gender, race/ethnicity (African American, non-Hispanic white, Hispanic, other), age (10–13 years or 14 years), and legal status (processed in juvenile or adult court). Face-to-face structured interviews were conducted at the detention center in a private area, most within 2 days of intake (baseline interview).

We conducted follow-up interviews: (1) at 3, 4.5, 6, 8, and 12 years after baseline for the entire sample; (2) at 3.5 and 4 years after baseline for a random subsample of 997 participants (600 males and 397 females); and (3) at 10 and 11 years after baseline for the last 800 participants enrolled at baseline (460 males and 340 females). Participants were interviewed whether they lived in the community or in correctional facilities.

Participants signed either an assent form (if they were <18 years old) or a consent form (if they were 18 years old). The institutional review boards approved all study procedures and waived parental consent for persons younger than 18 years, consistent with federal regulations regarding research with minimal risk.<sup>36</sup>

### Measures and Variables

**Typology of Substance Use Disorders**—To assess SUDs at baseline, we administered the Diagnostic Interview Schedule for Children, version 2.3 (DISC 2.3),<sup>37,38</sup> based on the *DSM-III-R*, the most recent version available at the time. The DISC 2.3 generates diagnoses for alcohol, marijuana, and “other” illicit drug use disorders (e.g., “hard drugs” such as cocaine, opiates, hallucinogens/PCP) for the past 6 months. At follow-up interviews, we administered the Diagnostic Interview Schedule, Version IV (DIS-IV)<sup>39,40</sup> based on the *DSM-IV*, because the DISC was not sufficiently comprehensive to cover the substance use behaviors of aging delinquent youth. The DIS-IV assesses SUDs in the year before the interview. Consistent with prior studies, such as the National Comorbidity Survey Replication,<sup>41</sup> (1) participants who met diagnostic criteria for an SUD with “partial recovery” were scored as having the disorder,<sup>41</sup> and (2) we defined SUD as a diagnosis of abuse or dependence.<sup>41–43</sup> Among participants with any SUD, approximately two-thirds met criteria for dependence (see Supplement 1, available online, for additional estimates). As detailed in Supplement 1, prior analyses demonstrated that changes in the prevalence of drug

and alcohol use disorders (abuse or dependence combined) from baseline to later time points did not appear to be due to changes in measurement.<sup>5</sup> However, the proportion of diagnoses attributable to dependence may have decreased over time because *DSM* criteria changed (see Supplement 1, available online, for details).

We used a mutually exclusive 5-category typology, validated in our prior work,<sup>1</sup> to score participants' SUD at each follow-up: none, alcohol alone, marijuana alone, comorbid alcohol and marijuana, and any "hard" drug (those other than marijuana, such as cocaine or hallucinogens). A participant with, for example, alcohol and cocaine use disorder would be in the last category. For convenience, we refer to the last category as "other" illicit drug.

## Data Analysis

**Prevalence of Disorder at Specific Time Points**—Prevalence was calculated using commercial software (Stata 12<sup>44</sup>) with its survey routines. To generate prevalence estimates that reflect the population of the CCJTDC, each participant was assigned a sampling weight augmented with a nonresponse adjustment to account for missing data.<sup>45</sup> Taylor series linearization was used to estimate standard errors.<sup>46,47</sup>

As in our prior work,<sup>5,6</sup> because some participants were interviewed more often than others, we summarize prevalence at 6 time points for the entire sample: baseline (Time 0) and Time 1 through Time 5, corresponding to approximately 3, 5, 6, 8, and 12 years after baseline. Table 1, summarizing sample demographics and retention, shows that 83% of participants had a Time 5 interview (retention for Time 1 to Time 4 was 91%, 85%, 77%, and 73%, respectively).

**Trajectories of Substance Use Disorders Over Time**—We determined trajectories of SUDs using growth mixture models (GMMs), estimated with software package *Mplus*, version 6.<sup>48</sup> Figure S1, available online, illustrates our model. SUDs were measured at baseline and at up to 9 additional time points in the subsequent 12 years (a total of 12,511 interviews from 1,825 participants). We hypothesized that there were "c" distinct trajectory classes of SUD. Within each trajectory class, the shape of the trajectory was determined by three parameters: intercept (i), slope (s), and a quadratic term (q); variances were estimated freely. This model allowed the shapes of trajectories to vary across classes. We treated SUD as an ordinal outcome. We used demographic characteristics—gender, race/ethnicity (African American, Hispanic, and non-Hispanic white), and age at detention—to predict trajectory class membership within the GMM. There was no evidence that demographic characteristics were significantly associated with intercept and slope within class. We excluded four participants who self-identified as "other" race/ethnicity and estimated all models with sampling weights to account for study design.

Because incarceration may restrict access to substances, the time incarcerated before the follow-up interview was treated as a time-varying exogenous factor. To match the measurement period for SUDs, we used incarceration information from the year preceding each follow-up interview. Depending on time point, between 36.0% and 48.8% of the sample had been incarcerated in the year before the interview; their median time



incarcerated ranged from 177 to 237 days. Between 9.3% and 15.7% of the sample had been incarcerated the entire year before the interview.

We estimated models with one, two, three, and four classes using maximum likelihood with numerical integration. We evaluated models using the following metrics: (1) sample size adjusted Bayesian information criterion (BIC),<sup>49,50</sup> with smaller values indicating better models; (2) average posterior probabilities of trajectory membership, with higher values indicating better classification of individuals; (3) entropy, with higher values indicating better classification of individuals; and (4) ease of interpretation—that is, the trajectories distinguished differences that were clinically meaningful.

**Missing Data**—Although attrition was modest (Table 1), and we augmented sampling weights with nonresponse adjustments, we used multiple imputation by chained equations to examine the sensitivity of our findings to unplanned missing data. We imputed data under the assumption that participants who dropped out had up to twice the odds of disorder compared with participants who remained in the study. Because there were no substantive differences in trajectories (tables and figures available from authors), we present results using the original data.

## RESULTS

### Prevalence

Figures 1 and 2 present prevalence estimates for any SUD and its mutually exclusive subcategories (defined above) during the 12 years after detention for males and females, respectively. Prevalence of marijuana alone and comorbid alcohol and marijuana generally decreased, whereas alcohol alone increased slightly. Up through 8 years after baseline, alcohol alone was less prevalent than marijuana alone. Throughout the follow-up period, approximately 5% of females and less than 5% of males had an “other” illicit drug use disorder, such as cocaine or hallucinogen/PCP disorder. Table S1, available online, provides the specific prevalence estimates shown in the figures. Gender and racial/ethnic differences in the prevalence of disorders of specific drugs are published elsewhere.<sup>6</sup>

### Trajectories of Substance Use Disorders

Because prevalence of alcohol alone and “other” illicit drug use disorder was low at baseline and throughout much of the follow-up, to estimate trajectories, we collapsed the 5-category typology of SUD into a 3-category ordinal variable: (1) no disorder, (2) alcohol or marijuana alone, and (3) comorbid alcohol and marijuana or “other” illicit drug (any “hard” drug). Hereafter, we refer to the latter category as comorbid/“other” illicit. Prevalence estimates are shown in Table S2, available online.

Because our goal was to model trajectories of disorder, we omitted from the analysis participants who did not have an SUD at any interview (19.6% of youth). This approach is common in trajectory analysis.<sup>20,28,51</sup> Compared with males, females were more likely to have no SUD (30.4% versus 18.7%; adjusted odds ratio [AOR] = 2.0; 95% CI, 1.5–2.6). African Americans were more likely to have no SUDs than non-Hispanic whites (20.6% versus 11.7%; AOR = 2.1; 95% CI, 1.3–3.3).

## Model Selection

We estimated models with two, three, and four trajectory classes. We present the three-class model because it offered the best combination of fit and parsimony (sample-size adjusted Bayesian information criterion 14573.6 for three-class versus 14924.1 and 14848.5 for two- and four-class, respectively). Average posterior probabilities for the three-class solution were acceptable: 0.71, 0.77, and 0.78. Although the four-class model classified participants better than the three-class model (entropy of 0.65 versus 0.46), too few participants ( $n = 4$ ) were assigned to the fourth class to interpret the trajectory. Entropy was reduced by using sampling weights (e.g., three-class unweighted entropy of 0.61 versus 0.46 weighted). We present the weighted three-class model because it offered the best combination of fit and parsimony (see Supplement 1, available online, for details).

## Trajectory Classes

Figure 3 depicts prevalence of any SUD and its subcategories (alcohol or marijuana alone; comorbid/“other” illicit) for each of the three trajectory classes. Table S3, available online, shows the corresponding prevalence estimates. We discuss classes in order of increasing severity.

**Class 1 (24.5% of youth)**—Participants in this class exhibited bell-shaped trajectories. Prevalence increased in the first 5 years after baseline, then decreased substantially. Alcohol or marijuana alone was more common than comorbid/“other” illicit drug use disorders. Twelve years after baseline, 17.9% of participants in this class had an SUD.

**Class 2 (41.3% of youth)**—Compared with Class 1, Class 2 had higher prevalence of SUDs at baseline. Prevalence then declined sharply in the first 6 years after detention. Similar to Class 1, alcohol or marijuana alone was more common than comorbid/“other” illicit drug disorder. Twelve years after baseline, 23.5% of youth had an SUD.

**Class 3 (14.6% of youth)**—This class, the most serious and persistent trajectory, had the highest prevalence of any SUD and its subcategory, comorbid/“other” illicit. Like Class 2, prevalence decreased over time. However, unlike Classes 1 and 2, comorbid/“other” illicit drug disorder was more prevalent than alcohol or marijuana alone at many time points. However, 12 years after baseline, 35.3% of participants had an SUD, 17.9% had alcohol or marijuana alone, and 17.4% had comorbid/“other” illicit drug disorder.

## Trajectory Classes: Gender, Racial/Ethnic, and Age Differences

Gender, race/ethnicity, and age at baseline were significant predictors of trajectory class. Table 2 shows odds ratios for demographic differences. Table 2 also shows demographic differences between the no-SUD group (discussed above) and participants included in the trajectory analyses.

**Gender Differences**—More than half of females were in Class 2, compared with 40.3% of males. Only 6.3% of females were in Class 3, compared with 15.2% of males. Compared with females, males had more than 3 times the odds of being in Class 3 than in Class 2 (AOR = 3.6; 95% CI, 2.0–6.7).

**Racial/Ethnic Differences**—Nearly one-third of Hispanics and nearly half of non-Hispanic whites were in Class 3. In contrast, only 9.1% of African Americans were in Class 3. Compared with African Americans, Hispanics had 3.8 times the odds—and non-Hispanic whites, 6.0 times the odds—of being in Class 3 than in Class 2 (95% CI, 1.8–12.2 and 2.9–12.4, respectively). In addition, compared with African Americans, non-Hispanic whites were more likely to be in Class 3 than in Class 1 (AOR = 4.7; 95% CI, 1.8–12.2).

**Age Differences**—More than half of participants who were 10 to 13 years of age at baseline were in Class 1, compared with 10.6% of those 17 years and older. In contrast, nearly half of participants 17 years and older at baseline were in Class 2, compared with only 11.9% of 10- to 13-year-olds. Similarly, only 3.6% of the 10- to 13-year-olds were in Class 3, compared with 17.9% of participants 17 years and older. Being older at baseline was significantly associated with being in Class 2 or Class 3, compared with Class 1 (AOR = 2.2 per year; 95% CI, 1.1–4.2; AOR = 2.1 per year; 95% CI, 1.4–3.3, respectively).

## DISCUSSION

Delinquent youth follow markedly different trajectories of SUD as they age. Nearly 1 in 6 youth were in the most serious and persistent trajectory (Class 3). At all time points, this group had the highest prevalence of SUD: nearly 90% at the baseline interview and more than one-third 12 years later. Comorbid SUDs and illicit drug use disorders—such as cocaine or hallucinogen—were far more common in this trajectory than in others. Youth who were older at baseline were more likely to be in this group; younger participants may not have had enough time to develop more serious or multiple SUDs.

Trajectory classes 1 and 2—24% and 41% of youth, respectively—were similar to the “adolescent-limited” trajectories of substance abuse found among general population youth.<sup>20, 52</sup> Class 2 contained disproportionately older detainees, who may have been closer to the “maturing out” phase when sampled at baseline.<sup>53</sup> More than half of youth who were 10 to 13 years old at detention were in Class 1. These youth may be the most amenable to preventive interventions because they have yet to develop SUDs. Moreover, they are more likely to receive services than older detainees.<sup>54</sup>

There were substantial gender differences. Consistent with studies of general population and other at-risk youth,<sup>15,17,28,29,55</sup> females had twice the odds of being in the no-SUD group compared with males. Compared with females, males had 3.6 times the odds of being in the most serious and persistent trajectory (Class 3). What accounts for these dramatic gender differences? Females may be more likely than males to desist as childcare demands evolve.<sup>56–58</sup> Moreover, females benefit from the greater provision of mental health services provided to them while they are incarcerated and when they return to their communities.<sup>5,59</sup>

Although the war on drugs has disproportionately affected African Americans,<sup>60–62</sup> less than 10% of African Americans were in the most serious and persistent trajectory (Class 3) compared with nearly 45% of non-Hispanic whites. Hispanics had trajectories more similar to non-Hispanic whites than to African Americans. Our findings add new information to the equivocal and often conflicting literature on racial/ethnic differences in trajectories of

substance abuse. However, it is difficult to compare our findings with the findings of prior studies because most investigated only use (not disorder), excluded Hispanics, or had too few racial/ethnic minorities to analyze differences.<sup>17,20,55,63–66</sup>

Our sample included participants from one jurisdiction; findings may not be generalizable to other regions. Our data are also subject to the limitations of self-report. Although participants were re-interviewed up to 9 times, some may have had SUDs outside the recall period. As in prior studies,<sup>41–43</sup> we defined SUDs as including abuse or dependence disorders. This approach does not account for the severity of disorder as measured by symptom counts. Estimating trajectories necessitated combining less common substances. Although the sample was large, we could not identify more than three trajectories or include predictors beyond demographic characteristics. To reflect the population of youth entering the juvenile justice system (10–18 years of age), we sampled a wide range of ages at baseline.<sup>2</sup> Trajectories might have been different had we focused on a specific age at baseline. We did not model trajectories based on the participant's age at each wave because of age cohort effects: participants sampled during early adolescence have different outcomes as they age compared with participants sampled during late adolescence.

Despite these limitations, our findings have implications for future research, mental health policy, and clinical services. Regarding recommendations for future research:

### **(1) Incorporate trajectory analysis into longitudinal studies of psychiatric disorders in youth**

Trajectory analysis provides unique information about the course of psychiatric disorders, complementing information provided by studies of prevalence. Investigations of high-risk populations—youth in the child welfare system and homeless and runaway youth—are especially needed.

### **(2) Use trajectories to predict distal outcomes**

Trajectory analysis provides a comprehensive view of psychiatric disorder as youth age, not just at one point in time. Thus, trajectory analysis is a powerful tool to predict how the burden of disorder during adolescence affects outcomes in adulthood, such as educational achievement, employment, and responsible parenting.

### **(3) Examine multiple substances**

Most trajectory analyses focus on use (not disorder) and examine only one substance, such as alcohol or marijuana.<sup>21,22,30,67,18,20</sup> Few examine other illicit drugs, how the choice of substances changes with age, and the sequences of multiple SUDs. Thus, we have the fewest data on the most serious patterns of abuse.

### **We note the following implications for clinicians**

**(1) Design interventions for Hispanics**—Like non-Hispanic whites, Hispanics were more likely than African Americans to be in the most serious and persistent trajectory. Yet, few substance use prevention or treatment programs have been designed for Hispanic youth.

This omission is critical: Hispanics are now the largest minority in the United States<sup>68</sup> and are disproportionately incarcerated in many states.<sup>24,69,70</sup>

**(2) Provide gender-specific interventions**—The last decade has seen needed improvements in programs for delinquent females, who have been historically underserved in the justice system. However, males continue to be both overrepresented in juvenile justice and to fare worse than females; we found that 15.2% of males were in the most serious and persistent trajectory compared with 6.3% of females. Moreover, males have poorer outcomes after substance use treatment than females.<sup>71–73</sup>

**(3) Design preventive interventions for younger detainees**—Interventions that work with older adolescents may not be successful with younger adolescents. Our finding that more than half of the youngest participants had yet to develop SUDs indicates that interventions during early adolescence may provide the best return on treatment dollars.<sup>74</sup>

Many youth become involved in the juvenile justice system as a consequence of substance abuse.<sup>75</sup> A substantial proportion will resume abusing drugs after they are released from detention.<sup>76</sup> The challenge for child psychiatry is to slow the revolving door between the detention center and the community. The Patient Protection and Affordable Care Act (PPACA) provides reason for optimism because treatment for SUD is considered an “essential health benefit” that must be provided by Medicaid and the insurance exchanges to youth in the community.<sup>77</sup> (The PPACA does not pertain to services provided to prisoners.<sup>78</sup>) Nevertheless, challenges remain. Child psychiatrists and other mental health specialists must collaborate with the police, courts, and detention centers to ensure that youth accused of minor offenses are diverted from juvenile justice to receive needed services, develop more effective treatments for incarcerated youth, and improve the systems that serve released detainees when they return.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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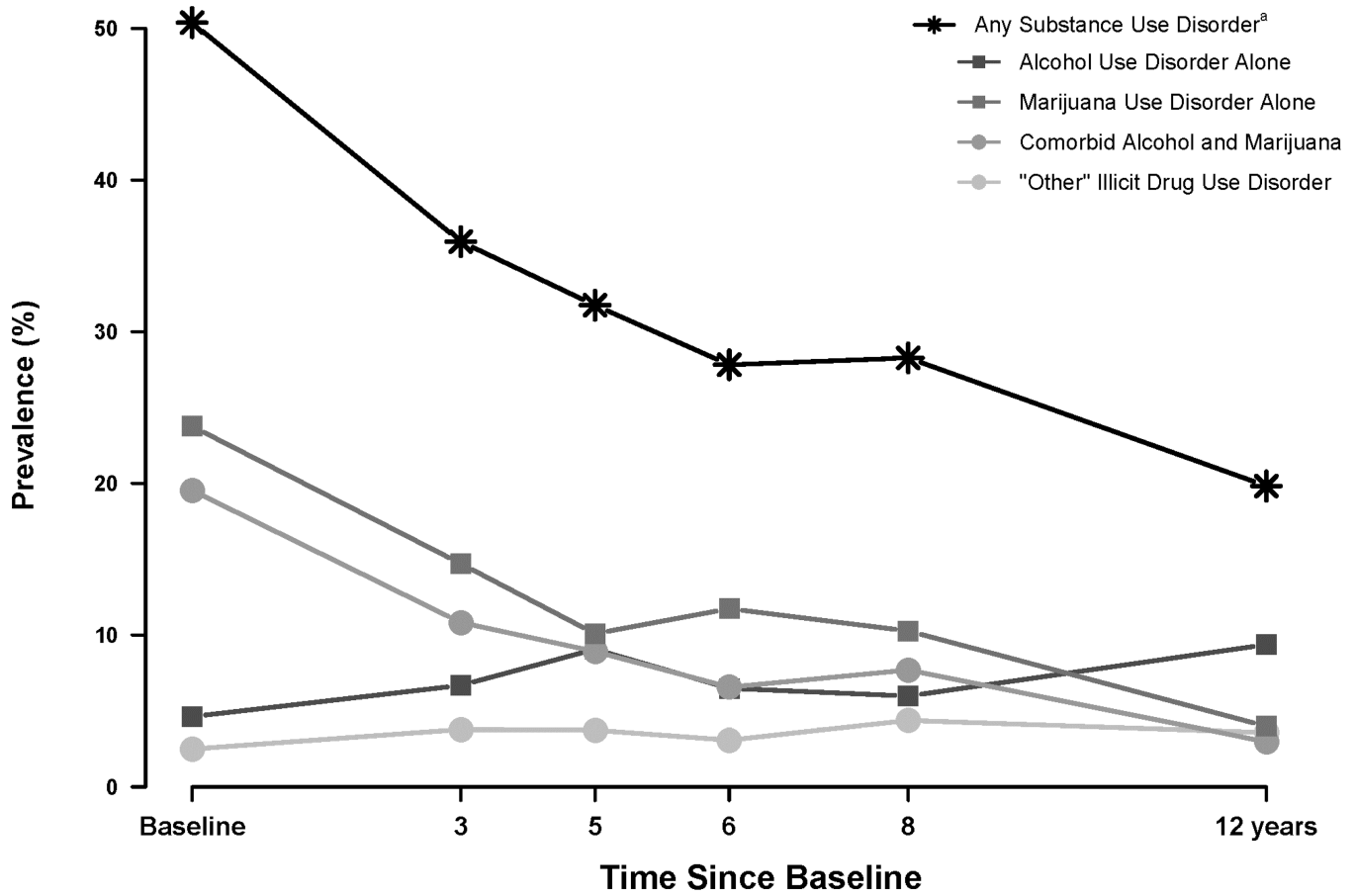
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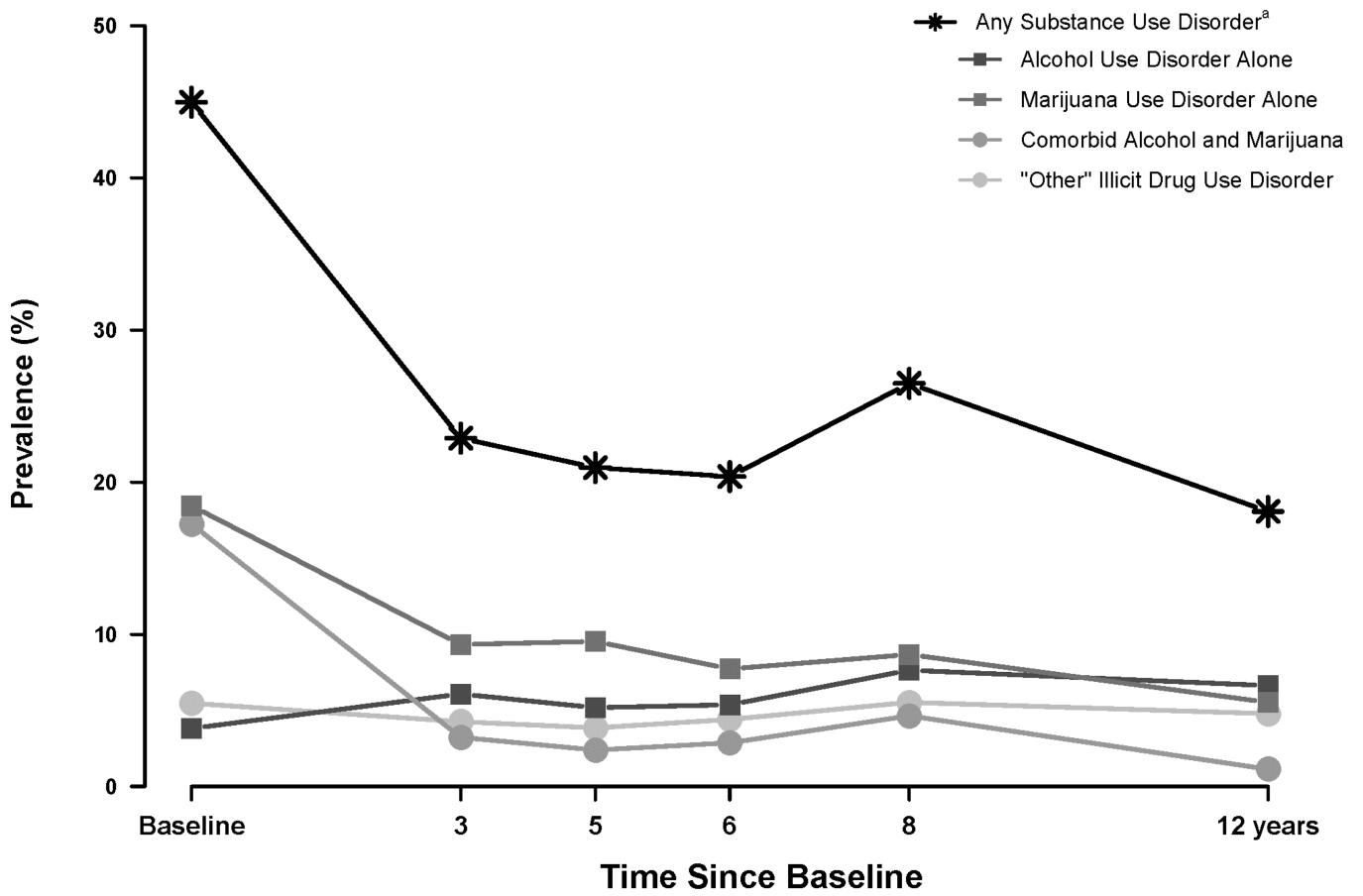
**Figure 1.** Prevalence of substance use disorders (SUDs) during the 12 years after detention in Cook County (Chicago): males (n = 1,142). Note: Prevalence estimates for any SUD and its mutually exclusive subcategories during the 12 years after detention for males are shown.

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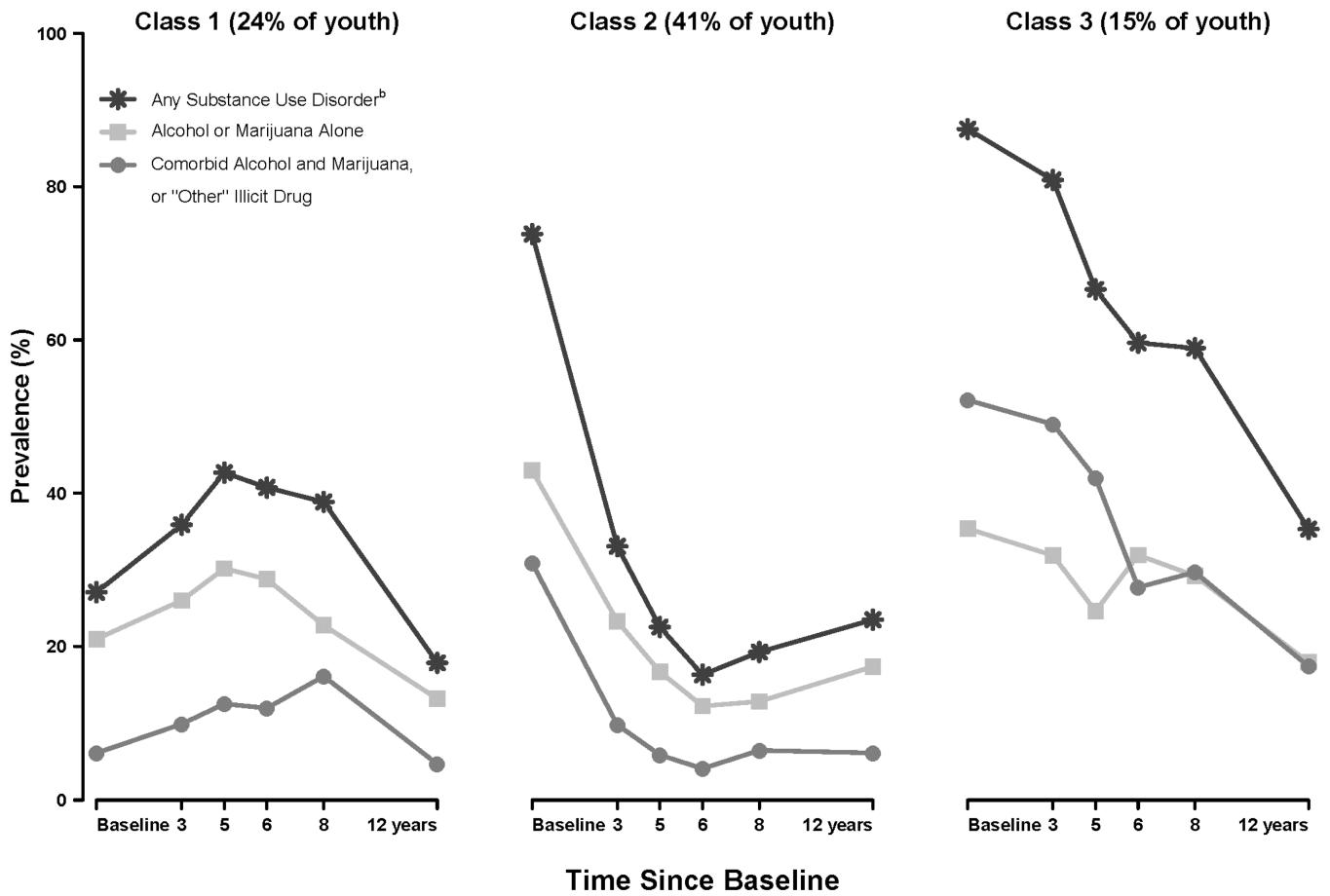
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**Figure 2.** Prevalence of substance use disorders (SUDs) during the 12 years after detention in Cook County (Chicago): females (n = 631). Note: Prevalence estimates for any SUD and its mutually exclusive subcategories during the 12 years after detention for females are shown.



**Figure 3.** Trajectories of substance use disorder (SUD) in juvenile delinquents during the 12 years after detention (n = 1,822). Note: Prevalence of any SUD and its subcategories (alcohol or marijuana alone; comorbid/“other” illicit) for each of the three trajectory classes. The 19.6% of youth who never had a SUD at any follow-up interview are not shown. Subcategories of any SUD are mutually exclusive.

**Table 1**Demographic Characteristics of the Sample at the Baseline Interview and 12 Years Later<sup>a</sup>

Characteristic	Baseline (n = 1,829)		Time 5, 12 years later <sup>b</sup> (n = 1,519)	
	No.	(%)	No.	(%)
<b>Race/Ethnicity</b>				
African American	1,005	(55)	879	(58)
Non-hispanic white	296	(16)	228	(15)
Hispanic	524	(29)	410	(27)
Other	4	(0)	2	(0)
<b>Gender</b>				
Male	1,172	(64)	943	(62)
Female	657	(36)	576	(38)
<b>Legal Status at Detention</b>				
Processed in adult court	275	(15)	230	(15)
Processed in juvenile court	1,554	(85)	1,289	(85)
<b>Age (years)</b>				
Mean (SD)	14.9	(1.4)	27.6	(1.4)
Median	15		28	
Range	10–18		22–32	
<b>Nonresponse</b>				
Died	—		97	
Refused	—		69	
Skipped interview <sup>c</sup>	—		135	
Interview out of range <sup>d</sup>	—		9	

<sup>a</sup>Percentages may not sum to 100% due to rounding error.<sup>b</sup>At Time 5, 83.1% (n=1,519) of the sample was retained.<sup>c</sup>Participant was not located in time to be interviewed.<sup>d</sup>The participant was interviewed more than 1.5 years after the interview due date.

**Table 2** Predicting Trajectory Class Membership Using Gender, Race/Ethnicity, and Age at Baseline (N = 1,822)<sup>a</sup>

	% in Each Group			Odds Ratios (95% CI) Predicting Class Membership <sup>b</sup>			
	No SUD	Class 1	Class 2	Class 3	No SUD vs. All Classes	Class 3 vs. Class 2	Class 2 vs. Class 1
<b>Overall</b>	19.6	24.5	41.3	14.6			
<b>Gender</b>							
Female	30.4	8.6	54.7	6.3	Reference <sup>b</sup>	Reference <sup>b</sup>	Reference <sup>b</sup>
Male	18.7	25.8	40.3	15.2	<b>0.5 (0.4-0.7)</b>	1.1 (0.4-3.3)	<b>3.6 (2.0-6.7)</b> 0.3 (0.1-1.1)
<b>Race/Ethnicity</b>							
African American	20.6	25.5	44.8	9.1	Reference <sup>c</sup>	Reference <sup>c</sup>	Reference <sup>c</sup>
Hispanic	17.2	22.1	29.8	30.9	0.8 (0.5-1.2)	2.5 (0.9-6.5)	<b>3.8 (1.6-9.2)</b> 0.6 (0.2-1.9)
Non-Hispanic white	11.7	18.4	26.3	43.5	<b>0.5 (0.3-0.8)</b>	<b>4.7 (1.8-12.2)</b>	<b>6.0 (2.9-12.4)</b> 0.8 (0.3-2.0)
<b>Age at Baseline<sup>d</sup></b>					1.0 (0.9-1.2)	<b>2.1 (1.4-3.3)</b>	1.0 (0.6-1.5) <b>2.2 (1.1-4.2)</b>
10-13 years	31.0	53.6	11.9	3.6			
14-16 years	14.2	34.3	38.5	13.0			
17+ years	22.3	10.6	49.2	17.9			

Note: Odds ratios in boldface type are significantly different from 1.0 with P < .05. SUD = substance use disorder.

<sup>a</sup>Prevalence estimates and odds ratios are weighted to adjust for sampling design and to reflect the demographic characteristics of the Cook County Juvenile Temporary Detention Center. Four participants who identified as "other" race/ethnicity and 3 participants who never completed the Diagnostic Interview Schedule for Children (DISC) (baseline interview) or the Diagnostic Interview Schedule (DIS) (follow-up interviews) are excluded from the table.

<sup>b</sup>Odds ratios comparing Classes 1, 2, and 3 were estimated within our growth mixture model to account for uncertainty in assigning participants to the latent classes. Odds ratios comparing the no-SUD group to all classes were estimated using logistic regression outside the growth mixture model framework.

<sup>c</sup>The reference group is females.

<sup>d</sup>The reference group is African Americans. Odds ratios (95% CI) for Hispanics compared with non-Hispanic whites are as follows: Class 3 vs. Class 1, 1.9 (0.7-5.1); Class 3 vs. Class 2, 1.6 (0.7-3.5); Class 2 vs. Class 1, 1.2 (0.3-4.4); and no SUD vs. all others, 1.6 (0.9-2.6).

<sup>e</sup>Odds ratios (95% CI) are given per every year. For example, the odds ratio of 2.1 means that compared with a participant who is 14 years at baseline, a participant who is 15 years has 2.1 times the odds of being in Class 3 compared with Class 1.



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### CHAPTER

## 22 Developmental Influences of Substance Use on Criminal Offending

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### Abstract

This chapter investigates how substance use might increase the risk of offending with an emphasis on developmental trajectories of substance use and their influence on offending. It describes three models that explain how substance use directly influences criminal offending: the psychopharmacological model, the economic motivation model, and the socio-environmental/contextual model. The chapter then provides an overview of empirical studies examining developmental influences of substance use on criminal behavior. First, studies examining contemporaneous and lagged associations are briefly summarized. Then, studies that have examined how trajectories of alcohol and marijuana use predict later criminal offending are reviewed, along with a brief discussion of the effects of substance use on desistance and persistence of criminal offending. Last, the chapter recommends areas for future research.

**Keywords:** [substance use](#), [developmental trajectories](#), [psychopharmacological model](#), [economic motivation model](#), [socio-environmental model](#), [contextual model](#), [developmental influences](#), [drugs](#), [alcohol](#)

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DEVELOPMENTAL criminology focuses primarily on temporal within-individual changes in criminal offending and other deviant behaviors throughout the life course (Le Blanc and Loeber 1998). This chapter focuses on the developmental influence of substance use on criminal behavior. Although both substance use and criminal offending are considered forms of deviant behavior (Le Blanc 2009), Le Blanc and Loeber (1998) suggested that it is possible to think of all types of deviance as part of a general deviance (or problem behavior) syndrome but at the same time to acknowledge that this general pattern can be subdivided into different types of deviance. By studying these behaviors as two distinct forms of deviance, one can examine how substance use acts as a precursor to offending and, thereby, be in a better position to inform preventive interventions.

Specifically, this chapter will investigate how substance use might increase the risk of offending with an emphasis on developmental trajectories of substance use and their influence on offending. Developmental trajectories are an important parameter of interest to developmental criminologists (Loeber and Le Blanc 1990). A developmental trajectory is the “description of systemic developmental changes in offending” (Loeber and Le Blanc 1990, p. 382). Loeber and Le Blanc (1990) argued that there are multiple trajectories that reflect individual differences in the development of deviance. An advantage of studying trajectories is that they allow for the study of individual differences within a developmental perspective. An ultimate goal of studying trajectories is to identify etiological factors for and precursors of various developmental stages so that they can be targeted in preventive interventions (Le Blanc and Loeber 1998).

There are three primary ways (although not mutually exclusive) by which substance use can directly impact criminal offending: (1) acute and chronic psychopharmacological effects of drugs on behavior; (2) the need for drugs creating an economic motivation for criminal offending; and (3) socioenvironmental/contextual influences, specifically involvement in drug-using and drug-selling networks (Goldstein 1985; White and Gorman 2000). This essay focuses on the developmental influences of substance use on criminal offending with the acknowledgment that criminal behavior can influence substance use and that the association between these two behaviors can be reciprocal or spurious. For example, criminal behavior can induce drug use because of having extra money to spend, reinforcement from deviant peers groups, and other lifestyle factors (Bennett and Holloway 2006; Brunelle et al. 2014; Collins and Messerschmidt 1993; Welte et al. 2005). Furthermore, some offenders use drugs to justify or excuse their criminal behavior, to give themselves the courage to commit a crime, or simply to have fun while committing a crime (Brunelle, Brochu, and Cousineau 2010; Brunelle et al. 2014; Zhang, Welte, and Wiczorek 2002).

For some individuals (especially adolescents), the relationship between substance use and criminal offending may be spurious or coincidental because both forms of deviance share similar underlying predictors (e.g., impulsivity, low self-control, childhood victimization, poor parenting) (Brunelle et al. 2014; Hawkins, Catalano, and Miller 1992; Kirschbaum et al. 2013; White 2016). This essay does not focus on this “common cause” model (but see White 2016 for details); instead, it focuses on the influence of substance use on offending.

There are two main sections of this chapter. Section I describes three models that explain how substance use directly influences criminal offending: the psychopharmacological model, the economic motivation model, and the socioenvironmental/contextual model. Section II provides an overview of empirical studies examining developmental influences of substance use on criminal behavior. First, studies examining contemporaneous and lagged associations are briefly summarized. Then, studies that have examined how trajectories of alcohol and marijuana use predict later criminal offending are reviewed. The section ends with a brief discussion of the effects of substance use on desistance and persistence of criminal offending. The concluding section (Section III) summarizes the previous two sections and recommends areas for future research. For this chapter, substance use includes alcohol, illicit drugs (e.g., marijuana, cocaine, heroin), and non-medical use of prescription drugs (e.g., pain killers, tranquilizers, amphetamines, sedatives, etc.). Criminal offending includes adolescent delinquent behavior (e.g., fighting, theft, vandalism, assault) and adult criminal behavior (e.g., armed robbery, rape, assault, theft). Drug dealing and its influence on non-drug-related offending is also addressed.



## I. Explanatory Models

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### A. The Psychopharmacological Model

The psychopharmacological model proposes that the effects of intoxication (including disinhibition, cognitive-perceptual distortions, attention deficits, bad judgment, and neurochemical changes) increase the risk for criminal (especially violent and impulsive) behavior (White 2016). In other words, intoxication causes cognitive disruption and impairs cognitive processes that would normally inhibit aggressive responding (Giancola 2002). Whereas experimental studies provide strong support for a relationship between alcohol intoxication and aggression, findings also indicate that the effects of alcohol use on aggression are moderated by subject characteristics (e.g., propensity toward aggression), experimental design conditions (e.g., alternatives to aggression), and beverage characteristics (e.g., dose, type) (Chermack and Giancola 1997; Gustafson 1993; Ito, Miller, and Pollock 1996).

Although the psychopharmacological model has been mostly attributed to alcohol and violent crime, other drugs with similar psychoactive properties to alcohol (e.g., barbiturates and tranquilizers) may have similar effects on violence (Lundholm et al. 2013). In addition, some studies suggest that stimulants (e.g., crack cocaine and amphetamines) and various steroids increase violence (Pihl and Sutton 2009), although the results have been mixed (Lundholm et al. 2013). Intoxication from marijuana and heroin generally has not been found to increase aggression, although the effects of specific drugs on violence often depend on dosage (Haggård-Grann et al. 2006; Lundholm et al. 2013; Miczek et al. 1994). Furthermore, few laboratory studies of drug effects on aggression have been conducted with the sophisticated controls that alcohol studies have included (MacCoun, Kilmer, and Reuter 2003). Cognitive disruptions caused by alcohol and other drugs may also influence decisions to commit property crimes, especially impulsive decisions (Fergusson and Horwood 2000; Kirschbaum et al. 2013).

Chronic alcohol and drug use may also contribute to aggression and crime due to factors such as withdrawal, sleep deprivation, nutritional deficits, impairment of neuropsychological functioning, or enhancement of psychopathologic personality disorders (Virkkunen and Linnoila 1993). Furthermore, chronic administration of alcohol or drugs (or withdrawal among those addicted) can lead to physiological or neuropsychological changes that result in mood changes, such as increased negative affect (Miczek et al. 1994). These mood changes can increase the risks for aggressive behavior (for greater detail, see White 2016).

Besides the pharmacological effects of alcohol, another broad explanation for the impact of alcohol on aggression focuses on the beliefs and expectations of the drinker regarding alcohol (Leonard 2008). Those individuals who believe that alcohol causes aggression will be more likely than those without such beliefs to become aggressive after drinking. Whereas cross-cultural studies provide some evidence for expectancy effects on aggression (e.g., McAndrew and Edgerton 1969), laboratory studies do not provide strong support for a pure expectancy model of alcohol and physical aggression (Leonard 2008).

## B. The Economic Motivation Model

The economic motivation model assumes that drug users need to generate illicit income to support their drug habit. Therefore, they engage in crimes such as robbery, burglary, prostitution, and shoplifting to get drugs or the money to buy drugs. Support for the economic motivation model originated from literature on heroin addicts, which indicated that raising or lowering the frequency of substance use among addicts raised or lowered their frequency of crime, especially property crime (e.g., Anglin and Perrochet 1998). In addition, criminal activity was significantly greater following addiction to drugs than before addiction (Nurco et al. 1988). McGlothlin (1985) found that addicts commit more property crime but not more violent crime compared to those who use less drugs (see also Gottfredson, Kearley, and Bushway 2008; Jofre-Bonet and Sindelar 2001; Thompson and Uggen 2012). The fact that treatment reduces income-generating crimes rather than all crimes lends support for the economic motivation model (Anglin and Perrochet 1998).

Anglin and Perrochet (1998) argued that in countries where drug maintenance and treatment are provided by the government (e.g., the Netherlands and the United Kingdom), many fewer property crimes are attributed to narcotics use. On the other hand, studies in the United Kingdom and Australia have found that economic motivation accounts for a substantial amount of criminal activity (Bennett and Holloway 2006). For example, in a U.K. study, Bennett and Holloway (2006) found that a large majority (approximately 60 to 80 percent) of drug-using offenders reported that there was a connection between their offending and their drug use. Those criminals using heroin and cocaine generally claimed an economic connection, whereas alcohol, barbiturates, stimulant, and PCP use were most often associated with crime due to the pharmacological properties of these substances (see also Manzoni, Fischer, and Rehm 2007). In contrast, in the United States only about 17 percent of 2004 state prisoners reported having committed a crime in order to get money for drugs (Mumola and Karberg 2006).

In sum, the economic motivation model is more applicable to property rather than violent crimes. Overall, this model has been attributed primarily to drugs that are addictive and expensive (e.g., heroin and crack). Nevertheless, Brunelle and colleagues (2014) claimed that, due to limited funds during adolescence, young drug users often commit crimes to cover their drug expenses, even for relatively inexpensive drugs. Conversely, other studies of adolescents have not found much support for an economic motivation model (Menard and Mihalic 2001). Inconsistencies in findings regarding the relative strength of the economic model probably reflect differences in the age composition of the samples, the stage of substance use (e.g., recreational vs. dependent), and type of substance used. Furthermore, historical, geographical, and social policy factors affect the need for income-generating crime.

## p. 458 C. Socioenvironmental/Contextual Model

The socioenvironmental/contextual model proposed here primarily encompasses the influence of drug-using peers and drug-selling environments on criminal behavior. Substance users and offenders often share similar social networks in which subcultural norms reinforce both criminal behavior and substance use (Fagan 1990). In fact, Brunelle et al. (2010) found that, among adolescents, substance use and offending are tightly linked within a wider deviant lifestyle.

Substance use and crime also share common environmental and situational influences. For example, drug exposure and use are more common among residents of neighborhoods with high rates of crime (White and Gorman 2000). Certain places and situations where substances are consumed also generate greater rates of crime. For instance, crime rates are high when and where people (especially young males) are drinking (e.g., at bars and sports stadiums) (Fagan 1993). In addition, characteristics of certain bars (e.g., loud noise, inconvenient access routes, poor ventilation, overcrowding, permissive social environments, and aggressive staff) make them more conducive for fighting and aggression than other bars (Graham, Schmidt,

and Gillis 1996; Home Office 2004; Roberts 2007). In the United Kingdom violence occurs most often around pubs and clubs on weekend nights and rates of violence are especially high around pub closing times as crowds of intoxicated strangers (mostly young males) converge on the street at the same time (Home Office 2004; see also Brower and Carroll 2007).

There is also “systemic violence” connected with drug markets (Goldstein 1985). That is, the system of drug distribution is inherently connected with crime and violence, including fights over organizational and territorial issues, enforcement of rules, punishments of and efforts to protect buyers and sellers, and transaction-related crimes (Miczek et al. 1994). Further, drug markets can create community disorganization, which in turn may be associated with increases in crime that are not directly related to drug selling (see Blumstein 1995; Gorman, Zhu, and Horel 2005).

Although drug dealing is strongly related to criminal offending, studies indicate that individuals drawn to dealing were already violent and delinquent prior to dealing, and once involved in drug use or dealing, their level of violent behavior increased (Fagan and Chin 1990; Van Kammen and Loeber 1994). Research conducted in the 1990s consistently showed that crack users were heavily involved in dealing, but they were also involved in nondrug criminality (Inciardi and Pottieger 1994). In a study of in-custody, inner-city male adolescents, researchers found that large percentages of dealers did not use cocaine or crack but that few crack or cocaine users did not also deal (Lipton and Johnson 1998).

p. 459 In an at-risk sample of young men from the Pittsburgh Youth Study (PYS), White, Loeber, and Farrington (2008) found that, among those who engaged in both behaviors, serious violent offending preceded drug dealing by about one year. Serious theft preceded dealing by one to three years depending on cohort. They also found that, controlling for earlier violent offending, drug dealing was significantly related to later violent offending during adolescence and emerging adulthood. In general, dealing, compared to drug use, is more strongly related to violence (De Li, Prieu, and MacKenzie 2000; Menard and Mihalic 2001). Nevertheless, not all drug dealers are violent, and levels of violence differ depending on types of drug markets, types of drugs, and geographical areas (Curtis and Wendel 2007; Desroches 2007; Sales and Murphy 2007) as well as national policies regarding drug control (White and Gorman 2000).

## II. Developmental Associations

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Developmental researchers are interested in the comorbidity or contemporaneous occurrence of two or more behaviors as well as their sequential covariation. Loeber and Le Blanc (1990, p. 432) defined sequential covariation as “when increases and decreases in the frequency of an independent variable are associated with increases and decreases in offending.” This section briefly summarizes results from studies that have examined contemporaneous and cross-lagged associations between substance use and criminal offending. Then it describes how various substance use trajectories are related to later criminal offending, including persistence and desistance of offending.

## A. Contemporaneous and Cross-Lagged Associations

Several within-individual analyses have examined sequential covariation and found that individuals commit more offenses at the same time in their lives when they are most involved with substances (Gottfredson et al. 2008; Horney, Osgood, and Marshall 1995; Welte et al. 2005). For example, among a high-risk sample of adolescents and young adults, Mulvey and colleagues (2006) found that violent days were more likely to be substance-using days, and substance-using days were more likely to be violent days (see also Chermack and Blow 2002; Felson, Teasdale, and Burchfield 2008). The findings for marijuana use were weaker than for alcohol and other illicit drugs. Among a sample of male offenders, Horney and colleagues (1995) found that periods of illegal drug use but not alcohol use were related to increases in drug dealing, property crime, and assault. Margolin and colleagues (2013) found that, although most occasions of aggression perpetration for male college students occurred on days without alcohol or drug use, on days when men used substances, they had a significantly greater chance of being aggressive than on days when they did not. For women, there was no significant association between aggressive behavior and days of substance use, suggesting that the association between substance use and aggression may differ by gender (see also Swan and Goodman-Delahunty 2013; but see Brunelle et al. 2014 and Ogders et al. 2008 for conflicting findings).

p. 460 Using the PYS data, White and colleagues (2013) found that within-individual annual increases in alcohol use quantity from one's own typical levels of drinking between ages 13 and 18 were concurrently associated with within-individual increases in aggressive behavior and vice versa. This association did not differ by race; however, increases in alcohol use and aggression were more strongly associated among boys with attitudes favoring violence and those who lived in high-crime neighborhoods. On the other hand, within-individual increases in marijuana use were associated with decreases in aggressive behavior. Overall, their results indicated that individual and contextual factors affect the strength of the sequential covariation of alcohol use and aggressive behavior during adolescence.

Longitudinal studies indicate that heavy drinking in adolescence is predictive of both violent and property offending in later adolescence and adulthood (e.g., Fergusson and Horwood 2000; Menard and Mihalic 2001). Conversely, individuals, especially males, who were aggressive in childhood or adolescence were more likely to be heavier drinkers in adolescence and adulthood (e.g., Farrington 1995; Popovici et al. 2012). Overall, studies examining cross-lagged associations indicate that there are reciprocal relationships of alcohol use with delinquency and aggression over time during adolescence (e.g., Huang et al. 2001; Wei, Loeber, and White 2004; White et al. 1999). Nevertheless, these associations differ depending on individual characteristics, such as age, race/ethnicity, gender, and socioeconomic status (Loeber et al. 2010; Mason et al. 2010). In general, the literature has demonstrated that early delinquency is a stronger predictor of later alcohol use than early alcohol use is of later delinquency and criminal offending (Mason et al. 2010).

Several studies have found that marijuana and/or other illicit drug use in adolescence predicts criminal offending later on (e.g., Menard, Mihalic, and Huizinga 2001; Mulvey, Schubert, and Chassin 2010). Similarly, studies have found that adolescent delinquency predicts later drug use (e.g., Doherty, Green, and Ensminger 2008; Hayatbaksh et al. 2008). Overall, as with alcohol, it appears that the relationship between drug use and delinquency/violence is reciprocal during adolescence (e.g., D'Amico et al. 2008; Estévez and Emler 2011; Mason and Windle 2002; Wei et al. 2004; White et al. 1999). D'Amico and colleagues (2008) argued that neither substance use nor delinquency is the driving force behind the other; they suggested, instead, that each behavior influences the other.

## B. Trajectory Analyses

Whereas there have been numerous studies examining developmental trajectories of delinquency and aggression/violence and trajectories of alcohol and marijuana use during adolescence or from adolescence into adulthood (for a review, see White 2015), only studies examining the influence of developmental trajectories of substance use on criminal offending are reviewed here. Although not the focus of this chapter, it should be noted that trajectories of offending have also been found to predict later substance use and abuse (e.g., Brook et al. 2013; Odgers et al. 2008; Wiesner, Kim, and Capaldi 2005).

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Several studies have examined criminal outcomes in young adulthood of adolescent alcohol use trajectories. For example, Tucker et al. (2005) found that early adolescent high-binge drinkers were significantly more likely to sell drugs and commit violent crimes at age 23 than adolescent non-binge drinkers. In contrast, Hill and colleagues (2000) reported that once they controlled for adolescent drug use, there was no effect of adolescent binge drinking trajectories on self-reported criminal behavior at age 21. Similarly, Lynne-Landsman, Bradshaw, and Jalongo (2010) found no adolescent alcohol or marijuana trajectory group differences in violent or nonviolent criminal records at age 21.

In a joint trajectory analysis with the PYS data, White, Jackson, and Loeber (2009) identified moderate associations between trajectories of drinking (based on frequency) and violence (a binary indicator) during adolescence (ages 13 to 18), but no significant associations during emerging adulthood (ages 18 to 25). In addition, adolescent trajectories of drinking did not predict emerging adult violent offending and adolescent trajectories of violence did not predict emerging adult drinking. They argued that heavy drinking is normative in emerging adulthood and, thus, cannot differentiate violent offenders from non-offenders. Although not a trajectory analysis, Fergusson, Harwood, and Swain-Campbell (2002) also found a stronger association between marijuana use and offending in adolescence than in emerging adulthood.

Several studies have examined how trajectories of marijuana use beginning in adolescence affect later criminal behavior in young adulthood. For example, Brook, Zhang, and Brook (2011) examined developmental trajectories of marijuana use from ages 14 to 32 and found that early-onset chronic marijuana users and increasers reported significantly more symptoms of antisocial personality disorder (ASPD) at age 37 than never and occasional users, even with controls for early personality and behavioral factors associated with antisocial behavior. There were no differences between the quitters/decreasers and the non- and occasional users. Tucker et al. (2005) found that individuals in all marijuana-using trajectories, compared to abstainers, were more likely to sell drugs in emerging adulthood. Steady marijuana increasers, compared to abstainers, were also more likely to steal in emerging adulthood. In a minority sample, Brook, Lee and colleagues (2011) identified four marijuana trajectory groups from ages 14 to 29 and examined self-reported criminal behavior at age 29. The chronic high, late-onset, and maturing out groups were all significantly higher than the non-/low users. Furthermore, the chronic high group was significantly higher than the maturing out group. Brown and colleagues (2004) examined trajectories of marijuana use from the sixth to the tenth grade separately for blacks and whites. For blacks, they identified an early-onset group, a later-onset group, and a very-late-onset group. The later-onset group reported more arrests at age 20 than the very-late-onset group. For whites, they identified a non-user group, a later-onset chronic group, and an early-onset chronic group, across which arrest rates significantly increased in a linear fashion. For both races, the early-onset and later-onset groups reported more aggression at age 20 than the non-user or very-late-onset groups.

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Pardini, Bechtold, Loeber, and White (2015) identified four marijuana use trajectory groups from adolescence through the mid-twenties in the PYS older cohort: non-users or very light users, adolescence-limited users, late increasing users, and early-onset chronic users. They used both official records and self-reports of offending in young adulthood (through the mid-thirties) and controlled for race, socioeconomic status, other substance use, and several confounding variables related to propensity for offending. Early-

onset chronic and late increasing marijuana users were more likely to engage in drug-related offending (self and official report) during their mid-thirties, compared to non-users. Compared to non-users, adolescence-limited users were more likely to be arrested for drug-related crimes. There were no trajectory group differences for violence or theft. Although blacks scored higher than whites on several criminal outcomes, none of the race by trajectory group interactions were significant.

Overall, the trajectory studies generally indicate that early-onset, chronic substance users exhibit more antisocial personality features, aggression, and criminal behavior in adulthood than non-/low users. This finding is more consistent for marijuana than alcohol users, although when substance-related offenses are excluded and confounding factors are included, results are more ambiguous.

### C. Desistance

Le Blanc and Loeber (1998; Loeber and Le Blanc 1990) highlighted the importance of developmental criminologists studying desistance as part of an offending trajectory. Desistance has been defined in many ways (see Kazemian 2007). Loeber and Le Blanc (1990, p. 407) defined it as the processes that lead to cessation, either in part or entirely. Here, research on the role of alcohol and drugs in desistance from offending is briefly summarized.

Due to age normative changes in substance use and offending, these two types of deviance peak at different stages in the life cycle and desistance for most individuals occurs earlier for offending than for substance use. Desistance from criminal offending often begins in late adolescence (Elliott 1994), a time when substance use is generally escalating (Bachman et al. 1997). For the most part, youth do not mature out of heavy drinking and illicit drug use until they take on adult roles, such as marriage and career (Labouvie 1996).

Nevertheless, studies have shown that reductions in substance use in young adulthood may play a key role in de-escalation of offending (Kazemian, Farrington, and Le Blanc 2009; Stoolmiller and Blechman 2005). Some research also suggests that chronic use of substances impedes the natural desistance from offending (e.g., Farrington and Hawkins 1991; Hussong et al. 2004; Morizot and Le Blanc 2007; Welte et al. 2005). Hussong et al. (2004, p. 1043) suggested that substance abuse may impede desistance by entrenching individuals into antisocial patterns of behavior, increasing the occurrence of snares (e.g., incarceration), and reducing the accumulation of protective factors (e.g., good marriages). They also suggested that abuse of different types of substances may impede maturation out of offending in different ways. For example, dependence on illicit drugs may push individuals into drug markets where antisocial behavior is expected, whereas heavy drinking may cause acute cognitive impairments, which increase the likelihood of antisocial behavior. In contrast, White and colleagues (2012) found that, during emerging adulthood, heavy drinking for both black and white young men was not related to persistence of serious violent offending. They attributed this finding to the fact that heavy drinking is normative during this developmental period. Furthermore, in a follow-up study, White, Buckman, Pardini, and Loeber (2015) found no differences in alcohol, marijuana, or hard drug use at age 36 between persisters and desisters of violent offending. Maruna (2001) argued, however, that desistance from crime goes hand in hand with desistance from substance use.

### III. Conclusion

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The nature of the associations between substance use and offending is developmental and evolves through adolescence and adulthood (Brunelle et al. 2014). As discussed earlier, there are clear age differences generally suggesting a stronger relationship in adolescence than adulthood (Fergusson et al. 2002; White et al. 2009, 2012), although heavy use or addiction can interfere with the natural desistance out of offending in young adulthood (Hussong et al. 2004). Besides stage in the life cycle, the nature of the relationship between substance use and offending depends on the stage of drug use. Faupel and Klockars (1987) suggested that during the initial user stage, the association is spurious; during the more intense user stage, drug use is facilitated by criminal behavior; and finally during the street addict career stage, drug use directly influences crime (see also Brunelle et al. 2014).

The literature reviewed above indicates that substance use and crime are strongly related. Nevertheless, the substance-using/crime-committing population is heterogeneous, and there are multiple paths that lead from substance use to crime as well as connect the two forms of behavior. For some individuals, instances of acute intoxication increase the risks for violent and impulsive crime; for some, the need for expensive and addictive drugs increases the risks for income-generating crime; for some, exposure to drug cultures and drug markets increases all types of crime, especially violent crime; for some, the criminal lifestyle increases substance use; and, finally, for some, common underlying characteristics (e.g., family, personality, genetics, neighborhoods) increase the risks for both substance use and crime. Not only do substance use and crime associations vary across individuals, they also vary across occasions, types of substance use, and types of crimes. Nonetheless, heavy drinking and illicit drug use do not lead to offending for many users.

p. 464 Protective factors may include higher financial status, ↪ greater social control, and prosocial families and peers. In addition, individual temperament factors, such as lower impulsivity or greater harm avoidance, may protect some substance users from offending. More research is needed to understand the individual and situational factors that increase the risk that substance use will result in criminal offending.

There are several gaps in knowledge regarding substance use and crime. For example, although some studies have found that there are ethnic/racial and gender differences in the nature and extent of the drug-crime relationship, more research is needed to explain these differences. In particular, longitudinal studies with larger populations of ethnic/racial minorities and women are needed to understand developmental changes in substance use and crime and to identify proximal and distal risk and protective factors. More research is also needed on environmental contexts (e.g., societal norms toward specific drugs, availability, and laws prohibiting use of certain drugs) and how they influence the drug-crime association (MacCoun et al. 2003). Further, much of the research on substance use and criminal offending has focused on lower-class addicts and street crime with little research on the role of substance use in white-collar crime (McBride, VanderWaal, and Terry-McElrath 2003). In addition, it is well documented that drug-using criminal offenders often have comorbid mental health problems (Sacks et al. 2009). Therefore, more research is needed on the relationships among alcohol and drug use, mental illnesses, and crime and on appropriate interventions within the community and within the criminal justice system to deal with these co-existing problems. Most importantly, better-designed prevention and intervention research is needed to determine which components of which interventions work for which individuals under which conditions.

In summary, the studies reviewed above make it clear that the associations between substance use and criminal offending depend on drug type; crime type; contextual, cultural, and historical factors; and individual differences in gender, age, race/ethnicity, expectancies, reactions to drugs, and temperament. There is, therefore, a need for researchers to collect data across multiple domains and use multidimensional models to examine mediators and moderators (Chermack and Giancola 1997).

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## Notes

- \* Portions of this essay were excerpted from Helene R. White, 2016. "Substance Use and Crime." In *The Oxford Handbook of Substance Use and Substance Use Disorders*, Vol. 2, edited by Kenneth J. Sher. Oxford: Oxford University Press; and Helene R. White, 2015. "A Developmental Approach to Understanding the Substance Use-Crime Connection." In *The Development of Criminal and Antisocial Behavior: Theory, Research and Practical Applications*, edited by Julien Morizot and Lila Kazemian. New York: Springer.



## Statutory Definitions of Severe Emotional Disturbance, Developmental Disability, and Intellectual Disability for the Findings Necessary to Trigger The Mandate to Order a Care Review Team

### **Severe Emotional Disturbance**

#### **G.S. 7B-1501(24a)**

“A diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within the DSM-5 that resulted in functional impairment which substantially interferes with or limits the child's role or functioning in family, school, or community activities in a person who is under the age of 18.”

### **Developmental Disability**

#### **G.S. 122C-3(12a)**

A severe, chronic disability of a person that satisfies all of the following:

- a. Is attributable to one or more impairments.
- b. Is manifested before the person attains age 22, unless the disability is caused by a traumatic brain injury, in which case the disability may be manifested after attaining age 22.
- c. Is likely to continue indefinitely.
- d. Results in substantial functional limitations in three or more of the following areas of major life activity: self-care, receptive and expressive language, capacity for independent living, learning, mobility, self-direction, and economic self-sufficiency.
- e. Reflects the person's need for a combination and sequence of special interdisciplinary, or generic care, treatment, or other services that are of a lifelong or extended duration and are individually planned and coordinated; or when applied to children from birth through age four, may be evidenced as a developmental delay.

### **Intellectual Disability**

#### **G.S. 122C-3(17a)**

A developmental disability characterized by significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested before age 22.

**No Bed...Now**

**What?**

**NC DPS** NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY  
HEALTHY PEOPLE. HEALTHY N.C.

## There is No Bed....Now What?

### *Mental Health Issues and Juvenile Law*

Sonja L. Frison, Ph.D., MPH  
Psychological Program Manager/Juvenile Detention  
NC Division of Juvenile Justice and Delinquency Prevention

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## Barriers to Behavioral Health (BH) Residential Placement

» *What Have We Learned from Some of our Youth Waiting in Detention?*

**NC DPS** North Carolina Department of Public Safety 9/13/2023 2

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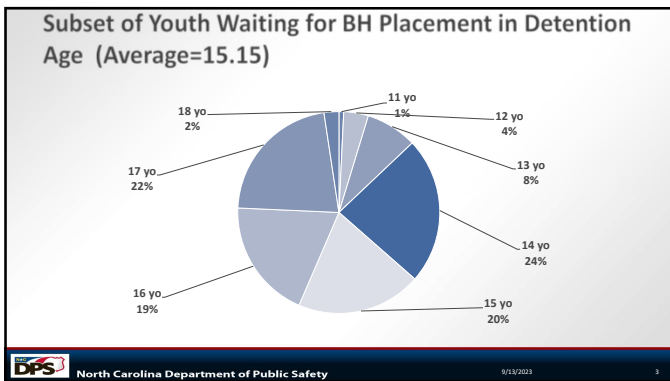
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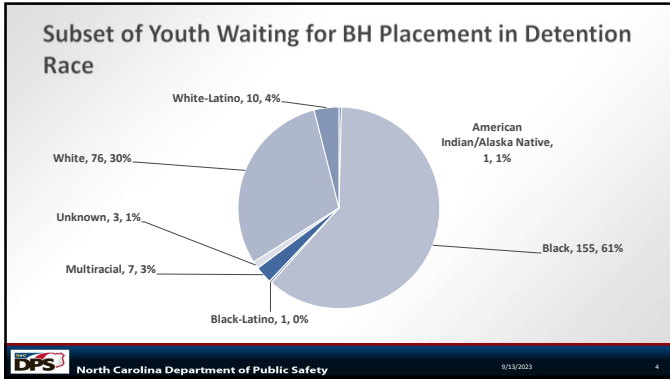
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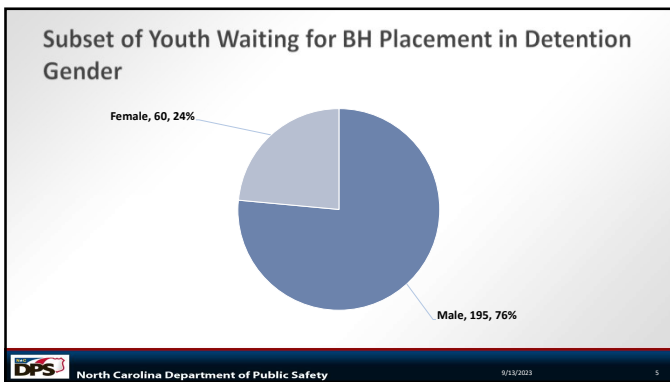
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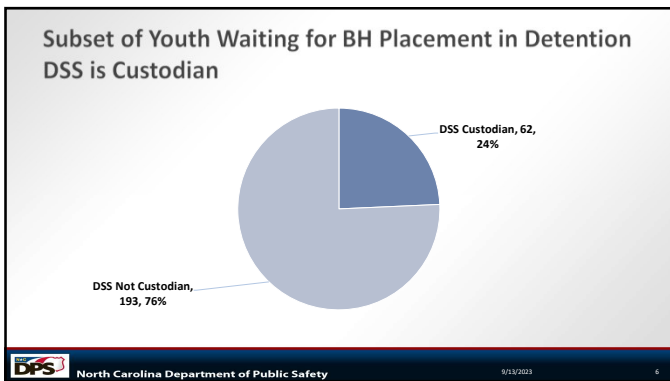
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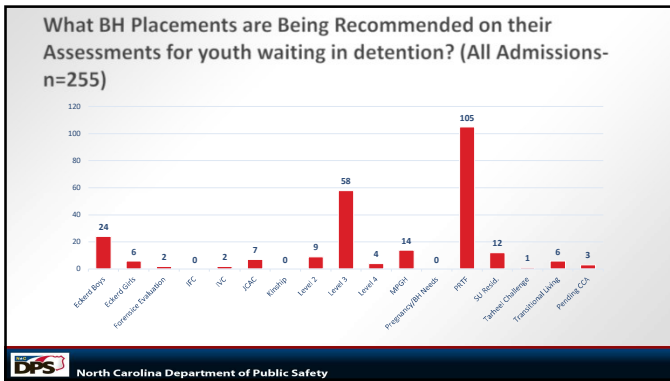
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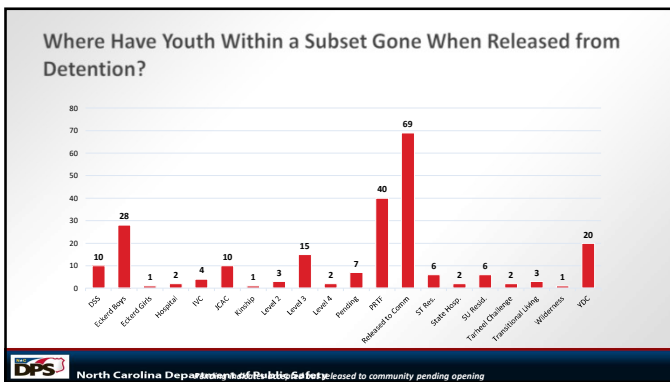
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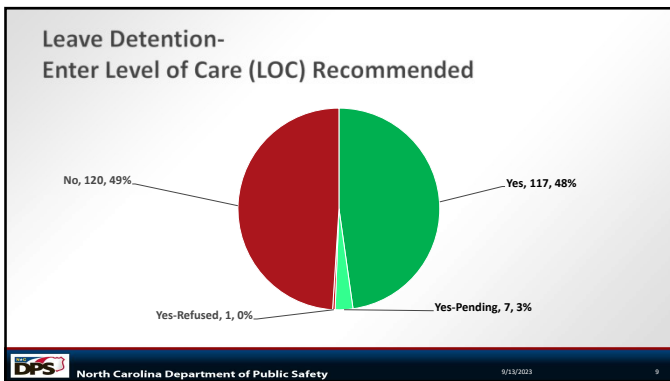
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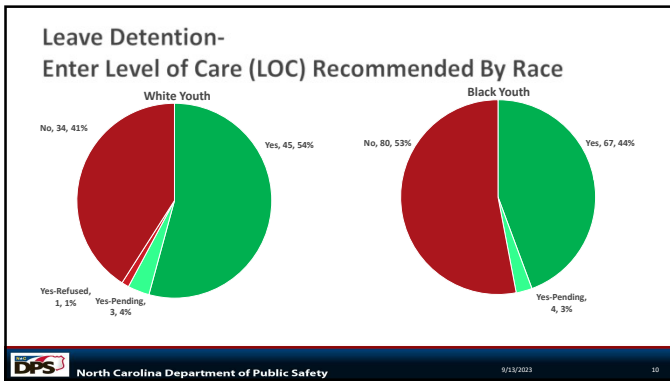
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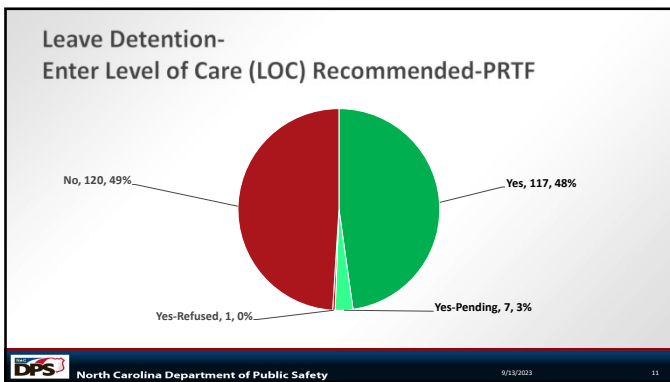
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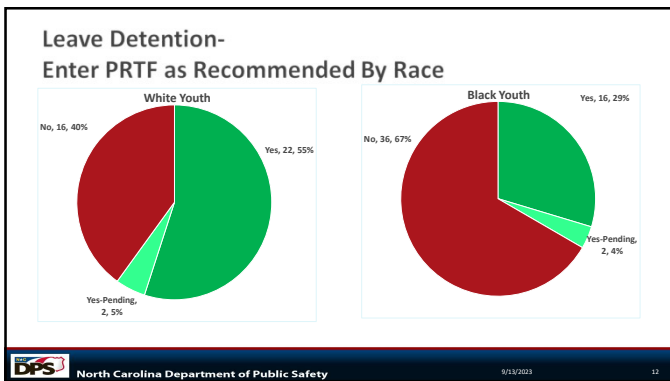
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**Youth In Detention:  
Examples of Identified Barriers**

»» *Areas for Consideration*



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**Important Caveat**

- ▶ After working with multiple teams, including JJ staff, behavioral health clinicians, child welfare staff, community partners, and managed care organizations, they are facing real barriers
- ▶ Have asked for lists of referrals and sometimes dozens of agencies are approached and no options
- ▶ One youth had over 60 referrals with no responses or there were denials
- ▶ So, these slides are focused on troubleshooting a challenging situation
  - Bringing forth "Areas for Consideration"



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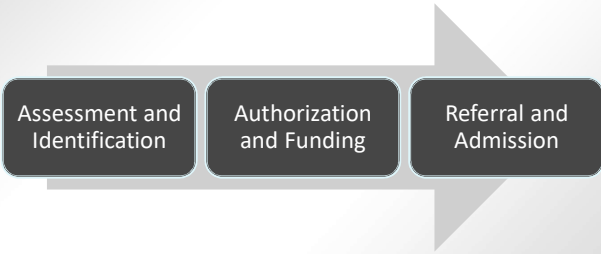
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**Youth In Detention:  
Examples of Identified Barriers/Areas for Consideration**



Assessment and Identification    Authorization and Funding    Referral and Admission



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**Assessment and Identification Barriers**  
**Areas for Consideration**

- ▶ Comprehensive Clinical Assessment-Medical Necessity
- ▶ Is the assessment current/does it reflect current behavior?
  - For example, young person had assessment 10 months ago-current maintained behavior not noted
- ▶ Is there only a Disruptive Behavior Diagnosis (Conduct Disorder or Oppositional Defiant Disorder) on assessment?
  - Most MH placements won't accept behavioral diagnoses only
  - Is trauma reflected in the assessment?
- ▶ What role does sexual aggression play in their functioning-this is a barrier for placements and only certain places will accept young person

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**Assessment and Identification Barriers-**  
**Areas for Consideration**

- ▶ Youth with Intellectual/Developmental Disorder (IDD) challenges
  - Are there indications of possible intellectual/developmental challenges? (recent psychological evaluation, young person involved with Individualized Education Plan at their school)
  - There are limited placements that work with youth with mental health **and** IDD issues (Complex Needs)
  - Managed Care Organizations may need to troubleshoot or add services to ensure youth with "complex needs" are being supported
    - Fewer options since trying to keep youth in the community

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**Authorization and Funding Barriers-**  
**Areas for Consideration**

- ▶ Most youth stuck in detention have Medicaid (not same with youth in community)
- ▶ Youth with Medicaid (and Healthchoice) have more options for residential placement-LME/MCO
- ▶ Tri-Care may pay for psychiatric residential treatment facility but not sure of other levels of residential care
- ▶ Youth with private insurance may need to have special arrangement with Medicaid to pay for PRTF. This process not easy now.
  - Goal was to avoid putting youth in DSS custody just so they can get services

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**Authorization and Funding Barriers- Areas for Consideration**

- ▶ LME/MCOs may not authorize service because there is not enough information or reviewer not receiving feedback
- ▶ If the young person's family or team feels that the decision is not fair, then the family can appeal
- ▶ Appeals
  - Disability Rights North Carolina outlines appeal process well-[Medicaid Appeals Involving LME/MCOs - DRNC \(disabilityrightsnc.org\)](#)
  - Appeal Process looks different at each Insurance Company
    - Most Private Insurers don't pay for residential
- ▶ Other JJ options and county discussions of funding

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**Referral and Admission Barriers**

- ▶ THE BED CRISIS IN STATE AND OUTSIDE OF STATE IS REAL ACROSS ALL SYSTEMS
  - Significant loss of residential beds (COVID closures and staffing crisis, community push to keep youth at home-research finding youth who stay in community do better overall)
  - Substance Use
    - There are only four Facility Based Crisis placements for youth under 18-designated places to manage substance use withdrawal-"detox"
    - There are only 2 Adolescent Substance Use Residential CASP facilities left
    - Youth end up in detention-no staffing to address these high needs (monitored by MD, 24-7 nursing and SU Staffing)-they must be at a medically monitored facility

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**Referral and Admission Barriers**

- ▶ THE BED CRISIS IN STATE AND OUTSIDE OF STATE IS REAL
  - Sexual Aggression
    - Know of three facilities that have more than once accepted our youth with sexual aggression (all three are out of state)
  - IDD Needs
    - Multiple facilities that won't allow for youth with lower than 70 IQ or with other Developmental Disabilities such as Autism
  - Example of one team applying to over 60 placements for a young person with IDD/MH needs and also sexual aggression and no one would accept youth
- ▶ NC Regulations don't allow for some youth to be in certain settings
  - Most PRTFs are not equipped to handle significant aggression issues and under higher scrutiny if something happens (running away, aggression)-see next slide

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**Denial Reasons listed in Wake Licensed Mental Health Clinician's notes (a few months data)**

- ▶ Aggression
- ▶ Running Away
- ▶ JJ Involvement
- ▶ Gang Involvement
- ▶ Sexualized Behaviors
- ▶ Stealing Behaviors/Larceny
- ▶ Cognitive/Developmental Disability
- ▶ Bed Space



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**Referral and Admission Barriers- Areas for Consideration**

- ▶ Is there a list of denials or just waiting?
  - Sometimes, people have attempted to call but the placement did not follow up
- ▶ Best if application done by behavioral health professional
  - Either a provider or MCO representative does these applications-JJ asks for updates
- ▶ Applications may have been submitted when there are no openings
  - Are there current updates?
- ▶ Troubleshoot with local Child and Family Team or Care Review team
  - For example, offer interviews during application process-sometimes meeting the youth helps in decisions
- ▶ Find out if they know the main reason for denials (running away, aggression, cognitive ability)
  - Ask if placements geared towards those areas?



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**Referral and Admission Barriers- Areas for Consideration**

- ▶ Very rarely are youth getting into placements in real time
- ▶ Sometimes youth are on a waitlist for provider due to capacity
- ▶ Being on a waitlist is better than not being on a list
  - Ask team if continuing to seek other options if far down the list
  - Ask how quickly youth transition at facility (ex. # 30 and youth leave once per month)
- ▶ If the youth is in community waiting-ask what type of services can be done in interim-Services at Day 1 of release
  - Mobile Outreach Response Engagement and Stabilization (MORES)
  - If not going to facility-High Fidelity Wraparound (Care Coordination)
  - JJ Community Programs



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**Referral and Admission Barriers-  
Areas for Consideration**

- ▶ On almost every team I have worked with, multiple people are trying hard to find placements-they are sometimes not there
- ▶ What are the back up plans for the young person?
- ▶ What are the back up plans for the family?
- ▶ What services can be put in place for as soon as the young person leaves detention (some of JJ programs may be an option for interim)

*The TEAM approach is a hallmark of system of care-that young person and family need their team to help them identify what can be a support if the system has no options-many teams have been very creative when they come together*

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**Questions?**

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# Confidentiality

# North Carolina Criminal Law Blog

## How to Comply with Federal Confidentiality Laws When Reviewing Comprehensive Clinical Assessments in Delinquency Cases

April 26, 2022 by [Jacquelyn Greene](#)

<https://nccriminallaw.sog.unc.edu/author/greene/>

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Comprehensive clinical assessments (CCA's) are frequently completed—and sometimes required—prior to ordering a disposition in a delinquency matter.

### [G.S. 7B-2502\(a2\)](#)

[https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter\\_7B/GS\\_7B-2502.pdf](https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter_7B/GS_7B-2502.pdf). You can find more information about when the statutory

requirement is triggered in a [previous blog](#) <https://civil.sog.unc.edu/legislative-changes-to-required-mental-health-assessments-before-entering-a-delinquency-disposition-new-provisions-of-g-s-7b-2502/>. CCA's contain information about the juvenile's

mental health and they may also contain information about substance use disorder treatment. These kinds of information are covered by federal confidentiality laws that are not specifically addressed by the Juvenile Code.

While the federal laws generally prohibit disclosure absent a valid patient authorization, courts can order disclosure after following the required procedure and making certain findings. The North Carolina Administrative Office of the Courts (NCAOC) recently released new and revised forms that are structured to provide the court access to CCA's while complying with the requirements of federal confidentiality laws. This post explains why and how to use the new and revised forms.

## Federal Confidentiality Laws that Cover CCA's

Health information that is protected by the Health Insurance Portability and Accountability Act (HIPAA) includes, among other things, information that

- Identifies the individual,
- Is created or received by a health care provider, health plan, or public health authority, and
- that relates to the past, present, or future physical or mental health or condition of an individual. **45 C.F.R. 160.103**

<https://www.ecfr.gov/current/title-45/subtitle-A/subchapter-C/part-160/subpart-A/section-160.103>.

The information in a CCA falls squarely within this definition. As protected health information, a CCA can only be disclosed if there is a valid authorization for that disclosure from the juvenile's parent, guardian, or custodian (**45 C.F.R. § 164.508** <https://www.ecfr.gov/current/title-45/subtitle-A/subchapter-C/part-164/subpart-E>) or in response to a court order that specifically authorizes its release (**45 C.F.R. § 164.512(e)** <https://www.ecfr.gov/current/title-45/subtitle-A/subchapter-C/part-164/subpart-E>).

Federal law contains an additional layer of privacy protection for substance use disorder patient records. **42 C.F.R. Part 2**

<https://www.law.cornell.edu/cfr/text/42/part-2>. This law generally restricts disclosure of patient records that identify the patient as having or having had a substance use disorder. **42 C.F.R. § 2.12(a)(1)**

<https://www.law.cornell.edu/cfr/text/42/2.12>. However, the federal regulations also provide a procedure for a court to order disclosure for noncriminal purposes under certain circumstances. **42 C.F.R. § 2.64**

<https://www.law.cornell.edu/cfr/text/42/2.64>. This structure can be used to order disclosure of substance use disorder information in a delinquency matter.

### Step 1: Order Production of the CCA to the Court, to be Filed Under Seal

Because the CCA is subject to the privacy protections in HIPAA and 42 C.F.R. Part 2, it should not be disclosed to the court without specific authorization from the juvenile and their parent, guardian, or custodian that complies with the applicable federal laws or without a specific court order that authorizes production of the CCA to the court.

### *CCA Completed Within 45 Days Prior to Adjudication*

If there is a CCA that was completed within 45 days prior to adjudication in the case, then the court is not required to order the completion of a new CCA. G.S. 7B-2502(a2). However, the court does need to ensure compliance with federal privacy laws in obtaining access to that recent CCA. Side two of a new form, [AOC-J-477 <https://www.nccourts.gov/assets/documents/forms/j477ff%204-4-2022.pdf?idD.cmnxtKDq75vTMwjHHI1e2p2TDAsp>](https://www.nccourts.gov/assets/documents/forms/j477ff%204-4-2022.pdf?idD.cmnxtKDq75vTMwjHHI1e2p2TDAsp), should be used in this circumstance to order production of the completed CCA.

This order requires the provider who completed the CCA to provide the CCA to the court under seal. There are two requirements in 42 C.F.R. Part 2 that must be met *before* the court orders disclosure, which are best managed if the CCA comes under seal for court review.

- The provider must have notice of the intent to disclose the record and an opportunity to object to that disclosure. (“Opportunity” means an opportunity to appear in person or to file a written response. A response is not required, and many times a provider will choose not to be heard on the question of whether an order to disclose should be issued.)
- The court must make certain findings regarding good cause in order to require disclosure of the CCA. The court must therefore have the opportunity to review the necessity for disclosure of the CCA prior to authorizing its disclosure.

If the court orders production of the CCA, there will need to be a gap in time between the adjudication and disposition hearings. The court can be told about the timely CCA following adjudication. The court can then order the provider to produce the CCA, and the provider must have time to comply with that order and to prepare any potential objection. It is possible to avoid this pause in the case if a party or the court subpoenas the CCA, to be produced to the court under seal, prior to adjudication. In that circumstance, the provider will have notice of the subpoena and opportunity to object without the need for a pause between adjudication and disposition. If a timely CCA is already in the court file, under seal, at the time of adjudication, then the court will not need to use the AOC-J-477. The court can move to step 2: order disclosure of the CCA.

### *CCA Not Completed Within 45 Days Prior to Adjudication*

If a CCA was not completed within 45 days prior to adjudication, the court MUST order DJJ to make a referral for a CCA following adjudication if the juvenile has a suspected mental illness, developmental disability, or intellectual disability. G.S. 7B-2502(a2). The front of the AOC-J-477 should be used to order completion and production of a CCA under this circumstance. This order also requires that the CCA be provided to the court under seal and it gives the provider who completed the CCA notice and an opportunity to object to disclosure, as required by federal law.

### **Step 2: Order Disclosure of the CCA**

The **AOC-J-471** <[https://www.nccourts.gov/assets/documents/forms/J471\\_o.pdf?9FkihM1lqhsnuoQ1xyKRCh4OG5TKrZte](https://www.nccourts.gov/assets/documents/forms/J471_o.pdf?9FkihM1lqhsnuoQ1xyKRCh4OG5TKrZte)> should be used to order disclosure of the CCA after that CCA has been produced to the court under seal. This form was revised to include the findings necessary for the court to order disclosure in compliance with federal privacy laws. It includes findings that

- the juvenile and the provider have been given notice and opportunity to be heard and
- that good cause exists for disclosure, as required by federal law.



If the court makes those findings, then the court can order disclosure of the CCA to the court and the parties for consideration of whether the court should convene a care review team. Absent a patient authorization that is valid under the federal privacy laws, this is the only way that the court and the prosecutor can have access to the CCA. The order also prohibits redisclosure of the CCA unless redisclosure is otherwise authorized by applicable confidentiality laws.

The AOC-J-471 should also be used to order a care review team if the court makes the necessary findings contained in the section of the form titled “Findings on review of Assessment.” **[G.S. 7B-2502\(a3\)](#)**

[https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter\\_7B/GS\\_7B-2502.pdf](https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter_7B/GS_7B-2502.pdf).

### **Ordering Disclosure of Other Expert Examinations Containing Mental Health and/or Substance Use Disorder Information**

Expert examinations may also be ordered in delinquency cases outside of this CCA process. **[G.S. 7B-2502\(a\)](#)**

[https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter\\_7B/GS\\_7B-2502.pdf](https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter_7B/GS_7B-2502.pdf) allows the court to order an examination by any qualified expert as

needed to determine the needs of the juvenile. Side two of form **[AOC-J-476](#)**

[https://www.nccourts.gov/assets/documents/forms/j476\\_o.pdf](https://www.nccourts.gov/assets/documents/forms/j476_o.pdf)

[YCP3FP6XcFLjQNpoNIsZAA2pOrV7z5IM](#) should be used to order an expert examination in a delinquency matter. This form was also recently revised to include language that complies with any applicable federal privacy laws. Using the same structure in place when ordering a CCA, the form orders the provider to submit the evaluation to the court under seal and gives the provider notice and opportunity to object to disclosure of the examination.

Once the court receives the expert examination under seal, the bottom half of side one of the form provides the findings needed to order disclosure of the expert examination to the court and the parties. These are the same findings noted above in the AOC-J-471. If, on review of the sealed examination, the court can make the findings, then the court can order disclosure. The front of this form includes such an order. The order limits disclosure to the use permitted by G.S. 7B-2502(a)—to determine the needs of the juvenile. The order also limits redisclosure of the examination to redisclosure that is otherwise allowed or required under applicable confidentiality laws.

## Keeping Track of This Process

If you have read this far, you may be feeling a little overwhelmed. There are many moving pieces related to providing access to the assessments that may be needed to get to disposition in a delinquency case while complying with federal privacy laws. The basic structure to remember is:

- The court can order access to private mental health and substance use disorder information of a juvenile under certain circumstances.
- The court must first order production of the assessment under seal or the CCA can be subpoenaed for production to the court under seal.
- Then, if the court can make the required findings, the court can order disclosure of the assessment for the limited purpose necessary in the delinquency matter.

Thinking about this process early in the case and ensuring that the proper orders are issued at the appropriate time will help reduce the amount of time a case has to pause in order to comply with the requirements of federal privacy laws.

Special thanks to my colleague, Mark Botts—our SOG expert in mental health law, and to Lindsey Spain of the NCAOC for their collaboration in helping me to understand this issue and their review of this blog.



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\_\_\_\_\_ County

In The General Court Of Justice  
District Court Division

**NOTE TO COURT:** Use this side of the form only if a juvenile adjudicated delinquent has a suspected mental illness, developmental disability, or intellectual disability and has **not** received a CCA or equivalent mental health assessment within the last 45 days before the adjudication hearing. Use form AOC-J-471 for the Court's review of the assessment and to order disclosure of the assessment for that review.

## IN THE MATTER OF

COMPREHENSIVE CLINICAL ASSESSMENT-  
ORDER TO COMPLETE ASSESSMENT AND  
PRODUCE RECORDS

Name Of Juvenile

Juvenile's Date Of Birth

Age

Date Of Hearing

42 C.F.R. § 2.64, 45 C.F.R. § 164.512(e); G.S. 7B-2502(a), 122C-54(a)

## FINDINGS

The Court hereby finds the following:

1. The juvenile has been adjudicated delinquent and has a suspected mental illness, developmental disability, or intellectual disability. [G.S. 7B-2502(a2)]
2. A comprehensive clinical assessment or equivalent mental health assessment has not been conducted within the last 45 days before the adjudication hearing.
3. Pursuant to G.S. 7B-2502(a2), the Court is required to order a comprehensive clinical assessment or equivalent mental health assessment.
4. Further, it is necessary and required for the Court to review a copy of the assessment to determine whether a care review team must be ordered pursuant to G.S. 7B-2502(a3).

## ORDER

It is hereby ORDERED that:

1. An assessment be completed that evaluates the developmental, emotional, behavioral, and mental health needs of the juvenile.
2. The provider identified below shall provide a written copy of the assessment to the Court to be filed under seal.
3. The records shall be transmitted to the Court in a sealed envelope addressed to the Clerk of Superior Court in this county with the file number clearly marked on the outside of the envelope.
4. The Clerk shall place these records under seal in the juvenile's court file.
5. This Order shall serve as notice to the juvenile and the provider of the Court's intent to disclose these records for review by the Court as required by G.S. 7B-2502(a3). At the time of filing the sealed records, the provider may, but is not required to, file written objections to the disclosure of these records, and may, but is not required to, further argue any objections at the court hearing set below.
6. The records shall be available for the Court at a hearing set for (specify date) \_\_\_\_\_ to determine whether to convene a care review team pursuant to G.S. 7B-2502(a3) and (a4).

Name And Address Of Provider

Date

Name Of District Court Judge (type or print)

Signature Of District Court Judge

## CERTIFICATE OF SERVICE

The undersigned certifies that a copy of this Order To Complete Assessment And Produce Records was served on the provider named above by:

- hand delivery to the provider named above.
- depositing a copy in a post-paid, properly addressed wrapper in a post office or official depository under the exclusive care and custody of the U.S. Postal Service, addressed to the  provider  (if provider is a corporation) officer, director, or managing agent of the corporation at the address shown above.
- Other manner of service (specify)

Date Served

Name Of Person Serving (type or print)

Signature Of Person Serving

\_\_\_\_\_ County

In The General Court Of Justice  
District Court Division

**NOTE TO COURT:** Use this side of the form only if a juvenile adjudicated delinquent has a suspected mental illness, developmental disability, or intellectual disability and a CCA or equivalent mental health assessment was conducted within the last 45 days prior to adjudication. Use form AOC-J-471 for the Court's review of the assessment and to order disclosure of the assessment for that review.

## IN THE MATTER OF

**COMPREHENSIVE CLINICAL ASSESSMENT  
ALREADY COMPLETED - ORDER TO  
PRODUCE RECORDS**

Name Of Juvenile

Juvenile's Date Of Birth

Age

Date Of Hearing

42 C.F.R. § 2.64, 45 C.F.R. § 164.512(e); G.S. 7B-2502(a), 122C-54(a)

## FINDINGS

The Court hereby finds the following:

1. The juvenile has been adjudicated delinquent and has a suspected mental illness, developmental disability, or intellectual disability. [G.S. 7B-2502(a2)]
2. A comprehensive clinical assessment or equivalent mental health assessment has been conducted within the last 45 days before the adjudication hearing. [G.S. 7B-2502(a2)]
3. It is necessary and required for the Court to review a copy of the assessment to determine whether a care review team must be ordered pursuant to G.S. 7B-2502(a3).

## ORDER

It is hereby ORDERED that:

1. The provider identified below shall provide a written copy of the comprehensive clinical assessment or the equivalent mental health assessment to the Court to be filed under seal.
2. The records shall be transmitted to the Court in a sealed envelope addressed to the Clerk of Superior Court in this county with the file number clearly marked on the outside of the envelope.
3. The Clerk shall place these records under seal in the juvenile's court file.
4. This Order shall serve as notice to the juvenile and the provider of the Court's intent to disclose these records for review by the Court as required by G.S. 7B-2502(a3). At the time of filing the sealed records, the provider may, but is not required to, file written objections to the disclosure of these records, and may, but is not required to, further argue any objections at the court hearing set below.
5. The records shall be available for the Court at a hearing set for (specify date) \_\_\_\_\_ to determine whether to convene a care review team pursuant to G.S. 7B-2502(a3) and (a4).

Name And Address Of Provider

Date

Name Of District Court Judge (type or print)

Signature Of District Court Judge

## CERTIFICATE OF SERVICE

The undersigned certifies that a copy of this Order To Produce Records was served on the provider named above by:

- hand delivery to the provider named above.
- depositing a copy in a post-paid, properly addressed wrapper in a post office or official depository under the exclusive care and custody of the U.S. Postal Service, addressed to the  provider  (if provider is a corporation) officer, director, or managing agent of the corporation at the address shown above.
- Other manner of service (specify)

Date Served

Name Of Person Serving (type or print)

Signature Of Person Serving

\_\_\_\_\_ County

In The General Court Of Justice  
District Court Division**NOTE TO COURT:** Use only if the Court previously ordered the production of a juvenile's comprehensive clinical assessment or its equivalent to be filed under seal AND the juvenile is eligible for a Level 3 disposition and/or Psychiatric Residential Treatment Facility (PRTF) placement.**IN THE MATTER OF****ORDER TO DISCLOSE AND ORDER ON REVIEW  
OF COMPREHENSIVE CLINICAL ASSESSMENT  
OR EQUIVALENT MENTAL HEALTH  
ASSESSMENT**

G.S. 7B-2502(a2) through (a4)

Name Of Juvenile

Juvenile's Date Of Birth

Age

Date Of Hearing

**FINDINGS ON DISCLOSURE OF RECORDS**

On the matter of ordering disclosure of records that are confidential under 42 C.F.R. Part 2, 45 C.F.R. Parts 160 and 164, and G.S. Chapter 122C, the Court hereby finds the following:

1. The Court previously ordered the production of the juvenile's comprehensive clinical assessment records to be filed under seal.
2. The Court has the authority to order disclosure of confidential information. [42 C.F.R. § 2.64, 45 C.F.R. § 164.512(e), G.S. 122C-54(a)]
3. The juvenile and the provider have been given notice and an opportunity to be heard. [42 C.F.R. § 2.64]
4. Good cause exists for ordering disclosure of the assessment because:
  - a. Other ways of obtaining the information are not available or would not be effective; and
  - b. The public interest and need for the disclosure outweigh the potential injury to the patient, the physician-patient relationship, and the treatment services. [42 C.F.R. § 2.64]

**ORDER TO DISCLOSE RECORDS**

It is hereby ORDERED that:

1. The written record of the comprehensive clinical assessment or its equivalent be disclosed to the Court and the parties for consideration of whether to convene a care review team as required by G.S. 7B-2502(a3).
2. The parties shall not further disclose this record unless otherwise permitted or required by the applicable confidentiality laws.

Date

Name Of Judge (type or print)

Signature Of Judge

**FINDINGS ON REVIEW OF ASSESSMENT**

The Court, on review of the comprehensive clinical assessment or equivalent mental health assessment in this case, makes the following Findings of Fact:

1. The juvenile has been adjudicated delinquent and has a suspected mental illness, a developmental disability, or an intellectual disability.
2. A comprehensive clinical assessment or equivalent mental health assessment has been completed.
3. The juvenile is eligible for a Juvenile Justice Level 3 Disposition and/or is recommended for a Psychiatric Residential Treatment Facility (PRTF) placement.
4. The Court has reviewed the assessment and finds sufficient evidence that the juvenile:
  - a. Has a severe emotional disturbance, as defined in G.S. 7B-1501(24a), a developmental disability, as defined in G.S. 122C-3(12a), or an intellectual disability, as defined in G.S. 122C-3(17a).
  - b. Does not have a severe emotional disturbance, as defined in G.S. 7B-1501(24a), a developmental disability, as defined in G.S. 122C-3(12a), or an intellectual disability, as defined in G.S. 122C-3(17a).
5. In the Court's discretion, the Court finds that the juvenile's severe emotional disturbance, developmental disability, or intellectual disability  did  did not substantially contribute to the juvenile's delinquent behavior.

**ORDER ON REVIEW OF ASSESSMENT**

It is hereby ORDERED that:

- A care review team be convened by the Division of Juvenile Justice of the Department of Public Safety and assigned to the case. The care review team shall develop a recommendation plan for appropriate services and resources that address the identified needs of the juvenile and shall submit a recommendation to the Court at a hearing set for (specify date) \_\_\_\_\_ which the Court will consider in determining the juvenile's disposition.
- NOTE TO COURT:** Date set must be within 30 days of the date of this order.
- A care review team is not warranted.

Date

Name Of Judge (type or print)

Signature Of Judge

**NOTE TO COURT:** If the Court determines that the juvenile does not have health insurance and that the parent or funding from the Division of Juvenile Justice of the Department of Public Safety is unable to pay the cost of the assessment, evaluation, or treatment, the Court shall conduct a hearing pursuant to G.S. 7B-2502(b) to determine who should pay and shall notify the county manager, or any other person who is designated by the chair of the board of county commissioners, of the hearing using form AOC-J-240A.



# ASSESSMENTS AND CONFIDENTIALITY IN DELINQUENCY CASES

There are many kinds of clinical assessments that may be needed in a delinquency matter. They can include mental health and substance use disorder assessments as well as assessments of problematic sexual behavior.

## PRE-ADJUDICATION

### Assessments

Assessments can be completed if there is a valid consent. When the juvenile is under 18, consent usually must be from a parent, guardian, or legal custodian. Minors can consent to their own diagnosis and treatment of abuse of controlled substances or alcohol and emotional disturbance.

### Confidentiality

No statement made to the juvenile court counselor during the preliminary inquiry and evaluation process is admissible before the dispositional hearing (G.S. 7B-2408).

Predisposition reports, including a risk and needs assessment containing information about the juvenile's psychiatric and psychological history, cannot be submitted to the court before the juvenile is adjudicated delinquent (G.S. 7B-2413).

## POST-ADJUDICATION

### Assessments

The court can order assessments under G.S. 7B-2502:

That the juvenile be examined by a physician, psychiatrist, psychologist, or other qualified expert as may be needed for the court to determine the needs of the juvenile (G.S. 7B-2502(a)).

That DJJ make a referral for a comprehensive clinical assessment (CCA) or an equivalent mental health assessment if there is a suspected mental illness, developmental disability, or intellectual disability and there was not a CCA within 45 days before the adjudication hearing (G.S. 7B-2502(a2)).

If an assessment reveals the youth has or has had a substance use disorder, consent or a court order is needed to disclose the assessment to the court and the parties.

## THROUGHOUT A CASE

### Confidentiality

Records maintained by DJJ can only be released pursuant to a court order, except for release to the juvenile and the juvenile's attorney, the juvenile's parent, guardian custodian or their authorized representative, professionals at DJJ who are directly involved in the case, and juvenile court counselors. (G.S. 7B-3001).

Health Insurance Portability and Accountability Act (HIPAA) prohibits disclosure of protected health records without a valid authorization or a court order. (45 CFR Parts 160, 164).

Mental health treatment records can only be released with a valid consent or court order. Consent for release of the record is required from the person who originally consented for the treatment. (G.S. 122C-52).

Records that identify the patient as having or having had a substance use disorder can only be released when there is a valid consent or court order. Consent is always required from the juvenile and is also required from the parent if the parent consented to the original treatment. (42 CFR Part 2).

Under G.S. 7B-3100, information may be shared among certain local agencies for the protection of the juvenile and others and to improve the educational opportunities of the juvenile when a petition has been filed and as long as the juvenile is under the jurisdiction of the court. Information related to the juvenile having, or having had, a substance use disorder can only be shared if there is consent to or a court order allowing the sharing of that information.





## **S.L. 2023-106: Parents' Rights, Who Is a Parent, and Juvenile Abuse, Neglect, and Dependency Cases**

On August 16<sup>th</sup>, the legislature used an override of the Governor's veto to pass [S.L. 2023-106 \(S49\)](#), a law enumerating the rights of parents regarding their children's education, health care, and mental health needs. But in addressing a parent's rights, the law contains some exceptions when the child is alleged to be abused, neglected, or dependent. Notably, the new law defines "parent" as "any person with legal custody of a child, including a natural or adoptive parent or legal guardian." In cases where a department of social services (DSS) has filed a petition alleging a juvenile is abused, neglected, or dependent, DSS may obtain custody of the juvenile, or the court may ultimately award legal custody or guardianship to a person who is not the juvenile's parent. As a result, the new law impacts abuse, neglect, and dependency cases. This post discusses the new law as it relates to abuse, neglect, and dependency cases only and is not a comprehensive discussion of the new law generally.

### **Overview of S.L. 2023-106**

There are three parts to S.L. 2023-106, two of which are the focus of this post.

- Part I of the law, "Parents' Bill of Rights," creates a new Chapter in the General Statutes, Chapter 114A, and became effective on August 15, 2023.
- Part II of the law focuses on educational issues by creating a new Article 7B to the state's education laws in G.S. Chapter 115C and amending other educational statutes. Part II became effective at the beginning of this school year (2023-2024).
- Part III of the law enacts new statutes in G.S. Chapter 90 that address parental consent for medical treatment of a minor and is not effective until December 1, 2023. (To learn about Part III of the law, see my colleague's blog post [here](#)).

### **Who is a "parent"?**

Parts I and II of S.L. 2023-106 define a "parent" as "[a] person who has legal custody of a child, including a natural parent, adoptive parent, or legal guardian." G.S. 114A-1(5); 115C-76.1(5). Legal custody or guardianship is granted by a court order. The expanded definition of parent gives legal custodians and guardians newly enumerated rights as set forth in S.L. 2023-106. Because the definition focuses on legal custody, a natural or adoptive parent who does not have legal custody of their child does not have these rights. For example, if there is a court order awarding legal custody or guardianship to another individual (e.g., a grandparent), that individual is the "parent," and the natural or adoptive parent is not for purposes of this new law.

Also under Parts I and II of the law, a "child" is defined as a person under 18 years old who is not emancipated by marriage or court order. G.S. 114A-1(2); 115C-76.1(2).

Is DSS a parent? Often in an abuse, neglect, or dependency action, DSS seeks a court order awarding it custody of the juvenile. See G.S. 7B-504 and -506 (nonsecure custody); 7B-903(a)(6) (dispositional alternatives after adjudication). When legal custody of the juvenile is ordered to DSS, DSS has the right to make decisions regarding the child, including issues related to the child's placement and matters that are generally made by the child's custodian. See G.S. 7B-507(a)(4); 7B-903.1(a). A DSS is a county's child welfare agency. G.S. 7B-101(8a). The legislature did not include in the definition of "parent" an agency with legal custody but rather referred to "a person" with legal custody of a child. However, rules for statutory construction state that "the word 'person' shall extend and be applied to bodies politic and corporate, as well as to individuals, unless the context clearly shows to the contrary." G.S. 12-3(6). There is nothing about the context that indicates a county DSS with a court order of custody is not a "person" with legal custody making it a "parent" with the rights provided for in S.L. 2023-106.

When legal custody is ordered to DSS, there is no other legal custodian or guardian for the child. The effect of interpreting the definition of "parent" to not include a county DSS with legal custody would be to leave that child without a "parent" who can exercise the rights provided for in S.L. 2023-106. This would be an absurd result given that there is not an exception carved out for any category of children, let alone children who are often considered one of the most vulnerable populations in our state – those that are abused, neglected, or dependent. See *In the Matter of Brake*, 347 N.C. 339 (1997) (in construing a statute, presumption that legislature acted with reason and common sense and did not intend an absurd result). Finally, although DSS obtains custody, it is the DSS director, who is of course a person, who acts on behalf of the department and the child. See, e.g., G.S. 108A-14(a)(6), (11), (12), (13); 7B-300; 7B-401.1; 7B-903.1.

### **Part I: The Parents' Bill of Rights**

The Parents' Bill of Rights is set forth at the new G.S. 114A-10 and enumerates ten specific rights of a parent, which include

- directing the child's education;
- directing the child's moral or religious training;
- enrolling the child in a school the child is eligible by law to attend in compliance with compulsory attendance laws;
- accessing and reviewing the child's educational records, which is authorized by the federal Family Educational Rights and Privacy Act (FERPA) (for more information about FERPA and its application in abuse, neglect, and dependency cases, [see Chapter 14, section 14.5](#) of the Abuse, Neglect, Dependency, and TPR Manual);
- making health care decisions for the child unless otherwise provided for by law;
- accessing and reviewing the child's medical records as authorized by HIPAA and not otherwise prohibited by law;
- prohibiting the creation, sharing, or storage of the child's biometric scan without prior written parental consent unless ordered by a court or required by law (e.g., fingerprinting,

- photographing, and collecting DNA samples when the criteria are met under the juvenile delinquency laws is still permitted);
- prohibiting the creation, sharing, or storage of the child’s blood or DNA without prior written parental consent unless ordered by a court or required by law (e.g., DNA samples when a juvenile is alleged to commit certain crimes and the delinquency case is transferred to superior court is still permitted);
  - prohibiting the creation of a video or voice recording of the child without a parent’s prior written consent unless certain exceptions apply, including court recordings, security surveillance, and certain school activities; and
  - being promptly notified if a state employee suspects the child has been a victim of a crime unless an exception applies. Under this new law, a “state employee” includes an employee of the state, a political subdivision of the state (e.g., a county or municipality), or any public school unit. See S. 114A-1(6).

There are exceptions set out in the Parents’ Bill of Rights that are specifically related to abuse, neglect, or dependency cases (and criminal, delinquency, and undisciplined cases as well).

- When the child is the subject of a DSS assessment for abuse, neglect, or dependency, a video or voice recording of the child may be made without prior written parental consent. G.S. 114A-10(9)b.
- When the parent is the subject of an assessment of abuse, neglect, or dependency and DSS requests that medical records for the child not be provided to the parent, the parent does not have a right to access the child’s medical records. G.S. 114A-10(6)a.2.
- If a state employee (which includes employees of a political subdivision of the state and public school units) who suspects the child is a victim of a crime has made a report to law enforcement or DSS and notifying the parent of the employee’s suspicions would impede DSS’s or law enforcement’s assessment, the parent does not have a right to be promptly notified. G.S. 114A-10(10).

This last right regarding prompt notification to the parent that a state employee (which includes employees of a political subdivision of the state and public school units) suspects the child is a victim of a crime raises some questions regarding a report to DSS if the crime also constitutes abuse, neglect, or dependency as defined in the Juvenile Code (G.S. Chapter 7B). See G.S. 7B-101(1), (9), and (15) (defining “abused juvenile”, “dependent juvenile”, and “neglected juvenile”). Any individual, including a state employee, who has cause to suspect a child is abused, neglected, or dependent must make a report to the county DSS where the child resides or is found. G.S. 7B-301(a). A state employee is obligated to make a report to DSS when the crime it suspects the child is a victim of also constitutes juvenile abuse, neglect, or dependency. Unless the exception (discussed below) applies, the parent is entitled to prompt notification that the state employee suspects the child is a victim of a crime. The statute does not specify who must promptly notify the parent, how notice is to be provided, or what must be included in the notice. DSS must keep any information it receives in an abuse, neglect, or dependency case in “strictest confidence”

and may not disclose the identity of a reporter absent a court order. G.S. 7B-302(a1); (a1)(1a), (a3); 7B-303(e); 7B-700(a). As a result, one can presume that the obligation to notify the parent is on the state employee who suspects that a criminal offense has been committed. The state employee is not obligated to inform the parent they made a report to DSS. Upon receiving notification of the child's suspected victimization of a crime, it is likely the parent will conclude that the state employee made the report to DSS.

One exception to notifying the parent exists: when a report is made to DSS or law enforcement and notice to the parent would impede either agency's investigation. The law does not specify who makes the determination that notice to the parent would impede an investigation – the state employee who is the reporter or the agency who received the report. If a state employee has reported the suspected crime to DSS, it is presumably because the employee suspects the child is abused, neglected, or dependent. Juvenile abuse, neglect, and dependency result from circumstances created by the juvenile's parent, guardian, custodian, or caretaker (except for a minor victim of human trafficking, who is abused and neglected regardless of who created the circumstances). Accordingly, when a state employee suspects the child is a victim of a crime that also constitutes abuse, neglect, or dependency, it is reasonable for that employee to believe that promptly notifying the "parent" of such a crime would impede a DSS investigation, since the parent would likely be notified by the state employee before any investigation was commenced by DSS and/or law enforcement. In other words, the state employee's prompt notification to the parent in such a circumstance would "tip off" the parent to the fact that they may be under investigation for a crime, which may include the juvenile's abuse, neglect, or dependency, they are suspected of committing against their child. That notification may hamper the investigation and potentially endanger the child at issue.

There are instances where some of the rights established in the new G.S. 114A-10 will be superseded by federal law. For example, a parent has a right to enroll the child in a school the child is eligible to attend, but if the child has been removed from their home and is placed in DSS custody, the federal Every Student Succeeds Act (ESSA) and Fostering Connections Act apply. These two federal laws require child welfare agencies and public school districts to work together to ensure a child's educational stability when a child is removed from their home. The laws require the child to remain in the school they were attending at the time of their removal when it is in the child's best interests to do so. A best interests determination is made in a Child and Family Team meeting, which the parent has a right to attend and participate in. Ultimately, DSS and/or the court hearing the abuse, neglect, or dependency case will make the determination if consensus cannot be reached. If the child must transfer schools, their enrollment must be immediate, even if the child's educational records are not available, to avoid a gap in schooling. For more information about ESSA, see Chapter 13, section 13.7 of the Abuse, Neglect, Dependency, and TPR Manual, [here](#).

The Parent's Bill of Rights also includes statutory limitations on the rights of a parent. A parent does not have the right to abuse or neglect their child as defined in the Juvenile Code or to engage

in unlawful conduct. G.S. 114A-15(a). The new law does not prohibit a state official or employee (which includes officials and employees of a political subdivision of the state and public school units) from acting in their “official capacity within the reasonable and prudent scope of his or her authority.” G.S. 114A-15(b)(1). The Parents’ Bill of Rights also does not prevent a court from issuing orders that are permitted by law. G.S. 114A-15(b)(2). For example, a court with subject matter jurisdiction in an abuse, neglect, or dependency action may enter an order that removes the child from the custody of the parent (see G.S. 7B-504; 7B-506; 7B-600; 7B-903), limits the parent’s right to make medical decisions for the child (see G.S. 7B-505.1; 7B-903.1(e)), limits the parent’s rights to make education or other decisions for their child (see G.S. 7B-903.1(a)-(b)), and limits visitation and contact with the child (see G.S. 7B-905.1).

Notably, when the court does enter an order that awards custody or guardianship to a suitable person who is not the parent, *that custodian or guardian now has all the rights that are enumerated in the Parents’ Bill of Rights*. These rights also apply to DSS when it has legal custody of a juvenile. At the same time, if the custody or guardianship order does not specify what, if any, rights the natural or adoptive parent retains, the natural or adoptive parent no longer has rights under the Parents’ Bill of Rights. See G.S. 7B-903.1(a); *In re M.B.*, 253 N.C. App. 437 (2017).

## **Part II: Parental Guides and Notifications related to Education**

Part II of the law enacts new statutes that address parental involvement in a child’s education.

Under the new G.S. 115C-76.20(b), public school units (defined at G.S. 115C-5(7a)) must

- inform parents of their legal rights and responsibilities regarding their child’s education (specified in G.S. 115C-76.25),
- provide annually a guide for parents about their child’s achievement and educational progress, and how a parent can help their child succeed in school (what is required in the guide is specified in the new G.S. 115C-76.30), and
- develop policies to effectively involve parents in their child’s education and school (specified in G.S. 115C-76.35).

Under the new G.S. 115C-76.25, parents have legal rights regarding their child’s education, twelve of which are specifically enumerated, including

- consenting or withholding consent for participation in reproductive health and safety education programs;
- seeking a medical or religious exemption from immunization requirements (note, if a child is in DSS custody through an order in an abuse, neglect, or dependency case, DSS may consent to immunizations unless the court orders otherwise because of a parent’s bona fide religious exemption; see S. 7B-505.1(a), (c)(3);
- reviewing statewide standardized assessment results;

- requesting their child's evaluation for a gifted program or identification as a student with a disability (for more information about the Individuals with Disabilities in Education Act (IDEA), see Chapter 13, section 13.8 in the Abuse, Neglect, Dependency and TPR Manual [here](#));
- inspecting and purchasing textbooks and other instructional materials;
- accessing information about promotion, retention, and graduation requirements;
- regularly receiving report cards that address the student's academic performance, conduct, and attendance;
- accessing information about the State's standards and report card, attendance, and textbook standards;
- participating in parent-teacher organizations;
- opting in for certain data collection for their child;
- requiring parental consent before a student participates in surveys that include protected student information (see S. 115C-76.65); and
- reviewing records of all materials their child has borrowed from the school library.

When a parent submits a written request for information that they have a right to access under the law, the principal has 10 business days to provide the information or inform the parent that because of the volume or complexity of the request, it will be 20 business days from the date of the request before the parent receives the information. G.S. 115C-76.40. If the information is not given, a process for contacting the superintendent and then the governing body of the public school unit is provided in the statute.

Under the new G.S. 115C-76.45, the public school unit must adopt procedures to notify the parent of the student's physical and mental health, including providing information about health care services that are offered at the school. The statute also addresses how the parent provides consent for health care services and how the parent may obtain access to physical and mental health records. In an abuse, neglect, or dependency case, a court order that removes a juvenile from a parent, guardian, or custodian likely designates who has authority to consent to medical treatment for the juvenile. See G.S. 7B-505.1; 7B-903.1(e). The court order should control. Further, a parent is not entitled to access medical records for their child under two circumstances. First, medical records are not provided when DSS is conducting an assessment of abuse or neglect and DSS requests the medical records not be released to the parent. G.S. 115C-76.45(c); see G.S. 114A-10(6). Second, the public school unit's education and health records are not provided to the parent when "a reasonably prudent person would believe that disclosure would result in the child becoming an abused or neglected juvenile" as defined by the Juvenile Code. G.S. 115C-76.45(c). For example, if a school has a reasonable belief that releasing information in the child's medical records to the parent would cause the parent to abuse or neglect the child, the school is not required to disclose those records to the parent.

A child's gender identity and a parent's rights are also addressed in the new education laws. If a child wants to change their name or pronoun, the school unit must first provide notice to the parent.

G.S. 115C-76.45(a)(5). Note, the child's request to change their name is not limited to situations involving gender identity; it may include a change of name to a nickname, e.g., Kiki from Kirsten. For kindergarten through 4<sup>th</sup> grade, gender identity, sexual activity, or sexuality must not be included in the curriculum, including instruction provided by third parties. However, responses to student-initiated questions about gender identity, sexual activity, or sexuality may be provided. G.S. 115C-76.55.

The public school unit must adopt a procedure for the parent to raise concerns about the procedures or practices the school unit utilizes to comply with the rights contained in these new laws. Ultimately, a parent may seek a hearing before the State Board of Education or in court. G.S. 115C-76.60.

Because of the expanded definition of "parent," public school units will need to be aware that a DSS with an order of legal custody or another person with a court order of custody or guardianship have these rights under Part II of the new law. Conversely, the child's natural or adoptive parents may not have these rights by virtue of a court order that is entered in an abuse, neglect, or dependency action. Court orders entered in abuse, neglect, or dependency actions are withheld from public inspection, so the legal custodian or guardian will need to notify the school of their status and relationship to the child. See G.S. 7B-2901(a). The court may also change custody or guardianship during a school year. As a result, the school may have to work with more than one "parent" for an individual student who is the subject of an abuse, neglect, or dependency action, as there may be different parents for this student during their school career.





## 14.1 Juvenile Records

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### E. Designated Agency Information Sharing

The Juvenile Code provides for information sharing among agencies who work with children that are receiving protective services in abuse, neglect, or dependency cases. Specifically, G.S. 7B-3100(a) requires that “designated agencies” share with other designated agencies information that is in their possession (even if it is confidential) and has been requested and is relevant to

- any DSS assessment of a report or provision or arrangement of protective services in a child abuse, neglect, or dependency case;
- any case in which a petition is filed alleging that a juvenile is abused, neglected, dependent, undisciplined, or delinquent; or
- any case in which a vulnerable juvenile is receiving juvenile consultation services (*see* G.S. 7B-1501(27b) (definition of “vulnerable juvenile”); 7B-1706.1 (juvenile consultation services; *see also* S.L. 2021-123, secs. 5.(b), (c), (f), effective December 1, 2021).

Designated agencies must share information, however, only to the extent permitted by federal law and regulations (such as the Confidentiality of Substance Use Disorder Patient Records regulations and the Family Educational Rights and Privacy Act, discussed respectively in sections 14.4 and 14.5, below). G.S. 7B-3100(a). See also sections 14.2.D.4 and 14.4.D.4, below (discussing the Health Insurance Portability and Accountability Act and 42 C.F.R. Part 2 as related to G.S. 7B-3100). Designated agencies sharing information must document the name of the agency to which the information was provided and the date it was provided. 14B N.C.A.C. 11A.0302.

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**Practice Note:** Information sharing is not defined. The applicable statute and rules do not explicitly authorize or prohibit the exchange of agency records. When determining whether copies of documents may be provided, the designated agencies should first look to any applicable federal laws. If a federal law prohibits the release of documents, that law must be followed. If there is no prohibition, absent a signed consent to release or court order that allows records to be released from one designated agency to another, the designated agencies will need to determine whether information sharing means releasing copies of records or disclosing information contained in the agency’s records without providing copies of those records.

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The purpose of the information sharing is limited. Designated agencies that receive information pursuant to these provisions may use the information only for the protection of the child and others or to improve the child’s educational opportunities. G.S. 7B-3100(a).

Designated agencies must continue to share information until DSS closes the protective services case or, if a petition is filed, until the juvenile is no longer subject to the jurisdiction of the juvenile court. Designated agencies must keep shared information confidential and may not permit public inspection of the information. G.S. 7B-3100(a). Information shared with a local educational agency shall not be part of the student's official education record, and the principal must destroy the information when they find that the school no longer needs the information to protect the safety of or improve the education opportunities for the student or others. G.S. 115C-404(a). The purpose of the information for use by the school, the sharing of that information to necessary school employees, and the sanction of the employee's dismissal for not maintaining the confidentiality of the shared information is addressed in G.S. 115C-404.

The Juvenile Code requires that the Division of Juvenile Justice of the Department of Public Safety consult with the Conference of Chief District Court Judges and adopt rules that designate certain local agencies that are authorized to share information. G.S. 7B-3100(a). The applicable rules are 14B N.C.A.C. 11A.0301 and 11A.0302. The designated agencies include

- the Division of Juvenile Justice of the Department of Public Safety (note the Division is still referred to as the Department of Juvenile Justice and Delinquency Prevention in the rules), which includes juvenile court counselors;
- Guardian Ad Litem offices;
- county departments of social services;
- local management entities or area mental health, developmental disability, and substance abuse authorities;
- local law enforcement agencies;
- the district attorney's office in the district (however, while a district attorney (DA) may obtain information, the statute does not impose on a DA a requirement to disclose or release any information in the DA's possession);
- county mental health facilities and developmental disabilities and substance use disorder programs;
- local school administrative units;
- local health departments; and
- any local agency that is located in the judicial district and is designated by an administrative order issued by the chief district court judge.

G.S. 7B-3100(a); 14B N.C.A.C. 11A.0301.

The court is not an "agency" and records maintained by the clerk of superior court are not subject to these provisions. The court records are governed by G.S. 7B-2901 (discussed in section 14.1.B, above).

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**Practice Note:** In 2006, G.S. 7B-3100 was amended to expand its application to situations where DSS is assessing a report of or arranging for protective services for a child in an abuse, neglect, or dependency case. The rule governing information sharing among designated agencies, 14B N.C.A.C. 11A.0301, has not been revised since the statutory amendment and

only authorizes information sharing between designated agencies in those cases where a petition is filed that alleges a juvenile is abused, neglected, dependent, delinquent, or undisciplined. Designated agencies may rely on G.S. 7B-3100. A chief district court judge may want to include in an administrative order authorized by G.S. 7B-3100 the language in that statute regarding the circumstances that allow for information sharing to occur between the agencies designated in that administrative order.

**Resource:** For more information about agency information sharing pursuant to G.S. 7B-3100 and the confidentiality laws that apply to health, mental health, and substance use disorder services, see Mark F. Botts, LaToya B. Powell, Rachel Johnson, Jessica Jones, [North Carolina Juvenile Justice - Behavioral Health Information Sharing Guide](#) (UNC School of Government, 2015).

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## 14.2 Health Records and HIPAA<sup>1</sup>

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) and its implementing regulations at Chapter 45 of the Code of Federal Regulations, Parts 160 and 164 (the “privacy rule”) govern the use and disclosure of health care information. Generally, information acquired or created in connection with providing health care is confidential and may not be disclosed except as permitted or required by the privacy rule. *See* 45 C.F.R. Parts 160 and 164.

**Note,** mental health records are governed by both the privacy rule and the state law discussed in section 14.3. The use and disclosure of mental health records must comply with both laws. Substance use disorder treatment records are governed by the privacy rule, the state law discussed in section 14.3, below, and a federal law discussed in section 14.4, below. The use and disclosure of substance use disorder treatment records must comply with all three laws.

HIPAA is a complex federal law. For purposes of this Manual, this section focuses on disclosure of information by a covered health care provider when there is cause to suspect or a substantiation by DSS that a child is abused, neglected, or dependent. This section is an introductory overview of the relevant provisions of HIPAA and does not provide a comprehensive review of this federal law. Additionally, it does not address when DSS is subject to HIPAA requirements as a covered entity.

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**Resource:** For information about whether DSS is a HIPAA covered entity, see Aimee Wall, [Should a Local Government Be a HIPAA Hybrid Entity?](#), UNC SCH. OF GOV'T: COATES' CANONS: NC LOCAL GOVERNMENT LAW BLOG (April 28, 2015).

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<sup>1</sup> This section was written by School of Government faculty member [Mark Botts](#).

## A. Covered Health Care Providers

The privacy rule applies to any “health care provider” that transmits health information in electronic form in connection with certain transactions, including the electronic transmission of information to a health plan for purposes of obtaining authorization or payment for health care services. *See* 45 C.F.R. 160.103, 164.500. While the transmission of information in electronic form for specified activities makes a health care provider a “covered entity” under the privacy rule, once covered, the privacy rule protects health information maintained by the provider in any form, whether electronic or on paper. (Other covered entities include health plans and health care clearinghouses.) “Health care provider” is defined broadly to include any person or organization that, in the normal course of business, furnishes, bills, or is paid for care, services, or supplies related to the health of the individual. This includes services relating to the mental condition or functional status of an individual. *See* 45 C.F.R. 160.103 for definitions of “health care provider” and “health care”.

## B. Protected Health Information

The privacy rule governs health information that is maintained in any form or medium (e.g., electronic, paper, or oral) that

- is created or received by a health care provider, health plan, employer, or health care clearinghouse;
- identifies an individual or provides a reasonable basis to believe that the information can be used to identify an individual; and
- relates to the past, present, or future physical or mental health or condition of an individual; the provision of health care to an individual; or the past, present, or future payment for the provision of health care to an individual.

## C. Duty to Comply with HIPAA

A covered entity, including a covered health care provider, may use and disclose protected health information only as permitted or required by the privacy rule. Any person or organization alleging a HIPAA violation may file a complaint with the U.S. DHHS Office of Civil Rights (OCR). Because OCR has the authority to impose significant civil monetary penalties for impermissible disclosures of protected health information, anyone seeking information from a health care provider will often be asked to point to a provision of the privacy rule that authorizes the provider to disclose the information. *See* 45 C.F.R. 160.402.

## D. Impact on Abuse, Neglect, Dependency Laws

**1. Reporting child abuse, neglect, or dependency.** Anyone who has cause to suspect that a child is abused, neglected, or dependent, or has died as a result of maltreatment, has a legal duty under state law to report the case to the department of social services in the county where the child resides or is found. G.S. 7B-301. The HIPAA privacy rule permits a covered health care provider or other covered entity to disclose protected health information to a government authority authorized by law to receive reports of child abuse or neglect. *See* 45

C.F.R. 164.512(b). Thus, the privacy rule does not prevent a covered provider from complying with North Carolina's reporting law nor does it bar the provider from disclosing protected health information when making a report required by G.S. 7B-301.

**2. Assessment and protective services.** The department of social services is required to assess every abuse, neglect, and dependency report that falls within the scope of the Juvenile Code. G.S.7B-302. The director of social services (or the director's representative) may make a *written* demand for any information or reports, whether or not confidential, that in the director's opinion may be relevant to the assessment of a report or to the provision of protective services. G.S. 7B-302(e). Upon such demand, any agency or individual is required to provide access to and copies of confidential information to the extent permitted by federal law. The privacy rule permits a health care provider to disclose protected health information to the extent the disclosure is required by law. *See* 45 C.F.R. 164.512(a). Thus, the privacy rule permits a covered provider to disclose protected health information to DSS when DSS makes a written demand for the information pursuant to G.S. 7B-302(e).

**3. The child's GAL access to information.** G.S. 7B-601 authorizes the court to appoint a guardian ad litem (GAL) to represent children alleged to be abused, neglected, or dependent in juvenile court proceedings. The GAL has the authority to obtain "any information or reports, whether or not confidential, that may in the guardian ad litem's opinion be relevant to the case." G.S. 7B-601(c). Because the privacy rule says a health care provider may disclose protected health information to the extent that such disclosure is required by law, 45 C.F.R. 164.512(a), and because state law requires disclosure of information to a GAL appointed under G.S. 7B-601, the privacy rule permits a health care provider to disclose protected health information to the GAL as necessary to comply with G.S. 7B-601.

The form order used by courts to appoint a GAL includes the authorizing language of G.S. 7B-601(c) and adds that the authority includes the ability to obtain information protected by the HIPAA privacy rule. *See* AOC-J-207, Order to Appoint or Release Guardian ad Litem and Attorney Advocate (June 2014), quoted in section 14.1.D, above.

**4. Interagency information sharing.** As discussed in section 14.1.E, the Juvenile Code requires the adoption of rules designating local agencies that are *required* to share with one another, upon request and to the extent permitted by federal law and regulations, information in their possession that is relevant to

- any assessment of a report of child abuse, neglect, or dependency;
- the provision or arrangement of protective services in a child abuse, neglect, or dependency case by a local department of social services; or
- any case in which a petition is filed alleging that a juvenile is abused, neglected, dependent, undisciplined or delinquent.

G.S. 7B-3100.

To the extent that the rules designate health care providers or other HIPAA covered entities to disclose information pursuant to G.S. 7B-3100, the HIPAA privacy rule permits the

information sharing because it authorizes a covered entity to disclose protected health information to the extent that such disclosure is required by law. 45 C.F.R. 164.512(a). The state law requirement to share information, combined with the privacy law's permission to disclose information when required by state law, requires the health care provider to disclose information in accordance with G.S. 7B-3100 if the health care provider is a designated agency by rule. *See* 14B N.C.A.C. 11A.0301 for a list of agencies designated to share information pursuant to G.S. 7B-3100.

**5. Disclosure pursuant to a subpoena.** The privacy rule permits a health care provider or other covered entity to disclose protected health information in response to a subpoena if the covered entity receives *satisfactory assurance* from the party seeking the information that reasonable efforts have been made by the party either to

- ensure that the individual who is the subject of the information has been given notice of the request or
- secure a qualified protective order.

*See* 45 C.F.R. 164.512(e).

*Satisfactory assurance of notice* means a written statement and accompanying documentation that the party requesting records has made a good faith attempt to provide written notice to the individual that includes sufficient information about the proceeding to permit the individual to raise an objection to the court and the time for the individual to raise objections has elapsed and either no objections were filed or all objections filed were resolved by the court and the disclosures being sought are consistent with such resolution.

*Satisfactory assurance of a qualified protective order* means a written statement and accompanying documentation demonstrating that the parties to the dispute giving rise to the request for information have agreed to a qualified protective order and have presented it to the court or tribunal, or the party seeking the information has requested a qualified protective order. (*See* 45 C.F.R. 164.512(e) for more information on protective orders.)

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**Practice Note:** The HIPAA privacy rule does not preempt state and federal confidentiality laws that place greater restrictions on the disclosure of protected information. Because the state mental health confidentiality law and the federal law governing substance use disorder patient records do not permit the disclosure of protected information in response to a subpoena alone, information that is governed by those laws cannot be disclosed pursuant to a subpoena, notwithstanding the fact that the same information also may be subject to the HIPAA privacy rule. *See* sections 14.3 and 14.4, below.

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**6. Disclosure pursuant to a court order.** A health care provider or other HIPAA covered entity may disclose protected health information in response to an order of a court or administrative tribunal, provided that the covered entity discloses only the information expressly authorized by the order. 45 C.F.R. 164.512(e)(1)(i). The privacy rule expresses no particular procedure or criteria for obtaining a court order to disclose protected health information.

**7. Disclosure with patient authorization.** A health care provider may disclose protected health information as authorized by the patient. The authorization must be voluntary and in writing. It also must be informed, which means that the individual signing the authorization must understand what information will be shared, with whom it will be shared, and for what purpose. Toward this end, the privacy rule specifies required content for a valid authorization. See 45 C.F.R. 164.508(c).

The patient’s written authorization permits, but does not require, the health care provider or other covered entity to disclose information. Any disclosure made by a health care provider pursuant to a patient’s authorization must be consistent with, and may not exceed, the terms of the written authorization. The patient may revoke the authorization at any time.

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**Resources:**

For a detailed guide to HIPAA, see “[The HIPAA Privacy Rule](#)” section of the U.S. Department of Health and Human Services website.

For a sample patient-authorization-to-disclose form that meets the requirements of the HIPAA privacy rule, see Mark F. Botts, LaToya B. Powell, Rachel Johnson, Jessica Jones, [North Carolina Juvenile Justice - Behavioral Health Information Sharing Guide](#) (UNC School of Government, 2015).

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### **14.3 Mental Health Records and G.S. Chapter 122C<sup>2</sup>**

The Mental Health, Developmental Disabilities, and Substance Abuse Act of 1985, G.S. Chapter 122C, governs providers of mental health, developmental disabilities, and substance abuse services (MH/DD/SA services). G.S. 122C-52 through -56 govern the information relating to those services.

#### **A. Covered Providers**

G.S. Chapter 122C applies to any “facility”—meaning any individual, agency, company, area authority, or state facility—at one location *whose primary purpose* is to provide services for the care, treatment, habilitation, or rehabilitation of the mentally ill, the developmentally disabled, or those with substance use disorder. This definition includes public and private agencies, providers of outpatient as well as inpatient services, state-operated psychiatric hospitals, psychiatric residential treatment centers, and agencies and individuals who contract with area authorities to provide services to area authority clients.

An “area authority” is commonly referred to as a “local management entity/managed care organization” or “LME/MCO.” Though these terms have distinct meanings in some contexts, for the purposes of this section of the Manual, the terms are interchangeable and refer to the public authorities responsible for contracting for the provision of publicly-funded

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<sup>2</sup> This section was written by School of Government faculty member [Mark Botts](#).

MH/DD/SA services within a specified geographic service area. *See* G.S. 122C-3 for the definitions of these terms.

In addition to G.S. Chapter 122C, regulations at 10A N.C.A.C. 26B impose additional confidentiality requirements on a subset of MH/DD/SA facilities: area authorities, state facilities, and the individuals and agencies that contract to provide services on behalf of area authorities and state facilities.

## **B. Confidential Information**

Any information, whether recorded or not, relating to an individual served by a “facility” and received in connection with the performance of any function of the facility is confidential and may not be disclosed except as authorized by G.S. 122C-52 through -56 and, where applicable, 10A N.C.A.C. 26B. *See* G.S. 122C-3(9); 122C-52.

## **C. The Duty of Confidentiality**

“No individual” having access to confidential information may disclose it except as authorized by G.S. Chapter 122C and, where applicable, 10A N.C.A.C. 26B. *See* G.S. 122C-52(b). The unauthorized disclosure of confidential information is a Class 3 misdemeanor (*see* G.S. 122C-52(e)) and could result in civil liability for the treatment facility or its employees. Further, because employees of area and state facilities are subject to disciplinary action if they disclose information in violation of G.S. Chapter 122C (*see* 10 N.C.A.C. 26B.0104), agencies subject to G.S. Chapter 122C will generally insist on identifying the legal authority for a disclosure before making the disclosure.

Note that the duty of confidentiality is not limited to MH/DD/SA treatment providers (“facilities”). The duty extends to any “individual having access to confidential information.” G.S. 122C-52(b). Thus, the duty of confidentiality applies to departments of social services that receive confidential information from a facility, and these departments may not redisclose such information except as permitted or required by G.S. 122C-53 through G.S. 122C-56 (*e.g.*, pursuant to patient consent, court order, or a provision of law like those discussed in 14.3.D, below). In this respect, the state law governing MH/DD/SA records is similar to the federal law governing substance use disorder records, for an “individual” having access to information protected by state law has a duty much like the duty of a “lawful holder” of information protected by 42 C.F.R Part 2. *See* section 14.4.C, below, for the confidentiality duty of DSS as a lawful holder of protected substance use disorder information.

## **D. Impact on Abuse, Neglect, Dependency Laws**

**1. Reporting child abuse, neglect, or dependency.** Anyone who has cause to suspect that a child is abused, neglected, or dependent, or has died as a result of maltreatment, is required to report the case to the department of social services in the county where the child resides or is found. G.S. 7B-301. Under G.S. 122C-54(h), providers of MH/DD/SA services are required to disclose confidential information for purposes of complying with Article 3 of G.S. Chapter



7B, which includes 7B-301. Thus, the state law governing the confidentiality of MH/DD/SA services is not a bar to complying with the state's child abuse reporting statute, and providers of services must disclose confidential information when necessary to comply with the mandatory reporting law.

**2. Assessment and protective services.** The department of social services is required to assess every abuse, neglect, and dependency report that falls within the scope of the Juvenile Code. G.S.7B-302. The director or director's representative may make a *written* demand for any information or reports, whether or not confidential, that in the director's opinion may be relevant to the assessment or to the provision of protective services. Upon such demand, any agency or individual must provide access to and copies of confidential information to the extent permitted by federal law.

The state mental health confidentiality law requires individuals and agencies subject to the law to disclose confidential information for purposes of complying with Article 3 of G.S. Chapter 7B, which includes 7B-302. *See* G.S. 122C-54(h). Thus, even if DSS seeks information that falls within the scope of the confidentiality protections of G.S. Chapter 122C, providers of MH/DDSA services must provide access to and copies of the requested information, unless disclosure is prohibited by federal law and regulations.

**3. The child's GAL access to information.** A guardian ad litem (GAL) appointed under G.S. 7B-601 to represent children who are alleged to be abused, neglected, or dependent, has the authority to obtain "any information or reports, whether or not confidential, that may in the guardian ad litem's opinion be relevant to the case." G.S. 7B-601(c).

G.S. 122C-54(h) provides that facilities governed by G.S. Chapter 122C must disclose confidential information "as required by other State or federal law." Thus, when a court order appoints someone to be a GAL under G.S. 7B-601, the GAL must be granted access to any information, whether or not protected by G.S. Chapter 122C, that the GAL believes is relevant to the case.

**4. Interagency information sharing.** As discussed in sections 14.1.E and 14.2.D.4, above, the Juvenile Code requires the adoption of rules designating local agencies that are *required* to share with one another, upon request and to the extent permitted by federal law and regulations, information that is in their possession that is relevant to

- any assessment of a report of child abuse, neglect, or dependency;
- the provision or arrangement of protective services in a child abuse, neglect, or dependency case by a local department of social services; or
- any case in which a petition is filed alleging that a juvenile is abused, neglected, dependent, undisciplined or delinquent.

To the extent that the applicable rules, 14B N.C.A.C. 11A.0301, designate MH/DD/SA service providers among the agencies required to share information in accordance with G.S. 7B-3100, those service providers would be required to share information upon the request of

another designated agency because G.S. Chapter 122C requires providers to disclose confidential information as required by other state law. *See* G.S. 122C-54(h).

The rules designate area mental health, developmental disabilities, and substance abuse authorities among the agencies required to share information pursuant to the statute, as well as any “local agency designated by an administrative order issued by the chief district court judge of the district court district in which the agency is located.” 14B N.C.A.C. 11A.0301(j).

Because the rules do not designate individuals and agencies who contract with area authorities to provide services to area authority clients, such providers of services do not come under G.S. 7B-3100 and, therefore, would not be permitted to disclose confidential information pursuant to the statute unless they are designated by an administrative court order as provided for in the rule. *See* 14B N.C.A.C. 11A.0301 for a list of agencies designated to share information pursuant to G.S. 7B-3100.

**5. Disclosure pursuant to a subpoena.** Unlike the privacy rule governing health records, discussed in section 14.2, above, G.S. Chapter 122C does not include a provision permitting a provider of MH/DD/SA services to disclose confidential information in response to a subpoena alone. A subpoena would compel disclosure of confidential information only if the confidentiality bar is removed by the client’s written authorization to disclose, a court order requiring disclosure, or some other legal mandate, such as a statute or regulation, that requires disclosure under the particular circumstances.

**6. Disclosure pursuant to a court order.** A facility must disclose confidential information if a court of competent jurisdiction issues an order compelling disclosure. G.S. 122C-54(a). G.S. 122C-54(a) expresses no standard or criteria for the issuance of a court order. Presumably, the court should use a public interest test similar to the test articulated in the regulations governing substance use disorder records, see section 14.4, below, which requires the court to balance the public interest and need for the disclosure against the potential injury to the patient, the patient-provider relationship, and the provider’s on-going treatment services.

The evidentiary privilege statutes for mental health professionals may provide some guidance to the court. The privilege statutes for psychologists and other mental health professionals provide that a judge may order disclosure of privileged information when “necessary to the proper administration of justice” (e.g., in order that the truth be known and justice done). *See* G.S. 8-53.3 (psychologists); 8-53.5 (marital and family therapists); and 8-53.7 (social workers) and case annotations.

**7. Disclosure with patient authorization.** A facility may disclose confidential information if the client or his or her legally responsible person consents in writing to the release of the information to a specified person or agency. *See* G.S. 122C-53(a); 122C-3(28).

The state regulations that apply to area authorities and their contracted providers of services specify the required content for consent forms. *See* 10A N.C.A.C. 26B.0200. The consent must be voluntary, informed, and in writing. The client’s consent is revocable, and it permits, but does not require, a facility to disclose confidential information.

Any consent form used for the disclosure of information that is confidential under G.S. Chapter 122C will probably need to conform to the HIPAA privacy rule requirements for patient authorization, as most MH/DD/SA providers also are healthcare providers covered by the privacy rule. The most effective way to ensure that you are using a consent form that meets the requirement of law is to have the patient sign and fully complete the treatment provider's own consent form.

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**Resource:** For a sample patient-authorization-to-disclose form that meets the requirements of the HIPAA privacy rule and G.S. Chapter 122C, see Mark F. Botts, LaToya B. Powell, Rachel Johnson, Jessica Jones, [North Carolina Juvenile Justice - Behavioral Health Information Sharing Guide](#) (UNC School of Government, 2015).

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## 14.4 Substance Use Disorder Records and 42 C.F.R. Part 2<sup>3</sup>

Federal law restricts the use and disclosure of patient information received or acquired by a federally assisted alcohol or drug abuse program. 42 U.S.C. 290dd-2; 42 C.F.R. Part 2.

### A. Covered Programs

The federal law governs federally assisted programs. A “program” is

- an individual or entity (other than a general medical facility) that holds itself out as providing, and provides, substance use disorder diagnosis, treatment, or referral for treatment;
- an identified unit within a general medical facility that holds itself out as providing, and provides, substance use disorder diagnosis, treatment, or referral for treatment; or
- medical personnel or other staff in a general medical facility whose primary function is the provision of substance use disorder diagnosis, treatment, or referral for treatment and who are identified as such providers.

See 42 C.F.R. 2.11 (definition of “substance use disorder”).

A program is considered “federally assisted” if it participates in Medicare, has tax exempt status, is registered to dispense a controlled substance used in the treatment of substance use disorders, receives federal financial assistance in any form even if the financial assistance does not directly pay for substance use disorder treatment, or is a local government unit that receives federal funds that could be but are not necessarily spent for a substance use disorder program. See 42 C.F.R. 2.12(b). By participating in Medicaid and receiving federal block grant funding, area authorities (LME/MCOs) and the agencies that contract with them to provide substance use disorder diagnosis, treatment, or referral for treatment are federally assisted programs governed by 42 C.F.R. Part 2.

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<sup>3</sup> This section was written by School of Government faculty member [Mark Botts](#).

The federal regulations cover those treatment or rehabilitation programs, employee assistance programs, programs in general hospitals, and school-based programs who hold themselves out as providing and provide substance use disorder diagnosis, treatment, or referral for treatment. A private practitioner who specializes, and holds herself out as specializing, in diagnosing substance use disorders and referring patients elsewhere for treatment is covered by the regulations even though she does not treat substance use disorders.

As noted above there are three separate “program” definitions, or three independent ways that a person or entity may fall within the definition of “program.” Two of the definitions apply to “general medical facilities,” a term not defined in the regulations. Looking at the definitions above, and considering a general or acute care hospital to be a general medical facility, we can see that the federal regulations would not apply to hospital emergency department personnel who refer a patient to the hospital’s intensive care unit for an apparent drug overdose unless the *primary* function of such personnel is the provision of substance use disorder diagnosis, treatment, or referral for treatment and they are identified as providing such services. Alternatively, if the general hospital has promoted its emergency department or other identified unit, such as a detox unit, to the community as a provider of such services, the identified unit, but not the rest of the general hospital, would be a program covered by the regulations.

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**Practice Note:** If a hospital emergency room treating a trauma patient performs a blood test that identifies cocaine or other drugs in the patient’s blood, this alone would not make the hospital emergency room a “program” covered by the regulations and, therefore, the drug test results would not be protected by 42 C.F.R. Part 2. If, however, a substance use disorder counselor evaluates the same patient for drug abuse and referral for treatment after the patient is admitted to a medical floor of the hospital, then the substance use disorder counselor would be considered a “program.”

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## B. Confidential Information

The federal restrictions on disclosure apply to any information, whether recorded or not, that

- would identify a “patient” (defined as an individual who has applied for or been given substance use disorder treatment, diagnosis, or referral for treatment) as having or having had a substance use disorder and
- is alcohol or drug abuse information obtained by a federally assisted alcohol or drug abuse program for the purpose of treating substance use disorder, making a diagnosis for that treatment, or making a referral for that treatment.

The mere acknowledgement by program staff of the presence of an identified patient at a residential or inpatient facility would involve the disclosure of confidential information if the facility is publicly identified as a place where only substance use disorder diagnosis, treatment, or referral for treatment is provided. Acknowledging the presence of a patient in this circumstance would require either the patient’s written consent or an authorizing court order issued in compliance with the regulations. For disclosures pursuant to a court order or patient consent, *see* section 14.4.D, below (discussing impact on abuse and neglect laws).

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**Practice Note:** Suppose a child protective services worker investigating a report of child neglect requests access to a child's mental health record. The family/social history section of the child's record states that the mother, during the intake interview with the child's mental health counselor, disclosed that she uses cocaine. This information is not covered by 42 C.F.R. Part 2 because it was not obtained for the purpose of treating or diagnosing the mother or referring her for treatment. The information also would not be covered because it does not identify the mother as a person who has applied for or received substance use disorder treatment, diagnosis, or referral for treatment.

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A diagnosis that is made solely for the purpose of providing evidence for use by law enforcement agencies or officials is not confidential information because it is not obtained for the purpose of treating substance use disorder, making a diagnosis for treatment, or making a referral for that treatment. On the other hand, a diagnosis that is initially prepared by a program in connection with treatment or referral for treatment of a substance use disorder patient is covered by the regulations even if the diagnosis is not used for treatment because the patient does not follow up on the referral.

### **C. Duty Imposed by Federal Substance Use Disorder Records Law**

The regulations prohibit the *disclosure* and *use* of patient records except as permitted by the regulations themselves. Anyone who violates the law is subject to a criminal penalty in the form of a fine (up to \$500 for a first offense, up to \$5,000 for each subsequent offense).

It is important for social services departments, guardians ad litem (GALs), and others who receive substance use disorder (SUD) information from a "program" to understand that the duty of confidentiality imposed by the federal regulations may extend to them. For example, when a department of social services receives SUD information from a treatment program pursuant to the patient's written authorization, the department becomes a "lawful holder" of protected information that may not be redisclosed except as permitted or required by the federal law. The restrictions on disclosure apply to individuals and entities who receive patient information directly from a program or other lawful holder of information if they are notified of the prohibition on redisclosure in accordance with section 2.32 of the regulations. That section requires a program that discloses information pursuant to the patient's written consent to notify the recipient that the information continues to be protected by 42 C.F.R. Part 2 and may be redisclosed only as permitted by the regulations. The recipient, a lawful holder of protected information, is bound by the restrictions on disclosure in the same way that a Part 2 program is bound.

### **D. Impact on Abuse, Neglect, Dependency Laws**

If the federal law does not expressly permit the disclosure of confidential patient information in a particular circumstance, then the disclosure is prohibited. To understand the impact of 42 C.F.R. Part 2 on North Carolina's laws pertaining to child abuse, neglect, and dependency, we must start with the federal law's own rule regarding its relationship to state law: "no state law may either authorize or compel any disclosure prohibited by this part." 42 C.F.R. 2.20. Thus, where the Juvenile Code or other state law authorizes or compels a disclosure that is not

permitted by 42 C.F.R. Part 2, the federal prohibition on disclosure must be followed. Conversely, the federal regulation does not preempt the field of state law. If the federal law permits a particular disclosure, but state law prohibits it, then state law controls. The federal law does not compel disclosure under any circumstance.

In addition to restricting the *disclosure* of information, the regulations also restrict the *use* of information to initiate or substantiate criminal charges against a patient. Generally, when a department of social services or guardian ad litem seeks information from programs for the purpose of carrying out their functions relating to child abuse, neglect, or dependency, the restrictions on program *disclosures* will apply to guide programs on how to respond to requests for information. Because the restrictions on *use* apply only to the use of information for purposes of criminal investigation or prosecution, those restrictions are not discussed here. See 42 C.F.R. 2.12 for the restrictions on use of information.

**1. Reporting child abuse, neglect, or dependency.** The federal restrictions on the disclosure of confidential information do not apply to the reporting of suspected child abuse or neglect under state laws mandating such reports. 42 C.F.R. 2.12(c)(6). Therefore, the federal law does not bar compliance with North Carolina’s mandatory reporting statute (G.S. 7B-301), even if it means disclosing patient identifying information.

**2. Assessment and protective services.** Although substance use disorder programs (or third party payers who have received information from such programs) must make a report of suspected abuse, neglect, or dependency as mandated by G.S. 7B-301, they are not authorized to provide information beyond the initial report when DSS requests further information pursuant to its duty under G.S. 7B-302(e) to assess the report. The federal rules permit the disclosure of information for follow-up investigations or for court proceedings that may arise from the report only with the patient’s written *consent* or a *court order* issued pursuant to Subpart E of the federal regulations. 42 C.F.R. 2.12(c)(6).

**3. The child’s GAL access to information.** A guardian ad litem (GAL) appointed under G.S. 7B-601 to represent children who are alleged to be abused, neglected, or dependent, has the authority to obtain “any information or reports, whether or not confidential, that may in the guardian ad litem’s opinion be relevant to the case.” G.S. 7B-601(c). However, the federal regulations governing substance use disorder treatment records do not recognize this as a policy exception to the confidentiality of patient information. (The federal regulations do not contain a provision permitting disclosure in this circumstance.) The federal rules permit the disclosure of information to a GAL only with the patient’s written consent or a court order issued in compliance with Subpart E of the federal regulations.

**4. Interagency information sharing.** Although the HIPAA privacy rule and state mental health law permit the interagency sharing of confidential information required by G.S. 7B-3100 and 14B N.C.A.C. 11A.0301, as discussed in sections 14.2.D.4 and 14.3.D.4, above, the federal drug and alcohol confidentiality law and its implementing regulations at 42 C.F.R. Part 2 do not permit the disclosure of confidential information pursuant to these state laws. (The federal regulations do not contain a provision permitting disclosure in these or similar circumstances.)

**5. Disclosure pursuant to a subpoena.** Unlike the privacy rule governing health records, discussed in section 14.2, above, but like the state confidentiality law governing MH/DD/SA services, 42 C.F.R. Part 2 does not include a provision permitting a provider of services to disclose confidential information in response to a subpoena alone. A subpoena compels disclosure of confidential information only if accompanied by the client's authorization to disclose, a court order to disclose, or some other legal mandate, such as a statute or regulation that requires disclosure under the circumstances.

**6. Disclosure pursuant to a court order.** Under Subpart E of 42 C.F.R. Part 2, a court of competent jurisdiction may authorize a use or disclosure that would otherwise be prohibited under the regulations. *See* 42 C.F.R. 2.61. Such an order does not compel disclosure; to compel disclosure a subpoena or similar mandate must be issued.

Subpart E sets forth the procedure and criteria for court orders authorizing

- disclosure for noncriminal purposes,
- disclosure and use of information to criminally investigate or prosecute patients,
- disclosure and use of information to investigate or prosecute a program or the person holding the records, and
- the use of undercover agents and informants to investigate employees or agents of a program in connection with a criminal matter.

The kind of order needed by a department of social services to obtain confidential information in the context of child abuse, neglect, or dependency proceedings is an order authorizing disclosure for noncriminal purposes. Any person having a legally recognized interest in the disclosure that is sought may apply for the order. The application may be filed separately or as part of a pending action and must use a fictitious name, such as John Doe, to refer to the patient unless the court orders the record of the proceeding sealed from public scrutiny. *See* 42 C.F.R. 2.64. When seeking a court order where there is no pending action, *see In re Albemarle Mental Health Center*, 42 N.C. App. 292 (1979) (where no civil or criminal proceeding has been commenced, the superior court has jurisdiction to hear a motion requesting an in camera hearing to determine whether information in the possession of a mental health center should be disclosed; the action is in the nature of a special proceeding.).

When the information is sought for noncriminal purposes, the patient and person holding the records must be given adequate notice and opportunity to file a written response or appear in person for the limited purpose of providing evidence on the legal criteria for issuance of the order. 42 C.F.R. 2.64. The judge may examine the records before making a decision. Any oral argument, review of evidence, or hearing on the application must be held in camera.

To order disclosure, the court must find "good cause" for the disclosure. For an order authorizing disclosure for noncriminal purposes, this means the court must find that

- other ways of obtaining the information are not available or would not be effective and
- the public interest and need for disclosure outweigh the potential injury to the patient, the patient's relationship to the program, and the program's ongoing treatment services.

Any order authorizing disclosure must (i) limit disclosure to those parts of the record that are essential to fulfill the purpose of the order, (ii) limit disclosure to those persons whose need for the information forms the basis for the order, and (iii) include any other measures that are necessary to limit disclosure for the protection of the patient, the patient-treatment provider relationship, and the program's ongoing treatment services (e.g., sealing from public scrutiny the record of any proceeding for which the disclosure of information has been ordered). *See* 42 C.F.R. 2.64.

The disclosure of certain information—the things a patient says to program personnel—requires additional findings by the court. A court may order the disclosure of “confidential communications” made by a patient to a program in the course of diagnosis, treatment, or referral for treatment only if the disclosure is

- necessary to protect against an existing threat to life or serious bodily injury, including circumstances that constitute suspected child abuse and neglect and verbal threats against third parties;
- necessary to the investigation or prosecution of an extremely serious crime; or
- in connection with litigation in which the patient offers testimony or other evidence pertaining to the content of the confidential communications. 42 C.F.R. 2.63.

**7. Disclosure with patient authorization.** A program may disclose confidential information with the consent of the patient. As with the HIPAA privacy rule and the state mental health law, patient consent must be voluntary and in writing. It also must be informed, which means that the individual signing the authorization must understand what information will be shared, with whom it will be shared, and for what purpose. Toward this end, the federal law governing substance use disorder programs specifies certain content that must be included in the written consent for it to be considered valid. *See* 42 C.F.R. 2.31.

Any consent form used for the disclosure of information that is confidential under 42 C.F.R. Part 2 will need to conform to the state law requirements for consent because G.S. Chapter 122C also applies to substance use disorder treatment services. In addition, if the program is a covered entity under the HIPAA privacy rule, the privacy rule's requirements for patient authorization will apply. The most effective way to ensure that you are using a consent form that meets the requirements of law is to have the patient sign and fully complete the treatment program's own consent form.

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**Resource:** For a sample consent-to-disclose form that meets the requirements of the HIPAA privacy rule, G.S. Chapter 122C, and 42 C.F.R. Part 2, see Mark F. Botts, LaToya B. Powell, Rachel Johnson, Jessica Jones, [\*North Carolina Juvenile Justice - Behavioral Health Information Sharing Guide\*](#) (UNC School of Government, 2015).

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## 4.6 Discovery

### A. Discovery Generally

G.S. 7B-700 addresses information sharing and discovery in abuse, neglect, dependency, and termination of parental rights proceedings and supersedes the discovery provisions in the Rules of Civil Procedure. *In re M.M.*, 272 N.C. App. 55 (2020). Because G.S. 7B-700 applies to all actions under Subchapter I of the Juvenile Code, it also applies when petitions are filed relating to alleged interference with or obstruction of a DSS assessment or for judicial review of a responsible individual determination (both of which are discussed in Chapter 5).

The Juvenile Code encourages a process in which parties access information by means of permissible voluntary information sharing before resorting to discovery motions to obtain information. Parties are permitted to utilize discovery motions pursuant to G.S. 7B-700.

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**Practice Note:** The Juvenile Code addresses confidentiality and information sharing in juvenile cases in more than one place (not just in the discovery statute). *See, e.g.*, G.S. 7B-302(a1); 7B-311; 7B-601(c); 7B-700; 7B-2901; 7B-3100. For a discussion of confidentiality and information sharing, see Chapter 14.

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### B. The Juvenile Code and Discovery

**1. DSS sharing of information.** The Juvenile Code permits DSS to share with any other party information that is relevant to a pending juvenile action, with these exceptions:

- DSS may not share information that would reveal the identity of a reporter or lead to discovery of the reporter's identity.
- DSS may not share any uniquely identifying information that would lead to the discovery of any other person's identity if DSS determines that disclosure of the information would be likely to endanger that person's life or safety.

G.S. 7B-700(a).

The provisions of G.S. 7B-700 apply to information sharing and discovery requests made by parties in the juvenile proceeding and do not apply to requests for information or discovery made on a DSS by a person or agency who is not a party to the juvenile proceeding, such as a litigant in another action or a government agency investigating a party in the juvenile proceeding. For a discussion about when DSS is authorized to share information to non-parties, see Chapter 14.1.

**2. GAL sharing of information.** The child's guardian ad litem (GAL) is not free to voluntarily share information with other parties but can share information pursuant to either a court order or local rules. G.S. 7B-700(f); 7B-601(c). However, any reports and records the GAL submits to the court must first be shared with the parties in the juvenile proceeding. G.S. 7B-700(f). In addition, the GAL must share information requested by other designated agencies (including DSS) under G.S. 7B-3100 to the extent that information falls within the

parameters of that statute. See Chapter 14.1.D and E for further discussion.

**3. Local rules.** The chief district court judge may adopt local rules or enter an administrative order addressing the sharing of information among parties and the use of discovery. G.S. 7B-700(b). Local rules, however, may not contradict statutory requirements. *See In re J.S.*, 182 N.C. App. 79 (2007); *In re T.M.*, 187 N.C. App. 694 (2007). There may also be a local rule or administrative order that addresses the sharing of predisposition reports among the parties. *See* G.S. 7B-808(c).

Note that local rules or administrative orders issued pursuant to G.S. 7B-700 and 7B-808(c) apply to the parties in a juvenile proceeding and may not be directed to agencies or entities that are not parties. Information sharing among agencies is covered by G.S. 7B-3100, and rules issued by the Department of Public Safety authorize a chief district court judge to issue administrative orders designating local agencies that are required to share information pursuant to that statute. *See* 14B N.C.A.C. 11A.0301 and .0302. See Chapter 14.1.E for further discussion of information sharing.

**4. Discovery procedure and methods.** G.S. 7B-700 makes no reference to the discovery methods or procedures in the Rules of Civil Procedure.

In *In re M.M.*, 272 N.C. App. 55 (2020), the court of appeals examined G.S. 7B-700 and the required procedure. The attorney for respondent father noticed the DSS social worker under Rule 30 of the Rules of Civil Procedure for a deposition and served the social worker with a subpoena to appear at the scheduled deposition. The father's attorney also filed a motion for discovery under G.S. 7B-700 but did not include the request for deposition. At a pre-trial hearing, the trial court agreed with DSS that before the father's attorney could depose the social worker, the attorney should first seek information from the information sharing provision of G.S. 7B-700(a), and if more information was sought, file a motion for discovery under G.S. 7B-700(c) to request the deposition. The court of appeals concluded there was no error by the trial court. The court of appeals stated, "[t]he Juvenile Code provides for discovery, specifically including depositions, and thus the Rules of Civil Procedure do not apply here." *In re M.M.*, 272 N.C. App. at 63–64.

Regarding discovery methods (as opposed to the procedure), the appellate courts have discussed the use in juvenile proceedings of certain discovery methods that are set forth in the Rules of Civil Procedure. (Note that these opinions were decided before *In re M.M.* addressed the procedure for discovery under G.S. 7B-700.) Discovery methods include depositions, interrogatories, requests for production of documents, and physical/mental examinations. See section 4.1.A, above; *see also In re J.D.*, 234 N.C. App. 342 (2014) (referring to use of request for production of documents in factual summary of the case). A party may also subpoena a witness's attendance at a deposition or command the production, inspection, and copying of designated documents, including electronic records, and tangible things in the possession or control of the person specified in the subpoena. N.C. R. CIV. P. 45; *see In re A.H.*, 250 N.C. App. 546 (2016) (applying Rule 45 when addressing motion to quash subpoena for testimony at hearing). Additionally, a chief district court judge might reference or incorporate certain discovery rules in the judicial district's local rules or in an

administrative order issued pursuant to G.S. 7B-700(b). The court of appeals has also referred to Rule 26(b)(1) of the Rules of Civil Procedure, which allows for discovery regarding any matter that is not privileged and is relevant to the subject matter of the pending action. *In re J.B.*, 172 N.C. App. 1 (2005).

**5. Discovery motions.** The Juvenile Code requires a motion for discovery and authorizes a motion for protective order. G.S. 7B-700(c), (d); *see In re M.M.*, 272 N.C. App. 55 (2020) (motion for discovery required when information not received through information sharing). As a general rule, discovery orders are reviewed for an abuse of discretion. *In re M.M.*, 272 N.C. App. 55; *In re J.B.*, 172 N.C. App. 1; *Ritter v. Kimball*, 67 N.C. App. 333 (1984).

**(a) Motion for discovery.** Any party may file a “motion for discovery.” G.S. 7B-700(c). A motion for discovery must contain

- a specific description of the information sought and
- a statement that the requesting party has made reasonable efforts to obtain or cannot obtain the information by means of information sharing permitted by statute, local rules, or an administrative order.

G.S. 7B-700(c).

A motion for discovery must be served on all parties pursuant to Rule 5 of the Rules of Civil Procedure. The court must conduct a hearing and rule on the motion within ten business days of the date the motion is filed. G.S. 7B-700(c). The court is authorized to “grant, restrict, defer, or deny the relief requested” in the motion. G.S. 7B-700(c).

**(b) Motion for protective order.** Any party who has been served with a motion for discovery may seek a protective order to deny, restrict, or defer the discovery. G.S. 7B-700(d). *See In re J.B.*, 172 N.C. App. 1 (holding, in a case decided under prior language of discovery statute, that the trial court did not err in using its authority to “deny or restrict” discovery where it denied a request to interview the child due to the disruption it would cause to the child’s therapeutic progress). A protective order should be made pursuant to the requirements of G.S. 7B-700(d) as the Juvenile Code prescribes a procedure that differs from Rule 26(c) of the Rules of Civil Procedure. The court of appeals has consistently held the Rules of Civil Procedure only apply when they do not conflict with the Juvenile Code and the application of a rule advances the purpose of the Juvenile Code. *In re M.M.*, 272 N.C. App. 55 (2020); *In re E.H.*, 227 N.C. App. 525 (2013); *In re L.O.K.*, 174 N.C. App. 426 (2005). *But see In re J.D.*, 234 N.C. App. 342 (2014) (referencing in the factual summary a motion for protective order made pursuant to Rule 26(c), without mentioning G.S. 7B-700(d)).

Pursuant to G.S. 7B-700(d), a party requesting that the discovery be denied, restricted, or deferred must submit the information the party seeks to protect for in camera review by the court. If the court denies or restricts discovery, copies of materials submitted for in camera review must be preserved for potential appellate review. G.S. 7B-700(d).

**6. Continuances related to discovery.** The court may grant continuances in an abuse, neglect, dependency, or termination of parental rights proceeding for a reasonable time to allow for expeditious discovery. G.S. 7B-803; 7B-1109(d). However, any order related to discovery must avoid unnecessary delay and establish expedited deadlines for completion. G.S. 7B-700(c). *See In re J.S.*, 182 N.C. App. 79 (2007) (holding, in a case decided under prior law, that the trial court did not abuse its discretion in denying a continuance where the attorneys failed to make time to examine the records within the time frame set out by the administrative order).

**7. Redisclosure.** Information obtained through discovery or permissible sharing of information may not be redisclosed if the redisclosure is prohibited by state or federal law. G.S. 7B-700(e). *See also* G.S. 108A-80; 7B-3100.

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**Resource:** For a discussion on information sharing with a criminal-defense attorney, see Timothy Heinle, [\*When and How Criminal Defense Attorneys Can Obtain Access to Confidential Child Welfare and Juvenile Abuse, Neglect, and Dependency Records\*](#), ADMINISTRATION OF JUSTICE BULLETIN NO. 2021/02 (UNC School of Government, Oct. 2021).

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# Medicaid

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## Medicaid's Gold Standard Coverage for Children and Youth: Past, Present, and Future

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## Medicaid's Gold Standard Coverage for Children and Youth: Past, Present, and Future

*Jane Perkins\* & Sarah Somers<sup>+</sup>*

Since 1967, federal law has entitled low-income children and youth under age twenty-one to coverage of Early and Periodic Screening, Diagnostic and Treatment (EPSDT) services through Medicaid.<sup>1</sup> Designed specifically for these low-income children, EPSDT not only offers comprehensive screening services and a broad scope of treatment benefits but also incorporates care coordination services designed to ensure that children and families know about EPSDT and how to use it.<sup>2</sup> Properly implemented, EPSDT is the gold standard coverage for children.

This article offers a comprehensive overview of the EPSDT benefit. After providing information about the various population groups entitled to EPSDT and a brief overview of the Medicaid program, we explain the driving forces behind EPSDT. Congress intended EPSDT to be implemented aggressively and has amended the law on multiple occasions to make that

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<sup>1</sup> *Early Periodic Screening, Diagnosis, and Treatment*, HRSA MATERNAL & CHILD HEALTH (Dec. 2018), <https://mchb.hrsa.gov/maternal-child-health-initiatives/mchb-programs/early-periodic-screening-diagnosis-and-treatment>.

<sup>2</sup> *Id.*

clear.<sup>3</sup> Next, we discuss what EPSDT looks like today and how EPSDT performance can be measured by policy makers, health care providers, press, advocates, and other members of the public using publicly available data. Finally, we assess the future implementation of EPSDT. As we explain, in order to achieve its promise, EPSDT will need to embody twenty-first century standards of care. That is to say, ensuring up-to-date preventive screening services will not be enough. States will need to focus their attention on the nature and extent of diagnostic and treatment services. For example, the EPSDT benefit must be more aggressively used to cover family-centered, community-based services for children with special health care needs. Moreover, EPSDT must work to help address the social determinants of health which occur outside of clinical settings. Finally, states and their managed care contractors must be held accountable for complying with the requirements of the Medicaid program by using accurate and timely data to expose and address health inequities.

## I. BACKGROUND

There are more than seventy-three million children in the United States, making up twenty-two percent of the population.<sup>4</sup> In 2018, about one in seven children lived in a household with an income below the poverty level.<sup>5</sup> Notably, of those poor children, almost seventy-one percent were children of color.<sup>6</sup> The main sources of insurance for poor children are the Medicaid program and Children's Health Insurance Program; these programs covered forty-six million children in 2018.<sup>7</sup> Despite the fact that children make up forty percent of all Medicaid enrollees, only nineteen percent of Medicaid expenditures were attributable to children at this time.<sup>8</sup>

Medicaid is the publicly funded health insurance program for low-income people in the United States.<sup>9</sup> Established in 1965 by Title XIX of the Social

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<sup>3</sup> See *infra* Section II.

<sup>4</sup> CHILDREN'S DEF. FUND, THE STATE OF AMERICA'S CHILDREN 2021 6 (Children's Def. Fund ed., 2020).

<sup>5</sup> *Id.* at 6.

<sup>6</sup> *Id.*

<sup>7</sup> U.S. DEP'T HEALTH & HUM. SERVS., FEDERAL FISCAL YEAR (FFY) 2018 STATISTICAL ENROLLMENT DATA SYSTEM (SEDS) REPORTING 3, tbl. 1 (2019), <https://www.medicaid.gov/sites/default/files/2019-12/fy-2018-childrens-enrollment-report.pdf>.

<sup>8</sup> CTRS. FOR MEDICARE & MEDICAID SERVS., MEDICAID & CHIP BENEFICIARIES AT A GLANCE 1, fig. beneficiary characteristics (2020), <https://www.medicaid.gov/medicaid/quality-of-care/downloads/beneficiary-ataglance.pdf>.

<sup>9</sup> *Program History*, MEDICAID.GOV, <https://www.medicaid.gov/about-us/program-history/index.html> (last visited Mar. 13, 2021).



Security Act,<sup>10</sup> it is jointly funded and administered by the state and federal governments.<sup>11</sup> Each participating state must comply with federal Medicaid laws when operating their programs, such as having a state Medicaid plan that governs program operation.<sup>12</sup> Further, states must meet minimum federal requirements, including eligibility standards, the scope of services provided, and procedural due process protections.<sup>13</sup> Each state also has the option to exceed these minimum standards, including providing coverage to additional categories of eligible people and covering additional categories of services.<sup>14</sup> All states have chosen to participate in the Medicaid program, consequently binding the states to the federal standards.<sup>15</sup>

In order to qualify for Medicaid, a person must fit into a covered eligibility group, have a limited income, be a resident of the state in which they are applying and be a U.S. citizen or meet the strict requirements for eligibility for immigrants.<sup>16</sup> Children are covered under the following categories:

- *Children and youth in low-income families.* Children under age nineteen with family incomes below 133% of the federal poverty level (FPL).<sup>17</sup> Covering children with higher incomes, including children who are covered by the separate Children's Health Insurance Program, is optional.<sup>18</sup>
- *Children of caretaker relatives.* Children who would have qualified under the former Aid to Families with Dependent Children (AFDC)

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<sup>10</sup> *Id.*

<sup>11</sup> See Social Security Act, 42 U.S.C. § 1396a (2006) (showing the funding and administration of Medicaid); *Financial Management*, MEDICAID.GOV, <https://www.medicaid.gov/medicaid/financial-management/index.html> (last visited Mar. 13, 2021).

<sup>12</sup> 42 U.S.C. § 1396a(a)(4).

<sup>13</sup> See *id.* § 1396a(a) (setting forth requirements for each state Medicaid plan); see also *id.* § 1396d(a) (listing categories of services that must or may be covered).

<sup>14</sup> *Id.* §§ 1396a(a)(10)(B), 1396d(a).

<sup>15</sup> See, e.g., *Schweiker v. Gray Panthers*, 453 U.S. 34, 36 (1981) (demonstrating the binding standards of Medicaid).

<sup>16</sup> 42 U.S.C. §§ 1396a(a)(10)(A) (eligibility and income), 1396a(b)(2) (prohibition of residence requirements that exclude any individual residing in the state), 1396a(b)(3) (eligibility for citizens); Personal Responsibility and Work Opportunity Reconciliation Act, 8 U.S.C. § 1611 (1997) (limiting eligibility for immigrants); CMS General Eligibility Requirements, 42 C.F.R. § 435.403 (2012) (describing residency requirements).

<sup>17</sup> 42 U.S.C. §§ 1396a(a)(10)(A)(i)(V), (VI), (VII), 1396a(l).

<sup>18</sup> *Id.* §§ 1396a(a)(10)(A)(ii)(IX), 1396a(a)(10)(A)(ii)(XIV).

cash assistance program, because they are in very low income single-parent family are covered.<sup>19</sup>

- *Children with disabilities.* Children who qualify for Supplemental Security Income (SSI) or, in some states, children who meet stricter requirements than those applicable to SSI, must be covered.<sup>20</sup> States may also cover certain children because they need an institutional level of care.<sup>21</sup>
- *Children who are adopted or in foster care.* States must cover children in foster care or who are receiving adoption assistance under Title IV-E of the Social Security Act and have the option to cover other foster and adopted children.<sup>22</sup>
- *Medically needy children.* States may cover children who have income or resources that exceed the mandatory coverage levels.<sup>23</sup> They may qualify after incurring medical expenses that bring their incomes below the state's medically needy income level.<sup>24</sup>

All U.S. citizen children who meet the eligibility requirements for Medicaid must be covered.<sup>25</sup> This includes children born in the United States to undocumented immigrant parents.<sup>26</sup> However, most immigrant children are barred from receiving full Medicaid benefits for the first five years after

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<sup>19</sup> *Id.* § 1396a(a)(10)(A)(i)(I); see Personal Responsibility and Work Opportunity Reconciliation Act of 1996, Pub. L. No. 104-193, § 103, 110 Stat. 2105, 2110–2184 (1996) (codified at 42 U.S.C. § 1305 note) (repealing AFDC and replacing it with the Temporary Assistance to Needy Families program). Children do not automatically qualify even if they are enrolled in TANF, although most qualify on an independent basis because of their low incomes. See KAISER FAM. FOUND., PARTICIPATION IN WELFARE AND MEDICAID ENROLLMENT—ISSUE PAPER (Aug. 30, 2018), <https://www.kff.org/medicaid/report/participation-in-welfare-and-medicare-enrollment-issue/>.

<sup>20</sup> 42 U.S.C. § 1396a(a)(10)(A)(i)(II) (eligibility for SSI recipients or the equivalent); § 1396a(e)(3) (eligibility for home and community-based care for those needing institutional services).

<sup>21</sup> *Id.* § 1396a(e)(3).

<sup>22</sup> *Id.* §§ 1396a(a)(10)(A)(i)(I), 1396a(a)(10)(A)(ii)(VIII).

<sup>23</sup> *Id.* § 1396a(a)(10)(C)(ii)(I).

<sup>24</sup> *Id.* § 1396a(a)(10)(C).

<sup>25</sup> See *id.* § 1396a(b)(3) (demonstrating the eligibility requirements).

<sup>26</sup> *Id.* § 1320b-7(d)(1)(A)(iii) (2006) (showing that anyone born in the United States regardless of the immigration status of their parents, may receive benefits); § 1320b-7.

they enter the country.<sup>27</sup> One of the only exceptions is that Medicaid will cover “emergency medical conditions” for these children.<sup>28</sup>

Medicaid requires states to include certain categories of services in their state plan and provides states the option to choose others.<sup>29</sup> Specifically, states must cover hospital services,<sup>30</sup> physician services,<sup>31</sup> nurse practitioner services,<sup>32</sup> and EPSDT.<sup>33</sup> The states have the option to include prescription drug coverage,<sup>34</sup> dental services,<sup>35</sup> and physical or related therapies.<sup>36</sup>

## II. WHY EPSDT?

In 1964, a study found that about one-third of eighteen-year-olds registering with the Selective Service failed to qualify for military duty because of untreated health conditions, including a large portion of draftees being rejected for emotional and mental health reasons.<sup>37</sup> The Department of Health, Education, and Welfare (HEW), the predecessor agency to the Department of Health and Human Services (DHHS), was concerned with these findings and convened the Program Analysis Group (Group). After further study during 1964, the Group estimated that sixty-two percent of the conditions found by the Selective Service could be prevented or treated through the provision of comprehensive and continuous health care.<sup>38</sup> The

<sup>27</sup> 8 U.S.C. § 1613(a) (2006).

<sup>28</sup> *Id.*; Personal Responsibility and Work Opportunity Reconciliation Act, Pub. L. No. 104–193, § 402, 110 Stat. 2105, 2262–64 (1996) (codified at 8 U.S.C. §§ 1601–46). There are exceptions for certain “qualified aliens,” including lawful permanent residents and certain refugees and asylees, 8 U.S.C. § 1611(b)(1)(A) (2006).

<sup>29</sup> 42 U.S.C. §§ 1396a(a)(10)(A), 1396d(a) (2020).

<sup>30</sup> *Id.* §§ 1396d(a)(1)–(2).

<sup>31</sup> *Id.* § 1396d(a)(5)(A).

<sup>32</sup> *Id.* § 1396d(a)(21).

<sup>33</sup> *Id.* §§ 1396a(a)(43), 1396d(a)(4)(B), 1396d(r).

<sup>34</sup> *Id.* § 1396d(a)(12).

<sup>35</sup> *Id.* § 1396d(a)(10).

<sup>36</sup> *Id.* § 1396d(a)(11).

<sup>37</sup> See PRESIDENT’S TASK FORCE ON MANPOWER CONSERVATION, ONE-THIRD OF A NATION: A REPORT ON YOUNG MEN FOUND UNQUALIFIED FOR MILITARY SERVICE 11 (Jan. 1, 1964) (discussing that about one-third of all men turning eighteen would not be qualified for the armed forces due to medical reasons or failure of the “mental test”).

<sup>38</sup> See Patricia Butler, *An Advocate’s Guide to Early and Periodic Screening, Diagnosis and Treatment*, at 10 CLEARINGHOUSE REV. 1, 2 (May 1976) (citing U.S. DEP’T HEALTH EDUC. & WELF., OFF. ASSISTANT SEC. FOR PROGRAM COORDINATION, RPT. OF THE PROGRAM ANALYSIS GROUP ON CHILD HEALTH at V.1 (1966)); see also L. Kate Mitchell, *The Promise and Failures of Children’s Medicaid and the Role of Medical-Legal Partnerships as Monitors and Advocates*, 30 HEALTH MATRIX 175, 187–88 (2020) (discussing that access to preventive, diagnostic, and treatment services can drastically improve health outcomes for

Group envisioned a program “to provide early case finding and treatment of congenital and other chronic disorders in children.”<sup>39</sup> When President Lyndon B. Johnson introduced legislation in 1967 to address the problem, he emphasized the need for timely screening and prompt treatment of low-income children:

The problem is to discover, as early as possible, the ills that handicap our children. There must be continuing follow-up and treatment so that handicaps do not go neglected.<sup>40</sup>

Shortly thereafter, Congress amended the Medicaid Act to require states to provide:

Such early and periodic screening and diagnosis of individuals who are eligible under the plan and are under the age of [twenty-one] to ascertain their physical or mental defects, and such health care, treatment, and other measures to correct or ameliorate defects and chronic conditions discovered thereby[.]<sup>41</sup>

Legislative history shows that Congress intended states to engage in aggressive efforts to locate low-income children and address their mental and physical conditions as quickly and comprehensively as possible. The House of Representatives’ report accompanying the legislation stated:

Organized and intensified case-finding procedures will be carried out in well-baby clinics, day care centers, nursery schools, Headstart centers in cooperation with the Office of Economic Opportunity, by periodic screening of children in schools, through follow-up visits by nurses to the homes of newborn infants, by checking birth certificates for the reporting of congenital malformation and by related activities.<sup>42</sup>

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children); SARA ROSENBAUM ET AL., ISSUE BRIEF: NATIONAL SECURITY AND U.S. CHILD HEALTH POLICY: THE ORIGINS AND CONTINUING ROLE OF EPSDT 6–11 (Geo. Wash. Univ. Sch. of Pub. Health & Health Servs., Apr. 2005) (discussing history of EPSDT statute).

<sup>39</sup> See Butler, *supra* note 38, at 1 (citing *Rpt. of the Program Analysis Grp.* at III.18–21). The Program Analysis Group’s recommendations were included in the Child Health Act of 1967. See also Child Health Act of 1967, H.R. REP. NO. 90-5701 § 301 (1967) (showing the recommendations placed in the Child Health Act of 1967).

<sup>40</sup> 113 CONG. REC. 2883 (Feb. 8, 1967).

<sup>41</sup> Social Security Amendments of 1967, Pub. L. No. 90-248 § 302(a), 81 Stat. 821 (1967) (adding 42 U.S.C. § 1396d(a)(4)(B) (effective July 1, 1969)); see also *id.* § 505(a)(7) (adding 42 U.S.C. § 705(a)(7) Maternal and Child Health provisions requiring states to provide “for early identification of children in need of health care and services . . .”).

<sup>42</sup> H.R. REP. NO. 90-544, at 127 (1967).

HEW issued regulations and guidance documents to implement the 1967 amendments.<sup>43</sup> States were required to ensure that Medicaid-eligible children's needs were identified and that they received necessary services and treatments promptly.<sup>44</sup> The Department's *Medical Assistance Manual* discussed EPSDT history and explained the basic EPSDT obligations.<sup>45</sup> The agency noted that, with the 1967 amendment,

Congress intended to require States to take aggressive steps to screen, diagnose and treat children with health problems. . . . Senate and House Committee reports emphasized the need . . . to make services available so that young people can receive medical care before health problems become chronic and irreversible damage occurs.<sup>46</sup>

Thus, the agency confirmed that the amendment required states to “actively seek out eligible individuals” in order to inform them of EPSDT and help them obtain screening and treatment.<sup>47</sup> The agency further explained that the 1967 amendment required states to implement comprehensive services statewide, “so that young people who are eligible for Medicaid services will have access to a coordinated, integrated evaluation process and health care system.”<sup>48</sup>

The Medical Assistance Manual also emphasized the intent of the 1967 amendments to ensure the timely provision of EPSDT services: Screening was to occur periodically, at pre-set intervals, and otherwise when further evaluation was needed.<sup>49</sup> Diagnostic referrals were to be made “without delay,” with state follow-up to make sure the evaluation occurred.<sup>50</sup> Finally, the Medicaid Assistance Manual instructed states to enlist a range of health providers so that EPSDT could achieve “early case finding and diagnosis, as well as prompt and effective treatment. . . .”<sup>51</sup>

The 1967 EPSDT amendments clearly intended states to take aggressive actions to reach and inform families of the EPSDT benefit and to provide low-income children and youth with services to ensure both early

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<sup>43</sup> *Id.* at H10676.

<sup>44</sup> *See, e.g.*, 36 Fed. Reg. 21,409 (1971) (promulgating 45 C.F.R. § 249.10, requiring states to “assure that individuals under 21 years of age who are eligible for medical assistance receive the services. . .”).

<sup>45</sup> U.S. DEP'T OF HEALTH EDUC. & WELFARE, *MEDICAL ASSISTANCE MANUAL* § 5-70-20 (1972).

<sup>46</sup> *Id.*

<sup>47</sup> *Id.* at § 5-70-20A.

<sup>48</sup> *Id.* at §§ 5-70-20D, 5-70-20A.

<sup>49</sup> *Id.* at § 5-70-20E.

<sup>50</sup> *Id.* at § 5-70-20F.

<sup>51</sup> *Id.* at § 5-70-20A.

identification and treatment of health conditions.<sup>52</sup> “This set the EPSDT laws apart from the rest of the Medicaid program because it marked a clear departure from Medicaid’s role as a mere ‘vendor payment’ program that paid providers upon submission of a claim.”<sup>53</sup>

However, the aggressive implementation never materialized because, once again, states failed to adhere to the requirements of the EPSDT statute and rules. Accordingly, a frustrated Congress enacted legislation in 1972 to get states’ attention.<sup>54</sup> The 1972 legislation imposed a one-percent reduction in federal funding to a state’s Aid to Families with Dependent Children program for any quarter during which the state failed to inform families of EPSDT or ensure the provision of EPSDT services pursuant to minimum federal standards.<sup>55</sup> Federal regulations that implemented the penalty included, among other things, quantified, 60-day timeframes for prompt delivery of screening and treatment services.<sup>56</sup> Additional, sub-regulatory federal guidance confirmed that a state would be penalized if it did not meet the 60-day requirements, regardless of how a recipient requested EPSDT—whether directly from the state or elsewhere (*e.g.*, from a provider).<sup>57</sup> Notably, the guidance explicitly provided that having a scarcity of providers would not protect a state from the penalty.<sup>58</sup> That is to say, timely service delivery “mean[t] seeing that the recipient gets to the . . . office for diagnosis and treatment within the specified time frame.”<sup>59</sup>

Even with these federal laws in place, state implementation dragged. As a 1974 case from Indiana, *Stanton v. Bond*, illustrates, children and families began to turn to the courts as a mechanism to move EPSDT from paper

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<sup>52</sup> See generally, U.S. DEP’T OF HEALTH EDUC. & WELF., *supra* note 45 (showing the activities and benefits provided to low-income children).

<sup>53</sup> Brief for the National Health Law Program, as Amici Curiae Supporting Plaintiffs-Appellees at 16, *Rosie D. v. Baker*, 986 F.3d 51 (2020) (No. 19-1262) [hereinafter Brief for the National Health Law Program et al.].

<sup>54</sup> Social Security Amendments of 1972, Pub. L. No. 92-603, § 403(g), 86 Stat. 1329, 1463 (1972) (implementing 42 U.S.C. § 603(g)).

<sup>55</sup> *Id.* In 1972, a child whose family was receiving AFDC automatically qualified for Medicaid coverage. The AFDC cash assistance program has been replaced by Temporary Assistance to Needy Families.

<sup>56</sup> See 45 C.F.R. § 205.146(c) (1974) (removed as obsolete, 62 Fed. Reg. 64301 (Dec. 5, 1997)) (stating sixty days for screening and treatment referral; treatment initiation within 60 days of initial request for screening).

<sup>57</sup> Brief for the National Health Law Program et al., *supra* note 53, at 11. (citing to U.S. DEP’T OF HEALTH EDUC. & WELF., MEDICAID REQUIREMENT FOR STATE PROGRAMS OF EARLY AND PERIODIC SCREENING DIAGNOSIS, AND TREATMENT OF INDIVIDUALS UNDER 21: POLICY INTERPRETATION PROGRAM AND PENALTY PROVISIONS 8, 13–17 (Aug. 1979)).

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

policies to tangible, on-the-ground services.<sup>60</sup> Low-income families and children filed this class action case because they were not informed about EPSDT and were not getting the preventive and medical care services EPSDT guarantees.<sup>61</sup> The Indiana Medicaid agency, which was responsible for informing families about EPSDT, was not engaging in affirmative outreach to them.<sup>62</sup> The Seventh Circuit Court of Appeals ordered Indiana to change its practice, reasoning:

It is utterly beyond belief to expect that children of needy parents will volunteer themselves or that their parents will voluntarily deliver them to the providers of health services for early medical screening and diagnosis. By the time an Indiana child is brought for treatment it may too often be on a stretcher. This is hardly the goal of “early and periodic screening and diagnosis.”<sup>63</sup>

Congress also recognized the need for states to better inform families of EPSDT. In 1981, Congress amended the Medicaid Act to require states to inform all Medicaid recipients under age twenty-one of EPSDT and to provide or arrange for screening and treatment services.<sup>64</sup> And even though Congress repealed the AFDC penalty provision, it called on states to continue to develop fully effective EPSDT programs.<sup>65</sup>

The federal agency, now DHHS, promulgated regulations in 1983.<sup>66</sup> In addition to implementing the informing and screening requirements now reflected in the Medicaid Act, the agency focused on the timely provision of treatment services, stating: “We believe that Federal regulations should still include a set of requirements directed at assuring that services are delivered to children in timely fashion. This implements Congressional intent that States continue to develop fully effective EPSDT programs while paperwork reporting requirements are reduced.”<sup>67</sup> The agency proposed Services: Requirements and Limits Applicable to Specific Services 42 C.F.R. § 441.56(e), requiring that states set standards for “timely delivery” of services.<sup>68</sup> The regulations tie timely provision of treatment services to medical standards of care, as set by the professionals who provide that care,

<sup>60</sup> *Stanton v. Bond*, 504 F.2d 1246 (7th Cir. 1974), *aff'g*, 372 F. Supp. 872 (N.D. Ind. 1974).

<sup>61</sup> *Id.* at 1250–51.

<sup>62</sup> *Id.* at 1251.

<sup>63</sup> *Id.*

<sup>64</sup> *See* 42 U.S.C. § 1396a(a)(44) (subsequently re-designated as § 1396a(a)(43)).

<sup>65</sup> Omnibus Budget Recon. Act of 1981, Pub. L. No. 97-35 § 2171, 95 Stat. 483, 807 (1981).

<sup>66</sup> Medicaid Program, Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program, 48 Fed. Reg. 38,015 (Aug. 22, 1983).

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

while still maintaining a quantified outside limit for when treatment must be initiated.<sup>69</sup> As the federal agency noted when publishing the final rule, “[p]eriodicity and timeliness requirements should be set based on professional judgment since that best reflects what is required in order for proper medical treatment to be provided. The regulations reflect that approach.”<sup>70</sup> The agency added: “we believe that requiring States to establish time standards which meet reasonable standards of medical and dental practice will ensure that States adopt the shortest possible time-span for each step of the EPSDT cycle compatible with efficient administration of the Medicaid program.”<sup>71</sup>

Despite all of these efforts, states fell short, and children did not receive EPSDT screens or treatment. As a result of states’ failure to adequately implement the program, in 1989 Congress yet again stepped in to clarify and strengthen states’ obligations to ensure that children receive early screening *and* necessary treatment.<sup>72</sup> The 1989 amendments clarified that states must provide services necessary to “correct or ameliorate” health conditions.<sup>73</sup> The legislative changes also established the scope of EPSDT benefits by removing the Secretary’s authority to define EPSDT services and defining them in the statute.<sup>74</sup> Accordingly, states must now ensure coverage of “other necessary health care, diagnostic services, treatment and other measures described in subsection (a) of the section [42 U.S.C. § 1396d(a)] to correct or ameliorate defects and physical and mental illnesses and conditions discovered by the screening services, whether or not such services are covered under the State plan.”<sup>75</sup> States must also “arrang[e] for (directly or through referral to appropriate agencies, organizations, or individual) corrective treatment” that a child needs.<sup>76</sup>

DHHS included guidance on the 1989 amendments in its *State Medicaid Manual* (which replaced the HEW *Medical Assistance Manual*), describing EPSDT as “A Comprehensive Child Health Program” which:

<sup>69</sup> Services: Requirements and Limits Applicable to Specific Services, 42 C.F.R. §441.56(e) (1984).

<sup>70</sup> Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program, 49 Fed. Reg. 43,654, 43,660 (1984).

<sup>71</sup> *Id.* at 43,661.

<sup>72</sup> See Omnibus Budget Reconciliation Act of 1989, Pub. L. No. 101-239, § 6403, 103 Stat. 2106 (1989) (discussing the need to treat conditions discovered by screening services).

<sup>73</sup> 42 U.S.C. § 1396d(r)(5) (2020).

<sup>74</sup> See Omnibus Budget Reconciliation Act of 1989, *supra* note 72.

<sup>75</sup> 42 U.S.C. § 1396d(r)(5) (2020).

<sup>76</sup> *Id.* at § 1396a(a)(43)(C) (2020); see, e.g., Katie A. *ex rel.* Ludin v. Los Angeles Co., 481 F.3d 1150, 1162 (9th Cir. 2007) (“Requiring the State actually to provide EPSDT services that have been found to be medical necessary.”).



[C]onsists of two, mutually supportive, operational components: assuring the availability and accessibility of required health care resources and helping Medicaid recipients and their parents or guardians effectively use them . . . . These components enable Medicaid agencies to manage a comprehensive child health program of prevention and treatment, to systematically . . . [a]ssess the child's health needs through initial and periodic examinations and evaluation, and [a]ssure that health problems found are diagnosed and treated early, before they become more complex and their treatment more costly.<sup>77</sup>

More recently in 2014, DHHS issued *EPSDT-A Guide for States: Coverage in the Medicaid Benefit for Children and Adolescents* [hereinafter *EPSDT Guide*].<sup>78</sup> According to the *EPSDT Guide*, the EPSDT benefit is “designed to assure that children receive early detection and care so that health problems are averted or diagnosed and treated as early as possible.”<sup>79</sup> The *EPSDT Guide* continues: “[t]he affirmative obligation to connect children with necessary treatment makes EPSDT different from Medicaid for adults . . . [and] . . . is a crucial component of a quality child health benefit.”<sup>80</sup> The federal agency summarizes the states’ obligations to ensure that children receive necessary treatment promptly as follows: “[t]he EPSDT benefit is more robust than the Medicaid benefit for adults and is designed to assure that children receive early detection and care, so that health problems are averted or diagnosed and treated as early as possible.”<sup>81</sup>

In sum, since EPSDT was first enacted in 1967, Congress and DHHS, the agency responsible for overseeing the states’ compliance with the law, have affirmed that “the EPSDT obligation is . . . extremely broad,”<sup>82</sup> and that the

<sup>77</sup> U.S. DEP’T OF HEALTH & HUM. SERVS., STATE MEDICAID MANUAL § 5010B (Apr. 1990).

<sup>78</sup> CTRS. FOR MEDICARE & MEDICAID SERVS., *EPSDT-A GUIDE FOR STATES: COVERAGE IN THE MEDICAID BENEFIT FOR CHILDREN AND ADOLESCENTS 2* (2014) [hereinafter *EPSDT Guide*] (stating that while it does not establish new policy, the *EPSDT Guide* serves the important purpose of compiling federal EPSDT policy guidance over the years into one place).

<sup>79</sup> *Id.* at 1 (“The goal of EPSDT is to assure that individual children get the health care they need when they need it—the right care to the right child at the right time in the right setting.”).

<sup>80</sup> *Id.* at 5; *see also, e.g.*, *Memisovski ex rel. Memisovski v. Maram*, No. 92 C 1982, 2004 WL 1878332, at \*50 (N.D. Ill. Aug. 23, 2004) (stating that EPSDT “differ[s] from merely providing ‘access’ to services; the Medicaid statute places affirmative obligations on states to assure that these services are actually provided to children on Medicaid in a timely and effective manner.”).

<sup>81</sup> *EPSDT Guide*, *supra* note 78, at 1.

<sup>82</sup> *Katie A. ex rel. Ludin v. Los Angeles Co.*, 481 F.3d 1150, 1154 (9th Cir. 2007).

state's "obligations with respect to EPSDT services require more proactive steps, such as actual provision of services . . . in a timely fashion."<sup>83</sup>

### III. THE CURRENT LAW EXPLAINED

Today's EPSDT benefit maintains the essential elements finalized in the 1989 legislation, consisting of outreach and informing; screening, diagnostic, and treatment services; ensuring provider availability; and annual reporting on EPSDT performance.<sup>84</sup>

#### *Outreach and Informing*

States must use a combination of written and oral methods to effectively inform potentially eligible families about: (1) the benefits of preventive healthcare; (2) the services available through EPSDT; (3) that services are available without charge; and (4) that transportation and scheduling assistance are available upon request.<sup>85</sup> In carrying out these functions, states must also comply with the Americans with Disabilities Act (ADA) and provide reasonable accommodations for any person who may have difficulty receiving information about EPSDT because of a disability, including vision or hearing problems or learning disabilities.<sup>86</sup> States must also ensure that families and children who have limited English proficiency have meaningful access to services by, for example, providing translated materials in language predominant in the area.<sup>87</sup>

#### *Screening Services*

The EPSDT statute requires states to provide four different types of screens: vision, hearing, dental, and medical.<sup>88</sup> Medical screens must include: (1) a comprehensive health and developmental history, (2) an unclothed physical examination, (3) administration of required immunizations, (4) laboratory testing, and (5) appropriate health education and anticipatory guidance.<sup>89</sup> A mental health history must also be a part of

<sup>83</sup> Clark v. Richman, 339 F. Supp. 2d 631, 646–47 (M.D. Pa. 2004); *id.* at 640, 647 (citing 42 C.F.R. § 441.56(e)).

<sup>84</sup> 42 U.S.C. §§ 1396a(a)(43)(A), 1396d(r) (2014).

<sup>85</sup> CMS EPSDT Required Activities, 42 C.F.R. § 441.56(a)(2)(1984).

<sup>86</sup> *Id.* § 441.56(a)(2)(iv); *see also* EPSDT Guide, *supra* note 78, at 17, 21.

<sup>87</sup> *EPSDT Guide*, *supra* note 78, at 17.

<sup>88</sup> 42 U.S.C. §§ 1396a(a)(43)(B), 1396d(r)(1)-(4).

<sup>89</sup> *Id.* at § 1396d(r) (1999); H.R. Rep. No. 101-247, at 399 (1989); *see also* CMS, STATE MEDICAID MANUAL, ch. 5, § 5123.2.E (listing required content for medical screenings).

the medical screen.<sup>90</sup> Hearing and vision screens must use procedures that are age appropriate and formulated in consultation with those who provide these services.<sup>91</sup> Finally, states must provide dental screens and services, which, at a minimum, must include “relief of pain and infections, restoration of teeth, and maintenance of dental health.”<sup>92</sup>

### *Periodicity of Screens*

The Medicaid statute requires delivery of “periodic” screens at preset intervals established by the states.<sup>93</sup> The law requires that qualified providers perform each of the four types of screens at different intervals in accordance with periodicity schedules that meet the standards of pediatric medical and dental practice.<sup>94</sup> The statute does not prescribe the content and timing of medical screens.<sup>95</sup> Rather, CMS directs states to use the standards of the American Academy of Pediatrics or the National Center for Education in Maternal and Child Health’s *Bright Futures*.<sup>96</sup> EPSDT also requires coverage of “inter-periodic” screens, which are visits to a health care provider at “such other intervals, indicated as medically necessary, to determine the existence of an illness or condition.”<sup>97</sup>

### *Treatment*

EPSDT requires coverage of a broader scope of treatment than Medicaid services for adults. Both mandatory and optional services that a state can cover under Medicaid are considered “covered services” even if those services are not covered for adults.<sup>98</sup> Moreover, EPSDT has its own medical necessity definition that is more expansive than the definition generally applied to services for adults.<sup>99</sup> The Medicaid Act requires coverage of a

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<sup>90</sup> See generally CMS, STATE MEDICAID MANUAL, *supra* note at 89, ch. 5, § 5123.2.F(1).

<sup>91</sup> *Id.*

<sup>92</sup> 42 U.S.C. § 1396d(r)(3) (1999).

<sup>93</sup> *Id.* at § 1396d(r)(1)–(4).

<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> CMS, STATE MEDICAID MANUAL, *supra* note 89, at ch. 5 § 5123.2 (2000); see also AM. ACAD. OF PEDS., *Bright Futures*, <https://brightfutures.aap.org/materials-and-tools/guidelines-and-pocket-guide/Pages/default.aspx> (last visited April 6, 2021) (showing the standards used by American Academy of Pediatrics and Child’s Health Bright Futures).

<sup>97</sup> 42 U.S.C. § 1396d(r)(1)–(4).

<sup>98</sup> Jane Perkins, *Medicaid Early and Periodic Screening, Diagnosis and Treatment Factsheet*, NAT’L HEALTH L. PROGRAM 1, 4 (2008), see also 42 U.S.C. § 1396d(a) (listing services).

<sup>99</sup> 42 U.S.C. § 1396d(r)(5) (1999).

service if it is among the list of Medicaid services and “necessary . . . to correct or ameliorate defects and physical and mental illnesses and conditions. . . .”<sup>100</sup> This means that limits on the amount, duration, or scope of benefits that may apply to adult services cannot automatically apply to EPSDT services. Instead, the determination of the type and amount of service needed must be individualized.<sup>101</sup> For example, if a state does not cover physical therapy for adults, or covers a strictly limited amount, that cannot apply to coverage of the service for children. Rather, EPSDT must cover those services to the extent needed by the individual child.<sup>102</sup> As the federal Medicaid agency has stated, EPSDT requires “the right care to the right child at the right time in the right setting.”<sup>103</sup>

Consistent with these policies, courts have required states to make the broad scope of benefits potentially available under the Medicaid program when necessary to “correct or ameliorate” the child’s condition.<sup>104</sup> Notably, courts have not allowed states to simply wait for health care providers to submit claims; rather, they hold states responsible for “arranging for” services that the child needs.<sup>105</sup> Indeed, multiple courts recognize that EPSDT’s obligation is “proactive” and, regardless of whether it is contracting with others for the provision of services, “the ultimate responsibility to ensure treatment remains with the state.”<sup>106</sup> As the United States District Court for the District of Arizona stated:

Arizona may not simply shrug indifferently when children do not request help, but instead must first affirmatively determine what obstacles lie between the children and the help that is available, and then mitigate those obstacles.<sup>107</sup>

Courts have ordered state Medicaid agencies to extend EPSDT to children who need lead blood screens,<sup>108</sup> oral health services,<sup>109</sup> family planning

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<sup>100</sup> *Id.*

<sup>101</sup> EPSDT *Guide*, *supra* note 78, at 23.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.* at 1.

<sup>104</sup> 42 U.S.C. §§ 1396d(r)(5), 1396a(a)(43) (2015).

<sup>105</sup> *Id.* § 1396a(a)(43)(C).

<sup>106</sup> Katie A. *ex rel.* Ludin v. Los Angeles County, 481 F.3d 1150, 1158–59 (9th Cir. 2007).

<sup>107</sup> Tinsley v. Faust, 411 F. Supp. 3d 462, 473–74 (D. Ariz. 2019); *see also* O.B. v. Norwood, 838 F.3d 837, 840 (7th Cir. 2016) (finding error where state agency “left the search [for private duty nurses] to be conducted by parents who apparently lacked the knowledge or experience required to hire the needed number of nurses without a painfully protracted search”).

<sup>108</sup> Thompson v. Raiford, No. 3:92-CV-1539-R, 1993 WL 497232 (N.D. Tex. 1993).

<sup>109</sup> *See* Mitchell v. Johnston, 701 F.2d 337 (5th Cir. 1983) (dental exams).

services;<sup>110</sup> diabetic supplies;<sup>111</sup> augmentative communication devices;<sup>112</sup> psychology services;<sup>113</sup> therapy services for children with autism spectrum disorders;<sup>114</sup> incontinence supplies;<sup>115</sup> organ transplants;<sup>116</sup> psychiatric residential treatment;<sup>117</sup> behavioral health services;<sup>118</sup> transportation services;<sup>119</sup> and physical, occupational, and speech therapy.<sup>120</sup>

Although states may require prior authorization or have tentative limits for treatment services, they may not have inflexible limits.<sup>121</sup> States may also provide services in the most economic mode as long as it is “equally effective and actually available” to the requested route, does not delay services, and does not violate the ADA.<sup>122</sup> For example, the ADA requires that public entities provide requested community-based services to persons with disabilities when the request can be reasonably accommodated, taking into account the resources available to the entity and the needs of other disabled individuals who receive services from the entity.<sup>123</sup> Therefore, if a state can accommodate that request, a state may not provide services in an institution

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<sup>110</sup> See *Doe v. Pickett*, 480 F. Supp. 1218, 1221 (S.D. W.Va. 1979) (finding parental consent requirements conflicted with EPSDT mandates).

<sup>111</sup> See *Biewald et al. v. State*, 451 A.2d 98 (Me. 1982) (medical assistance program for testing materials essential to mother's treatment of her diabetic son).

<sup>112</sup> *Hunter v. Chiles*, 944 F. Supp. 914 (S.D. Fla. 1996).

<sup>113</sup> *Chisholm v. Hood*, 133 F. Supp. 2d 894 (E.D. La. 2001).

<sup>114</sup> See *K.G. ex rel. Garrido v. Dudek*, 731 F.3d 1152, 1160 (11th Cir. 2013), *on remand*, 981 F. Supp. 2d 1275 (S.D. Fla. 2013) (issuing a permanent injunction requiring Florida to pay for ABA); *Parents' League for Effective Autism Servs. v. Jones-Kelley*, 339 F. App'x 542, 552 (6th Cir. 2009) (enjoining state rules that restricted EPSDT coverage of ABA), *aff'g* 565 F. Supp. 2d 905 (S.D. Ohio 2008).

<sup>115</sup> *S.D. ex rel. Dickson v. Hood*, 391 F.3d 581, 596 (5th Cir. 2004); *Smith ex rel. Smith v. Benson*, 703 F. Supp. 2d 1262, 1274 (S.D. Fla. 2010); *Ekloff v. Rodgers*, 443 F. Supp. 2d 1173, 1173 (D. Ariz. 2006).

<sup>116</sup> *Miller ex rel. Miller v. Whitburn*, 10 F.3d 1315, 1321 (7th Cir. 1993), *vacated*; 816 F. Supp. 505 (W.D. Wis. 1993); *Pittman ex rel. Pope v. Sec'y Fla. Dep't of Health & Rehab. Servs.*, 998 F.2d 887, 892 (11th Cir. 1993); *Pereira v. Kozlowski*, 996 F. 2d 723, 723 (4th Cir. 1993).

<sup>117</sup> *Collins v. Hamilton*, 349 F.3d 371, 376 (7th Cir. 2003).

<sup>118</sup> *Kirk T. v. Houstoun*, No. 99-3253, 2000 WL 830731, at 6 (E.D. Pa. June 27, 2000).

<sup>119</sup> *Tex. Health & Hum. Servs. Comm'n v. Advocates for Patient Access, Inc.*, 399 S.W.3d 615, 630–31 (Tex. App. 2013).

<sup>120</sup> *A.M.T. v. Gargano*, 781 F. Supp. 2d 798, 808 (S.D. Ind. 2011).

<sup>121</sup> *EPSDT Guide*, *supra* note 78, at 24.

<sup>122</sup> *Id.* at 25.

<sup>123</sup> *Statement of the Department of Justice on Enforcement of the Integration Mandate of Title II of the ADA and Olmstead v. L.C.*, U.S. DEP'T OF JUST., [https://www.ada.gov/olmstead/q&a\\_olmstead.htm](https://www.ada.gov/olmstead/q&a_olmstead.htm) (last updated Feb. 25, 2020).

simply because it is less expensive.<sup>124</sup> States also do not have to cover a treatment that it deems unsafe or experimental.<sup>125</sup> However, it is important to note that a service is not necessarily experimental simply by virtue of being rare.<sup>126</sup>

Finally, states delivering services through managed care entities must ensure that managed care plans comply with EPSDT,<sup>127</sup> including making an adequate supply of providers available and providing the same scope of services available to children not enrolled in managed care.<sup>128</sup> Moreover, managed care plans may not impose a stricter medical necessity standard on children.<sup>129</sup> Rather, the managed care plan must also comply with the “correct or ameliorate” standard set forth in the statute.<sup>130</sup>

#### IV. MEASURING EPSDT PERFORMANCE

States continue to struggle to meet the benchmarks suggested by the federal Medicaid agency for delivery of EPSDT services. Similarly, although state performance has improved in some respects, there is much room for improvement. Principally, the federal and state governments require reliable data in order to monitor performance and to determine how to improve it. To this end, the federal Medicaid agency, state Medicaid agencies, and private entities created a variety of mandatory and optional data collection requirements that collect information about delivery of EPSDT services. These complementary data sources measure EPSDT’s reach and, together, provide insight into how well states and managed care plans are providing EPSDT services. In this section, we discuss three of the most important data sources: (1) the federal Form CMS-416, (2) the HealthCare Data and Information Set (HEDIS), and (3) the federal Core Set of Children’s Health Quality Measures.

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<sup>124</sup> *Id.*; see also DOJ Prohibitions Against Discrimination, 28 C.F.R. § 35.130(d) (2008) (requiring public entities to administer services in most integrated setting appropriate to the needs of persons with disabilities); Letter from Timothy Westmoreland, Dir., Ctr. for Medicaid & St. Operations, to St. Medicaid Dir. (Jan. 10, 2001) (on file with author).

<sup>125</sup> *EPSDT Guide*, *supra* note 78, at 24–25. Neither the federal Medicaid statute nor the regulations define what constitutes an experimental service. However, a state’s determination of whether a service is experimental must be reasonable and based on the latest scientific information available. *Id.* at 24–25.

<sup>126</sup> *Id.*

<sup>127</sup> *Id.* at 29.

<sup>128</sup> 42 U.S.C. § 1396u-2(b)(5) (2006); 42 C.F.R. § 438.206 (2007).

<sup>129</sup> *EPSDT Guide*, *supra* note 78, at 30.

<sup>130</sup> See *John B. v. Menke*, 176 F. Supp. 2d 786, 794 (M.D. Tenn. 2001) (requiring Medicaid managed care system to meet EPSDT mandates).

A. *Form CMS-416*

The EPSDT statute has long included a built-in mechanism to measure how well the program is meeting its goals – Form CMS-416 (“Form 416”).<sup>131</sup> When Congress strengthened EPSDT in 1989, it added a requirement that states report the number of children (1) receiving health screening services; (2) referred for corrective treatment; (3) receiving dental services; and (4) the state’s results in attaining goals set by the Medicaid statute.<sup>132</sup> States are required to report this information to the federal Medicaid agency, CMS, on the Form 416 each year.<sup>133</sup> This enables CMS to “assess the effectiveness of EPSDT services.”<sup>134</sup> CMS then posts the data for each state on its website.<sup>135</sup>

Form 416 data has immense value for CMS, but also to states and the public because it collects and reports information on how each state is performing on some of the primary EPSDT goals.<sup>136</sup> Each state reports information about the delivery of screening, other services, and additional aspects of EPSDT, allowing for comparisons among states.<sup>137</sup> Moreover, because CMS posts data dating back to 1995, a state’s progress can be tracked over time.<sup>138</sup> For example, Form 416 data shows that only forty percent of eligible children in the United States received preventive dental services in 2014, forty-two percent in 2016, and forty-three percent in 2018.<sup>139</sup> These data show that nearly sixty percent of eligible children were not receiving these crucial services for years.<sup>140</sup> Thus, states and CMS have much work to do to ensure that all children receive these crucial services.

Form 416 data can also reveal serious underlying problems in children’s health. The Flint water crisis provides a dramatic recent example. In 2014, officials in Flint, Michigan switched the source of the city’s drinking

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<sup>131</sup> 42 U.S.C. § 1396a(a)(43)(D).

<sup>132</sup> Omnibus Budget Reconciliation Act of 1989, Pub. L. No. 101-239, § 6403, 103 Stat. 2106 (1989) (adding 42 U.S.C. § 1396a(a)(43)(D)).

<sup>133</sup> *Early and Periodic Screening, Diagnostic, and Treatment*, MEDICAID.GOV, <https://www.medicaid.gov/medicaid/benefits/early-and-periodic-screening-diagnostic-and-treatment/index.html> (last visited Apr. 22, 2021).

<sup>134</sup> *Id.*

<sup>135</sup> *Id.*

<sup>136</sup> *Id.*; see also *EPSDT Guide*, *supra* note 78, at 31 (describing function of Form 416).

<sup>137</sup> See *Early and Periodic Screening, Diagnostic, and Treatment*, *supra* note 133 (providing EPSDT Form 416 data from all states for FY 1995-2019).

<sup>138</sup> *Id.*

<sup>139</sup> JANE PERKINS ET AL., CHILDREN’S HEALTH UNDER MEDICAID: A NATIONAL REVIEW OF EPSDT 2015–2019 (Nat’l Health L. Program, forthcoming June 2021) (on file with authors).

<sup>140</sup> *Id.*

water.<sup>141</sup> This switch caused contamination of the city's water supply, which resulted in thousands of child lead poisoning cases.<sup>142</sup> Despite complaints from residents about foul-looking and tasting water, officials denied that the water was contaminated.<sup>143</sup> In 2015, a researcher at a Flint hospital serving many low-income children pulled medical records containing lead blood testing data.<sup>144</sup> The data showed that the number of children with higher-than-average blood lead levels had risen by more than 100% since the change in the water supply.<sup>145</sup> This data existed only because EPSDT mandates delivery, collection, and reporting of lead blood screening.<sup>146</sup>

Despite its value, however, Form 416 does have shortcomings. For example, it asks if a child has received "at least one initial or periodic screen."<sup>147</sup> Thus, Form 416 does not indicate which type of screening a child received (*e.g.* dental or medical) or whether they received the recommended number of screenings under the state's periodicity schedule.<sup>148</sup> Form 416 does not report whether children received all elements of a screen.<sup>149</sup> Moreover, the data may undercount children who are screened if providers do not report their activities,<sup>150</sup> or if managed care plans fail to report or verify

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<sup>141</sup> Mona Hatta-Attisha et al., *Elevated Blood Lead Levels in Children Associated with the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public Health Response*, 106 AM. J. PUB. HEALTH 283, 283 (2016).

<sup>142</sup> *Id.*

<sup>143</sup> *Id.* at 285; see also Jonathan Cohn, *Think Obamacare Repeal Won't Affect Kids? Think Again*, HUFFINGTON POST (July 15, 2017 8:01 A.M.) [https://www.huffpost.com/entry/obamacare-repeal-kids\\_n\\_595ffad6e4b0615b9e91a4b2](https://www.huffpost.com/entry/obamacare-repeal-kids_n_595ffad6e4b0615b9e91a4b2) (describing review of children's medical records).

<sup>144</sup> *Id.*; see also Nicole Carroll, *Lead was Poisoning the Water in Flint, Mich. Dr. Mona Hanna-Attisha Put Her Reputation on the Line to Prove It*, USA TODAY (Aug. 27, 2020, 4:00 AM), <https://www.usatoday.com/in-depth/life/women-of-the-century/2020/08/11/19th-amendment-flint-water-crisis-elevated-dr-mona-hanna-attisha/5535823002/> (describing review of children's medical records).

<sup>145</sup> *Id.*

<sup>146</sup> *Id.*

<sup>147</sup> CTRS. FOR MEDICARE & MEDICAID SERVS., INSTRUCTIONS FOR COMPLETING FORM CMS-416: ANNUAL EARLY AND PERIODIC SCREENING, DIAGNOSTIC, AND TREATMENT (EPSDT) PARTICIPATION REPORT 7, [https://www.hhs.gov/guidance/sites/default/files/hhs-guidance-documents/2017.instructions%2520cms-416%2520annual%2520epsdt%2520report\\_9.pdf](https://www.hhs.gov/guidance/sites/default/files/hhs-guidance-documents/2017.instructions%2520cms-416%2520annual%2520epsdt%2520report_9.pdf) (last visited May 28, 2021).

<sup>148</sup> *Id.*

<sup>149</sup> U.S. GOV'T ACCOUNTABILITY OFF., GAO-19-481, MEDICAID: ADDITIONAL CMS DATA AND OVERSIGHT NEEDED TO HELP ENSURE CHILDREN RECEIVE RECOMMENDED SCREENINGS 21 (2019), <https://www.gao.gov/products/gao-19-481> (last visited Apr. 22, 2021).

<sup>150</sup> JANE PERKINS & SARAH SOMERS, TOWARD A HEALTHY FUTURE: MEDICAID EARLY AND PERIODIC SCREENING, DIAGNOSTIC AND TREATMENT SERVICES FOR POOR CHILDREN AND YOUTH 45 (2003).



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their data.<sup>151</sup> Fortunately, there are other sources that complement the data provided by Form 416.

### B. HEDIS Data

The Healthcare Effectiveness Data and Information Set (HEDIS) measures performance by managed care plans, including Medicaid managed care.<sup>152</sup> At least three-quarters of Medicaid-enrolled children receive care through managed care plans.<sup>153</sup> Thus, HEDIS measures are an important tool for tracking whether these children are receiving required EPSDT services.<sup>154</sup> The HEDIS measures are published by the private, non-profit organization National Committee for Quality Assurance (NCQA).<sup>155</sup> There are more than ninety measures that relate to six health care “domains;” including effectiveness of care, access to and availability of care, and experience of care.<sup>156</sup> Measures of children’s health include immunization status, lead screening,<sup>157</sup> children and adolescent’s access to primary care practitioners, and well-child visits.<sup>158</sup> Information is collected for the state as a whole, as well as for individual managed care plans, which allows for comparison of performance among plans.<sup>159</sup> NCQA summarizes performance on selected

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<sup>151</sup> *Id.*

<sup>152</sup> *States Using NCQA Programs*, NAT’L COMM. FOR QUALITY ASSURANCE, <https://www.ncqa.org/public-policy/work-with-states-map/> (last visited Apr. 22, 2021) (describing states requiring Medicaid plans to report HEDIS to NCQA); *see also* Jane Perkins & Sarah Somers, *Sunshine and Accountability: The Pursuit of Information on Quality in Medicaid Managed Care*, 5 ST. LOUIS UNIV. J. HEALTH L. & POL’Y 153, 163 (2011) (describing use of HEDIS measures in Medicaid managed care).

<sup>153</sup> Elizabeth Hinton et al., *10 Things to Know about Medicaid Managed Care*, KAISER FAM. FOUND. (Oct. 29, 2020), <https://www.kff.org/medicaid/issue-brief/10-things-to-know-about-medicicaid-managed-care/>.

<sup>154</sup> JANE PERKINS ET AL., *supra* note 139.

<sup>155</sup> *HEDIS and Performance Measurement*, NAT’L COMM. FOR QUALITY ASSURANCE, <https://www.ncqa.org/hedis/> (last visited Apr. 23, 2021).

<sup>156</sup> *Id.*

<sup>157</sup> *HEDIS Measures and Technical Resources*, NAT’L COMM. FOR QUALITY ASSURANCE, <https://www.ncqa.org/hedis/measures/> (last visited Apr. 23, 2021) (noting this measure does not, however, reflect the Medicaid requirements for lead screening Cf. HEDIS measuring one test with SMM calling for tests at twelve and twenty-four months of age).

<sup>158</sup> *Id.*

<sup>159</sup> *See generally* Sarah H. Scholle et al., *Quality of Child Health Care: Expanding the Scope and Flexibility of Measurement Approaches*, 54 COMMONWEALTH FUND 1, 5–7 (2009) (proposing a measurement framework for comprehensive well-child care to capture a richer view of children’s health care and take a more efficient approach to data collection at multiple administrative levels).

HEDIS measures from the previous calendar year,<sup>160</sup> including a dozen related to child and adolescent health care.<sup>161</sup> For example, the most recent report shows that 67.1% of children enrolled in Medicaid managed care plans in 2019 received nutritional counseling, a significant increase from 2009, when only 41.9% received it.<sup>162</sup>

In comparison to Form 416, HEDIS has strengths and weaknesses. HEDIS measures more aspects of health care delivery than Form 416 and can therefore provide additional insight into delivery of services to children. However, in contrast to Form 416, the federal Medicaid agency does not require Medicaid managed care organizations to collect data on HEDIS measures.<sup>163</sup> Even if states choose to require HEDIS reporting, they are free to pick and choose which measures they require plans to use or change them from year to year.<sup>164</sup> Academics, clinicians, and policy analysts have questioned aspects of the measures, including their reliability and the cost of implementation.<sup>165</sup> There may also be variations in states' methods of data collection that make the measures less comparable across states.<sup>166</sup> For example, states may use different childhood immunization measures (e.g., different combinations of immunizations, periodicity, or age groups).<sup>167</sup> Despite these concerns, the HEDIS measures provide a valuable source of information about the care delivered by managed care plans to Medicaid beneficiaries.

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<sup>160</sup> See *State of Health Care Quality*, NAT'L COMM. FOR QUALITY ASSURANCE, <https://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality-report/thank-you/> (last visited Apr. 23, 2021) (summarizing performance on selected HEDIS measures from reporting year).

<sup>161</sup> *Id.*

<sup>162</sup> See *Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents (WCC)*, NAT'L COMM. FOR QUALITY ASSURANCE, <https://www.ncqa.org/hedis/measures/weight-assessment-and-counseling-for-nutrition-and-physical-activity-for-children-adolescents/> (last visited Apr. 23, 2021) (reporting number of children who received nutritional counseling).

<sup>163</sup> See generally CMS All-inclusive Care for Elderly, 42 C.F.R. § 438 Subpart E (showing that CMS requires states to employ a variety of means to monitor quality); see also *id.* § 438.10(e)(1) (collecting HEDIS measures is not one of the requirements, however, when collected, States must make them available to potential managed care enrollees).

<sup>164</sup> *Id.*

<sup>165</sup> See PERKINS & SOMERS, *supra* note 150, at 165 (discussing the issues regarding the measures used).

<sup>166</sup> EMBRY M. HOWELL ET AL., MEDICAID AND CHIP RISK-BASED MANAGED CARE IN 20 STATES 45 (2012).

<sup>167</sup> *Id.*

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C. Core Set of Children's Health Quality Measures

The Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) required CMS to establish a core set of children's health care quality measures and update them annually.<sup>168</sup> States collect information on these measures and report it to CMS.<sup>169</sup> States are not currently required to collect the core measure but will be required to do so starting in 2024.<sup>170</sup> Currently, measures reported by twenty-five or more states are publicly reported, including in a reporting mechanism CMS calls the Medicaid and CHIP Scorecard.<sup>171</sup> Some of the measures are the same as those collected through HEDIS, such as well-child visits and immunizations for adolescents.<sup>172</sup> Others are essentially the same as those collected through Form 416, including the percentage of eligible children who received preventive dental services.<sup>173</sup> The Scorecard shows how state Medicaid and CHIP programs are serving beneficiaries by presenting the core measure data in easy-to-understand charts and graphs.<sup>174</sup> Annual reports on the children's health quality measures show trends in state performance and how that performance compares to other states.<sup>175</sup> For example, the most recent reports showed significant improvement in receipt of adolescent and child

<sup>168</sup> See 42 U.S.C. § 1320b-9a(b)(5) ("Beginning no later than January 1, 2013, and annually thereafter, the Secretary shall publish recommended changes to the core measures..."); see also generally, *Medicaid and CHIP Child and Adult Core Sets Annual Review and Selection Process*, CTRS. FOR MEDICARE & MEDICAID SERVS., <https://www.medicaid.gov/medicaid/quality-of-care/downloads/annual-core-set-review.pdf> (last visited Apr. 23, 2021) (listing core set of children's health care quality measures for that year).

<sup>169</sup> *State Health System Performance*, MEDICAID.GOV, <https://www.medicaid.gov/state-overviews/scorecard/state-health-system-performance/index.html> (last visited Apr. 23, 2021).

<sup>170</sup> *Id.*

<sup>171</sup> *Id.*

<sup>172</sup> See *id.* (reporting Medicaid and CHIP State Health Performance). Compare CTRS. FOR MEDICARE & MEDICAID SERVS., 2021 CORE SET OF CHILDREN'S HEALTHCARE QUALITY MEASURES FOR MEDICAID AND CHIP 1-2 (2021), with *HEDIS Measures and Technical Resources*, NAT'L COMM. FOR QUALITY ASSURANCE, <https://www.ncqa.org/hedis/measures/> (last visited Apr. 23, 2021).

<sup>173</sup> Compare CTRS. FOR MEDICARE & MEDICAID SERVS., 2021 CORE SET OF CHILDREN'S HEALTHCARE QUALITY MEASURES FOR MEDICAID AND CHIP 1-2 (2021), with CTRS. FOR MEDICARE & MEDICAID SERVS., INSTRUCTIONS FOR COMPLETING FORM CMS-416: ANNUAL EARLY AND PERIODIC SCREENING, DIAGNOSTIC, AND TREATMENT (EPSDT) PARTICIPATION REPORT 1 (2014).

<sup>174</sup> *State Health System Performance*, *supra* note [169](#)

<sup>175</sup> *Id.*

well-care visits and use of preventive dental services.<sup>176</sup> The median state performance on some child health measures, such as receipt of recommended vaccinations for children and adolescents, was above seventy-five percent, which is encouraging.<sup>177</sup> In contrast, state performance on other measures, including use of preventive dental services, receipt of dental sealants, and developmental screening in the first three years of life, were below fifty percent.<sup>178</sup> This means that half of eligible children did not receive these crucial services.<sup>179</sup>

Thus, there is a wealth of information about delivery of EPSDT services, much of which is readily available on the web. These data sources enable states, managed care plans, and policy makers to target particular aspects of a state's performance for improvement and measure progress over time. Moreover it is there for Medicaid beneficiaries, providers, advocates, the press, and other members of the public to review and assess how their states' Medicaid programs are performing.

#### V. THE FUTURE OF EPSDT

Looking forward, EPSDT must be implemented as a twenty-first century benefit that ensures timely and adequate health services for low-income children. As noted above, various data sources show strong performance in some areas, such as well-child visits, and weaknesses in others, including receipt of dental services. Policy makers and other stakeholders will need to understand and work aggressively to implement the statutory requirements, while ensuring that EPSDT policies are kept up to date.

We expect four trends involving state EPSDT programs to play out in the coming years. First, EPSDT programs will need to focus on social determinants of health by maintaining affirmative outreach to families and more aggressively forging links with community services. Second, those entities implementing EPSDT will need to ensure that children's health needs are determined based on individualized assessments that reflect the current state of health care, not outdated and/or across-the-board coverage guidelines. Third, EPSDT will need to strengthen coverage of family-centered, community-based services for children with special health care needs. Fourth, policy makers and other stakeholders will need to ramp up their use of data, both national and other more granular data, to hold government

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<sup>176</sup> CTRS. FOR MEDICARE & MEDICAID SERVS., FACT SHEET: QUALITY OF CARE FOR CHILDREN AND ADULTS IN MEDICAID AND CHIP: OVERVIEW OF FINDINGS FROM THE 2019 CHILD AND ADULT CORE SETS 3 (2020).

<sup>177</sup> *Id.* at 2.

<sup>178</sup> *Id.*

<sup>179</sup> *Id.*

entities accountable and to expose and address health inequities. Each of these trends is discussed below.

### 1. *Linking EPSDT to social determinants of health*

Health care practitioners, policy makers, academics, and advocates increasingly recognize that social determinants of health—the conditions in which we live, learn, work, and play—are driving health outcomes.<sup>180</sup> Population health cannot improve without addressing the social, environmental, and behavioral factors that lead to the majority of health problems.<sup>181</sup> Thus, policy makers and health care providers are increasingly focusing on issues such as housing, food security, education, and systemic racism as part of a holistic approach to improving health outcomes.<sup>182</sup>

Although these social determinants have a profound effect on health, with strictly limited exceptions, Medicaid does not pay for housing, nutrition, or educational services and its limited funds are already taxed providing for the basic health care needs of all beneficiaries.<sup>183</sup> Yet, as CMS and others recognize, the Medicaid program provides numerous opportunities to address these social determinants.<sup>184</sup> This is particularly true of EPSDT, given its preventive thrust. A number of Medicaid and EPSDT features target social determinants, in particular, EPSDT's requirement of aggressive and targeted outreach;<sup>185</sup> making connections with organizations that provide nutrition,

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<sup>180</sup> See, e.g., Cara V. James, *Actively Addressing Social Determinants of Health Will Help Us Achieve Health Equity*, HEALTHIT ANSWERS (May 9, 2019), <https://www.healthitanswers.net/actively-addressing-social-determinants-of-health-will-help-us-achieve-health-equity-2/> (providing an overview to various social determinants and steps for addressing them).

<sup>181</sup> *Id.*

<sup>182</sup> See Karen DeSalvo & Michael O. Leavitt, *For an Option to Address Social Determinants of Health, Look to Medicaid*, HEALTH AFFS. BLOG (July 8, 2019), <https://www.healthaffairs.org/doi/10.1377/hblog20190701.764626/full/>; Manatt, Phelps & Phillips, LLP, *Medicaid's Role in Addressing Social Determinants of Health*, ROBERT WOOD JOHNSON FOUND. (Feb. 1, 2019), <https://www.rwjf.org/en/library/research/2019/02/medicaid-s-role-in-addressing-social-determinants-of-health.html>.

<sup>183</sup> Letter from CMS Acting Deputy Admin. & Dir. Anne Marie Costello to St. Health Officials, MEDICAID.GOV (Jan. 7.2021) at 5, 9, <https://www.medicaid.gov/federal-policy-guidance/downloads/sho21001.pdf>; HANNAH KATCH, MEDICAID CAN PARTNER WITH HOUSING PROVIDERS AND OTHERS TO ADDRESS ENROLLEES' SOCIAL NEEDS 3 (Ctr. on Budget and Pol'y Prior. 2020) <https://www.cbpp.org/research/health/medicaid-can-partner-with-housing-providers-and-others-to-address-enrollees-social>.

<sup>184</sup> Manatt, Phelps & Phillips, LLP, *supra* note 182; see also Letter from CMS, *supra* note 183.

<sup>185</sup> See 42 U.S.C. §1396a(a)(43)(A) (requiring informing eligible beneficiaries of EPSDT services and need for immunization); 42 C.F.R. § 441.56(a) (requiring written, oral, and non-technical outreach); CTRS. FOR MEDICARE & MEDICAID SERVS., *supra* note 77, at 5–7 (requiring targeted informing); see also *supra* Section III, Part I “*Outreach and Informing.*”

housing, and similar supports;<sup>186</sup> and Medicaid's coverage of case management services, which can connect children with social services and supports.<sup>187</sup> For example, Michigan made targeted case management services available to Medicaid-eligible children served by Flint's water system, such as comprehensive assessments, nutritional support, and early education programs.<sup>188</sup> Federal and state agencies and other health policy experts continue to explore ways in which Medicaid can address social determinants of health.<sup>189</sup> Medicaid managed care plans are an integral part of this effort.<sup>190</sup> Various states are requiring their managed care plans to evaluate community needs, demonstrate capacity for integrating social determinants, and develop relationships with community organizations, such as Head Starts, food banks, and faith based organizations.<sup>191</sup> Some states have also used managed care contract provisions to address a wide variety of social determinants of health including requiring plans to connect enrollees with housing services and nutritional support and coordinate with schools and school based health centers.<sup>192</sup> Medicaid policy makers must highlight and strengthen these built-in Medicaid and EPSDT features that promote connections with organizations that can address social determinants.

2. *Ensuring treatment decisions are based on individual assessment, not just clinical guidelines*

The Medicaid EPSDT provisions require covered services to be provided when "necessary to correct or ameliorate" the child's condition, thus the provisions require individualized assessment and treatment of each child's medical needs.<sup>193</sup> This requirement for individualized treatment is being tested as health insurers and medical practices are increasingly making

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<sup>186</sup> 42 C.F.R. § 441.61(c); *see also* *EPSDT Guide*, *supra* note 78, at 27 (discussing how Medicaid governs making these connections).

<sup>187</sup> 42 U.S.C. § 1396d(a)(19); 42 C.F.R. § 440.169.

<sup>188</sup> Kate Honsberger et al., *State Strategies to Improve Childhood Lead Screening and Treatment Services Under Medicaid and CHIP*, NAT'L ACAD. FOR STATE HEALTH POL'Y 1, 4 (April 2018), <https://www.nashp.org/wp-content/uploads/2018/04/Childhood-Lead-Screening.pdf>.

<sup>189</sup> Letter from CMS, *supra* note 183; Manatt, Phelps & Phillips, LLP, *supra* note 182.

<sup>190</sup> DeSalvo & Leavitt, *supra* note 182.

<sup>191</sup> *Id.*

<sup>192</sup> TINA KARTIKA, NAT'L ACAD. FOR STATE HEALTH POL'Y, *HOW STATES ADDRESS SOCIAL DETERMINANTS OF HEALTH IN THEIR MEDICAID CONTRACTS AND CONTRACT GUIDANCE DOCUMENTS 1-2* (2018), [https://www.nashp.org/wp-content/uploads/2018/08/Social-Determinants-of-Health-in-Medicaid-Contracts-plus-CT-12\\_6\\_2018.pdf](https://www.nashp.org/wp-content/uploads/2018/08/Social-Determinants-of-Health-in-Medicaid-Contracts-plus-CT-12_6_2018.pdf).

<sup>193</sup> *Early and Periodic Screening, Diagnostic, and Treatment*, *supra* note 134.

coverage decisions by applying clinical guidelines.<sup>194</sup> This is causing problems for families and children. In some instances, the clinical guidelines have been copyrighted by private companies that strictly license their use to insurers and do not make them readily available to the public.<sup>195</sup> There is also growing evidence that some guidelines use algorithms or other evidentiary bases that are based on biased data, assumptions, and modeling.<sup>196</sup> A 2019 study by Ziad Obermeyer found algorithms are not accounting for the sicker health status of Black patients as compared to White patients, resulting in less money spent caring for Black patients than White.<sup>197</sup>

Some individuals have been forced to file litigation to obtain disclosure of the clinical guidelines being used to deny EPSDT coverage.<sup>198</sup> In *Salazar v. District of Columbia*, for example, the District of Columbia Medicaid agency reduced coverage of a child's in-home care based on treatment guidelines developed and copyrighted by a private company.<sup>199</sup> The child requested copies of the guidelines, but the District refused to turn them over, citing copyright and trade secret laws.<sup>200</sup> The court, however, ordered disclosure, finding that it was "patently irresponsible to presume that Congress would permit a state to disclaim federal responsibility by contracting away its obligation to a private entity."<sup>201</sup> Thereafter, the child obtained coverage of in-home health services based on her individual need, not the amount listed on the clinical guideline.<sup>202</sup> In another case, the Florida Medicaid agency denied coverage citing a lack of clinical evidence supporting the efficacy of the requested service. In *K.G. v. Dudek*, Florida's Medicaid Agency refused

<sup>194</sup> ROBIN GRAHAM ET AL., INST. OF MED., CLINICAL PRACTICE GUIDELINES WE CAN TRUST 2 (Nat. Acad. Press eds., 2011) (noting thousands of guidelines have been produced).

<sup>195</sup> See *Salazar v. District of Columbia*, 596 F. Supp. 2d 67, 68 (D.D.C. 2009), *partial recon. granted*, 750 F. Supp. 2d 65 (D.D.C. 2010) (ordering the District to disclose copyrighted clinical guidelines used by managed care contractor to deny request for EPSDT in-home services).

<sup>196</sup> Ziad Obermeyer et al., *Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations*, 366 SCI. 447, 447 (2019).

<sup>197</sup> *Id.*; see also Ibram X. Kendi, *There is No Such Thing as Race in Health-care Algorithms*, 1 LANCET e375, e375 (2019) (discussing the importance of transparency for evaluation and validation to ensure algorithms do not reinforce racial biases).

<sup>198</sup> See *Salazar v. District of Columbia*, 596 F. Supp. 2d 67, 68 (D.D.C. 2009), *partial recon. granted*, 750 F. Supp. 2d 65 (D.D.C. 2010) (requiring disclosure of clinical guidelines); *K.G. v. Dudek*, 864 F. Supp. 2d 1314, 1315 (S.D. Fla. 2012), *aff'd in part and vacated and remanded in part*; *Garrido v. Dudek*, 731 F.3d 1152 (11th Cir. 2013), *later history omitted*.

<sup>199</sup> *Salazar*, 596 F. Supp. 2d at 68.

<sup>200</sup> *Id.*

<sup>201</sup> *Id.* at 69–70 (citations omitted).

<sup>202</sup> Personal knowledge of the authors. The National Health Law Program is co-counsel to the children in *Salazar v. D.C.*

coverage on the ground that there was an insufficient evidentiary basis to support coverage of Applied Behavioral Analysis (ABA) therapy for children with autism.<sup>203</sup> Florida relied on non-scientific summaries contained in a high-level, meta-analysis of the research to argue that the therapy was experimental under Florida law.<sup>204</sup> The court rejected the State's position, concluding that ABA has been the "consensus in the medical community" for treatment for autism since the 1990s.<sup>205</sup> The position taken by the state Medicaid agencies in these cases is cause for concern. Although clinical standards can prevent ineffective treatments and establish performance measures for comparing health plans, the use of these standards can conflict with federal EPSDT requirements when applied reflexively by states or health plans to make coverage decisions.<sup>206</sup> Notably, many treatments and clinical therapies—while quite effective for an individual child—will not have research-based evidentiary support.<sup>207</sup> There are numerous reasons for this. Clinical trials have historically excluded children.<sup>208</sup> In addition, some conditions affect too few children to allow for a clinically valid study.<sup>209</sup> Finally, as *Garrido* illustrates, even when clinical research exists, the state may base its coverage policy on reports and non-scientific summaries that do not completely or accurately reflect the scientific literature.<sup>210</sup> Notably, the Social Security Act includes provisions to protect Medicaid-eligible children

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<sup>203</sup> *K.G. v. Dudek*, 864 F. Supp. 2d 1314, 1315 (S.D. Fla. 2012) (finding ABA therapy for children with autism is a rehabilitative service covered by the Medicaid Act and is not experimental), *aff'd in part and vacated and remanded in part*; *Garrido v. Dudek*, 731 F.3d 1152 (11th Cir. 2013) (finding district court did not abuse its discretion in issuing a permanent injunction that overruled state's determination that ABA was experimental), *later history omitted*.

<sup>204</sup> *K.G.*, 864 F. Supp. 2d at 1322–23.

<sup>205</sup> *K.G. ex rel. Garrido v. Dudek*, 981 F. Supp. 2d 1275, 1287 (S.D. Fla. 2013) (citing testimony of autism specialists, treating physicians, and former editor of the *Journal of Applied Behavioral Analysis*).

<sup>206</sup> See 42 U.S.C. § 1396d(r)(5) (requiring treatment needed to "correct or ameliorate" the child's condition); see generally Sara Rosenbaum, *Health Insurance and Coverage of Evidence-Based Care*, 132 PUB. HEALTH REP. 260, 261 (2017) (discussing legal protections governing access to evidence of treatment efficacy).

<sup>207</sup> Austin Frakt, *Why Doctors Still Offer Treatments That May Not Help*, N.Y. TIMES (Aug. 26, 2019), <https://www.nytimes.com/2019/08/26/upshot/why-doctors-still-offer-treatments-that-may-not-help.html>.

<sup>208</sup> Suz Redfean, *Clinical Trial Patient Inclusion and Exclusion Criteria Need an Overhaul, Say Experts*, CENTERWATCH (Apr. 23, 2018), <https://www.centerwatch.com/articles/12622-clinical-trial-patient-inclusion-and-exclusion-criteria-need-an-overhaul-say-experts>.

<sup>209</sup> COMM. ON CLINICAL RSCH. INVOLVING CHILDREN, ETHICAL CONDUCT OF CLINICAL RESEARCH INVOLVING CHILDREN 80 (Marilyn J. Field & Richard E. Behrman eds., 2004).

<sup>210</sup> See e.g., *K.G. ex rel. Garrido v. Dudek*, 864 F. Supp. 2d 1314 (S.D. Fla. 2012) (discussing the accuracy of various summaries of research regarding efficacy of ABA therapy).



from the improper use of evidence-based measures.<sup>211</sup> While calling on states to employ quality of care metrics to assess their Medicaid programs, states are prohibited from using quality measures to establish an irrebuttable presumption regarding either the medical necessity or the amount of Medicaid coverage that a child receives.<sup>212</sup> Moving forward, policy makers will need to balance scientific advancements against the need to make individual, child-specific coverage decisions.

3. *Improving family-centered, home and community-based EPSDT for children with special health care needs*

More than thirteen million children, eighteen percent of the entire U.S. child population have special health care needs.<sup>213</sup> Medicaid covers about half of children with special health care needs.<sup>214</sup> Children with special health care needs have, or are at increased risk of having, one or more chronic physical, developmental, or behavioral condition.<sup>215</sup> Thus, these children need more health care, both inpatient and outpatient, than other children.<sup>216</sup> Yet, nearly twenty percent of families with a special needs child report at least one unmet health need, such as in-home nursing, preventive care, or prescription coverage.<sup>217</sup> Nearly half of families of children with special health care needs experience issues related to their children's needs, including unmet medical needs, financial problems, and reduced employment.<sup>218</sup>

Due to medical and treatment advances, family-centered, in-home care can enable children with special health needs to achieve improved health

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<sup>211</sup> See 42 U.S.C. § 1320b-9a(h) (prohibiting use of quality measure to establish an irrebuttable presumption regarding either the medical necessity or amount for Medicaid or CHIP); *id.* at § 1320b-9a(b)(7) (stating that use of pediatric quality measures does not support restriction of coverage to only evidence-based services).

<sup>212</sup> *Id.*

<sup>213</sup> See CINDY MANN ET AL., MANATT HEALTH, KEEPING MEDICAID'S PROMISE: STRENGTHENING ACCESS TO SERVICES FOR CHILDREN WITH SPECIAL HEALTH CARE NEEDS 4 (2019) (discussing health care needs and challenges facing children with special health needs and offering best practices for addressing them); *see also, e.g.*, MARYBETH MUSUMECI & PRIYA CHIDAMBARAM, KAISER FAM. FOUND., ISSUE BRIEF: MEDICAID'S ROLE FOR CHILDREN WITH SPECIAL HEALTH CARE NEEDS: A LOOK AT ELIGIBILITY, SERVICES, AND SPENDING 1 (2019) (assessing the extent to which Medicaid provides coverage for children with special needs).

<sup>214</sup> MANN ET AL., *supra* note 213, at 4.

<sup>215</sup> Jane Perkins & Rishi Agrawal, *Protecting Rights of Children with Medical Complexity in an Era of Spending Reduction*, 141 PEDIATRICS S242, S243 (2018).

<sup>216</sup> MANN ET AL., *supra* note 213, at 4.

<sup>217</sup> *Id.* at 5.

<sup>218</sup> Perkins & Agrawal, *supra* note 215.

outcomes and avoid institutional care.<sup>219</sup> Unfortunately, state Medicaid programs are not adequately arranging for and ensuring coverage of the necessary home and community-based care that these children need.<sup>220</sup> These problems must be addressed.

DHHS can assist states by providing guidance to state Medicaid agencies on Medicaid and EPSDT coverage requirements as they relate specifically to children with special needs.<sup>221</sup> The agency also needs to clarify for all stakeholders how Medicaid EPSDT requirements relate to other federal laws, such as the ADA, which affords additional protections to children with special health care needs.<sup>222</sup>

It will also be important to maintain access to court for families and children when policy makers are not addressing systemic, ongoing problems. Carefully structured litigation has produced court orders and settlements that have improved the availability of community-based services for children with special health needs.<sup>223</sup> *Rosie D. v. Romney*, for example, focused on EPSDT's periodic screening and treatment provisions to require the State of Massachusetts to implement a state-of-the-art system for providing screening, service coordination, as well as crisis and home-based services for children with serious emotional disturbances.<sup>224</sup> Similarly, *Katie A., ex rel. Ludin v. Los Angeles County*, focused on EPSDT requirements—to “arrange for” the treatments that children need—and required the State of California to ensure that children in the foster care system were receiving intensive behavioral services, including therapeutic foster care services.<sup>225</sup> Courts are also enforcing these EPSDT provisions and the Americans with Disabilities Act

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<sup>219</sup> See Carolyn C. Foster et al., *Home Health Care for Children with Medical Complexity: Workforce Gaps, Policy and Future Directions*, 38 HEALTH AFFS. 987, 990 (2019) (discussing care coordination and other reform to ensure children with medically complex conditions obtain needed in-home care).

<sup>220</sup> MANN ET AL., *supra* note 213, at 7.

<sup>221</sup> See DEP'T OF HEALTH & HUM. SERVS., CMS INFORMATIONAL BULLETIN: CLARIFICATION OF MEDICAID COVERAGE OF SERVICES TO CHILDREN WITH AUTISM (2014), (describing coverage pathways, including EPSDT requirements).

<sup>222</sup> See *generally* Letter from Timothy Westmoreland, *supra* note 124 (discussing EPSDT-ADA interplay).

<sup>223</sup> *Rosie D. v. Romney*, 410 F. Supp. 2d, 18, 52–53 (D. Mass. 2006) (regarding 42 U.S.C. § 1396a(a)(43)).

<sup>224</sup> *Id.*

<sup>225</sup> *Katie A., ex rel. Ludin v. Los Angeles Cnty.*, 481 F.3d 1150 (9th Cir. 2007) *rev'g*, 433 F. Supp. 2d 1065 (C.D. Cal. 2006) (regarding 42 U.S.C. § 1396a(a)(43)(C)).

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to require coverage of in-home nursing services needed by children with medically complex conditions.<sup>226</sup>

4. *Using data to hold policy makers and managed care plans accountable*

CMS and states collect and maintain a trove of valuable data about children's health that can provide a picture of how well states and managed care plans are doing to deliver EPSDT services.<sup>227</sup> This data not only allows states to hold managed care plans accountable, but it can help CMS ensure that states are fulfilling their responsibility to ensure that the managed care system complies with Medicaid law and provides required services.<sup>228</sup> Moreover, there are opportunities to improve the quality of the data to provide an even clearer picture of a states' performance. As discussed above, the Form 416 is readily available from CMS and provides a quarter century of historic data on delivery of key elements of EPSDT.<sup>229</sup> And, CMS already publishes some results from the Child Core Set of Children's Health Quality Measures for those states who report them.<sup>230</sup> There is no current mandatory reporting requirement to report such data, however, beginning 2024, this information must be reported by all states including the District of Columbia.<sup>231</sup> Moreover, the user-friendly presentation of this data in the

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<sup>226</sup> See, e.g., *O.B. v. Norwood*, 838 F.3d 837, 840 (7th Cir. 2016), *aff'g*, 170 F. Supp. 3d 1186 (N.D. Ill. 2016) (enforcing Medicaid EPSDT "arrange for" provisions to require coverage of in-home shift nursing for children with medically complex conditions); *I.N. v. Kent*, No. C 18-03099 WHA, 2019 WL 1516785, at 4 (N.D. Cal. Apr. 7, 2019) (granting preliminary approval of class settlement requiring Medicaid agency to designate case management service providers for children with medically complex conditions who need in-home private duty nursing services); *A.H.R. v. Wash. State Health Care Auth.*, 469 F. Supp. 3d 1018, 1019 (W.D. Wash. 2016) (finding state failed to "arrange for" in-home private duty nursing services needed by children with medically complex conditions which likely violated EPSDT and the ADA).

<sup>227</sup> *Early and Periodic Screening*, *supra* note 134.

<sup>228</sup> See *Data for Program Accountability and Policy Development: Managed Care*, MEDICAID & CHIP PAYMENT & ACCESS COMMISSION, <https://www.macpac.gov/subtopic/data-for-program-accountability-and-policy-development/> (describing how managed care data enables oversight and accountability) (last visited on June 2, 2021).

<sup>229</sup> *Id.*

<sup>230</sup> *2021 Core Set of Children's Healthcare Quality Measures for Medicaid and CHIP 1-2 (2021)*, CTRS. FOR MEDICARE & MEDICAID SERVS. (2021), <https://www.medicaid.gov/medicaid/quality-of-care/downloads/2021-child-core-set.pdf>.

<sup>231</sup> *CMCS Informational Bulletin: 2021 Updates to the Child and Adult Core Health Care Quality Measurement Sets 2*, DEPT. OF HEALTH & HUM. SERVS., (2021), <https://www.medicaid.gov/federal-policy-guidance/downloads/cib111920.pdf>.

Scorecard makes it easy to assess a state's performance on selected measures.<sup>232</sup> However, CMS can and should do more.

All states reported at least one measure from the Child Core Set in 2019 and forty-nine reported on at least half those measures.<sup>233</sup> Unfortunately, CMS released data only on measures reported by at least twenty-five states and only those that met standards for data quality.<sup>234</sup> Mandating collection of the Core Set is a good start; however, CMS should release all measures that meet its standards and redouble efforts to ensure that data quality standards are met or, release measures with clear explanation as to why the measure collection did not meet data quality standards. In addition, CMS should strengthen and improve standards on collecting race, ethnicity, and language-based utilization data, to enable policy makers and health care providers better understand and address underlying health disparities.<sup>235</sup>

Moreover, while collection and reporting of HEDIS measures is not mandated by CMS, a number of states require their Medicaid managed care organizations to do so and make the measures available on the web.<sup>236</sup> CMS can also mandate collecting and reporting HEDIS, as it does in Medicare.<sup>237</sup> Such efforts will make information about the quality of care delivered to the millions of children enrolled in managed care plans available for all states using Medicaid managed care.

Armed with this data, Medicaid beneficiaries, advocates, and providers, along with the press, and other members of the public would have the means to monitor and hold managed care plans and state Medicaid agencies accountable for fulfilling their responsibilities under the Medicaid

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<sup>232</sup> *State Overviews: State Profiles*, MEDICAID.GOV, <https://www.medicaid.gov/state-overviews/state-profiles/index.html> (last visited Apr. 23, 2021).

<sup>233</sup> CTRS. FOR MEDICARE & MEDICAID SERVS., *supra* note 176.

<sup>234</sup> *Id.*

<sup>235</sup> Elizabeth Lukanen & Emily Zylla, *Exploring Strategies to Fill Gaps in Medicaid Race, Ethnicity, and Language Data*, ST. HEALTH VALUE STRATEGIES (Oct. 1, 2020), <https://www.shvs.org/exploring-strategies-to-fill-gaps-in-medicaid-race-ethnicity-and-language-data/>.

<sup>236</sup> *See, e.g., Performance Measure Data Submissions for Medicaid*, FLA. AGENCY FOR HEALTH CARE ADMIN., [https://ahca.myflorida.com/medicaid/quality\\_mc/submission.shtml](https://ahca.myflorida.com/medicaid/quality_mc/submission.shtml) (last visited Apr. 23, 2021) (listing performance measures for state Medicaid program); *Washington State HEDIS Quality Measures (Claims Based) – Data Dashboard*, WASH. OFF. FIN. MGMT., <https://ofm.wa.gov/washington-data-research/health-care/health-care-access-utilization-and-quality/washington-state-hedis-quality-measures-claims-based-data-dashboard> (last visited Apr. 23, 2021).

<sup>237</sup> CMS Quality Improvement Program, 42 C.F.R. § 422.152 (2020).

program.<sup>238</sup> Moreover, CMS can do more with this data to drive improvement in child health. A recent report from the U.S. Government Accountability Office (GAO) faults CMS for failing to use available Form 416 and Child Core Set data to improve performance.<sup>239</sup> It recommended that the agency set performance measure targets, evaluate progress towards these targets, and take action to resolve identified issues.<sup>240</sup> CMS did not agree with all of these findings and did not agree to take the recommended actions and claimed that the actions it had taken and the activities it already conducts are sufficient to ensure quality.<sup>241</sup> It remains to be seen whether EPSDT performance does improve, despite CMS rejecting the GAO's recommendations. If it does not, perhaps a new administration and leadership will bring a new direction and commitment to imposing specific standards for delivery of services and requiring states to adhere to those standards.

## VI. CONCLUSION

EPSDT is the gold standard benefit for children and youth. It must continue to adapt to a changing world and strengthen if it is to embody twenty-first century standards. Not only must CMS and state Medicaid agencies ensure that preventive screening services are widely available, but they must also expand EPSDT to move beyond medical care and support children with special needs to focus on community-based services and linking families to the services they need to focus on social determinants of health. Finally, federal and state agencies must ensure that policy makers, providers, and beneficiaries have access to accurate and timely data that can be used to chart successes and address health inequities. EPSDT has established the foundation for a nation of healthy children. Policy makers, providers, and advocates for children's health must build on this foundation to bring EPSDT's promise to reality.

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<sup>238</sup> See Wayne Turner et al., *A Guide to Oversight, Transparency, and Accountability in Medicaid Managed Care* (Jane Perkins et al., eds., 2015) (providing an in-depth discussion of how advocates can use data to monitor Medicaid managed care performance and push for improvements).

<sup>239</sup> U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 149, at 24.

<sup>240</sup> *Id.*

<sup>241</sup> *Id.* at 31–32.







REPORT FEB 3, 2022

# How North Carolina Is Using Medicaid To Address Social Determinants of Health

North Carolina has developed a large-scale, comprehensive approach to addressing unmet nonmedical needs—including food, housing, and transportation insecurity—through Medicaid.

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Strengthening Health, Health, Social Determinants of Health, +2 More



A view of Charlotte, North Carolina, during the coronavirus pandemic in March 2020. (Getty/Peter Zay/Anadolu Agency)

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“How North Carolina is Addressing Social Determinants of Health Through Medicaid” by Nicole Rapfogel and Jill Rosenthal

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## Introduction and summary

Medicaid—a joint federal-state partnership that provides health coverage primarily to low-income people and families in America—has been one of the most effective initiatives at improving health and addressing health disparities in the country.<sup>1</sup> Numerous studies have associated Medicaid coverage with better health outcomes and lower mortality rates.<sup>2</sup> However, experts are increasingly concluding that clinical interventions alone are not sufficient to combat insidious health inequities and give low-income people opportunities to achieve health and well-being.<sup>3</sup>

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Lower-income people often face social and structural barriers to achieving health, including food and housing insecurity; access to quality education; and access to clean air, land, and water. Intersecting identities such as race, gender, sexual orientation, and immigration status further compound these social needs.<sup>4</sup> This report considers the health landscape in North Carolina, where many residents have social needs that put them at high risk of health inequities:<sup>5</sup>

- More than 1.2 million North Carolinians are unable to access affordable housing.
- North Carolina has the eighth-highest food insecurity rate among all U.S. states.
- In North Carolina, 1 in 5 North Carolina children live in food-insecure households, and nearly 1 in 4 have had adverse childhood experiences, potentially traumatic events that occur in childhood.<sup>6</sup>
- Nearly 1 in 2 women in North Carolina have experienced intimate partner violence.

To respond to the unmet social needs affecting residents' health, North Carolina has developed a pilot program, the Healthy Opportunities Pilots, to leverage opportunities for flexibility offered by the Centers for Medicare and Medicaid Services (CMS) that allow state governments to use Medicaid dollars to address social determinants of health.<sup>7</sup> This report provides background on the Medicaid program and considers the merits of the Healthy Opportunities Pilots program.

## Background

Medicaid coverage is associated with increased access to care and preventive services, improved health status, decreased hospital and emergency department use, and decreased mortality rates.<sup>8</sup> Furthermore, the Affordable Care Act's Medicaid expansion, which provided Medicaid coverage to 13 million additional adults, has led to fewer public safety offenses, fewer evictions, and reduced medical debt.<sup>9</sup>

### Medicaid is a safety net program that provides flexibility for states

State Medicaid programs offer several flexibility opportunities that allow states to meet the needs of their residents. Section 1115 waivers, for example, allow states to modify Medicaid coverage, payment, and other requirements, which enables them to address a more robust set of needs than traditional clinical care.<sup>10</sup> Contracts with managed care organizations (MCOs) and accountable care organizations (ACOs) also create opportunities for health care payers to coordinate medical and nonmedical services more closely.<sup>11</sup> North Carolina was able to leverage a Section 1115 waiver to create a standardized screening initiative, referral platform, and pilot program to link social and medical services and use Medicaid funding to address social determinants of health.<sup>12</sup>

While Medicaid has been a lifeline to improve access to care, especially in the 38 states that have expanded it—of which North Carolina is not one—numerous nonclinical, or social, determinants weigh heavily on health care access and health outcomes. To address whole-person health, states must alter their approaches to target these social and economic factors.

### Social determinants of health play a key role in health outcomes and access to services

According to a 2016 article in the *American Journal of Preventive Medicine*, clinical care only accounts for 10 percent to 20 percent of health outcomes.<sup>13</sup> The remaining components of health include socioeconomic factors, physical environment, genes and biology, and health behaviors.<sup>14</sup> Social determinants of health are the nonclinical factors among these things, such as one's social and community context, education level, neighborhood and environment, health care access, and economic stability.<sup>15</sup> For example, people with more educational attainment are more likely to be healthier and live longer than those with lower educational attainment.<sup>16</sup> Notably, more than 1 in 3 Medicaid enrollees have less than a high school education.<sup>17</sup>

Traditional health policies that improve coverage or quality of care often only solve one piece of a complex puzzle; to create meaningful and lasting change and address persistent health inequities, policymakers must also focus on the social and economic factors underlying disparities. Strong evidence confirms the benefits of health care and community-based organizations working together to address social needs that affect health, including significant cost savings and high returns on investment.<sup>18</sup>



To create meaningful and lasting change and address persistent health inequities, policymakers must also focus on the social and economic factors underlying disparities.

Many interventions to address the social determinants of health emphasize a focus on individual health-related social needs. For example, a program may offer healthy meal deliveries to someone facing food insecurity or outfit a new air conditioner in an apartment whose resident has asthma. While these interventions are necessary, social determinants of health also operate on a community, structural level.<sup>19</sup> To maximize the benefits of federal spending, policymakers must address both individual and structural social needs in state health care approaches.

## North Carolina's Medicaid program

Using a Section 1115 waiver, North Carolina has undertaken a major effort to put Medicaid dollars toward evidence-based interventions to address social determinants of health: the Healthy Opportunities Pilots program.

### Healthy Opportunities Pilots program

North Carolina's interventions fall into four domains: food, housing, transportation, and interpersonal violence/toxic stress. The CMS has authorized a significant investment in the Healthy Opportunities Pilots program in two to four regions of the state as well as in robust evaluation: \$650 million over five years.

To qualify for participation in the program, a person needs to meet at least one needs-based criterion and demonstrate at least one social risk factor related to the four intervention domains.<sup>20</sup> The needs-based criteria refer to health risk factors including chronic conditions, frequent hospital use, high-risk pregnancies, and adverse childhood experiences. (see text box)

#### **North Carolina Healthy Opportunities Pilots program eligibility factors and services<sup>21</sup>**

To qualify for the Healthy Opportunities Pilots program, participants must demonstrate at least one health risk factor and one social risk factor. Pilot services correspond to needs associated with each social risk factor.

##### **Health risk factors:**

- Adults with two or more chronic conditions or repeated emergency department use or hospital admissions
- High-risk pregnant women
- Infants and children at high risk or with one or more chronic conditions

**Social risk factors and pilot services to address them:**

- Homelessness and housing insecurity
  - Pilot services: tenancy support; housing quality and safety; legal referrals; security deposit and first month's rent; and short-term post-hospitalization housing assistance
- Food insecurity
  - Pilot services: food support and meal delivery
- Transportation insecurity
  - Pilot services: nonemergency health-related transportation
- Risk of witnessing or experiencing interpersonal violence
  - Pilot services: interpersonal violence-related transportation, legal referrals, and parent-child supports

Healthy Opportunities Pilots program funds are also used to build capacity, establish network leads, and support human service organizations in delivering social services.<sup>22</sup> Network leads are entities with deep community roots that “facilitate collaboration and build partnerships across healthcare payers and human service providers.”<sup>23</sup> One network lead operates in each pilot region. To deliver their services, human service organizations contract with their region’s network lead.

Addressing unmet nonclinical needs may confer savings, potentially appeasing state budgetary concerns.<sup>24</sup> If the North Carolina program sees savings and/or improved outcomes in any region, it may become much easier for other regions in the state—and other states—to replicate the program. If the pilot program is successful and cost effective, the CMS can decide to expand its duration and scope.

**Transition from the fee-for-service model**

Prior to launching its Medicaid pilot program, North Carolina began to transition most of its Medicaid beneficiaries from fee-for-service Medicaid to managed care.<sup>25</sup> Fee-for-service arrangements pay health care providers for each service performed, while managed care models refer to contracts between Medicaid and managed care organizations (MCOs) that pay an MCO a set capitated payment for services per member per month.<sup>26</sup> Value-based purchasing arrangements, which link payments to provider performance and can include MCOs, provide financial flexibility for health care organizations to address social needs.<sup>27</sup> Conversely, fee-for-service models are not as well suited to cross-sector collaboration, as they only pay for specific services and may contribute to fragmented health care delivery systems.<sup>28</sup>

State legislation required North Carolina to contract with 4 to 12 prepaid health plans to deliver managed care across six regions, emphasizing case management and whole-person health.<sup>29</sup> Prepaid health plans must provide care management services with network leads to help beneficiaries access human service organizations’ nonmedical interventions.<sup>30</sup> Managed care plans took effect July 1, 2021.<sup>31</sup> As of October 2021, nearly 1.7 million North Carolina Medicaid beneficiaries were enrolled in managed care plans—more than two-thirds of Medicaid enrollees in the state.<sup>32</sup>

In restructuring its Medicaid program, the North Carolina Department of Health and Human Services (NCDHHS) embedded its screening, referral, and care management systems in its managed care programs.<sup>33</sup> As the state implements and evaluates the program, the NCDHHS intends to increasingly link payments to performance compared with health and cost benchmarks.<sup>34</sup> It will initially provide fee-for-service and bundled payments to prepaid health plans, which will pay network leads. Network leads will subsequently use the approved fee schedule to pay human service organizations for delivering Healthy Opportunities Pilots program services. Each year of the demonstration, the NCDHHS is responsible for implementing more comprehensive value-based incentive programs and moving away from fee-for-service payments.

### **Payment to social service providers**

Because Medicaid traditionally pays for clinical health services, North Carolina had to first conduct a robust analysis to determine how to pay for social services. To determine the fee schedule, the NCDHHS “conducted a rigorous and transparent year-long process to develop service definitions, gather data on cost inputs, and identify reference points for pricing when available.”<sup>35</sup> It looked at pricing information from 80 organizations, conducted focus groups with North Carolina-based human service organizations, and sought public feedback before submitting the fee schedule to the CMS. The fee schedule clearly describes and prices services. (see Table 1) Payment rates reflect the rate paid to the human service organization that provides the service and include administrative and other costs associated with delivering the service.

**Table 1**



## North Carolina Healthy Opportunities Pilots services fee schedule

Service	Unit of service
<i>Housing</i>	
Inspection for housing safety and quality	Cost-based reimbursement cap
Housing move-in support	Cost-based reimbursement cap
<i>Interpersonal violence (IPV)/toxic stress</i>	
IPV case management services	Per member per month
Home visiting services	One home visit
<i>Food</i>	
Evidence-based group nutrition class	One class
Healthy food box (delivered)	One food box
<i>Transportation</i>	
Reimbursement for health-related public transportation	Cost-based reimbursement cap
Reimbursement for health-related private transportation	Cost-based reimbursement cap

Table: Center for American Progress • Source: North Carolina Department of Health and Human Services "Request for Proposal (RFP)" (Raleigh, NC: 2019), available at <https://files.nc.gov/ncdhhs/2019/09/11/2019-09-11-Addendum-7-Revisions-to-the-RFP-TO-POST.pdf>.

### Standardized social need screenings

Using a Section 1115 Medicaid waiver, the NCDHHS created a list of nine standard screening questions for health care providers to determine if patients have unaddressed social needs. The screening tool asks about food, housing and utilities, transportation, and interpersonal safety, with two optional questions about immediate need. Providers can then use the NCCARE360 referral system described below to connect the patient with an organization that provides services or to determine eligibility for the Healthy Opportunities Pilots, if the program is operating in their region.

### Connecting health and social services through NCCARE360

NCCARE360 is a statewide resource database and referral platform that connects community-based organizations, social service agencies, and health care providers to address social determinants of health.<sup>36</sup> At the point of health care service, providers can use standardized screening questions to determine patients' social and economic needs and connect them with organizations to

help.<sup>37</sup> The referral system operates as a closed loop so that providers and organizations can track accepted referrals and outcomes for each participant.

## +2.2K

Organizations participating in NCCARE360

## +41K

Unique individuals served by NCCARE360 in 2020

## 8K

Requests for care coordination services responded to by NCCARE360 in 2020

### An example beneficiary's experience

Imagine an adult patient with a chronic condition who is admitted to an emergency department.\* The patient is treated; at the point of service, the health care provider asks the standardized screening questions. The patient answers “Yes” to the question: “Within the past 12 months, did you worry that your food would run out before you got money to buy more?” This affirmative response prompts the hospital to identify the patient as food insecure. If the patient does not live in one of the pilot regions or does not qualify for pilot services, the provider can connect them to food banks, nutrition coaching, and other food security services through NCCARE360. The provider can then track the referral to see if it was accepted by the receiving organization and if the patient accessed the help they needed.

If the patient does live in a Healthy Opportunities Pilots region and has a nutrition-related chronic condition, the provider can use NCCARE360 to refer the patient for pilot services. For example, if the patient is unable to purchase healthy foods or access a food distribution site, they can receive delivered healthy food boxes at no cost. The registered dietician, box packaging staff, and delivery staff would be reimbursed for their services through Medicaid, as would the cost of the food.

\* This text box builds on examples given by Zachary Wortman, chief of staff at the NCDHHS; Elizabeth Cuervo Tilson, state health director and chief medical officer at the NCDHHS; and Mandy Krauthamer Cohen, former secretary of the NCDHHS, in their 2020 Health Affairs article.<sup>38</sup>

### Funding

A key component of North Carolina’s Medicaid approach is its funding mechanism. By using a Section 1115 waiver, North Carolina received \$650 million over five years in federal Medicaid funds to support its endeavor to connect patients to social services, \$100 million of which can be used for capacity building. Critically, while waivers typically require budget neutrality, pilot services are considered “hypothetical,” in that the CMS assumes this spending would be permissible for federal funding in other parts of the Medicaid program, thereby waiving the budget neutrality component.<sup>39</sup> The waived budget neutrality clauses contain exceptions for certain waiver populations and

programs, such as aged, blind, and disabled beneficiaries and enhanced case management services.<sup>40</sup> North Carolina bears the risk for per capita costs of demonstration but not the risk for demonstration population size, which can change drastically depending on economic conditions.<sup>41</sup>

## Implementation

The NCCARE360 platform has accrued a substantial number of participants since it launched in select North Carolina counties in May 2019.<sup>42</sup> The innovative platform is now functional in all 100 counties, with more than 2,200 organizations participating.<sup>43</sup> Medicaid MCOs are required to participate in NCCARE360 once it is operating in their counties. Due to hospital consolidation, much of the market is concentrated, meaning that once a few health systems join NCCARE360, much of the service area may be covered.<sup>44</sup> For example, Duke Health,<sup>45</sup> UNC Health,<sup>46</sup> and WakeMed<sup>47</sup> have all adopted NCCARE360—and accrue 30.5 percent, 28.0 percent, and 24.5 percent of their primary service areas, respectively, primarily in the Research Triangle area (i.e., Durham, Chapel Hill, and Raleigh).<sup>48</sup>

### Lessons learned from the COVID-19 Support Services Program

While the Healthy Opportunities Pilots program is only beginning to launch its service provision components, North Carolina learned some important lessons in 2020 through its Support Services Program (SSP), which offered food and financial assistance to people in select “hot spot” counties that were quarantining, isolating, or sheltering in place due to COVID-19 exposure or risk.<sup>49</sup> Using the NCCARE360 referral platform and paired with a newly developed Community Health Worker program, the SSP partnered with local community-based organizations to deliver food to eligible individuals’ homes and provided financial supports to struggling residents.<sup>50</sup> The SSP used a combination of Coronavirus Aid, Relief, and Economic Security (CARES) Act and state funding to provide technical assistance and deliver these services.<sup>51</sup>

While temporary, the SSP was one initiative embedded in a broader “ecosystem of support.”<sup>52</sup> The NCDHHS used feedback and metrics for individual components of the SSP to improve programs across the ecosystem.<sup>53</sup> For example, the SSP allowed the NCDHHS to develop infrastructure and address challenges with reimbursement, technology access, language accessibility, and diverse population reach that will ultimately aid smoother rollout of Healthy Opportunities Pilots program services.<sup>54</sup>

The NCDHHS has already begun to make midcourse adjustments. In response to the limited initial uptake of the NCCARE360 platform, the NCDHHS changed the service from a pay-per-license structure to a flat fee for unlimited use charged to large health systems and payers.<sup>55</sup> Social service and community organizations do not pay to participate. Community organizations that receive referrals initially faced a referral acceptance rate of 56 percent, due in part to the referring organization’s limited understanding of eligibility criteria for services requested.<sup>56</sup> Nonetheless, in 2020, NCCARE360 served more than 41,000 unique individuals, up from 1,200 in the year prior.<sup>57</sup>



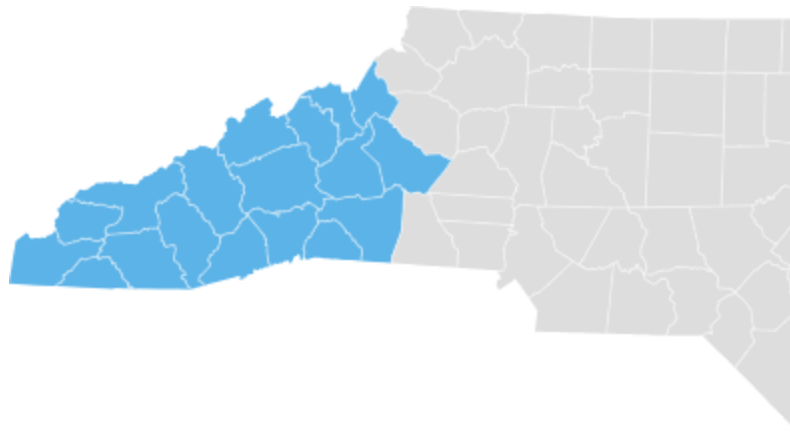
By spring 2022, the Healthy Opportunities Pilots program is expected to be operating in three regions of the state: one in western North Carolina, led by Impact Health (Dogwood Health Trust); the second in southern North Carolina, led by Community Care of the Lower Cape Fear; and a third in eastern-central North Carolina, led by Access East Inc.<sup>58</sup> (see Figure 1)

Figure 1



## North Carolina Healthy Opportunities Pilots program network lead organizations, counties, and population size

Access East Inc.   Community Care of the Lower Cape Fear Health



*Hover or click to see more info.*

Map: Center for American Progress • Source: North Carolina Department of Health Services, "DHHS Announces Three Regions for Medicaid Healthy Opportunities Pilot Milestone for Nation's First Comprehensive Medicaid Program to Address Non-Medical Health" Press release, May 27, 2021, available at <https://www.ncdhhs.gov/news/r>

### Evaluation criteria

The NCDHHS will evaluate the pilot program rigorously. Its key learning objectives include evaluating how effective the pilot program is at improving health outcomes and lowering health care costs, leveraging evaluation findings to sustain cost-effective interventions in the Medicaid program, and supporting the sustainability and capacity of delivering nonmedical services.<sup>59</sup> More specifically, to evaluate cost savings, the NCDHHS will calculate total expenditures to Medicaid, out-of-pocket costs for Medicaid enrollees, and costs of Medicaid-funded services and components.<sup>60</sup> The NCDHHS anticipates effective delivery of pilot services, increased screenings for social risk factors, more connections to social services, decreased social risk factors, improved health care outcomes, and lower health care costs.<sup>61</sup> Evaluations will occur in real time to make any midcourse adjustments and improve the delivery of effective services, and to inform a summative evaluation to assess the global impact of the pilot program.<sup>62</sup>



## Cost savings associated with addressing social needs

Addressing the social determinants of health not only improves equity of care, but it can also result in savings. Investing in the nonclinical factors that are critical determinants of a person's health status can reduce costs by preventing poorer health outcomes, lowering the number of hospital admissions and readmissions, and mitigating the emergency care needed to address acute health crises. For example, a Massachusetts program that coordinates social services for patients with chronic conditions and disabilities resulted in 55 percent fewer hospital days per 1,000 members than those incurred by comparable patients who did not access services.<sup>63</sup> Furthermore, researchers estimated that one community health worker intervention would result in a \$2.47 return on every dollar invested.<sup>64</sup> A social service referral program operating in 14 states resulted in 10 percent fewer expenditures for a group that reported met social needs, compared with a group that did not have their social needs met.<sup>65</sup> While the Healthy Opportunities Pilots program has not yet produced enough evidence to determine actual cost savings, many North Carolina initiatives previously conducted in the Healthy Opportunities Pilots program's four domains—interpersonal violence and toxic stress, housing, food, and transportation—have proved cost effective.

The NCDHHS anticipates effective delivery of pilot services, increased screenings for social risk factors, more connections to social services, decreased social risk factors, improved health care outcomes, and lower health care costs.

## Interpersonal violence and toxic stress

Much evidence demonstrates the economic value of addressing interpersonal violence and toxic stress in health care. One 2011 study found that the per-woman costs associated with ongoing domestic violence were more than \$13,000 per year—about \$16,000 today in 2021 purchasing power.<sup>66</sup> A 2012 study of quality interpersonal violence prevention and intervention programs in Alberta, Canada, estimated significant cost savings: There was as much as a 600 percent return on investment.<sup>67</sup> A recent systematic review found that, among 10 studies that conducted cost-benefit analyses of violence intervention programs, all studies reported positive cost-benefit ratios.<sup>68</sup> Furthermore, another study estimated cost savings from hospital-based violence intervention programs ranging from nearly \$83,000 to more than \$4 million,<sup>69</sup> and an additional study found that hospital-based violence intervention programs could save state Medicaid programs \$69 million annually among the Medicaid expansion population.<sup>70</sup>

## Housing

Housing initiatives can confer significant savings. A homeless medical respite pilot program in the southeastern United States resulted in a nearly 50 percent reduction in health care charges compared with the previous year.<sup>71</sup> One hospital in North Carolina started a program to connect homeless patients with housing resources that resulted in a 42 percent to 61 percent decrease in health

care costs of participants and a 35 percent decrease in emergency department use.<sup>72</sup>

## Food

Addressing malnutrition can also result in cost savings. One Chicago-based accountable care organization created a malnutrition screening initiative and supplemental nutrition program that resulted in \$3,800 in net savings per patient, totaling nearly \$5 million.<sup>73</sup> One early nutrition therapy initiative in Colombia resulted in a near 36 percent decrease in costs, resulting from lower hospital costs, reduced readmission rates, and fewer complications.<sup>74</sup>

## Transportation

Transportation is key to patients' ability to access medical care and can result in additional cost savings. A 2019 study modeled the economic benefit of nonemergency medical transportation initiatives via digital transportation networks, including ride-sharing platforms such as Uber and Lyft, for transportation-disadvantaged Medicaid beneficiaries and estimated net savings between \$4.3 billion and \$4.8 billion.<sup>75</sup> Furthermore, a 2018 study of return on investment associated with nonemergency medical transportation for people receiving dialysis treatments, accessing diabetes-related wound care, and seeking substance use disorder care found an average return on investment of \$1,335 per member per month.<sup>76</sup>

## Takeaways for other states

North Carolina's innovative Healthy Opportunities Pilots program raises important considerations for other states considering developing more robust programs to address social determinants of health. Following North Carolina's lead, states can use federal Medicaid funds to alleviate budgetary concerns, build on existing coordinated care efforts and community ties, and develop programs for maximal impact.

## Leverage federal Medicaid dollars

Leveraging federal Medicaid funds can mitigate some state budgetary constraints. Addressing social determinants of health may require significant upfront investment; because social determinant of health initiatives seek to address structural lack of access and inequities, it may take some time to begin to achieve savings. Leveraging federal funding to implement these programs may help states sustain them long enough to have a substantial impact. The Healthy Opportunities Pilots program will evaluate total expenditures to Medicaid, out-of-pocket costs to Medicaid enrollees, and costs of Medicaid-funded services and components to help determine if the program results in cost savings.<sup>77</sup>

North Carolina's Section 1115 waiver provides \$650 million in federal funding and reserves \$100 million in funding for capacity building. North Carolina uses Medicaid funds to pay for services, incentivize quality, and absorb the administrative costs of implementation. To begin, the NCDHHS sends funds to prepaid health plans, which then flow to network leads to reach human service organizations at the price outlined in the fee schedule.<sup>78</sup> Because this funding is initially operating under a fee-for-service or bundled payment model, North Carolina can gather the data needed to determine and transition to value-based payments.<sup>79</sup>

## Build on coordinated care efforts

North Carolina's first step toward treating whole-person health and addressing social needs was to commit to transitioning away from a fee-for-service Medicaid model. Several value-based payment models are conducive to paying for social services, including capitation, global budgets, and ACOs.<sup>80</sup> The North Carolina General Assembly passed legislation in 2015 directing the NCDHHS to transition Medicaid from fee-for-service to managed care.<sup>81</sup> Most Medicaid beneficiaries began transitioning to managed care on July 1, 2021.<sup>82</sup> By paying plans a monthly rate per member to provide care, North Carolina's Medicaid program enables them to include nonmedical services in their covered services.

However, North Carolina was careful not to take on more change than it could manage. The state built on its existing fee-for-service infrastructure to develop a fee schedule for payments to human service organizations. By beginning with the existing structure but embedding specific requirements to transition to a value-based payment model, North Carolina did not venture into impossibly ambitious territory. Instead, the state recognized its starting conditions and mapped out a concrete plan that built on that infrastructure. As other states consider robust reform, they should note this important lesson.

Critically, many states have already implemented value-based payment models upon which they can build: 69 percent of Medicaid beneficiaries nationally are enrolled in managed care.<sup>83</sup> Only four states—Alaska, Connecticut, Vermont, and Wyoming—use fee-for-service Medicaid models exclusively.<sup>84</sup> Furthermore, 24 states screen Medicaid enrollees for social needs, and 28 states refer enrollees to social services.<sup>85</sup> In a 2019 survey by the Institute for Medicaid Innovation, all surveyed managed care organizations offered coverage for some social determinant of health activities for some enrollees.<sup>86</sup>

However, few states currently address social needs to the extent that North Carolina does: Just 11 states use standardized screening questions, and only five states track the outcome of referrals. The states that already operate value-based payments may have the infrastructure needed to more easily develop more robust social needs programs.

### What are other states doing?

While North Carolina's approach is a significant advancement, several other states are also making headway in addressing nonmedical needs through Medicaid. Eighteen states and Washington, D.C., "have taken at least foundational steps toward statewide VBP [value-based payment] initiatives that directly address SDoH [social determinants of health] needs."<sup>87</sup> Yet only a few states specify payment reform or funding for activities that address social determinants of health.<sup>88</sup> For example, Oregon's coordinated care organizations (CCOs), networks of providers who work together to serve Medicaid beneficiaries,<sup>89</sup> are required in their contracts to make investments in "health-related services" (HRS) to provide support for social determinants of health.<sup>90</sup> This HRS spending can count toward the CCOs' medical loss ratio—a required proportion of spending on health care services and quality improving activities and an element that states can also integrate into their managed care contracts.<sup>91</sup> Oregon legislation passed in 2018 requires CCOs to "spend earnings above specified threshold on services designed to address health disparities and social determinants of health."<sup>92</sup> The CCO model resulted in a 7 percent

reduction in health care expenditures, fewer avoidable emergency department visits, and improvements in quality measures.<sup>93</sup>

In Massachusetts, ACOs implemented a screening process and contracted with community-based organizations to provide nonmedical services to Medicaid beneficiaries.<sup>94</sup> Massachusetts uses a Section 1115 Medicaid waiver to apply federal funds to social services and implemented a pay-for-performance shared savings program using screening quality measures.<sup>95</sup> Minnesota and Rhode Island operate similar programs: Minnesota's Integrated Health Partnerships program uses capitated population-based payments and performance metrics to target social needs, while Rhode Island's Accountable Entities and managed care programs use value-based payments and shared saving incentives to prioritize whole-person care.<sup>96</sup>

Washington state created its Accountable Communities of Health (ACHs) program through a Section 1115 waiver. ACHs are independent, regional organizations that work with community partners to improve the health of local populations through delivery system reforms, care coordination, and community investments.<sup>97</sup> ACHs have decision-making bodies that include health care partners, community partners, and community-based organizations that provide social services.<sup>98</sup> ACHs offered significant funding for this program: nearly \$1 billion over five years, ending December 2021, for performance-based incentive payments to providers and "managed care organizations (MCOs) that support delivery system transformation efforts."<sup>99</sup> Washington is pursuing a one-year amendment and extension of its ACH program.<sup>100</sup>

Similarly, in March 2021, Pennsylvania launched its Regional Accountable Health Councils (RAHCs) program, akin to Washington's ACHs.<sup>101</sup> Each of the five RAHCs, established by the MCOs and behavioral health primary contractors in each region, will include managed care payers, providers, and community-based organizations.<sup>102</sup> RAHCs aim to address health inequities and disparities; identify and address social determinant of health needs; and promote value-based purchasing and care integration, all with an emphasis on the communities most in need.<sup>103</sup>

## **Build on existing community resources and relationships**

While understanding health through a whole-person lens that integrates social and economic factors is crucial to addressing health disparities and improving outcomes, the North Carolina Medicaid approach maintains an important distinction between health care providers and payers and human service organizations. In addressing social determinants of health and linking social services to health care, health care providers and payers should not attempt to recreate social service infrastructure.<sup>104</sup> Also key is acknowledging power imbalances that arise from this partnership and building genuine cross-sectional relationships early in the process.<sup>105</sup>

By creating infrastructure and incentives for payers and providers to refer patients to human service organizations that are already established and trusted in local communities, health care and social service providers can collaborate without sacrificing quality or expertise. Furthermore, since 27 state Medicaid programs currently partner with community-based organizations and social

service providers in their managed care contracts, states can leverage those existing partnerships to follow in North Carolina's footsteps with an expanded program.<sup>106</sup> Finally, an important element of North Carolina's approach is using federal funds to support human service organizations in building capacity to offset increased demand.<sup>107</sup> For example, North Carolina has provided technical assistance and education to human service organizations to build capacity for billing, identifying insurance status, and other processes.<sup>108</sup> This is an approach other states should consider as they expand into addressing social needs.

### **Develop infrastructure for data collection and sharing**

North Carolina's NCCARE360 referral system, developed through its Section 1115 waiver, is a critical element of programming to address social determinants of health. North Carolina developed a set of standardized screening questions that help facilitate consistent data entry. The state designed NCCARE360 to offer bidirectional information sharing among health care providers, payers, and human service organizations. The state also provided key support by integrating NC 211, an around-the-clock confidential information and referral service that provides navigators who offer users oversight and technical assistance with NCCARE360.<sup>109</sup> Users can submit navigator requests directly on the NCCARE360 platform.<sup>110</sup> In 2020, NCCARE360 navigators responded to nearly 8,000 requests for care coordination services.<sup>111</sup>

One critical element of data sharing that states must consider early in the process is privacy protections for shared data. While health data are protected by the Health Insurance Portability and Accountability Act, other social determinant information may be subject to other privacy protections. For example, some education data are protected by the Family Educational Rights and Privacy Act. States should consider their approaches to data collection, sharing, and storage mechanisms in the early stages of integrating unmet social needs into health care experiences.<sup>112</sup>

### **Think big**

North Carolina's Medicaid approach to addressing social needs is a prime example of large-scale, innovative thinking. It was a multistep process that created several levels of infrastructure to be able to carry out social need referrals and services with hundreds of millions of dollars in federal funding. As other states seek to apply a similar model, they should think critically about their own context and the large-scale operations they can develop for meaningful change. Furthermore, while addressing individual nonmedical needs is critical, states should consider how to extend these programs to address social needs on a structural level.

### **Conclusion**

North Carolina's Healthy Opportunities Pilots program is an innovative approach, as are the state's other programs to address unmet social needs through Medicaid. Integrating a standardized screening process, referral and feedback system, and enhanced programming for at-risk individuals within the Medicaid program leverages federal funding and builds on existing infrastructure. Other states seeking to improve health outcomes and reduce health disparities should take note of North Carolina's programming, consider making similarly wise investments, and monitor its evaluation closely.

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CHILDREN'S HEALTH

# An attempt to streamline mental health care for NC foster care children meets resistance

*Foster care advocates try to smooth out bumps in the NC system for getting statewide care for children in need of mental health care*



by **Rose Hoban**

June 30, 2022



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**By Rose Hoban**

A few years ago, Gaile Osborne and her husband took in several foster children.

Osborne, a special education teacher, should have been the perfect foster parent. There was one problem. Osborne and her family lived in Buncombe County. The children were originally from Alamance County.

That meant Osborne was unable to get the mental health services her foster children needed from Vaya, the local mental health management entity (known as an LME-MCO) that covers western North Carolina. All children in the state's foster program are eligible for Medicaid coverage even when families who bring them into their lives have private insurance coverage. Often the Medicaid **coverage is more comprehensive** than what a commercial plan would provide.

"I was barking at Vaya saying, you know, 'This is a Medicaid kid. This kid is now in your catchment area,'" Osborne recalled recently.

Nonetheless, she kept hearing: "I'm sorry, there's nothing we can do. I'm sorry, there's nothing we can do."

"What do you mean, there's nothing you can do?" Osborne would retort.

The reason there was "nothing" the local LME-MCO could do was because when foster children move from one county to another, they continue to receive their Medicaid mental health services from the mental health management entity in their home county.

In the case of those in Osborne's care, that was almost 200 miles away.

"You know, we desperately needed help," Osborne recalled, noting that the children in her household needed therapy. "We had nothing, not a single support."

It was, in part, because of that experience that Osborne became an advocate for foster children, getting involved with the **Foster Family Alliance of North Carolina**. Eventually she became the executive director of the organization that advocates for foster children, who receive Medicaid while they're 18 and younger and even a few years more if they choose to remain in school.

For all of her years of advocacy, though, one thing hasn't changed in Osborne's world. Namely, foster children still receive mental health services through the LME-MCOs in their home counties, no matter where they live.

A proposal moving through the General Assembly would change that, **creating a statewide Medicaid plan to cover foster children**. It would seem like a simple answer to a vexing problem, but the plan has hit roadblocks.

## Coordination of care

LME-MCOs provide mental health care for people with more needs than the average patient. **Foster kids fall squarely into that category**. They've often experienced trauma, abuse or neglect and are dealing with all of the familial problems – such as substance use and violence — that landed them in the foster care system in the first place.

They often, if not always, need some mental health services. Different LME-MCOs contract with different providers that are in their geographic areas, while the money to pay for those services flows through the LME-MCO to the people doing the actual therapies. If a child moves beyond their home area, while still getting mental health services through their home LME-MCO, the logistics can get complicated quickly. The money and the contracts remain at home, even if the child is many counties away.

Until now, the LME-MCOs haven't coordinated across geographic areas to hand off the care of a child once they are in a different region. So, a child may only be eligible to see someone who's contracted with their "home" LME-MCO.

It's been that way since the state **changed to the statewide LME-MCO system in 2013**. It's been something that has frustrated legislators for years. It's meant that foster parents often have to take time off of work, travel great distances and disrupt the lives of the children in their care to get to therapy sessions. Sometimes the distance is only one county away. Sometimes it's across the state, which – in practicality – means it just doesn't happen.

That frustrates Sen. Sydney Batch (D-Raleigh), who is a family law attorney and child welfare advocate in addition to her work in the legislature.

“For the past 10 years, LME-MCOs have been tasked with taking care of the mental health and behavioral needs of a lot of our foster youth who have high acuity care and need a significant amount of resources attributed to their well-being,” Batch told NC Health News in an interview. “Having practiced in child welfare for the past 17 years, I have seen serious concerns with regards to the way in which children move from one LME-MCO to another without having continuity of care.”

She said that the whole process would be more streamlined if the state would cover foster kids in a Medicaid plan that includes their mental health services no matter where they are in the state, so they can stay with their

therapists, if needed, or change, if needed. They shouldn't have to be constrained by bureaucracy created by the LME-MCOs, their advocates say.

That's what the [Medicaid Children and Families Specialty Plan](#) bill would do. If it passes, one or two agencies would bid to provide a statewide network for these children. Access to intensive in-home services, substance use treatment, residential care and other forms of therapy could follow the child across the state to where they're living.

"This plan also focuses on whole family treatment," said Karen McLeod, who runs [Benchmarks](#), an umbrella non-profit organization that advocates for groups that provide care for children and families.

"It provides support services for the family, the family can opt in or opt out, they don't have to come into the specialty plan, but they have the option of coming in and that includes the siblings," McLeod explained.

It's something advocates have been seeking for years.

"I think our system is broken, and kids are falling through the cracks," Batch said. "I think that a plan of having one provider that is statewide to be able to deal with this very unique population... is by far the best way to deliver services to children."

## Pushback

The LME-MCOs have pushed back.

The state gives each LME-MCO a set monthly amount for each person they manage. For each child moved into a statewide Medicaid plan, the LME-MCO would lose money, acknowledged Brian Perkins, senior vice president of strategy and government relations with Alliance Health, the LME-MCO that provides services in Cumberland, Durham, Johnston, Mecklenburg, Orange and Wake counties.

But Perkins also said the LME-MCOs aren't worried about the money. They'll lose some kids who don't need as many mental health services and the money that follows them, he said. But any losses will be offset by extra dollars the LME-MCOs will receive for other children with more intense needs who the state will place onto specialized "tailored" Medicaid plans next year.

"It would essentially be a wash in terms of the [monthly] rates because we would get a higher rate to cover a more complex population overall," he said.

His agency currently manages the care for around 8,100 of about 31,000 foster care children in the state.

Perkins contended that relationships that LME-MCOs have with county departments of social services, which have legal custody of children in foster care, puts them in a better position to coordinate their care. He also argued that creating a statewide Medicaid plan would not address provider shortages across North Carolina.

Perkins further contended that the statewide coverage issue isn't that big of a problem. He claimed that only about 1 percent of children in foster care get tripped up when they are moved to different counties.

"I think the question would be if we're trying to help improve the process for that 1 percent, what are the purposeful things that we need to be doing?" he said.

## **Promises to do better**

Nonetheless, in May, as the Medicaid Children and Families Specialty Plan bill was gaining steam, the state's five LME-MCOs made a joint announcement that they were finally going to start coordinating across their service boundaries.

The agencies said they were going to launch an initiative to "Ensure Seamless, Statewide Care for Foster Children," which would accomplish the "ease of movement for children who relocate throughout the state to continue to receive services without delay or interruption," [according to a press release](#) issued at the time.

The announcement said the agencies would do much of what Batch, Osborne and other advocates have been recommending.

"We've leaned in to do a lot of this stuff without a new plan being created," Perkins said.

For Batch, it was too little too late.

"I think it's unfortunate that it's taken an idea of a statewide plan for them to get on the same page to say that they are going to finally address the needs of children," Batch said.

For now, the bill has been adopted by the Senate but is languishing in the House. It could reemerge in the flurry of activity that oftens marks the end of the legislative work session which is quickly approaching. Or the bill could be reintroduced next year if lawmakers decide that the LME-MCOs' promises to do better are not being kept.

## Bebe Smith

June 30, 2022 at 10:02

I wonder if anyone would ever do a study to see if this whole experiment with LME/MCOs and managed care is actually beneficial to people with the most complex needs. It's not just children affected by these cross-county moves — adults, too, especially those in group homes, family care homes, adult care homes and nursing homes. If they move out of the catchment area for the home county where their Medicaid is based, they have a helluva time navigating getting specialty mental health services they might need.

## EC

July 8, 2022 at 22:10

I question the validity of the 1% claim. This continues to be an ongoing issue for children in care & their caregivers & currently LME-MCOs are not cutting it, leaving local DSS to find their own solutions to ensure Children's needs are met. And sadly many times these boundary issues cause delays in services or placement disruptions because services cannot be found timely. A statewide system would be wonderful if it truly unites all mental health providers for the children in need. Another issue with multiple MCOs is they are all different & have different reimbursement rates, different programs and specialties which often makes it much harder for providers to work with more than one MCO due to the differences.

## Comments are closed.

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# **Judicial Review**

## Children in DSS Custody Who Need Treatment in a PRTF: There's a Disconnect

I recently finished a 2-day course for district court judges that focused on children with significant mental health needs. There were lots of questions about the admission and discharge process for a child who is in a county department's (DSS) custody and who needs treatment in a psychiatric residential treatment facility (PRTF). It's complicated because there are **two separate but simultaneously occurring court actions**:

1. the abuse, neglect, or dependency (A/N/D) action that addresses a child's custody, placement, and services; and
2. the judicial review of a child's voluntary admission to a secure psychiatric treatment facility that was made with the consent of the child's legally responsible person.

The two actions involve different parties, courts, purposes, and laws, and they are often not coordinated even though they directly impact each other.

### Placement in a PRTF

North Carolina requires a judicial review when a child is admitted to a 24-hour mental health or substance abuse facility that has the same or similar restrictions on the child's freedom of movement as a state-operated psychiatric hospital. [G.S. 122C-224](#). A "24-hour facility" provides a structured living environment and services to a patient for at least 24 consecutive hours and includes state psychiatric hospitals, public or private facilities providing acute inpatient care, and PRTFs. [G.S. 122C-3\(14\)g](#). PRTFs provide treatment to children who are mentally ill or substance abusers in need of care in a non-acute inpatient setting and whose removal from home or a community based residential setting is essential for treatment. [10A NCAC 27G.1901](#). Round the clock supervision and therapeutic interventions are provided with the goal of facilitating the child's transition to a less intensive and structured community setting. *Id.* For children insured by Medicaid, **prior approval** that the child's treatment in a PRTF is **medically necessary** must be obtained from the local management entity/managed care organization (**LME/MCO**). NC Div. of Medical Assistance, PRTF, Clinical Coverage Policy [8-D-1, 5.0](#); see [G.S. 122C-3\(20c\)](#).

When a child needs treatment in a PRTF, the placement is made by the child's **legally responsible person**: a parent, guardian, person standing in loco parentis, or legal custodian other than a parent who is specifically authorized by law or a court order to consent to medical care, including psychiatric treatment. [G.S. 122C-3\(20\)\(ii\)](#); -221(a).

### The Role of the A/N/D Court and DSS in a Child's Admission

When a child has been adjudicated abused, neglected, or dependent, DSS recommends a

treatment plan that addresses the child's needs. [G.S. 7B-808\(b\)](#). The court may order that the child receive a mental health evaluation by a qualified professional. [G.S. 7B-903\(d\)](#). When the court finds the child is mentally ill, it may order DSS to coordinate with the LME/MCO to develop the child's treatment plan. [G.S. 7B-903\(e\)](#). The court does not have authority to order the child's placement in a PRTF. See [G.S. 7B-903\(a\), \(e\)](#). If the child needs treatment in a 24-hour facility, the admission must be made by the child's legally responsible person. When the court orders a child into DSS custody, DSS is the child's legally responsible person if the court also authorizes DSS to consent to the child's mental health care or treatment pursuant to [G.S. 7B-505.1\(c\)](#). See [G.S. 7B-903.1\(e\)](#). Otherwise, the child's parent, guardian, or person acting in loco parentis is the child's legally responsible person for admission purposes. G.S. 122C-3(20)(ii).

### **Judicial Review of a Voluntary Admission**

Although a child's admission to a PRTF is voluntarily made with the consent of the minor's legally responsible person, NC law requires judicial review of the minor's "voluntary admission." [G.S. 122C, Article 5, Part 2](#). The purpose of the judicial review is to protect the child's liberty interest by ensuring that the child is not improperly admitted or improperly remains in the facility. [G.S. 122-221\(b\)](#); *In re A.N.B.*, 232 N.C. App. 406 (2014).

The judicial review is heard by the **district court in the county where the facility is located**. [G.S. 122C-224\(a\)](#). If the PRTF is in a different county from where the A/N/D case is pending, a different court will conduct the judicial review.

The judicial review **process begins within 24 hours** of when the child is admitted to the PRTF when the facility notifies the clerk of court of the child's admission and need for a hearing. [G.S. 122C-224\(c\)](#). The facility also notifies the clerk of the names and addresses of the child's legally responsible person and responsible professional (the person in the facility who is designated to be responsible for and is qualified to provide the child's care and treatment). *Id.*; [G.S. 122C-3\(32\)](#).

**Within 48 hours** of receiving the notice from the facility, the clerk must **appoint an attorney for the child**, who is presumed indigent. [G.S. 122C-224.1\(a\)](#); [AOC-SP-912M](#). This attorney is not the GAL/attorney advocate appointed to represent the child in the A/N/D proceeding. See [G.S. 7B-601](#). This newly appointed attorney represents the child in the judicial review proceeding and continues to represent the child until the judge relieves him or her of the appointment. [G.S. 122C-224.2\(c\)](#). The attorney meets with the child within 10 days of the appointment and at least 48 hours before the hearing. [G.S. 122C-224.2\(a\)](#).

The **hearing must be held within 15 days** of the child's admission to the facility. G.S. 122C-224(a), [-224.1\(b\)](#). At least 72 hours before the hearing, **notice of the hearing** is sent to the child's attorney, the child's legally responsible person, and the responsible professional. G.S. 122C-224.1(b). The hearing is closed to the public unless the child's attorney requests otherwise. [G.S. 122C-224.3\(d\)](#). The hearing is **held at the facility** unless the judge determines the



court calendar will be disrupted by holding the hearing there. [G.S. 122C-224.3\(a\)](#). In that case, the hearing may be held in a different location, such as the judge's chambers, but it should not be conducted in a courtroom if the child's attorney objects and there is a more suitable place available. *Id.* The child has a right to be present at the hearing and to testify, but he or she may waive that right or limit his or her appearance to when testifying. [G.S. 122C-224.2\(b\)](#), [-224.3\(b\)](#). Certified copies of medical records, including a psychologist's or other professional's findings and reports, are admissible in evidence so long as the child's right to confront and cross-examine witnesses is not denied. [G.S. 122C-224.3\(c\)](#); *In re C.W.F.*, 232 N.C. App. 213 (2014).

It is unclear if a legally responsible person who receives notice of the hearing is a **party** to the proceeding. *In re M.B.*, 771 S.E.2d 615 (2015). Unlike the Juvenile Code, which explicitly states that a person who has a right to notice and to be heard in certain A/N/D hearings is not a party, the statutes authorizing the judicial review of a voluntary admission are silent about the legally responsible person's role in the judicial review. Compare [G.S. 7B-906.1\(b\)](#), [-908\(b\)\(1\)](#), [-1112.1 to 122C-224.1\(b\)](#). Because a judicial review hearing is a civil proceeding, the court may look to the Rules of Civil Procedure to determine if a party should be joined or allowed to intervene if a motion is filed. See G.S. 1A-1, Rules [19](#), [20](#), [24](#); *In re A.N.B.*

## The Order

There are **three possible dispositional orders**.

1. The court **concurs** in the child's continued admission and **authorizes a treatment period for up to 90 days** if the court finds by **clear, cogent, and convincing evidence**
  - the child is mentally ill or a substance abuser,
  - the child is in need of further treatment at the 24-hour facility, and
  - less restrictive measures will be insufficient. When the court is determining if less restrictive measures will be insufficient, it may look at whether those lesser measures are actually available (e.g., is there an available bed in a less restrictive facility). [G.S. 122C-2](#); *In re M.B.*
2. The court orders a **one-time 15-day additional stay** when the court believes there are reasonable grounds to believe the child is mentally ill or a substance abuser and is in need of treatment at the facility but additional diagnoses and evaluations are needed for the court to make a determination, or
3. The court orders the **child's release**.

[G.S. 122C-224.3\(f\), \(g\)](#); [AOC-SP-913M](#).

## Additional Judicial Reviews

If the court concurs and orders continued admission for up to 90 days, the child is entitled to another judicial review before that additional treatment period ends. [G.S. 122C-224.4\(b\)](#). At subsequent judicial reviews, the court may order the **child's release or continued admission for up to 180 days**. *Id.* Judicial reviews will be held prior to the expiration of each subsequently authorized admission period when the responsible professional recommends a continued stay. G.S. 122C-224.4(b), (c). The responsible professional notifies the clerk at least 15 days before the admission period expires that an additional stay is recommended. G.S. 122C-224.4(c).

## Discharge

Discharge planning to a less restrictive treatment setting starts at the child's admission and is part of a child's treatment plan. [10A NCAC 27G.1903\(c\)](#). Legally responsible persons (e.g., parent or DSS social worker) and/or family members must be involved in the development and implementation of the child's treatment plans. [10A NCAC 27G.1903\(e\)](#). Before a child is discharged, the facility should meet with the child and family team, including the DSS social worker, and make service planning decisions. [10A NCAC 27G.1904](#).

A child is discharged when

- the court orders the child's release,
- the responsible professional determines the child is no longer mentally ill or a substance abuser or in need of treatment at the facility,
- the legally responsible person files a written request for the child's discharge with the facility (however, the facility may hold the child for 72 hours and seek an involuntary commitment if appropriate), or
- the child turns 18 and does not consent to the treatment.

[G.S. 122C-224.7](#); -224.3(g)(3).

## What About the A/N/D Court?

The A/N/D court does not hear the judicial review of a child's voluntary admission and will not be aware of what was decided at that judicial review unless evidence of what was ordered is introduced in the A/N/D proceeding. If the A/N/D court wants to timely coordinate its hearings with the judicial review of the child's voluntary admission or with the child's discharge, it may consider ordering

- the legally responsible person (e.g., parent or DSS) notify the clerk of the date for the judicial review of voluntary admission so that the clerk may schedule a review hearing in the A/N/D proceeding shortly afterwards. See [G.S. 7B-906.1\(a\)](#); -1000.
- the legally responsible person make efforts to obtain the permission of the court deciding the voluntary admission to release information from that court file, such as the court order,

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for the purpose of admitting a copy in the A/N/D proceeding. See [G.S. 122C-54\(d\)](#).

- DSS to participate in the child's treatment and discharge planning and to work with the PRTF to make timely efforts to secure a child's post-discharge placement. See *In re M.B.*
- the legally responsible person notify the clerk of a need for a review hearing if that person files a written request with the PRTF for the child's discharge.



# **Mental Health & A/N/D**

\_\_\_\_\_ County

IN THE MATTER OF

ORDER FOR  
NONSECURE CUSTODY  
(ABUSE/NEGLECT/DEPENDENCY)

Name And Address Of Juvenile

Juvenile's Date Of Birth      Age      Race      Sex

G.S. 7B-502 through -505.1, -508

Name And Address Of Parent/Guardian/Custodian/Caretaker

Name And Address Of Parent/Guardian/Custodian/Caretaker

Based upon the verified petition, this Court has jurisdiction over the subject matter of this proceeding and of the person of the juvenile.

1. As grounds for the issuance of this Order, the Court finds that there is a reasonable factual basis to believe that the matters alleged in the petition are true, that there are no other reasonable means available to protect the juvenile, and (check one or more)

- a. the juvenile has been abandoned.
- b. the juvenile has suffered physical injury, sexual abuse, or serious emotional damage as defined by G.S. 7B-101(1)e.
- c. the juvenile is exposed to a substantial risk of physical injury or sexual abuse because the parent, guardian, custodian, or caretaker has created conditions likely to cause injury or abuse or has failed to provide, or is unable to provide, adequate supervision or protection.
- d. the juvenile is in need of medical treatment to cure, alleviate, or prevent suffering serious physical harm which may result in death, disfigurement, or substantial impairment of bodily functions, and the juvenile's parent, guardian, custodian, or caretaker is unwilling or unable to provide or consent to the medical treatment.
- e. the parent, guardian, custodian, or caretaker consents to the nonsecure custody order.
- f. the juvenile is a runaway and consents to nonsecure custody.

2. Efforts by DSS to prevent or eliminate the need for the juvenile's placement were reasonable and include: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

OR

3. Efforts to prevent the need for the juvenile's placement were precluded by an immediate threat of harm to the juvenile, and placement of the juvenile in the absence of such efforts was reasonable. (Describe immediate threat of harm.)  
\_\_\_\_\_  
\_\_\_\_\_

4. Based on the above findings, the Court concludes that it is contrary to the juvenile's welfare to remain in the home.

4a. Based on an inquiry of the petitioner, the Court finds that the petitioner  does not know  knows  has reason to know that the juvenile is an Indian Child.  
 (if applicable) Following the inquiry, the Court instructed the petitioner to notify the Court if petitioner subsequently obtains information that provides reason to know that the juvenile is an Indian Child.

4b. (if applicable) The juvenile is an Indian Child and a member of or eligible for membership in the \_\_\_\_\_ tribe.

(if applicable) Emergency removal or placement is necessary to prevent imminent physical damage or harm to the Indian Child.

5. Based on the (check one or both)  petition and request for nonsecure custody,  testimony of the petitioner, the Court concludes that a less intrusive remedy than entering private property to take physical custody of the juvenile is not available.

6.  A former foster parent of the juvenile,  nonrelative kin of the juvenile,  other person(s) with legal custody of a sibling of the juvenile, \_\_\_\_\_ (name person(s)), is/are willing and able to provide proper care and supervision in a safe home, and placement of the juvenile with this person/these persons  would  would not be in the juvenile's best interests for the following reasons: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**TO ANY LAW ENFORCEMENT OFFICER OR DIRECTOR OF A COUNTY DEPARTMENT OF SOCIAL SERVICES**

YOU ARE ORDERED to take physical custody of the above-named juvenile(s) for placement in nonsecure custody and to make due return on this Order. You are also ordered to give a copy of this Order to the juvenile's parent, guardian, custodian, or caretaker named above.

The juvenile(s) shall be placed in nonsecure custody with:

- 1. the Department of Social Services of the county named above. The department may place the juvenile in a licensed foster home, a home otherwise authorized by law to provide temporary residential care, a facility operated by the department, or the home of a parent, relative, nonrelative kin, or other person with legal custody of a sibling, which the Court hereby approves:

The department is authorized to arrange for, provide, or consent to routine medical and dental care or treatment including, but not limited to, treatment for common pediatric illnesses and injuries that require prompt intervention; emergency medical, surgical, psychiatric, psychological, or mental health care or treatment; and testing and evaluation in exigent circumstances unless pursuant to G.S. 7B-505.1(a), the court orders the following exceptions to the department's authorization:

\_\_\_\_\_ (if blank, the department has no exceptions to the statutory authorization).

- The department is authorized to consent to treatment the medical provider recommends in order to cure, alleviate, or prevent the juvenile from suffering physical harm, pursuant to 1.d set forth above as a ground for nonsecure custody.
- The department is authorized to consent to a Child Medical Evaluation. The following findings demonstrate the director's compelling interest in having the juvenile evaluated prior to the hearing on the need for continued nonsecure custody:

\_\_\_\_\_  
\_\_\_\_\_

- 2. (designate person, if the Court places the juvenile directly, not through DSS) \_\_\_\_\_  
A further hearing to determine the need for continued nonsecure custody, whether with DSS or someone else shall be held:

Date Of Hearing	Time Of Hearing <input type="checkbox"/> AM <input type="checkbox"/> PM	Place Of Hearing
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- 3. The juvenile is a member of a State-recognized tribe. The Department of Social Services shall notify the juvenile's State-recognized tribe of the need for nonsecure custody for the purpose of locating relatives or nonrelative kin for placement.
- 4. The Department of Social Services shall make diligent efforts to notify relatives and, if applicable, other persons with legal custody of the juvenile's sibling, of nonsecure custody and subsequent hearings.

**TO ANY LAW ENFORCEMENT OFFICER**

- (No. 5 on Side One must be checked) YOU ARE AUTHORIZED to enter private property to take custody of the juvenile.
- and you are authorized to make forcible entry at any hour if that is required by exigent circumstances of the case.

Date	Signature Of Judge/Judge's Designee
Maximum Duration Of Custody	Name Of Judge/Judge's Designee (type or print) <input type="checkbox"/> Judge <input type="checkbox"/> Judge's Designee

**If the person above gives telephonic approval:**

Time <input type="checkbox"/> AM <input type="checkbox"/> PM	Name And Title Of Person Receiving Telephonic Approval	Signature Of Person Receiving Telephonic Approval
---	--	---

**RETURN ON ORDER**

Date Order Received	Date Order Returned
---------------------	---------------------

- 1. The juvenile named in this Order was taken into custody at \_\_\_\_\_  AM  PM, on (date) \_\_\_\_\_, and taken to \_\_\_\_\_; I gave a copy of this Order to the person named below.
- 2. Though diligently sought, the juvenile named in this Order could not be found in this county. (Add any comments or information about the juvenile's possible whereabouts.)

Name Of Person Who Has Personally Received A Copy Of This Order (type or print)	Signature And Title Of Person Making Return
Relationship To Juvenile	Department Or Agency

STATE OF NORTH CAROLINA

File No.

In The General Court Of Justice
District Court Division

County

IN THE MATTER OF

ORDER ON NEED FOR
CONTINUED NONSECURE CUSTODY
(ABUSE/NEGLECT/DEPENDENCY)

Name Of Juvenile

G.S. 7B-506

This matter is properly before the Court for a hearing, under G.S. 7B-506, to determine the need for the continued nonsecure custody of the juvenile named above. This Court has jurisdiction over the subject matter of this proceeding and of the person of the juvenile. A Petition was filed and an Order For Nonsecure Custody was entered, as the record shows. Present were:

Table with 4 columns: Name, Relationship/Title, Name, Relationship/Title. Multiple empty rows for listing names and relationships.

FINDINGS

The Court makes the following findings of fact based on clear and convincing evidence: (attach additional page(s) if necessary)

- 1. One or both of the juvenile's parents are absent and have not been served. Related facts, including efforts undertaken to identify and/or locate and serve the missing parent(s), include:
2. A relative of the juvenile, (name of relative), is willing and able to provide proper care and supervision in a safe home, and placement of the juvenile with this relative would/would not be in the juvenile's best interest for the following reasons:
3. The juvenile is/is not a member of a State-recognized tribe. Nonrelative kin of the juvenile (name of nonrelative kin), is willing and able to provide proper care and supervision in a safe home, and placement of the juvenile with nonrelative kin would/would not be in the juvenile's best interest for the following reasons:
4. A person with legal custody of a sibling of the juvenile, (name of person with legal custody), is willing and able to provide proper care and supervision in a safe home, and placement of the juvenile with this individual would/would not be in the juvenile's best interest for the following reasons:
5. There are other juvenile(s) remaining in the home: (give names and ages)
Specific findings of the DSS investigation regarding the child(ren) and actions taken or services provided for the child(ren)'s protection include:
6. a. Efforts by DSS to prevent or eliminate the need for the juvenile's placement include:
b. Efforts to prevent the need for the juvenile's placement were precluded by an immediate threat of harm to the juvenile, and placement of the juvenile in the absence of such efforts was reasonable.

(Over)



7. There  is  is not a reasonable factual basis to believe that the matters alleged in the petition are true, and:
- a. the juvenile has been abandoned.
  - b. the juvenile has suffered physical injury, sexual abuse, or serious emotional damage as defined by G.S. 7B-101(1)e.
  - c. the juvenile is exposed to a substantial risk of physical injury or abuse because the parent, guardian, custodian, or caretaker has created conditions likely to cause injury or abuse or has failed to provide or is unable to provide adequate supervision or protection.
  - d. the juvenile is in need of medical treatment to cure, alleviate or prevent suffering or serious physical harm which may result in death, disfigurement or substantial impairment of bodily functions, and the juvenile's parent, guardian, custodian, or caretaker is unwilling or unable to provide or consent to the treatment.
  - e. the parent, guardian, custodian, or caretaker consents to a nonsecure custody order.
  - f. the juvenile is a runaway and consents to nonsecure custody.

8. There  is  is not a reasonable factual basis to believe that no reasonable means other than nonsecure custody are available to protect the juvenile.

8a. Based on an inquiry of each participant, the Court finds that the participants

do not know  know  have reason to know that the juvenile is an Indian Child.

(if applicable) The juvenile is an Indian Child and a member or eligible for membership in the \_\_\_\_\_ tribe.

(if applicable) Following the inquiry, the Court instructed each participant to notify the Court if he or she subsequently obtains information that provides reason to know that the juvenile is an Indian Child.

9. Efforts undertaken to establish paternity, if at issue in this case, include:

\_\_\_\_\_

\_\_\_\_\_

10. Other Findings: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### CONCLUSIONS OF LAW

Based on the above findings of fact, the Court concludes as a matter of law that:

1. Grounds for continued nonsecure custody under G.S. 7B-503 and G.S. 7B-506  do  do not exist.
2. The Department of Social Services:
  - a. has made reasonable efforts to prevent the need for the juvenile's placement.
  - b. has made reasonable efforts to eliminate the need for the juvenile's placement.
  - c. has not made reasonable efforts to prevent and/or eliminate the need for the juvenile's placement.
  - d. was precluded, by an immediate threat of harm to the juvenile, from making efforts to prevent and/or eliminate the need for the juvenile's placement.
3. The best interests of the juvenile would be served by continuing the juvenile in the custody of DSS pending a further hearing.
4. A Child Medical Evaluation is in the juvenile's best interest.
5. (if applicable) The juvenile is an Indian Child pursuant to 25 U.S.C. § 1903(4). Continued placement is necessary to prevent imminent physical damage or harm to the Indian Child.
6. The best interest of the juvenile:
  - a. would not be served by allowing visitation.
  - b. would be served by allowing appropriate visitation.
7. Other: \_\_\_\_\_

(Over)

ORDER

The Court orders that:

1. Pending further hearings, the juvenile:

a. shall remain or be placed in the nonsecure custody of:
 the petitioner,  Other (name person) \_\_\_\_\_
for the purposes stated herein, subject to the following conditions: \_\_\_\_\_

b. shall be returned to the custody of (name person) \_\_\_\_\_

2. Pending further hearings, the petitioner shall:

a. make the following efforts to identify and/or locate and serve the missing parent(s): \_\_\_\_\_

b. provide or arrange for the following services aimed at eliminating the need for the juvenile's placement or at facilitating the juvenile's placement with a relative: \_\_\_\_\_

c. notify the juvenile's State-recognized tribe of the need for nonsecure custody for the purpose of locating relatives or nonrelative kin for placement.

d. (if applicable) make diligent efforts to verify the juvenile's status as an Indian Child and notify the \_\_\_\_\_
tribe and/or contact the Bureau of Indian Affairs.

e. arrange, facilitate, and supervise a visitation plan as follows: \_\_\_\_\_
(name of parent, guardian, or custodian) shall be permitted  supervised  unsupervised visitation with the juvenile
according to the following schedule:
A minimum of \_\_\_\_\_ times  per week,  every two weeks,  per month, for a minimum of \_\_\_\_\_ total
hours for that time period.

3.  a. With the consent of all parties, further hearings to determine the need for continued nonsecure custody pending the hearing on the petition are waived.

b. A further hearing to determine the need for continued nonsecure custody shall be held:

Table with 3 columns: Date Of Hearing, Time Of Hearing (AM/PM), Place Of Hearing

c. The adjudication hearing on the petition filed in this case shall be held:

Table with 3 columns: Date Of Hearing, Time Of Hearing (AM/PM), Place Of Hearing

4. The department is authorized to arrange for, provide, or consent to routine medical and dental care or treatment including, but not limited to, treatment for common pediatric illnesses and injuries that require prompt intervention; emergency medical, surgical, psychiatric, psychological, or mental health care or treatment; and testing and evaluation in exigent circumstances unless pursuant to G.S. 7B-505.1(a), the court orders the following exceptions to the department's authorization:

(if blank, the department has no exceptions to the statutory authorization).

The department is authorized to consent to treatment the medical provider recommends in order to cure, alleviate, or prevent the juvenile from suffering physical harm, pursuant to 7.d set forth above as a ground for nonsecure custody.

The department is authorized to consent to a Child Medical Evaluation.

5. Other: \_\_\_\_\_

Table with 3 columns: Date, Name Of Judge (type or print), Signature Of Judge



General Authorization for Treatment and Medication

Section A – Identifying Information	
Child's Name:	Date of Birth:
Medical Home Provider:	Telephone Number:
Other Medical, Dental, or Mental Health Provider or Specialist Prescribing or Administering Treatment:	Telephone Number:

Section B – Care, Treatment, and Parental Consent (N.C.G.S. § 7B-505.1)
<p>When a child is in the custody of the county child welfare agency, the county director may arrange for, provide, or consent to any of the following without obtaining parental consent:</p> <ul style="list-style-type: none"> <li>• Routine medical or dental care or treatment (including immunizations in most cases);</li> <li>• Emergency medical, surgical, psychiatric, psychological, or mental health care or treatment; and,</li> <li>• Testing and evaluation in exigent circumstances</li> </ul> <p>I hereby authorize _____ county child welfare agency to consent to the following treatment of the child identified above (include description):</p> <p><input type="checkbox"/> Prescriptions for psychotropic medication(s): _____</p> <p>_____</p> <p><input type="checkbox"/> Participation in a clinical trial: _____</p> <p>_____</p> <p><input type="checkbox"/> Child Medical Evaluation not otherwise authorized (DSS-5143 Consent/Authorization for Child Medical/Child/Family Evaluation must also be completed): _____</p> <p>_____</p> <p><input type="checkbox"/> Comprehensive clinical assessment, or other mental health evaluation(s): _____</p> <p>_____</p> <p><input type="checkbox"/> Surgical, medical, or dental procedure or test that requires informed consent: _____</p> <p>_____</p> <p><input type="checkbox"/> Psychiatric, psychological, or mental health care or treatment that requires informed consent: _____</p> <p>_____</p> <p><input type="checkbox"/> Other non-routine or non-emergency treatment or procedure: _____</p> <p>_____</p>

General Authorization for Treatment and Medication

Initial all that apply:

I have been informed of the recommendation that medication be prescribed to my child as part of their treatment plan.

I have been informed of the recommendation that a surgical, medical, dental, or mental health treatment or procedure be completed on my child as part of their treatment plan.

I have been notified, of my child's condition;

If I have questions about my child's treatment, I will contact the health care provider named at the top of this form.

I have been given a copy of this form.

I understand that I may revoke this authorization at any time. If I do not revoke this authorization it expires automatically as follows:

1. Upon closure of my case; or,
2. One year from the date this authorization is signed; whichever occurs first.

I understand that medication, a medical procedure or mental health treatment is only one aspect of my child's treatment plan and that success and continued improvement depends on my active involvement in treatment planning. Although this medication or procedure is expected to be helpful in the treatment of my child's condition, there is no guarantee that improvement will be seen.

Based on the information provided to me:

I authorize \_\_\_\_\_ county child welfare agency to consent to the administration of the above mentioned medication, treatment, or procedure.

I refuse to authorize the administration of immunizations due to a religious objection.

**Section C – Appointment and Follow-Up Information**

An appointment has been scheduled for \_\_\_\_\_ at \_\_\_\_\_. With the  
following provider: \_\_\_\_\_ at \_\_\_\_\_.  
Date Time  
Name of Provider/Practice Address/Location

**Section D - Signatures**

Parent/Guardian/Custodian signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_ Relationship: \_\_\_\_\_

County child welfare staff signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Written revocation of this consent should be mailed to:**

General Authorization for Treatment and Medication Instructions

**Purpose and Use**

The purpose of the DSS-1812 General Authorization for Treatment and Medication is to ensure children in the legal custody of a county child welfare agency receive necessary care and treatment and that county child welfare agencies engage parents in the care and treatment of their children. The DSS-1812 General Authorization for Treatment and Medication should be used to obtain parental authorization for the agency to consent to care or treatment for which a county child welfare agency director or director's representative does not have the authority to consent by operation of law under N.C.G.S. § 7B-505.1, as described below.

**Section A – Identifying Information**

Please provide the following identifying information in Section A:

- The child's full name
- The child's date of birth
- The medical home provider
- The telephone number of the medical home provider
- Other medical, dental, or mental health provider or specialist prescribing or administering treatment
- The telephone number of other medical, dental, mental health provider or specialist prescribing or administering treatment

**Section B – Care, Treatment, and Parental Consent (N.C.G.S. § 7B-505.1)**

Unless the court orders otherwise, when a child is in the custody of the county child welfare agency, a county director or the director's representative under N.C.G.S. § 7B-101(10) is authorized to arrange for, provide, or consent to any of the following without prior parental consent:

- Routine medical and dental care or treatment
- Emergency medical, surgical, psychiatric, psychological, or mental health care or treatment
- Testing and evaluation in exigent circumstances

The applicable statutory language does not preclude the director or director's representative from involving parents in the process in appropriate cases, when parental involvement can occur without significant delay.

If the court finds there are compelling circumstances requiring a Child Medical Evaluation prior to the 7-Day Nonsecure Custody Review Hearing, the court may, at the initial *ex parte* Nonsecure Custody Hearing, authorize the director of the county child welfare agency or the director's representative to consent to a Child Medical Evaluation. Consent for the Child Medical Evaluation in less urgent circumstances follows the procedures outlined below for non-routine care and treatment.

County child welfare agencies are required to obtain authorization from the juvenile's parent, guardian, or custodian for all care or treatment not covered by subsection (a) or (b) of G.S. 7B-505.1 (as described above), except that the court may authorize the director to provide consent after a hearing at which the court finds by clear and convincing evidence that the care, treatment, or evaluation requested is in the child's best interest. Care and treatment covered by this subsection includes:

- Prescriptions for psychotropic medication (discussion with parent(s) should include that medication and or dosage could be changed by the physician to address what is being treated)

General Authorization for Treatment and Medication Instructions

- Participation in clinical trials (all documents and information about the clinical trial should be shared with parents)
- Immunizations when it is known that the parent has a bona fide religious objection to the standard schedule of immunizations
- Child Medical Evaluations not governed by subsection (b) of G.S. 7B-505.1, comprehensive clinical assessments, or other mental health evaluations
- Surgical, medical, or dental procedures or tests that require informed consent (be sure to specify what surgical, medical, or dental procedure the consent is covering)
- Psychiatric, psychological, or mental health care or treatment that requires informed consent (be sure to specify what treatment the consent is covering)

For any care or treatment provided the child welfare agency shall make reasonable efforts to promptly notify the parent, guardian, or custodian that care or treatment will be or has been provided and give the parent or guardian frequent status reports on the child's treatment and the care provided.

Whenever possible, county child welfare agencies should work with parents to address foreseeable non-routine care and treatment needs of the child prior to the 7-Day Nonsecure Custody Review Hearing. If no parent is able or willing to authorize the county to provide consent, the county child welfare agency should ask the court for authority to consent to and arrange for care and treatment in the child's best interest.

The DSS-5143 Consent/Authorization for Child Medical/Child/Family Evaluation must be completed in addition to the DSS-1812 General Authorization for Treatment and Medication for all Child Medical Evaluations, whether the court has authorized the child welfare agency to consent, or the non-offending parent is providing consent or has authorized the county child welfare agency to consent.

Note that the form provides fields for parent(s) to initial that they have been informed of or received information regarding, the recommendation that medication be prescribed to their child as part of the child's treatment plan, the recommendation that a surgical, medical, or dental procedure be completed on the child as part of the child's treatment plan, the child's condition, and contact information for the medical or mental health provider recommending a particular course of treatment should the parent have any questions..

Parents may (and should be encouraged to) communicate with the medical or mental health provider who has prescribed or recommended the medication, surgery, or other course of treatment, as appropriate, to discuss the risks, benefits, and potential side effects. Child welfare workers should ensure that the parents are provided with contact information for the relevant providers. Parent's receipt of verbal and written information directly from the provider ensures that information about the child's condition and recommended course of treatment is communicated accurately.

**Section C – Appointment and Follow-Up Information**

Pursuant to N.C.G.S. § 7B-505.1 child welfare agencies shall make reasonable efforts to promptly notify the parent, guardian, or custodian that care or treatment will be or has been provided and give the parent or guardian frequent status reports on the child's treatment and care provided. Therefore, child welfare workers should use this section of the form to provide information to the parent, guardian, or custodian, as appropriate, concerning the child's upcoming appointment date, time, and location.

General Authorization for Treatment and Medication Instructions

**Section D – Signatures**

Required signatures:

- The parent or pre-removal guardian;
- The county child welfare worker; and/or

The judge does not need to sign the DSS-1812 General Consent for Treatment and Medication form; simply provide the date, and attach the court order.

Child welfare workers should provide signed copies of the consent to the following parties:

- Original (with signature) to the health care provider
- Copy for CPS file
- Copy for parent or pre-removal guardian
- Copy attached to court report (DSS-531 Model Court Report for Dispositional and Review Hearings, DSS-5311 Model Court Report for Permanency Planning Hearings)

Child welfare workers should provide the address where the parent or pre-removal guardian can mail written revocation of the consent if the parent chooses to revoke.





783 S.E.2d 206  
Court of Appeals of North Carolina.

In the Matter of **C.B.** & S.B.

No. COA15-724.

Feb. 2, 2016.

### Synopsis

**Background:** County social services department filed petitions regarding two child siblings, alleging first was neglected and second was neglected and dependent. After disposition hearing, the District Court, Buncombe County, [Andrea F. Dray, J.](#), adjudicated first child neglected, adjudicated second child neglected and dependent, and entered order continuing custody of first child with mother, under supervision of department, and continuing custody of second child with department. Mother appealed.

**Holdings:** The Court of Appeals, [McGee, C.J.](#), held that:

[1] evidence was sufficient to support adjudications of neglect;

[2] evidence was sufficient to support adjudication of dependency; and

[3] any deficiency in performance of mother's attorney was not ineffective assistance.

Affirmed.

[Tyson, J.](#), filed dissenting opinion.

West Headnotes (17)

#### [1] Appeal and Error

🔑 [Conclusiveness in General](#)

Unchallenged findings are binding on appeal.

[Cases that cite this headnote](#)

#### [2] Infants

🔑 [Determination, findings, and verdict](#)

Erroneous findings unnecessary to the determination do not constitute reversible error where a neglect and dependency adjudication regarding a child is supported by sufficient additional findings grounded in clear and convincing evidence.

[Cases that cite this headnote](#)

#### [3] Infants

🔑 [Special needs children](#)

Evidence was sufficient to support finding that mother minimized ten-year-old child's behavior or failed to grasp the severity of it, as would support adjudication of child as neglected and dependent; social worker testified that child regularly attacked other people, including school personnel and a police officer, that child had to be hospitalized multiple times, and that mother did not characterize child's behaviors as severe and believed child's mental health issues could be addressed at home without outside intervention.

[Cases that cite this headnote](#)

#### [4] Infants

🔑 [Special needs children](#)

Evidence was sufficient to support finding that mother would not agree to intensive in-home services for ten-year-old child, as would support adjudication of child as neglected and dependent following child's outbursts of aggressive, assaultive behavior; social worker testified that mother consistently refused to let child receive intensive in-home services and instead insisted that child be cared for by mother or receive less-intense, periodic outpatient services.

[Cases that cite this headnote](#)

#### [5] Infants

🔑 [Special needs children](#)

Evidence was sufficient to support finding that mother believed ten-year-old child's aggressive and assaultive behaviors were the result of fevers and seizures, as would support adjudication of

child as dependent and neglected after medical personnel found no evidence that child suffered from seizures and mother refused to agree to intensive in-home services for child; social worker testified that mother told him of her belief that child's only real issue was having a seizure disorder.

[Cases that cite this headnote](#)

[6] **Infants**

🔑 [Special needs children](#)

Evidence was sufficient to support finding that mother would not agree to work with the hospital on a discharge plan, after child was hospitalized following outbursts of aggressive, assaultive behavior, as would support adjudication of child as dependent and neglected, where social worker testified that mother refused to participate in child's discharge planning because mother was not in agreement with physician's recommended treatment plan.

[Cases that cite this headnote](#)

[7] **Infants**

🔑 [Nature of harm or injury in general; failure to thrive](#)

**Infants**

🔑 [Endangerment](#)

To support an adjudication of child as neglected, there must be some physical, mental, or emotional impairment of the child, or a substantial risk of such impairment, as a consequence of the alleged neglect. West's [N.C.G.S.A. § 7B-101\(15\)](#).

[Cases that cite this headnote](#)

[8] **Infants**

🔑 [Special needs children](#)

**Infants**

🔑 [Special needs children](#)

Evidence was sufficient to support adjudication of ten-year-old child as neglected, following child's outbursts of aggressive, assaultive behavior; mother believed child's extreme and violent behavior was result of fevers

or seizures despite medical personnel finding no evidence of this, mother continuously failed to obtain meaningful mental health services for child, child required repeated hospitalizations, and mother greatly minimized and denied seriousness of child's condition. West's [N.C.G.S.A. § 7B-101\(15\)](#).

[Cases that cite this headnote](#)

[9] **Infants**

🔑 [Medical and dental](#)

**Parent and Child**

🔑 [Care, Custody, and Control of Child; Child Raising](#)

The constitutionally protected paramount right of parents to custody, care, and control of their children does not extend to neglecting the welfare of their children; at some point, a parent's unjustified unwillingness or inability to obtain meaningful medical care for her child who is experiencing serious illness rises to the level of neglect. West's [N.C.G.S.A. § 7B-101\(15\)](#).

[Cases that cite this headnote](#)

[10] **Infants**

🔑 [Alternative remedies or placement](#)

**Infants**

🔑 [Special needs children](#)

Evidence was sufficient to support adjudication of child as dependent, following child's outbursts of aggressive, assaultive behaviors, where mother continuously failed to obtain meaningful mental health services for child, and mother did not identify any viable alternative to placement of child in mother's home. West's [N.C.G.S.A. § 7B-101\(9\)](#).

[Cases that cite this headnote](#)

[11] **Infants**

🔑 [Dependency, Permanency, and Termination Factors; Children in Need of Aid](#)

When determining that a child is dependent, the trial court must address both (1) the parent's ability to provide care or supervision and (2) the availability to the parent of alternative child care

arrangements; findings of fact addressing both prongs must be made before a juvenile may be adjudicated as dependent, and the court's failure to make these findings will result in reversal of the trial court. West's [N.C.G.S.A. § 7B-101\(9\)](#).

[Cases that cite this headnote](#)

**[12] Infants**

🔑 [Protection or intervention against another](#)

Evidence was sufficient to support adjudication of child as neglected, where mother allowed child to be continually exposed to sibling's erratic, troubling, and violent behavior, mother failed to obtain meaningful medical services for sibling that could have mitigated that behavior, and mother showed no concern for the effect this might have on child. West's [N.C.G.S.A. § 7B-101\(15\)](#).

[Cases that cite this headnote](#)

**[13] Infants**

🔑 [Deprivation, Neglect, or Abuse](#)

In determining whether a juvenile is a neglected juvenile, it is relevant whether that juvenile lives in a home where another juvenile has been subjected to neglect. West's [N.C.G.S.A. § 7B-101\(15\)](#).

[Cases that cite this headnote](#)

**[14] Infants**

🔑 [Evidence; procurement, presentation, and objections](#)

In evaluating an ineffective assistance claim in a dependency and neglect proceeding, decisions such as which witnesses to call or whether and how to conduct examinations are strategic and tactical decisions that are within the exclusive province of the attorney. [U.S.C.A. Const.Amend. 6](#).

[Cases that cite this headnote](#)

**[15] Infants**

🔑 [Effectiveness of Counsel](#)

To prevail upon a claim that counsel's assistance was ineffective in a dependency and neglect proceeding, a parent must show that (1) counsel's performance was deficient and (2) the deficient performance was so serious as to deprive the parent of a fair hearing. [U.S.C.A. Const.Amend. 6](#).

[Cases that cite this headnote](#)

**[16] Infants**

🔑 [Effectiveness of Counsel](#)

The burden to show that counsel's performance in a dependency and neglect proceeding fell short of the required standard is a heavy one for the client alleging an ineffective assistance claim to bear. [U.S.C.A. Const.Amend. 6](#).

[Cases that cite this headnote](#)

**[17] Infants**

🔑 [Effectiveness of Counsel](#)

Any deficiency in performance of mother's attorney in dependency and neglect proceeding, through attorney's alleged failure to review child's medical records arising from mental health hospitalizations, did not deprive mother of fair hearing and thus was not ineffective assistance, in proceeding in which one child was adjudicated neglected and second child was adjudicated neglected and dependent, where social services department presented overwhelming evidence to support the adjudications, and mother did not contend that attorney's representation was not otherwise vigorous and zealous. [U.S.C.A. Const.Amend. 6](#).

[Cases that cite this headnote](#)

**\*208** Appeal by Respondent–Mother from orders entered 13 February and 26 March 2015 by Judge Andrea F. Dray in District Court, Buncombe County. Heard in the Court of Appeals 29 December 2015. Buncombe County, Nos. 14 JA 149–50.

## Attorneys and Law Firms

John C. Adams, for petitioner-appellee Buncombe County Department of Social Services.

Armstrong & Armstrong Law, Smithfield, by Amanda Armstrong, for guardian ad litem.

Rebekah W. Davis, for respondent-appellant Mother.

## Opinion

McGEE, Chief Judge.

Appeal by Respondent–Mother (“Mother”) from adjudication and disposition orders, adjudicating C.B. neglected and S.B. neglected and dependent, and continuing custody of S.B. with DSS. We affirm.

### I. Procedural Background

C.B. and S.B. are twin sisters and were ten years old when the Buncombe County Department of Social Services (“DSS”) filed the juvenile petitions in the present case. The petitions alleged that C.B. was a neglected juvenile and that S.B. was a neglected and dependent juvenile. The trial court entered an order awarding nonsecure custody of S.B. to DSS on 27 May 2014. The trial court held an adjudication hearing (“the hearing”) on 18 December 2014 and entered orders on 13 February 2015 adjudicating C.B. as a neglected juvenile and S.B. as a neglected and dependent juvenile. The trial court held a disposition hearing on 12 February 2015 and entered orders on 26 March 2015 continuing custody of C.B. with her mother under the supervision of DSS and continuing custody of S.B. with DSS. Mother appeals.

### II. Factual Challenges

#### A. Standard of Review

[1] [2] Appellate review of an adjudication order is limited to determining “(1) whether the findings of fact are supported by clear and convincing evidence, and (2) whether the legal conclusions are supported by the findings of fact.” *In re Pittman*, 149 N.C.App. 756, 763–64, 561 S.E.2d 560, 566 (2002) (citation and quotation marks omitted). If the appellate court makes these determinations in the affirmative, it must

uphold the trial court's decision, “even where some evidence supports contrary findings.” *Id.* at 764, 561 S.E.2d at 566. “It is not the role of this Court to substitute its judgment for that of the trial court.” *Scott v. Scott*, 157 N.C.App. 382, 388, 579 S.E.2d 431, 435 (2003). Unchallenged findings are binding on appeal. *In re C.B.*, 180 N.C.App. 221, 223, 636 S.E.2d 336, 337 (2006), *aff'd*, 361 N.C. 345, 643 S.E.2d 587 (2007). Moreover, “erroneous findings unnecessary to the determination do not constitute reversible error” where an adjudication is supported by sufficient additional findings \*209 grounded in clear and convincing evidence. *In re T.M.*, 180 N.C.App. 539, 547, 638 S.E.2d 236, 240 (2006).

#### B. Unchallenged Findings

Mother brings numerous challenges to the findings of fact in the adjudication orders as to C.B. and S.B. The following unchallenged findings of fact are pertinent to an understanding of Mother's arguments on appeal:<sup>1</sup>

13. On [15 March] 2014, [DSS] received a report that alleged the following: that [Mother] slaps [S.B.] and calls her degrading names. The report further alleged that [S.B.] has extreme behavior problems, including punching herself.

...

15. The report was screened in and assigned to social worker ... Amanda Wallace [ (“Ms. Wallace”) ].

...

18. [Ms.] Wallace testified that [S.B.] had been hospitalized at Copestone [psychiatric hospital] on five (5) occasions, as specified below. [S.B.'s] therapist recommended intensive in-home services for [S.B.], upon discharge. [Mother] was aware of this recommendation but did not comply. [Mother] felt that [S.B.'s] issues could be handled at home and that all [S.B.] needed was “someone to talk to”. On [17 March] 2014, [Mother] told [Ms.] Wallace that she had cancelled an appointment with Access Family Services, for an assessment for outpatient services for [S.B.], because she “didn't get a good vibe” from her conversation with the provider. [Mother] committed to finding another provider for these services, but ultimately failed to do so.

19. After the initial interview with [Mother], [DSS] received a new report that alleged that [S.B.] had a “blow up” at a local Ingles and was admitted to Copestone for evaluation. She was released from Copestone on [9 April] 2014, only to be readmitted later that day, after she ran from her mother, climbed up a tree, and refused to come down. The Asheville City Fire Department and Asheville City Police, responded and plucked [S.B.] from the tree, at which point she assaulted an Asheville City Police Officer by biting that officer. [S.B.] is ten years old.

...

21. On [21 April] 2014, [S.B.] was discharged from Copestone. However, immediately after she was discharged, [S.B.] had another outburst. She assaulted school staff and locked herself in a closet at school. After she was extracted from the closet, she was readmitted into Copestone. During this incident, [S.B.] reported that [Mother] was forcing her to take the wrong medication while at school.

...

26. A treatment team meeting with the hospital staff and [social worker Craig] Flores [ (“Mr. Flores”) ] was scheduled for Monday, [19 May] 2014. The team was developing a plan for [S.B.] to be discharged from the hospital and was exploring a more appropriate placement for [S.B.’s] discharge. [Mother] was aware of this meeting and had agreed to attend. However, [Mother] later refused to attend that meeting. At that time the discharge plan for [S.B.] was that she was to be released to a Psychiatric Residential Treatment Facility (PRTF) upon her release from Copestone.

27. After the treatment team meeting, [Mr.] Flores went to [Mother’s] home to see why she did not attend the meeting. [Mother] stated that she would not cooperate with the hospital or [DSS] to develop a discharge plan. [Mother] stated that [S.B.] only had a fever. [Mother] also refused to sign \*210 releases to allow [DSS] and the hospital to develop a discharge plan.

...

30. [Mr.] Flores testified that on [22 May] 2014, [Mother] stated to him that she had “taken care of everything”; that she would no longer work with [DSS]; that she would not sign releases to Copestone; that she would not enroll [S.B.] in a PRTF as recommended by [S.B.’s] discharge plan. [Mother] disclosed that she did not agree with the discharge plan and that she wanted [S.B.] to be grounded at home in order to reconnect with her family identity. [Mother] ultimately signed a referral to Eliada as a PRTF. However, this action was not in compliance with the discharge recommendation, in that the document signed was only a consent to place, and [Mother] knew that Eliada did not have a bed available for 30–40 days.

...

35. The Court further finds that [Mother] testified to behaviors that she and the minor children suffered in the housing project, which are supported by medical records; however, said records recommended that the minor children [should] be assessed, especially [S.B.], which [Mother] failed to do. Additionally, [Mother] was not in compliance with discharge orders for Copestone, and did not protect [C.B.] from [S.B.’s] behaviors. [Mother’s] preferred treatment for [S.B.] to come home and be in the familial environment was directly in conflict with medical recommendations.

The trial court further found that C.B. and S.B. did “not receive proper care, supervision or discipline” from Mother and that they “live[d] in an environment injurious to [each girl’s] welfare.” It also found that Mother was “unable to provide for [S.B.’s] care or supervision and lack[ed] an appropriate alternative child care arrangement” for her.

### C. Challenged Findings as to S.B.

Mother challenges numerous findings in the adjudication order as to S.B.<sup>2</sup> Finding of fact 16 in the adjudication order as to S.B. provides that

16. [Ms.] Wallace’s investigation determined that [S.B.] has been hospitalized at Copestone several times,

including four separate times during the investigation. [S.B.'s] behaviors are extremely negative and have directly limited her access to services. For example, [S.B.] is no longer allowed to ride the bus to school, and the local church bus refuses to allow her to ride.

Mother contends that “[t]he evidence [presented at the hearing showed] that [S.B.] refused to ride the bus and that this is why [Mother] had to take [S.B.] to school and pick her up in the afternoon.” Ms. Wallace and Mother did testify at the hearing that S.B. did not want to ride the bus. However, Ms. Wallace also testified about an incident in which S.B. “ran away from [a] church bus and climbed up a tree, [and] that she had to be taken to the ER for evaluation.” Ms. Wallace also testified that S.B. would run away from school, attack school personnel, and generally acted “uncontrollable.” She confirmed that “those behaviors affected [S.B.'s] ability to ride the school bus [.]” Even assuming Mother's challenge regarding S.B. being “no longer *allowed* to ride the [school] bus” is meritorious, the portion of finding of fact 16 that “[S.B.'s] behaviors are extremely negative and have directly limited her access to services” is supported by clear and convincing evidence. Mother does not challenge the remainder of finding of fact 16. Therefore, all but the last sentence in finding of fact 16 is binding on this Court. \*211 **C.B.**, 180 N.C.App. at 223, 636 S.E.2d at 337; *Pittman*, 149 N.C.App. at 764, 561 S.E.2d at 566.

[3] Findings of fact 17, 22, and 33 in the adjudication order as to S.B. provide that

17. [Ms.] Wallace interviewed [Mother]. [Mother] denied calling [S.B.] *names*. [Mother] admitted that [S.B.] had been hospitalized several times due to [S.B.'s] behaviors. However, [Mother] minimized [S.B.'s] behaviors. She did agree to follow up with mental health services for [S.B.] However, [Mother] ultimately failed to cooperate with services recommended for [S.B.]

...

22. While [Mother] initially agreed to follow up with [S.B.'s] medical health needs, it became clear through subsequent interviews and actions that [Mother] minimizes [S.B.'s] behaviors and does not accept that [S.B.'s] behaviors are rooted in mental health problems. [Mother] also believes that the hospital “reprogrammed” [S.B.] to turn ... against [Mother].

...

33. After review of all the documentary evidence and the relevant testimony of the parties, the Court finds as fact the allegations in the Juvenile Petition and makes the following ultimate findings of fact. [S.B.] has been hospitalized due to psychiatric concerns no less than 5 times in 4 months, and she is engaging in behaviors requiring the intervention of mental health services. [S.B.] was in Copestone in March of 2004[sic], and displaying aggressive, assaultive, dangerous behaviors, and [Mother] did make efforts to get [S.B.] medical treatment; however, [Mother] failed to grasp the severity of [S.B.'s] mental health issues, and failure to do so placed [S.B.] at risk.

Mother challenges only the statements in findings of fact 17, 22, and 33 suggesting Mother “minimize[d] [S.B.'s] behavior or fail[ed] to grasp the severity of it.” At the hearing, Ms. Wallace testified that S.B. (1) regularly attacked other people, including school personnel and a police officer; (2) ran away from home and school; and (3) had to be hospitalized at Copestone multiple times. Ms. Wallace further testified that, in her conversations with Mother, Mother (1) “didn't characterize [S.B.'s] behaviors as severe[;]” (2) demonstrated that she did “not understand[ ] the severity of [S.B.'s] mental health issues[;]” and (3) believed S.B.'s mental health issues could be addressed at home without any outside “intervention[.]” Mr. Flores also testified that Mother failed to demonstrate an understanding of the extent of S.B.'s mental health needs, was even confused as to “why Copestone[, a psychiatric hospital,] was keeping [S.B.] so long because [Mother] believed S.B.] was only admitted ... for having a fever[.]” and that Mother's plan upon S.B.'s discharge was to merely “bring [S.B.] home[.]” Accordingly, the challenged statements in findings of fact 17, 22, and 33 are supported by clear and convincing evidence. Mother does not challenge the remainder of findings of fact 17, 22, and 33. Therefore, all of those findings are binding on this Court. **C.B.**, 180 N.C.App. at 223, 636 S.E.2d at 337; *Pittman*, 149 N.C.App. at 764, 561 S.E.2d at 566.

Finding of fact 20 in the adjudication order as to S.B. provides that

20. [Ms.] Wallace's investigation determined that [**C.B.**] was present during the incident at Ingle's, specified above, and has been present during each incident that resulted in [S.B.]

being involuntarily committed to Copestone. On this occasion, [C.B.] had to “run around Ingles” in an effort to find her sister, was worried about her, and expressed fear that [S.B.] was going to be hurt as a result of [S.B.'s] behaviors. [Mother] failed to protect [C.B.] from [S.B.'s] behaviors, and [Mother's] solution was that everyone “just needed to step out”, and allow [Mother] to get [S.B.] grounded at home.

Mother challenges only the statement in finding of fact 20 that Mother “failed to protect [C.B.] from [S.B.'s] behaviors” during the incident at Ingles because, Mother contends, \*212 she was not present during the incident and, therefore, was unable to “protect” C.B. at that time. Although we believe Mother likely takes too narrow a view of what the trial court meant when it found that Mother “failed to protect [C.B.] from [S.B.'s] behaviors,” even assuming Mother's challenge is meritorious, the remaining, unchallenged, portion of this finding is binding on this Court. [C.B.](#), 180 N.C.App. at 223, 636 S.E.2d at 337.

[4] Findings of fact 23, 31, 32 and 34 in the adjudication order as to S.B. provide

23. [Mother] refused to allow Intensive In Home Services to work with her family. [Mother] admitted to [Ms.] Wallace that she believes [S.B.'s] behaviors are making her and [S.B.'s] sister put their lives on hold. [Mother] is extremely defensive and rejects outside intervention into her family, despite the fact that [S.B.] remains hospitalized due to her extreme behaviors. [Mother] is unwilling or unable to understand [S.B.'s] needs, and refuses to make changes in her life to address [S.B.'s] needs. [Mother] does not have any emotional protective capacity and agitates [S.B.], making the situation more out of control.

...

31. [Mr.] Flores testified that [Mother] stated many times her belief that [S.B.] suffered from seizures and that was the only reason that [S.B.] was hospitalized. [S.B.] was tested at Copestone for seizures and no seizure disorder was identified. [Mr.] Flores was able to find no medical record that supported the conclusion that [S.B.] suffered

from [a] seizure disorder. [Mother] never asked [DSS] to secure a second medical opinion on this issue. Despite all of the information to the contrary, [Mother] continues to believe that [S.B.] suffers from [a] seizure disorder, rather than from mental health issues.

32. [Mother] testified that she had signed all treatment plans for [S.B.], prior to [13 May] 2014, but that she believed that [DSS's] treatment plans caused [S.B.] to have seizures, and that these treatment plans endangered her daughter. [Mother] believes that [S.B.] suffers from [Post-Traumatic Stress Disorder](#) (PTSD), due to a bullying incident that occurred at the family's housing project, but that this issue could be handled by her at home. [Mother] acknowledged that [C.B.] was present during the incidents of [S.B.'s] behaviors specified above, but had no concerns about exposing [C.B.] to [S.B.'s] behaviors.

...

34. The Court finds that [Mother] testified that [S.B.'s] only problems were a fever and a seizure, which is not evidenced in the Copestone records. Treatment medical doctors had acknowledged that [Mother's] presence with [S.B.] makes [S.B.'s] behaviors worse, and doctors felt there was a nexus between [Mother] and [S.B.'s] worsening behaviors. The doctors felt a PRTF placement was necessary to cut this connection. Throughout this case [DSS] has worked diligently with [Mother] to meet the needs of [S.B.] [Mother] refused intensive in-home treatment. [Mother] did sign some initial papers for Eliada, but not a release for [S.B.] to be placed there. [Mother] did state she and [C.B.] were being held hostage by [S.B.'s] behaviors, and [C.B.] was exposed to [S.B.'s] behaviors. [Mother] took no protective steps to keep [C.B.] from being exposed to [S.B.'s] behaviors, and when [Mother] was offered an opportunity to have [C.B.] evaluated, she refused.

Mother contends that the statements in findings of fact 23 and 34 suggesting that Mother would not agree to intensive in-home services for S.B. are not supported by the evidence. Ms. Wallace testified at the hearing that Mother consistently refused to let S.B. receive intensive in-home services and instead insisted that S.B. be cared for by Mother or receive less-intense, periodic outpatient services, which Ms. Wallace testified did not “effectively treat [S.B.'s] mental health \*213 needs[,]” lasted only two weeks, and ended when S.B. was readmitted to Copestone. Ms. Wallace further



testified that, instead of Mother disagreeing with the potential efficacy of intensive in-home services for S.B., Mother stated she refused to let S.B. receive intensive in-home services because she did not want providers “coming to” her home and because Mother “thought she could handle [S.B.'s mental health needs] at home” by herself. Moreover, although Mother contends in her brief that she “was willing” to have S.B. receive intensive in-home services by the time medical personnel felt S.B. needed placement in a psychiatric residential treatment facility (“PRTF”), we find no evidence from the adjudication hearing to support this contention. Therefore, the challenged statements in findings of fact 23 and 34 are supported by clear and convincing evidence.

[5] Mother also contends that statements in findings of fact 31, 32, and 34 suggesting that Mother believed S.B.'s behaviors were the result of fevers and seizures are not supported by the evidence. However, Mr. Flores testified Mother conveyed to him “her belief that [S.B.'s] only real issue was having a seizure disorder[.]” Mother even testified that S.B. was admitted to Copestone only “because [S.B.] had a fever and her eyes rolled back in her head and she passed out and had an episode.” Therefore, the challenged statements in findings of fact 31, 32, and 34 are supported by clear and convincing evidence. Mother also does not contest the trial court's finding that medical personnel at Copestone could find no evidence that S.B. suffered from seizures.

With regards the adjudications of S.B. as neglected and dependent, the challenged statements in findings of fact 23, 31, 32 and 34 are supported by clear and convincing evidence; Mother does not challenge the remainder of findings of fact 23, 31, 32 and 34.<sup>3</sup> Therefore, they are binding on this Court. [C.B.](#), 180 N.C.App. at 223, 636 S.E.2d at 337; [Pittman](#), 149 N.C.App. at 764, 561 S.E.2d at 566.

[6] Findings of fact 24 and 25 in the adjudication order as to S.B. provide that

24. On [15 May] 2014, the case was substantiated and transferred to In Home [social worker Mr.] Flores. [Mr.] Flores met with [Mother] on [15 May] 2014. [Mother] refused to agree to any services, [and she] refused to follow up with any mental health services for [S.B.] [Mother] also refused to participate in a comprehensive clinical assessment, as she found that “offensive.” [Mother] did acknowledge that [Mr.] Flores had a “calming energy” and stated she would allow him to conduct home visits.

25. [S.B.] was hospitalized in Copestone after being admitted on [14 May] 2014. [S.B.] has serious mental health needs that [Mother] refuses to ensure that those needs are met. [Mother] refuses to sign any releases or work with the hospital to plan for [S.B.'s] discharge. [S.B.] does not want to return to [Mother's] home.

Mother contends that the statements in findings of fact 24 and 25 suggesting that Mother “refused to participate in any services and would not agree to work with the hospital on a discharge plan” are not supported by the evidence. As a preliminary matter, findings of fact 26 and 27, which are not challenged by Mother, establish that Mother “would not cooperate with the hospital or [DSS] to develop a discharge plan” and in fact “refused to sign releases to allow [DSS] and the hospital to develop [any] discharge plan.” See [C.B.](#), 180 N.C.App. at 223, 636 S.E.2d at 337. Moreover, Mr. Flores testified at the hearing that Mother did, in fact, refuse to participate in S.B.'s discharge planning because “she wasn't in agreement with ... the doctor's recommend[ed]” treatment plan, which—absent DSS filing the present action—could have resulted in S.B. continuing to reside at Copestone psychiatric hospital indefinitely.<sup>4</sup> \*214 Accordingly, the challenged statements in findings of fact 24 and 25 are supported by clear and convincing evidence. Mother does not challenge the remainder of findings of fact 24 and 25. Therefore, they are binding on this Court. [C.B.](#), 180 N.C.App. at 223, 636 S.E.2d at 337; [Pittman](#), 149 N.C.App. at 764, 561 S.E.2d at 566.

#### 1. S.B.'s Neglect Adjudication

[7] [8] Mother first challenges the trial court's adjudication of S.B. as neglected. A neglected juvenile is defined, in part, as one “who does not receive proper care, supervision, or discipline from the juvenile's parent, guardian, custodian, or caretaker; or who has been abandoned; or who is not provided necessary medical care; or who is not provided necessary remedial care; or who lives in an environment injurious to the juvenile's welfare [.]” [N.C. Gen.Stat. § 7B–101\(15\) \(2013\)](#). “[T]his Court require[s] [that] there be some physical, mental, or emotional impairment of the juvenile or a substantial risk of such impairment” as a consequence of the alleged neglect. [In re McLean](#), 135 N.C.App. 387, 390, 521 S.E.2d 121, 123 (1999) (citations, quotation marks, and emphasis in original omitted).

Findings of fact 16, 23, and 25, and finding of fact 18, which is not challenged by Mother, show that S.B. had to be committed to Copestone five times in only four months, that S.B. “has serious mental health needs[, and] that [Mother] refuses to ensure that those needs are met.” Findings of fact 17, 22, 23, 31, 32, and 34, and finding of fact 27, which is not challenged by Mother, show that, although Mother “initially agreed to follow up with [S.B.’s] medical health needs, it became clear through subsequent interviews and actions that [Mother] minimize[d] [S.B.’s] behaviors and [did] not accept that [S.B.’s] behaviors are rooted in mental health problems.” Findings of fact 31, 32, and 34, and finding of fact 27, which is not challenged by Mother, specifically show that Mother believed S.B.’s extreme and violent behavior was the result of fevers or seizures. Findings of fact 17, 22, and 23 also establish that Mother was “unwilling or unable to understand [S.B.’s] needs, ... refuse[d] to make changes in her life to address [S.B.’s] needs[,] ... does not have any emotional protective capacity[,] and agitates [S.B.], making the situation more out of control.” Furthermore, findings of fact 16 and 20, and findings of fact 19 and 21, which are not challenged by Mother, show that S.B. continued to have erratic and violent behavior while in Mother’s custody and while she was not receiving meaningful mental health services. Yet, findings of fact 20 and 23, and findings of fact 18, 30, and 35, which are not challenged by Mother, show that Mother’s “preferred treatment for [S.B. was for S.B.] to come home and be in the familial environment[, which] was directly in conflict with medical recommendations.” Findings of fact 24 and 25, and findings of fact 26 and 27, which are not challenged by Mother, show that Mother refused to “cooperate with the hospital or [DSS] to develop a discharge plan” for S.B. during a subsequent hospitalization at Copestone and “refused to sign releases to allow [DSS] and the hospital to develop a discharge plan.”

The binding facts, discussed above, support the trial court’s ultimate conclusion that S.B. was neglected. Contrary to Mother’s contention in her brief, the present case was not brought merely because “[M]other and the hospital [had a disagreement] concerning the next step in [S.B.’s] treatment.” Instead, the binding findings of the trial court establish that (1) while S.B. was in Mother’s custody, Mother continuously failed to obtain meaningful mental health services for S.B. that could have prevented or mitigated S.B.’s need for repeated hospitalizations at Copestone; (2) greatly minimized and denied the seriousness of S.B.’s condition; and (3) even exacerbated it. Mother also obstructed the creation of any discharge plan for S.B. while S.B. was hospitalized

at Copestone, and thereby continued to subject S.B. to “the most intensive and restrictive type of [mental health] facility” in the state, [10a N.C.A.C. 27g.6001](#), even though all of the evidence presented at the hearing indicated that such continued placement would not have been medically “appropriate[.]”

This Court is sensitive to the difficult and momentous decisions that parents of children with severe mental illness must face. Indeed, \***215** we agree with the dissent that it likely would be inappropriate for the State to utilize neglect proceedings to resolve disagreements between parents and doctors over equally appropriate treatment options. We further agree with the dissent that parents have a “fundamental right ... to make decisions concerning the care, custody, and control of their children,” but respectfully note that this right is protected only “so long as a parent adequately cares for his or her children [.]” *Troxel v. Granville*, [530 U.S. 57, 66–68, 120 S.Ct. 2054, 2061, 147 L.Ed.2d 49, 57–58 \(2000\)](#); accord *Petersen v. Rogers*, [337 N.C. 397, 402, 445 S.E.2d 901, 904 \(1994\)](#) (“[S]o long as certain minimum requirements of child care are met, the interests of the child may be subordinated to the interests of other children, or indeed even to the interests of the parents or guardians themselves.”). “A parent’s rights with respect to [his or] her child[ren] have thus never been regarded as absolute, but rather are limited [,] ... critically, [by] the child[ren]’s own complementary interest in preserving ... [their] welfare and protection [.]” *Troxel*, [530 U.S. at 88, 120 S.Ct. at 2072, 147 L.Ed.2d at 70](#) (Stevens, J., dissenting).

[9] Indeed, our Courts have long held that constitutional “protection of the parent’s interest is not absolute [and] ... ‘the rights of the parents are a counterpart of the responsibilities they have assumed.’” *Price v. Howard*, [346 N.C. 68, 76, 484 S.E.2d 528, 533 \(1997\)](#) (quoting *Lehr v. Robertson*, [463 U.S. 248, 257, 103 S.Ct. 2985, 2991, 77 L.Ed.2d 614, 624 \(1983\)](#)). “[T]he constitutionally-protected paramount right of parents to custody, care, and control of their children” does not extend to “neglect[ing] the welfare of their children[.]” *Petersen*, [337 N.C. at 403–04, 445 S.E.2d at 905](#). At some point, a parent’s unjustified unwillingness or inability to obtain meaningful medical care for her child who is experiencing serious illness rises to the level of neglect, and that is something the Constitution and the laws of this state will not protect. See [N.C.G.S. 7B–101\(15\)](#) (specifically defining a neglected juvenile as one “who does not receive proper care ... from the juvenile’s parent, ... or who is not provided necessary medical care; ... or who lives in an environment injurious to

the juvenile's welfare[.]”); accord *In re A.R.*, 227 N.C.App. 518, 520, 742 S.E.2d 629, 631 (2013) (finding neglect, in part, where a child had “serious health issues including cysts on his only kidney and an enlarged bladder” and the parents repeatedly failed to obtain appropriate medical care for those conditions); cf. *In re Huff*, 140 N.C.App. 288, 300, 536 S.E.2d 838, 846 (2000) (holding that questions of “medical neglect” are “appropriate considerations” in an action to terminate parental rights, even though “[s]uch findings ... infring[e] on the [constitutionally-protected] autonomy of the parents to some degree[.]”).

In the present case, the findings of the trial court that are binding on appeal support the trial court's ultimate conclusion that S.B. was neglected. They establish that Mother continuously failed to obtain meaningful mental health services for S.B. while S.B. was in Mother's custody, minimized and denied the seriousness of S.B.'s condition, and even exacerbated it. This placed S.B. at a substantial risk of some physical, mental, or emotional impairment. See *McLean*, 135 N.C.App. at 390, 521 S.E.2d at 123. Accordingly, we affirm the trial court's adjudication of S.B. as neglected.

## 2. S.B.'s Dependency Adjudication

[10] Mother next challenges the trial court's adjudication of S.B. as dependent. She contends that the findings of fact and evidence do not support the trial court's conclusion of law that S.B. was a dependent juvenile. Specifically, she argues that the findings of fact “reflect [only a] disagreement between ... [M]other and the hospital concerning the next step in [S.B.'s] treatment.”

[11] A juvenile may be adjudicated dependent when the juvenile's parent, guardian or custodian “is unable to provide for the juvenile's care or supervision and lacks an appropriate alternative child care arrangement.” N.C. Gen.Stat. § 7B–101(9) (2013). When determining that a child is dependent “[u]nder this definition, the trial court must address both (1) the parent's ability to provide care or supervision, and (2) the availability to the parent of alternative child care arrangements.” *In re P.M.*, 169 N.C.App. 423, 427, 610 S.E.2d 403, 406 (2005). “Findings \*216 of fact addressing both prongs must be made before a juvenile may be adjudicated as dependent, and the court's failure to make these findings will result in reversal of the [trial] court.” *In re B.M.*, 183 N.C.App. 84, 90, 643 S.E.2d 644, 648 (2007). However,

it has been “consistently held that in order for a parent to have an appropriate alternative child care arrangement, the parent must have taken some action to identify viable alternatives.” *In re L.H.*, 210 N.C.App. 355, 364, 708 S.E.2d 191, 197 (2011).

In the present case, the trial court made the ultimate finding that Mother was “unable to provide for [S.B.'s] care or supervision and lack[ed] an appropriate alternative child care arrangement.” The unchallenged and otherwise binding findings of fact, discussed above, show that Mother continuously failed to obtain meaningful mental health services for S.B. while S.B. was in Mother's custody. Mother also failed to identify any “viable” placement alternatives outside of placement in her home at the adjudication hearing.<sup>5</sup> See *id.* Although Mother argues in her brief that she “was never given a chance to suggest an appropriate alternative child care arrangement” for S.B., the findings of the trial court clearly establish that Mother refused to participate in, and even obstructed, S.B.'s discharge planning. Accordingly, we affirm the trial court's adjudication of S.B. as dependent.

## D. Challenged Findings as to C.B.'s Neglect Adjudication

[12] Mother challenges the trial court's adjudication of C.B. as neglected. She contends that the findings of fact and evidence do not support the trial court's conclusion of law that C.B. was a neglected juvenile. Specifically, she argues that the trial court adjudicated C.B. a neglected juvenile “just because ... Mother would not agree to a comprehensive clinical assessment of [C.B.] and [because C.B.] saw some of S.B.'s extreme behaviors.” (capitalization modified without brackets).

[13] As already discussed, a juvenile is neglected if the juvenile lives in an environment injurious to the juvenile's welfare or that poses a “substantial risk” to the juvenile's wellbeing. *McLean*, 135 N.C.App. at 390, 521 S.E.2d at 123; see N.C.G.S. 7B–101(15). “In determining whether a juvenile is a neglected juvenile, it [also] is relevant whether that juvenile lives in a home where another juvenile has been subjected to ... neglect[.]” *Id.*

In addition to the factual challenges, discussed above, Mother specifically challenges part of finding of fact 32 in the adjudication order as to C.B., stating that Mother “had no concerns about exposing [C.B.] to [S.B.'s] behaviors[.]”

and argues that this finding “was not a fair reflection of the evidence.” However, during the adjudication hearing, Ms. Wallace testified that Mother acknowledged she and C.B. were “held hostage” by S.B.’s behaviors and that they “couldn’t live their lives because they had to be on guard with [S.B.]” Finding of fact 20 shows that C.B. had been “present during each incident that resulted in [S.B.] being involuntarily committed to Copestone.” This finding also recounts an incident where C.B. “had to ‘run around [an] Ingles’ [while S.B. was having a ‘blow up’] in an effort to find her sister, was worried about her, and expressed fear that [S.B.] was going to be hurt as a result of [S.B.’s] behaviors[.]” According to Ms. Wallace, C.B. was exposed to numerous similar incidents that made C.B. feel “scared” and alone. Many of these incidents involved acts of violence by S.B. Yet, Mother was unwilling or unable to obtain meaningful mental health services for S.B. while S.B. was at home with her and C.B., thereby continuing to expose C.B. to S.B.’s behaviors unabated. Moreover, Mother testified at the adjudication hearing that she was “waiting for [the issues with S.B.] to be over” before seeking any kind of therapy or help for C.B. and that, generally, she “was not concerned for” C.B.’s wellbeing as a result of S.B.’s “fits[.]” Accordingly, there was sufficient clear and convincing evidence presented at the adjudication hearing to support the contested portion \*217 of finding of fact 32 that Mother “had no concerns about exposing [C.B.] to [S.B.’s] behaviors.” Therefore, this finding is binding on appeal. See C.B., 180 N.C.App. at 223, 636 S.E.2d at 337; Pittman, 149 N.C.App. at 764, 561 S.E.2d at 566.

Mother may be correct that “the sibling of [a] child with mental health issues will be exposed to things that a parent wishes the sibling did not have to experience” and that it would pose an “impossible standard” to “expect a parent to anticipate when and where the problems will arise[.]” Again, this Court is sensitive to the innumerable challenges that parents of children with severe mental illness must face, especially when siblings are involved. However, in the present case, and notwithstanding whether Mother was willing to have C.B. undergo a comprehensive clinical assessment, all of the unchallenged or otherwise binding findings of the trial court support the trial court’s ultimate conclusion that C.B. was neglected. Mother (1) allowed C.B. to be continually exposed to S.B.’s erratic, troubling, and violent behavior; (2) failed to obtain meaningful medical services for S.B. while S.B. was in her custody that could have mitigated that behavior; and (3) showed no concern for

the effect this might have on C.B. Accordingly, we affirm the trial court’s adjudication of C.B. as neglected.

### III. Mother’s Claim of Ineffective Assistance of Counsel

Mother’s final contention is that she received ineffective assistance of counsel “because her attorney did not review [S.B.’s] medical records” from Copestone or subpoena the hospital psychiatrist and social worker during the adjudication hearing. (capitalization modified without brackets).

[14] [15] [16] “[D]ecisions such as which witnesses to call, [or] whether and how to conduct examinations ... are strategic and tactical decisions that are within the exclusive province of the attorney. Trial counsel are necessarily given wide latitude in these matters.” *State v. Rhue*, 150 N.C.App. 280, 290, 563 S.E.2d 72, 79 (2002) (citation and quotation marks omitted). To prevail upon a claim that counsel’s assistance was ineffective, a parent must show that: (1) counsel’s performance was deficient and (2) the deficient performance was so serious as to deprive the parent of a fair hearing. *In re S.N.W.*, 204 N.C.App. 556, 559, 698 S.E.2d 76, 78 (2010). The client must show that “counsel’s conduct fell below an objective standard of reasonableness ... [and that had] counsel [not] made [the alleged] error [in question], even [if it was] an unreasonable error, ... there is a reasonable probability ... there would have been a different result in the proceedings.” *State v. Braswell*, 312 N.C. 553, 561–63, 324 S.E.2d 241, 248 (1985). “[T]he burden to show that counsel’s performance fell short of the required standard is a heavy one for [the client] to bear.” *State v. Fletcher*, 354 N.C. 455, 482, 555 S.E.2d 534, 551 (2001).

Mother has not carried that burden. As a preliminary matter, Mother acknowledges in her brief that S.B.’s medical records from Copestone were entered into evidence and that the trial court reviewed S.B.’s medical records *in camera* for about two hours.<sup>6</sup> Mother does take issue with DSS’s characterization of S.B. during the adjudication hearing as having “severe mental health issues,” and she contends the medical records would have shown that S.B.’s extreme behavior emanated instead from “psychosocial [issues,] ... caused by the relationship with her mother.” Assuming Mother is correct, this would seem to hurt, rather than help, Mother’s position that S.B. was not living in an environment injurious to her welfare while in Mother’s custody.

Mother also contends that the medical records would have informed Mother's testimony and helped explain the hospital's reasoning behind its actions and treatment decisions. However, this does not get at the heart of the allegations pertaining to S.B. in her neglect and dependency petition—that S.B. was at risk because Mother was unwilling or unable to ensure that S.B. received medically necessary mental health services. Accordingly, we are unable to say “there is a reasonable probability ... there would have been a different result in the proceedings” had counsel fully reviewed and elicited testimony \*218 on the contents of S.B.'s medical records at the adjudication hearing. *Braswell*, 312 N.C. at 563, 324 S.E.2d at 248.

[17] Moreover, even assuming *arguendo* that counsel's performance was deficient as Mother claims, and that it “fell below an objective standard of reasonableness” as defined by *Braswell*, 312 N.C. at 561–62, 324 S.E.2d at 248, DSS presented “overwhelming” evidence to support the adjudications of S.B., and Mother does not contend that counsel's representation was otherwise not “vigorous and zealous.” See *In re Dj.L.*, 184 N.C.App. 76, 86, 646 S.E.2d 134, 141 (2007) (finding no ineffective assistance of counsel where, (1) assuming *arguendo*, “counsel failed to make proper objections to testimony [during a termination of parental rights hearing;] ... failed to develop defenses to the grounds alleged for termination; and ... did not subpoena witnesses” the parent felt were important to her case; (2) “DSS presented overwhelming evidence to support at least one ground for termination of respondent's parental rights[;]” and (3) “[c]ounsel's representation, while not perfect, was vigorous and zealous.”). Accordingly, Mother was not deprived of a fair hearing, *see id.*, and the adjudication orders of the trial court are affirmed. Mother does not directly challenge the disposition orders on appeal.

AFFIRMED.

Judge STEPHENS concurs.

Judge TYSON dissents with separate opinion.

TYSON, Judge, dissenting.

The majority's opinion affirms the trial court's adjudication that both S.B. and C.B. are neglected juveniles. The trial court's findings of fact do not support this conclusion of law. The majority's opinion also holds Mother has failed to carry her burden to show she received ineffective assistance of

counsel. Prior precedents guide this Court not to make such a factual determination based on the paucity of the record before us. I respectfully dissent.

### I. Standard of Review

This Court reviews a trial court's adjudication of neglect to determine: “(1) whether the findings of fact are supported by clear and convincing evidence, and (2) whether the legal conclusions are supported by the findings of fact [.]” *In re Gleisner*, 141 N.C.App. 475, 480, 539 S.E.2d 362, 365 (2000) (citations and internal quotation marks omitted). We review the trial court's conclusion that a juvenile is abused, neglected, or dependent *de novo* on appeal. *In re N.G.*, 186 N.C.App. 1, 13, 650 S.E.2d 45, 53 (2007) (citations and internal quotation marks omitted), *aff'd per curiam*, 362 N.C. 229, 657 S.E.2d 355 (2008).

### II. Adjudication of Neglect

Mother argues the trial court erred by finding S.B. and C.B. are neglected juveniles. She contends the trial court's findings of fact are not supported by clear, cogent, and convincing evidence. The majority's opinion states “[t]he binding facts ... support the trial court's ultimate conclusion that S.B. was neglected.” I disagree.

N.C. Gen. Stat § 7B–101(15) defines a “neglected juvenile” as:

[a] juvenile who does not receive proper care, supervision, or discipline from the juvenile's parent, guardian, custodian, or caretaker; ... or who is not provided necessary medical care; or who is not provided necessary remedial care; or who lives in an environment injurious to the juvenile's welfare.... In determining whether a juvenile is a neglected juvenile, it is relevant whether that juvenile lives in a home where ... another juvenile has been subjected to abuse or neglect by an adult who regularly lives in the home.

N.C. Gen.Stat. § 7B–101(15) (2013).

Our Supreme Court has recognized “not every act of negligence on the part of parents ... constitutes ‘neglect’ under the law and results in a ‘neglected juvenile.’ ” *In re Stumbo*, 357 N.C. 279, 283, 582 S.E.2d 255, 258 (2003) (holding an anonymous call reporting an unsupervised, naked two-year-old in the driveway, without more, does not constitute neglect as intended by the legislature). The determination of neglect is a fact-specific inquiry. A parent's conduct must be reviewed \*219 on a case-by-case basis, taking into consideration the totality of the circumstances. *Speagle v. Seitz*, 354 N.C. 525, 531, 557 S.E.2d 83, 86 (2001), cert. denied, 536 U.S. 923, 122 S.Ct. 2589, 153 L.Ed.2d 778 (2002).

The trial court must find “some physical, mental, or emotional impairment of the juvenile or a substantial risk of such impairment as a consequence of the failure to provide proper care, supervision, or discipline” in order to adjudicate a juvenile as neglected. *In re Safriet*, 112 N.C.App. 747, 752, 436 S.E.2d 898, 901–02 (1993) (citations and internal quotation marks omitted). Also, when determining whether a juvenile is neglected, “the trial judge may consider a parent's complete failure to provide the personal contact, love, and affection that exists in the parental relationship.” *In re Yocum*, 158 N.C.App. 198, 204, 580 S.E.2d 399, 403 (citation and quotation marks omitted), *aff'd per curiam*, 357 N.C. 568, 597 S.E.2d 674 (2003).

#### A. S.B.'s Adjudication of Neglect

No allegations or evidence offered by DSS tend to show Mother is unfit or has abused either of her daughters, abuses drugs or alcohol, deprived them of financial support, transportation, food, clothing, shelter, medical care, educational opportunities, abandoned them by not giving her time and resources, or failed to show parental love, comfort, care, or discipline. What is before us is a disagreement between the daughters' mother and a doctor and social worker over alternative recommendations of preferred therapies and treatment to address S.B.'s conduct.

N.C. Gen.Stat. § 7B–101(15) is not intended and cannot be used by DSS to gain a corrosive leverage over a parent's disagreements with alternative treatments and therapies for her child. Such an application erodes a parent's “fundamental right ... to make decisions concerning the care, custody, and control of their children.” *Troxel v. Granville*, 530 U.S. 57, 66, 120 S.Ct. 2054, 2060, 147 L.Ed.2d 49, 57 (2000) (citations

omitted). The facts here are no different than a parent who refuses a doctor's or counselor's recommendation to prescribe and administer *Ritalin*, a psychotropic drug, to her child, or a parent who refuses to allow *blood transfusions*, an *organ transplant*, or other invasive procedures to be performed or administered to her child without consent.

Reasonable people may disagree over the best course of treatment or conduct to follow. When that occurs, the fundamental rights and decision of the parent prevail over the recommendations of the non-parent and the State. The fact that the parent disagrees with the doctor, counselor, or social worker is not neglect. The parent's decision is legally and constitutionally entitled to support, deference and respect by the State and its actors. In the end, in the absence of any showing that the parent is unfit or refusing to allow emergency, life-saving treatment, the parent's final decision over the choices among alternative treatments and therapies to help her child trumps those favored by DSS. *Id.*

The “parental liberty interest ‘is perhaps the oldest of the fundamental liberty interests’ the United States Supreme Court has recognized.” *Owenby v. Young*, 357 N.C. 142, 144, 579 S.E.2d 264, 266 (2003) (quoting *Troxel*, 530 U.S. at 66, 120 S.Ct. at 2060, 147 L.Ed.2d at 57). The Supreme Court of the United States held this liberty interest must be given great deference, stating:

so long as a parent adequately cares for his or her children (*i.e.*, is fit), there will normally be no reason for the State to inject itself into the private realm of the family to further question the ability of that parent to make the best decisions concerning the rearing of that parent's children.

*Troxel*, 530 U.S. at 68–69, 120 S.Ct. at 2061, 147 L.Ed.2d at 58 (citation omitted).

Our Supreme Court also recognized the importance of this fundamental liberty interest in *Owenby v. Young*, 357 N.C. at 145, 579 S.E.2d at 266.

We acknowledged the importance of this liberty interest nearly a decade ago when this Court held: absent a finding that parents (i) are unfit or (ii) have neglected the welfare of their children, the constitutionally

protected paramount right of parents to custody, care, and control of their children must prevail. The protected liberty **\*220** interest complements the responsibilities the parent has assumed and is based on a presumption that he or she will act in the best interest of the child.

*Id.* (citations and internal quotation marks omitted). *See also Petersen v. Rogers*, 337 N.C. 397, 403–04, 445 S.E.2d 901, 905 (1994); *Price v. Howard*, 346 N.C. 68, 79, 484 S.E.2d 528, 534 (1997).

Here, Mother is informed and well-aware of S.B.'s mental health needs, and is exercising her constitutionally protected right to “custody, care, and control” of her children. *Owenby*, 357 N.C. at 145, 579 S.E.2d at 266. The record reflects Mother's prevailing right to prefer S.B.'s “issues [to] be handled at home[.]” Mother's preference for in-home treatment for S.B. appears to be a result of her “belie[f] that the hospital ‘reprogrammed’ [S.B.] to turn against” Mother.

Mother has taken S.B. to Copestone each time she required hospitalization. This evidence of Mother clearly responding to the dire needs of her severely mentally ill child must not be overlooked. Mother also recognized SW Flores had a “calming energy” around S.B., and allowed him to conduct home visits. Mother declined to participate in a comprehensive clinical assessment, because she found it “offensive.” Mother has also expressed concern that “she believed that the Department's treatment plans caused [S.B.] to have seizures, and that these treatment plans endangered her daughter.”

Mother's actions and choices regarding the “custody, care, and control” of her children is a utilization of her “protected liberty interest.” *Id.* The fact that Mother's choices for S.B.'s care differ from the suggestions from S.B.'s medical providers cannot diminish the presumption that she is acting in the best interest of her children. The record certainly does not lend any support to a finding that Mother is unfit or neglects the welfare of her children. *Id.* This Court sets a dangerous precedent if it allows a difference of opinion regarding mental health recommendations to erode or supplant this historic and fundamental liberty interest for parents to make critical and binding decisions over the care of their children.

The majority opinion's assumption that the trial court's findings of fact “support the trial court's ultimate conclusion

that S.B. [and **C.B.** were] neglected” is error and should be reversed. These findings are not sufficient to defeat the paramount presumption of “the right of parents to establish a home and to direct the upbringing and education of their children.” *Owenby*, 357 N.C. at 144, 579 S.E.2d at 266. *See Meyer v. Nebraska*, 262 U.S. 390, 399–400, 43 S.Ct. 625, 626–27, 67 L.Ed. 1042, 1045–46 (1923) (noting the Fourteenth Amendment's guarantee against deprivation of life, liberty or property without due process of the law includes an individual's right to establish a home and bring up children).

### B. **C.B.'s** Adjudication of Neglect

The majority's opinion concludes the trial court properly adjudicated **C.B.** and S.B. as neglected juveniles. This conclusion is based on the notion that “Mother was unwilling or unable to obtain meaningful mental health services for S.B. while S.B. was at home with her and **C.B.**, thereby continuing to expose **C.B.** to S.B.'s behaviors unabated.”

The fact that a sibling lives in a family home with a special needs child does not constitute “an environment injurious to the juvenile's welfare[.]” N.C. Gen.Stat. § 7B–101(15). The lives of any parent or sibling raising, caring for, and living in a home with a special needs child or other family member will undoubtedly be impacted by, and in many cases severely impacted by, the inordinate amount of time, resources and familial emotions expended for the care and upbringing of a family member with special needs. While such home environments may be challenging and cause siblings to carry these experiences into their adult lives, it is a gross abuse for DSS to assert that being exposed to and helping care for a special needs sibling supports either an allegation or an adjudication of neglect.

The trial court's findings of fact show Mother disagrees with the alternative treatment *recommendations* for S.B. Mother has a fundamental and constitutionally protected right to remain at the helm of rearing and caring for her children. Mother should not be chastised and penalized for exercising her **\*221** “constitutionally protected paramount right ... to custody, care, and control of [her] children” by disagreeing with alternative treatment recommendations. *Owenby*, 357 N.C. at 145, 579 S.E.2d at 266. The clear, cogent, and convincing evidence before this Court does not support a conclusion that either S.B. or **C.B.** are neglected juveniles. In the absence of any allegation or evidence that Mother is

unfit, DSS cannot use the special needs of one child to assert a sibling is neglected by sharing the same home.

### III. Ineffective Assistance of Counsel

Mother argues the trial court's order should also be vacated because she was provided ineffective assistance of counsel. Mother contends her attorney's failure to "review [S.B.'s] medical records" or subpoena the hospital psychiatrist and social worker during the adjudication amounts to ineffective and deficient representation and resulted in severe prejudice to her. Whether or not this is correct cannot be determined from the record before us.

The majority's opinion concludes Mother has failed to carry her burden to "show that counsel's performance fell short of the required standard [.]” *State v. Fletcher*, 354 N.C. 455, 482, 555 S.E.2d 534, 551 (2001), cert. denied, 537 U.S. 846, 123 S.Ct. 184, 154 L.Ed.2d 73 (2002). I disagree.

It is well established that ineffective assistance of counsel claims brought on direct review will be decided on the merits when the cold record reveals that no further investigation is required, i.e., claims that may be developed and argued without such ancillary procedures as the appointment of investigators or an evidentiary hearing. Thus, when this Court reviews ineffective assistance of counsel claims on direct appeal and determines that they have been brought prematurely, we dismiss those claims without prejudice, allowing [the party] to bring them pursuant to a subsequent motion for appropriate relief in the trial court.

*State v. Thompson*, 359 N.C. 77, 122–23, 604 S.E.2d 850, 881 (2004) (citations and internal quotation marks omitted), cert. denied, 546 U.S. 830, 126 S.Ct. 48, 163 L.Ed.2d 80 (2005).

On the record before us, this Court can only speculate whether counsel for Mother's failure to review S.B.'s medical records and subpoena relevant witnesses to testify at the hearing "fell below an objective standard of reasonableness.” *State v.*

*Braswell*, 312 N.C. 553, 561–62, 324 S.E.2d 241, 248 (1985) (citation omitted). In accordance with established precedents, I vote to remand this issue to the trial court for additional hearing, evidence, and findings of fact to further develop the record on this issue.

### IV. Conclusion

The trial court's findings of fact do not support its ultimate conclusion that S.B. and C.B. are neglected juveniles. The record clearly shows Mother repeatedly sought medical treatment for S.B. when necessary. Mother's authority and decision to disagree with the recommendations of some of the treatment providers and the State's actors is a valid and protected exercise of her parental rights. Her decisions are constitutionally protected and insufficient to support an adjudication of neglect. *Owenby*, 357 N.C. at 145, 579 S.E.2d at 266.

Having S.B.'s sibling, C.B., present in the home during the daily living and sharing in S.B.'s struggles does not constitute neglect. DSS cannot lawfully assert these allegations are sufficient to usurp Mother's constitutionally protected rights to make final decisions over "the custody, care, and control of [her] children[.]" which must be respected and supported by the State. *Id.* It is preposterous for DSS to assert or for the trial court to find that C.B. is neglected merely by living in the same home with her twin sister, who has special needs.

This case and S.B.'s needs are not a game over who wins and who loses. It concerns who is the ultimate decision-maker when choosing among alternative treatments for S.B.'s care. The Constitution and the Supreme Court of the United States, and the Supreme Court of North Carolina have repeatedly answered this issue in favor of the fit parent.

The record before us is insufficient to establish whether Mother was saddled with ineffective assistance of counsel at the adjudication and disposition. I vote to reverse \*222 the trial court's adjudications of neglect and to remand for hearing on the ineffective assistance of counsel claim. I respectfully dissent.

### All Citations

783 S.E.2d 206



Footnotes

- 1 The findings of fact in each child's order are virtually identical. All quoted findings herein are taken from the adjudication order as to S.B.
- 2 Mother challenges finding of fact 12, which provides that “[t]he verified Juvenile Petition[s] [were] entered into evidence without objection by any party.” Mother contends only that “[t]he record does not show that the petition[s] [were] entered into evidence.” Although there were general references to documents being admitted into evidence at the hearings, we agree with Mother to the extent that it is not clear whether the verified petitions as to S.B. and **C.B.** were admitted into evidence at the hearing. However, Mother provides no further argument on this issue and, therefore, we do not believe it is conclusive as to her appeal.
- 3 However, Mother does challenge another part of finding of fact 32 with regard to **C.B.’s** neglect adjudication, discussed *infra*.
- 4 Psychiatric hospitals are “the most intensive and restrictive type of [mental health] facility” in the state. [10a N.C.A.C. 27g.6001](#).
- 5 Mother testified at the adjudication hearing that she was also willing to place S.B. in a PRTF called Eliada, but according to testimony from Mr. Flores, Eliada would not have had an opening for S.B. for “[a]t least 30 to 40 days[.]”
- 6 S.B.’s medical records from Copestone have been included in the record on appeal.

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215 N.C.App. 389

Unpublished Disposition

NOTE: THIS OPINION WILL NOT APPEAR  
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WILL APPEAR IN A REPORTER TABLE.

Court of Appeals of North Carolina.

In the Matter of **A.C.G.**

No. COA10–1552.

|  
Sept. 6, 2011.**Opinion**

\*1 Appeal by Piedmont Behavioral Health from Order entered 28 July 2010 by Judge April C. Wood in Davidson County District Court. Heard in the Court of Appeals 11 May 2011.

**Attorneys and Law Firms**

[Michael K. Newby](#), for Davidson County Department of Social Services.

Laura Bodenheimer, for Guardian ad Litem program.

Nelson, Mullins, Riley & Scarborough, LLP, by [Stephen D. Martin](#), for Piedmont Behavioral Health.

[HUNTER, JR.](#), ROBERT N., Judge.

Piedmont Behavioral Health (“PBH”) appeals from a civil contempt order, arguing the Order is punitive and not supported by findings of fact sufficient to conclude PBH is in willful contempt of court. PBH also contends it is entitled to sovereign immunity as a contractor for the North Carolina Department of Health and Human Services. We affirm in part, and vacate in part.

**I. Factual & Procedural History**

On 20 March 2006, Oliver,<sup>1</sup> a minor child, was found to be an abused and neglected juvenile. On 4 December 2006, Oliver’s biological father signed a relinquishment of his parental rights and consented to Oliver being adopted. On 22 March 2007, the trial court entered an Order terminating the parental rights of Oliver’s biological mother due to her abandonment of Oliver. Davidson County Department of

Social Services (“DSS”) was appointed as Oliver’s guardian. DSS subsequently determined that Oliver, an indigent child, needed state mental health services and sought appropriate treatment for Oliver with PBH.

PBH facilitates multi-county mental health services, developmental disabilities services, and substance abuse services pursuant to [N.C. Gen.Stat. § 122C–115\(c\)](#) and was established by the Boards of Commissioners of Cabarrus, Davidson, Rowan, Stanly, and Union Counties. PBH acts as a “local management entity” (“LME”), a local political subdivision that provides oversight of mental health care providers by planning and coordinating certain behavioral health services in a defined geographic area. *See* [N.C. Gen.Stat. § 122C–115.4 \(2009\)](#). PBH does not provide these services, but connects those who require such services with service providers.

Pursuant to an agreement between PBH, the federal Center for Medicare and Medicaid Services (“CMS”), and the North Carolina Department of Health and Human Services, Division of Medical Assistance (“DMA”), PBH operates as a Prepaid Inpatient Health Plan (“PIHP”). A PIHP is a federally-recognized managed care organization pursuant to [42 C.F.R. § 438.2](#), and operates under federal Medicaid waivers pursuant to §§ 1915(b) and 1915(c) of the Social Security Act ([42 U.S.C. §§ 1396n\(b\) and \(c\)](#)). As a PIHP, PBH may only use Medicaid funds to pay for Medicaid services that are deemed “medically necessary” pursuant to [42 U.S.C. § 1396n\(b\)](#). To qualify for services, an enrollee must meet certain criteria defined by Medicaid. Pursuant to PBH’s contract with DMA, PBH is authorized to review requests by consumers to determine whether the requested services are “medically necessary,” that is, whether they meet all of the established criteria.

\*2 In August, September, and October of 2009, DSS, as Oliver’s guardian, requested that PBH approve certain Medicaid behavioral healthcare services on behalf of Oliver, including approval to place Oliver in a psychiatric residential treatment facility (“PRTF”). PBH denied these requests, finding that Oliver did not meet the “medically necessary” admission criteria required for PRTF placement. On 9 November 2009, DSS initiated an appeal from this denial in the North Carolina Office of Administrative Hearings (“OAH”). On 18 August 2011, Chief Administrative Law Judge Julian Mann, III, of the OAH granted summary judgment in favor of DSS.<sup>2</sup>

On 26 March 2010, the Davidson County District Court entered a Post Termination Review Order in which it directed PBH to provide an appropriate PRTF placement for Oliver and “provide the other services necessary to meet his mental health needs or in the alternative to appear and explain to the Court why the [requested facility] or other PTRF [sic] placement is not part of an appropriate treatment plan.” The Order further directed Dr. Hummel, Dr. Baker, or the current clinical director of PBH to appear at a 7 April 2010 hearing to explain PBH's denial, along with any other treating psychiatrist having the ability to describe in detail how PBH proposes to meet Oliver's “considerable needs.”

PBH received the Order on 31 March 2010 and acknowledged receipt of the Order in a 5 April 2010 Notice. On 5 April 2010, PBH filed an objection to the Order, asserting the court lacked jurisdiction, since the matters were already pending before the OAH in a Medicaid appeal. Without waiving these objections, PBH advised the court that Dr. Hummel was out of the country, Dr. Baker was no longer employed by PBH, there was currently no clinical director of PBH, and there were no treating psychiatrists on staff at PBH familiar with Oliver's case.

On 7 April 2010, the trial court conducted a post termination of parental rights review. PBH did not attend the hearing. On 5 May 2010, the trial court entered a Show Cause Order, directing the Area Director/CEO of PBH, Dan Coughlin, to appear and show cause why PBH should not be held in civil contempt for failing to comply with the 26 March 2010 Order.

On 2 June 2010, the trial court conducted a hearing on the Show Cause Order. Coughlin testified to the factual basis of PBH's prior objection, that none of the requested parties were available to attend the 7 April 2010 hearing. Coughlin testified that he made no attempt to contact Dr. Baker or otherwise obtain her attendance at the hearing.

On cross-examination, Coughlin stated that although Dr. Baker was no longer employed by PBH, she was still a consultant for PBH. Coughlin responded to cross-examination as follows:

Q. Well, could you not retain [Dr. Baker] to come to court to assist PBH in, uh, uh, explaining to the Court the appropriate treatment, uh, protocols for [Oliver]?

A. Yeah. Uh, could I? Theoretically, I could; whether she'd accept such an assignment or not, I don't know.

\*3 Q. Did you *try*?

A. I did not.

Q. Okay. What other efforts did you make to—in order to comply with the Court's order?

A. Other than?

Q. Other than just say, “Well, Dr. Hummel's not in the country.” What else did you do in order to comply with the Court's order?

A. We didn't do anything else.

In a 28 July 2010 Order, the trial court held PBH in civil contempt. The trial court's Order stated, in part:

5. PBH, through its counsel of record, filed a pleading in this cause relating to the April 7th hearing alleging its inability to comply with the Court's order and asking the Court to continue the hearing on April 7th; however, no one from PBH or representing PBH was present at the call of the case on April 7th to explain to the Court whether or not PBH was able to comply with the Court's order....

....

7. At today's hearing, Mr. Coughlin testified concerning PBH's efforts to comply with the Court's March 26 order. He testified that when he received a copy of the order, he inquired about the availability of Dr. Hummel and was informed he was out of the county. He further testified that said inquiry was the extent of his efforts to comply with the Court's order.

8. Neither Mr. Coughlin nor any representative of PBH attempted to obtain the appearance of Dr. Baker.... Mr. Coughlin testified that Dr. Baker continued to consult on [Oliver's] case and that his case was the only case for which she is currently a consultant.

....

11. By its lack of effort in complying with the Court's March 26 order without legal justification, despite its ongoing ability to do so, PBH is in willful civil contempt of court.

The Order stated that PBH could purge itself of contempt by producing Dr. Hummel “or the current medical director along with any other treating psychiatrist who has the ability

to describe in detail how PBH proposes to meet [Oliver]'s considerable needs” for testimony at a hearing on 17 June 2010, and by paying a fine of \$10,000.00.

On 17 June 2010, Dr. Hummel appeared before Judge April C. Wood in Davidson County Juvenile Court. PBH filed its Notice of Appeal from the order of contempt on 3 August 2010. PBH appeals and argues that the trial court erred in holding PBH in contempt of the 26 March 2010 Order and fining PBH \$10,000.00 to ensure compliance with its Order.

## II. Jurisdiction & Standard of Review

This Court exercises jurisdiction over the matter pursuant to [General Statutes section 5A–24](#). See [N.C. Gen.Stat. § 5A–24 \(2009\)](#) (“A person found in civil contempt may appeal in the manner provided for appeals in civil actions.”). Further, “review of contempt proceedings is confined to whether there is competent evidence to support the [trial court's] findings of fact and whether those findings support the judgment.” [McKillop v. Onslow Cnty.](#), 139 N.C.App. 53, 58, 532 S.E.2d 594, 598 (2000) (quotation marks omitted) (citation omitted) (alteration in original).

## III. Analysis

### A. Sovereign Immunity

\*4 PBH contends the trial court erred in holding PBH in civil contempt, on the grounds that as a contractor for the State of North Carolina, PBH enjoys sovereign immunity. We disagree.

Under North Carolina law, an agent of the State of North Carolina is not subject to contempt. See [N.C. Dep't of Transp. v. Davenport](#), 334 N.C. 428, 430, 432 S.E.2d 303, 304 (1993) (“Since the superior court's order was directed to an administrative agency ... the threshold question is whether the court had authority to hold the sovereign in contempt. We conclude the court could not do so.”). However, there is “no authority in this State which recognizes a contractor's right to assert governmental immunity in a ... claim which arises out of the performance of a contract with the State.” [Knighten v. Barnhill Contr. Co.](#), 122 N.C.App. 109, 113, 468 S.E.2d 564, 566 (1996).

In the instant case, PBH contracted with DMA, a state agency. PBH contends that this contractual relationship extended

sovereign immunity to PBH. PBH further argues that it is governed by federal Medicaid waivers in the five-county catchment area, and also operates a PIHP. Because PBH operates a federally-recognized managed care organization pursuant to [42 C.F.R. § 438.2](#), PBH argues the Medicaid waivers under which it operates supersede Chapter 122C of our General Statutes.

A PIHP “[p]rovides medical services to enrollees under contract with the State agency, and on the basis of prepaid capitation payments, or other payment arrangements that do not use State plan payment rates.” [42 C.F.R. § 438.2](#). While PBH acts as a PIHP, a federally recognized managed care organization, PBH does so under contract with the State. The two Medicaid waivers under which PBH operates are combination waivers that allow states to provide non-traditional long-term care services or to use a limited pool of providers to provide these services. 2005 Health L. Handbook § 12:7. As these waivers are employed by the State to select providers of services, they reinforce the contractual nature of PBH's provision of services.

The contract between PBH and DMA expressly provides that

[t]he Contractor [ (PBH) ] is and shall be deemed to be an independent contractor in the performance of this contract and as such shall be wholly responsible for the work to be performed and for the supervision of its employees. (Emphasis added.)

Since PBH was acting as an independent contractor and not as an agent of the State, it is not entitled to the protection of the State's sovereign immunity. See [Knighten](#), 122 N.C.App. at 113, 468 S.E.2d at 566. Therefore, PBH's argument is without merit and we find PBH was not entitled to the defense of sovereign immunity.

### B. Willful Contempt

PBH argues the trial court erred in concluding that PBH was in willful contempt of court. We disagree.

Failure to comply with a court order creates a continuing civil contempt so long as four elements are satisfied: (1) the original court order must remain in force, (2) its purpose may still be satisfied by compliance, (3) non-compliance must be willful, and (4) the non-compliant party must be able to

comply or take reasonable measures that would enable the party to comply. N.C. Gen.Stat. § 5A–21(a) (2009).

\*5 PBH does not contest the findings of fact of the trial court's 28 July Order. PBH argues the findings do not support the conclusion that PBH was in willful contempt because the findings show it was impossible for PBH to comply with the court's Order as it could not compel Dr. Baker to appear at the 7 April 2010 hearing.

Although PBH argues it could not compel Dr. Baker to testify, Dr. Baker continued to act as a consultant on Oliver's case. Coughlin's testimony that PBH could have retained Dr. Baker is evidence of their ability to comply with the Order. Given PBH's ability to retain Dr. Baker as a consultant, the complete lack of effort to comply with the Order supports the trial court's contempt Order. For this reason, we affirm the trial court's finding of civil contempt.

### C. Fine for Contempt

PBH contends the trial court erred in ordering it to pay a \$10,000 fine in its contempt Order arguing that the fine was punitive rather than coercive in nature. We agree.

In *Jolly v. Wright*, our Supreme Court identified the purpose of issuance of civil contempt fines, namely to coerce compliance with a court order. 300 N.C. 83, 92, 265 S.E.2d 135, 142 (1980) (“The purpose of civil contempt is not to punish; rather, its purpose is to use the court's power to impose fines or imprisonment as a method of coercing the defendant to comply with an order of the court.”), *overruled on other grounds, McBride v. McBride*, 334 N.C. 124, 431 S.E.2d 14 (1993); *see also Hicks ex. Rel Feiock v. Feiock*, 485 U.S. 624,

99 L.E.2d 721 (1988) (civil contempt non-remittable fines are acceptable forms of coercion for compliance with court orders); *Bishop v. Bishop*, 90 N.C.App. 499, 505, 369 S.E.2d 106, 109 (1988) (adopting *Hicks*). If the court imposes a fine as part of civil contempt, the fine “is lifted as soon as [the contemnor] decides to comply with the order of the court, or when it becomes apparent that compliance with the order is no longer feasible.” *Jolly*, 300 N.C. at 92, 265 S.E.2d at 142. The \$10,000 fine should have been lifted, in accordance with *Jolly*, on 17 June 2010, after Dr. Hummel testified in the trial court and complied with the dictates of the 26 March 2010 Order. Accordingly, we vacate the trial court's imposition of the fine against PBH.

### IV. Conclusion

The trial court did not err by holding PBH in contempt, as there was competent evidence supporting a finding of contempt. Further, PBH was not protected by sovereign immunity. However, the trial court did err in imposing a fine against PBH after PBH complied with its Order. Therefore, the Order of the trial court is

Affirmed in part, and vacated in part.

Judges STEELMAN and STEPHENS concur.  
Report per Rule 30(e).

### All Citations

215 N.C.App. 389, 716 S.E.2d 87 (Table), 2011 WL 3891038

### Footnotes

1 A pseudonym conceals the minor child's identity.

2 As the order granting summary judgment was filed after the record on appeal in this case, we take judicial notice of the order.

## Juveniles in DSS Custody Presenting at Hospital ED for Mental Health Treatment: New Laws and New Court Hearing Possible

Perhaps it is not surprising that juveniles who experience abuse, neglect, or dependency have a higher risk of suffering from mental health issues. These children have experienced trauma, and when they are removed from their homes and families, they further experience loss, separation, and disruption. **The National Conference of State Legislatures reports that “[u]p to [80 percent](#) of children in foster care have significant mental health issues, compared to approximately [18-22 percent](#) of the general population.”\*** **According to the American Academy of Pediatrics, “[m]ental and behavioral health is the largest unmet health need for children and teens in foster care.”\*\***

Some North Carolina laws set forth in the Juvenile Code address the issue of children in DSS custody who experience mental health issues. For example, G.S. 7B-505.1(c) addresses the need for DSS to obtain a court order to consent to non-routine and non-emergency medical treatment for a juvenile in its custody – such treatment includes mental health treatment requiring informed consent. And, G.S. 7B-903(d) authorizes the court to order a juvenile to receive a psychological or other necessary examination to determine the juvenile’s needs. Other laws, such as those in G.S. Chapter 122C, address mental health treatment generally and include provisions specific to juveniles. **Laws specifically addressing treatment and the coordination of services between a DSS with a juvenile in its custody and managed care organization (MCO) or prepaid health plans (PHP) were lacking, until the enactment of S.L. 2021-132.**

**This post focuses on two new laws** that were included in [S.L. 2021-132](#) that specifically address situations where a juvenile who is in DSS custody presents to a hospital emergency department for mental health treatment. **Effective October 1, 2021**, a new statute in G.S. Chapter 122C was enacted to address care coordination for the juvenile by DSS, the LME/MCO or prepaid health plan (PHP), the hospital, and the North Carolina Department of Human Services (DHHS): **G.S. 122C-142.2. Effective January 1, 2022**, a new statute in the Juvenile Code, **G.S. 7B-903.2**, was enacted to authorize an emergency motion and hearing to address compliance with the requirements of G.S. 122C-142.2.

**Juvenile presenting at hospital for mental health treatment.** When a juvenile who is in DSS custody presents to a hospital emergency department for mental health treatment and it is determined that the juvenile should not remain at the hospital and there is no immediately available appropriate placement for the juvenile, the DSS director must contact the appropriate LME/MCO or PHP within twenty-four hours of that determination. The director requests an assessment of the juvenile. G.S. 122C-142.2(b). Within five business days of the director’s request, the LME/MCO or PHP must, when applicable or required by their contract with DHHS, arrange for an assessment of the juvenile by the juvenile’s clinical home provider, the hospital (if able or willing), or another

qualified clinician. G.S. 122C-142.2(c). Depending on the level of care recommended by the assessment, DSS and the LME/MCO or PHP must act as provided for in the following table. G.S. 122C-142.2(d).

**Recommendation**

**DSS**

**LME/MCO or PHP**

# **Mental Health & Delinquency**



## Incapacity to Proceed and Juveniles

Two days ago, Franklin County prosecutors dismissed a murder charge against an 18-year-old male who allegedly admitted to decapitating his mother because “he felt like it.” The case made national headlines back in March when it was reported that the teen emerged from the home holding a butcher knife in one hand and his mother’s head in the other when officers arrived on the scene. According to this [article](#), the trial court recently found that the teen lacked capacity to proceed after he was examined by mental health professionals at Central Regional Hospital in Butner. This post discusses what it means for a juvenile to lack capacity to proceed and why it not only bars a criminal prosecution, but also, prohibits delinquency proceedings against a juvenile.

Both state law and constitutional due process require that juveniles must be mentally capable of participating in their defense (*i.e.*, possess capacity to proceed) in order to stand trial. If a juvenile cannot defend him or herself against the State, the fundamental fairness of the proceeding is significantly undermined. *Drope v. Missouri*, 420 U.S. 162, 172 (1975).

The constitutional test for capacity to proceed, known as the *Dusky* standard, is whether a defendant has a “sufficient present ability to consult with his lawyer with a reasonable degree of rational understanding” and “a rational as well as factual understanding of the proceedings against him.” *Dusky v. United States*, 362 U.S. 402, 402 (1960) (per curiam). The *Dusky* standard is codified in [G.S. 15A-1001\(a\)](#) as a three-part test, which provides that an accused lacks capacity to proceed if *by reason of a mental illness or defect*, he or she is unable to:

understand the nature and object of the charges against him or her,  
comprehend his or her own situation in reference to the proceedings, or  
assist in his or her defense in a rational or reasonable manner.

This standard was developed for adult criminal defendants, but the Juvenile Code makes it applicable to juveniles. See [G.S. 7B-2401](#). The first two prongs of the statutory test encompass the *Dusky* standard’s requirement that an accused must possess both a factual and rational understanding of the proceedings, and the third prong is the ability to consult with and assist counsel. Because the test is disjunctive, a juvenile who is unable to perform any of these abilities is incapable of proceeding.

**Factual understanding** refers to a juvenile’s basic knowledge of facts about the trial process and courtroom procedures. Facts the juvenile must understand include the roles of various participants in the process (*e.g.*, judge, prosecutor, and defense attorney), the nature and seriousness of the charges, the nature of plea agreements, and potential penalties for the offense. See Thomas Grisso, [Legal Questions About Juveniles’ Capacities](#), Module 4 (2009).

**Rational understanding**, sometimes called “appreciation,” is the ability to appreciate the relevance or significance of information that one factually knows. For example, a juvenile may

understand that the defense attorney's role is to help the juvenile at trial but may not understand how the defense attorney provides such help. The juvenile may not fully understand that the defense attorney's job includes advocating for a dismissal, even if the allegations are true. In other words, the juvenile may lack the ability to appreciate what the juvenile factually knows about the defense attorney's role. *Id.*

**Assisting in one's own defense** requires at least four types of abilities: (1) the ability to receive and communicate information adequately, (2) the ability to trust or work collaboratively with counsel, (3) the ability to exercise reason in making decisions about pleading and waivers of important constitutional rights, and (4) the ability to participate in courtroom events. In other words, a juvenile must have the ability to follow instructions, communicate relevant facts, maintain self-control in the courtroom, and testify coherently, if necessary. See Laurence Steinberg, [Adolescent Development and Juvenile Justice](#), 5 Ann. Rev. Clinical Psychol. 47, 63 (2009).

**Mental Illness or Defect.** Although the existence of a mental illness or intellectual disability is not explicitly mandated by *Dusky*, North Carolina law requires that a juvenile's or an adult's incapacity to proceed must result from a *mental illness or mental defect*. [G.S. 15A-1001](#). In criminal cases, North Carolina appellate courts have held that even a defendant with a severe mental illness or brain injury is not automatically deemed incapable of proceeding. See, e.g., *State v. Shytte*, 323 N.C. 684, 688-689 (1989). The mental illness or defect must impair at least one of the abilities required for capacity to proceed.

- *Mental Illness*

In adult cases, incapacity to proceed typically results from serious mental illnesses, including psychotic conditions that may require inpatient hospitalization. However, a juvenile's incapacity to proceed may result from a broader range of mental conditions which include, but are not limited to, Attention Deficit/Hyperactivity Disorder (ADHD), mood disorders (e.g., clinical depression), anxiety disorders (e.g., Posttraumatic Stress Disorder), and thought disorders (e.g., Schizophrenia or other delusional disorders). Although juveniles with these diagnoses are not automatically incapable of proceeding, they may be more vulnerable to a determination of incapacity. See Thomas Grisso, *Clinical Evaluations for Juveniles' Competence to Stand Trial: A Guide for Legal Professionals* (2005) (describing how these conditions may impact the various abilities required for capacity to proceed).

- *Mental Defect*

With respect to adult defendants, a mental defect generally refers to an intellectual disability, which requires an IQ score below 70 and evidence of significant impairment in functioning in everyday life. However, juveniles may have cognitive limitations that fall short of an intellectual disability, such as a low IQ score, learning disability, or neuropsychological impairment, which also may impact the abilities required for capacity to proceed. For example, a juvenile with an intellectual

disability or other cognitive limitation may have difficulty with both the “factual” and “rational” understanding prongs of *Dusky* due to impairments in memory, learning, information processing, and abstract reasoning. Likewise, such juveniles may have difficulty with verbal expression which can affect their ability to consult with and assist counsel. See Grisso, *supra*.

Only two published decisions by North Carolina appellate courts have evaluated capacity to proceed determinations involving juveniles with mental health disorders or intellectual deficiencies and both upheld rulings finding the juveniles capable of proceeding. See [In re I.R.T.](#), 184 N.C. App. 579, 582 (2007) (upheld a ruling that 15-year-old with diminished intellectual functioning was capable of proceeding where the evidence supported the court’s findings that the juvenile did not “demonstrate any mental defect that would preclude his capacity to proceed to trial,” that he could assist his attorney, and that he had the ability to understand legal terms and procedures that are explained in concrete terms); [In re Robinson](#), 151 N.C. App. 733, 736 (2002) (upheld ruling that a 14-year-old with moderate mental retardation and schizophreniform disorder was capable of proceeding despite conflicting reports from multiple experts).

These cases demonstrate that the question of a juvenile’s capacity to proceed is largely within the discretion of the trial court, which is responsible for weighing the evidence and resolving any conflicts. [I.R.T.](#), 184 N.C. App. at 582. If supported by the evidence, the trial court’s conclusion on the issue of capacity is conclusive on appeal.

**If a court finds that a juvenile is incapable of proceeding**, the prosecution must be suspended until the juvenile’s capacity is restored. As in the case of the Franklin county teen charged with murder, a juvenile who lacks capacity to proceed may be involuntarily committed to a state hospital if the court finds “reasonable grounds to believe” that the juvenile satisfies the criteria for involuntary commitment found in [G.S. 122C-261](#). See [G.S. 15A-1003\(a\)](#). However, most juveniles who lack capacity to proceed do not qualify for involuntary commitment.

In the case of adult defendants, Chapter 15A provides other dispositions the trial court may impose after a finding of incapacity to proceed, including orders “to safeguard the defendant and to ensure his return for trial” if the defendant regains capacity, periodic supplemental hearings on the issue of capacity, and dismissal. [G.S. 15A-1004\(a\)](#); [G.S. 15A-1007](#); and [G.S. 15A-1008](#). These statutes do not apply to juveniles.

As a result, trial judges often struggle with determining how to proceed after a finding of incapacity to proceed in juvenile court. Additional unanswered questions relevant to juvenile capacity to proceed hearings include the role of developmental immaturity in juvenile capacity evaluations, the potential for capacity restoration, and treatment options for juveniles who lack capacity to proceed but do not qualify for civil commitment. In my upcoming bulletin on “Juvenile Capacity to Proceed Hearings,” I address these questions and more. So, stay tuned!



# Chapter 7

## Capacity to Proceed

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## 7.1 Overview

A juvenile who lacks the mental capacity to proceed may not be subjected to an adjudicatory or dispositional proceeding in juvenile court. Several provisions of the Criminal Procedure Act, “Incapacity to Proceed,” apply to the court’s determination of whether a juvenile is capable of proceeding. G.S. 7B-2401. These statutes are G.S. 15A-1001, providing that proceedings cannot go forward when the juvenile is incapacitated; G.S. 15A-1002, setting forth procedures for determination of incapacity; and G.S. 15A-1003, containing procedures for the court to determine whether civil commitment proceedings should be instituted if the juvenile is found incapable of proceeding.

In practice, evaluation of a juvenile’s capacity to proceed may be quite different from that of an adult client. A juvenile may be functioning at a lower level than an adult simply by virtue of age or immaturity. It can be difficult to determine if the juvenile is simply immature or lacks the capacity to proceed, although extreme immaturity could be grounds for a finding of lack of capacity. *See infra* 7.5B, Test of Capacity.

This chapter will review the standard for capacity to proceed, the test for capacity, judicial procedures for a hearing on capacity, and considerations for counsel in representing a juvenile whose capacity may be in question.

## 7.2 Resources on Juvenile Capacity Issues

The North Carolina Defender Manual, published by the School of Government, explores in detail the issue of capacity to proceed in criminal cases. *See* 1 NORTH CAROLINA DEFENDER MANUAL Ch. 2, Capacity to Proceed (2d ed. 2013). The issues and case law discussed there generally apply to juvenile proceedings, as capacity to proceed in delinquency cases is determined pursuant to the designated statutes in the Criminal Procedure Act, G.S. 15A-1001, 15A-1002, and 15A-1003, and constitutional requirements.

This chapter is largely based on Chapter 2 of the Defender Manual, “Capacity to Proceed,” which has been adapted to take into account the juvenile court context and vocabulary. Most of the citations from the Defender Manual are to criminal cases and thus use the terms employed in criminal proceedings. These cases are applicable to juvenile cases to the extent that they involve the three relevant provisions of Chapter 15A and applicable constitutional considerations.

For a discussion of capacity in the context of delinquency proceedings, see LaToya Powell, [Incapacity to Proceed and Juveniles](#), ON THE CIVIL SIDE, UNC SCH. OF GOV’T BLOG (Oct. 13, 2017), and her forthcoming Juvenile Law Bulletin on juvenile capacity.

## 7.3 Terminology Used in this Chapter

***Incapacity to proceed*** is defined under North Carolina’s statutes to mean a juvenile who “by reason of mental illness or defect . . . is unable to understand the nature and object of the proceedings against him, to comprehend his own situation in reference to the proceedings, or to assist in his defense in a rational or reasonable manner.” G.S. 15A-1001(a). The term “incapable of proceeding” is used interchangeably. The term “incompetent” (see definition below) has a separate and distinct legal definition under current North Carolina law and is not interchangeable with “capacity,” but is sometimes used as such. Older North Carolina cases, as well as opinions from federal court and courts of other states, may also use the terms interchangeably.

***Incompetent*** refers to an individual who has been adjudicated incompetent to make or communicate important decisions concerning one’s person, family, or property pursuant to the procedures of Chapter 35A, “Incompetency and Guardianship,” and who has been appointed a guardian pursuant to that chapter. *See* G.S. 35A-1101(7), (8).

***Individualized education program (IEP)*** is the unique plan developed for each public school child with a disability who needs special education and related services. The IEP is developed by a team of qualified professionals and the child’s parents to address the specific needs of the child within the school setting. The IEP must be designed to meet the requirements of the Individuals with Disabilities Education Act (IDEA), Part B. *See* [A Guide to the Individualized Education Program, U.S. Department of Education](#) (July 2000).

## 7.4 Motions Pending Capacity Proceedings

G.S. 15A-1001(b) permits the court to go forward with any motions that the juvenile's counsel can handle without the assistance of the juvenile pending determination of capacity to proceed. *See also Jackson v. Indiana*, 406 U.S. 715, 740–41 (1972) (indicating that counsel may proceed even with dispositive motions that do not require the defendant's assistance, such as a motion challenging the sufficiency of the indictment).

## 7.5 Standard for Capacity to Proceed to Adjudication

### A. Requirement of Capacity

Due process and North Carolina law prohibit the trial or punishment of a person who is legally incapable of proceeding. *See Drope v. Missouri*, 420 U.S. 162, 171–72 (1975); G.S. Ch. 15A, art. 56 Official Commentary (recognizing that North Carolina statutes on capacity to proceed codify the principle of law that a criminal defendant may not be tried or punished when he or she lacks mental capacity to proceed). The requirement of capacity to proceed applies to all phases of a juvenile proceeding. A juvenile may not be “tried, convicted, sentenced, or punished” if mentally incapacitated as defined by statute. G.S. 15A-1001(a); G.S. 7B-2401.

### B. Test of Capacity

**Generally.** G.S. 15A-1001(a) sets forth the general standard of capacity to proceed. Under the statute, a juvenile lacks capacity to proceed if, by reason of mental illness or defect, the juvenile is unable to:

- understand the nature and object of the proceedings;
- comprehend his or her situation in reference to the proceedings; or
- assist in the defense in a rational or reasonable manner.

**Mental illness or defect.** The above test has two parts. First, the juvenile must have a mental illness or defect. Conditions that do not constitute a mental illness or defect generally do not support a finding that a person is incapable to proceed. *See State v. Brown*, 339 N.C. 426 (1994) (holding that trial court properly concluded defendant was capable of proceeding where capacity examination indicated that defendant's attitude, not a mental illness or defect, prevented him from assisting in his own defense); *State v. Aytche*, 98 N.C. App. 358 (1990) (upholding finding that the defendant was capable to stand trial despite evidence that the defendant experienced some back pain during trial).

If the juvenile has not been diagnosed with a specific mental illness but is unable to help defend the case because of age or immaturity, counsel should consider arguing that the juvenile's age or immaturity are essentially a “mental defect” for the purpose of determining capacity to proceed. *See generally Timothy J. v. Superior Court*, 150 Cal.



App. 4th 847, 862 (2007) (holding that the juvenile’s developmental immaturity could result in incapacity to proceed despite lack of a specific mental illness or defect); *Tate v. State*, 864 So. 2d 44, 48 (Fla. Dist. Ct. App. 2003) (holding that a capacity evaluation was required due to the juvenile’s “extremely young age and lack of previous exposure to the judicial system”).

In the alternative, counsel should argue that the court can find the juvenile incapable to proceed without determining that the juvenile has a mental illness or defect because the standard for capacity under the Due Process Clause of the United States Constitution does not require a specific mental illness or defect. Instead, the standard is whether the juvenile has “sufficient present ability to consult with his lawyer with a reasonable degree of rational understanding” and has “a rational as well as factual understanding of the proceedings against him.” *Dusky v. United States*, 362 U.S. 402, 402 (1960) (per curiam). The California Court in *Timothy J.* found that in determining whether the juvenile was capable “of understanding the proceedings and of cooperating with counsel,” the developmental immaturity of the juvenile could be considered without proof of a mental disorder or developmental disability. 150 Cal. App. 4th at 862. The Court discussed at length testimony presented concerning the developmental stage of the juvenile’s brain and thinking processes. *Id.* at 853–54.

**Capabilities.** Second, the mental condition must render the juvenile unable to perform at least one of the functions specified in G.S. 15A-1001(a). The existence of a mental condition alone does not necessarily mean that the juvenile lacks the capacity to proceed. *See State v. Willard*, 292 N.C. 567, 576–77 (1977) (amnesia does not per se render defendant incapable, although temporary amnesia may warrant continuance of trial); *In re I.R.T.*, 184 N.C. App. 579, 582–83 (2007) (although one evaluation noted “progressive decline in intellectual abilities,” both reports indicated juvenile could understand legal terms and procedures if explained in concrete terms); *In re Robinson*, 151 N.C. App. 733 (2002) (evidence sufficient to support court’s finding of capacity to proceed although private psychologist found moderate mental retardation and schizophreniform disorder).

The three functions listed in G.S. 15A-1001(a) are written in the disjunctive, which means that a juvenile’s inability to perform any individual function bars further proceedings. *See State v. Shytle*, 323 N.C. 684, 688 (1989); *State v. Jenkins*, 300 N.C. 578, 582–83 (1980). The Supreme Court and the Court of Appeals sometimes refer to a fourth condition of capacity: the ability to cooperate with counsel to the end that any available defense may be interposed. *See, e.g., State v. Jackson*, 302 N.C. 101, 104 (1981); *State v. O’Neal*, 116 N.C. App. 390, 395 (1994). The Supreme Court has held that trial courts need not make a specific finding on this fourth condition. *See Jenkins*, 300 N.C. at 583. Nevertheless, the court still appears to consider the condition to be a requirement of capacity, treating it as a subset of the statutory test. *See, e.g., Shytle*, 323 N.C. at 688–89.

### C. Medication

North Carolina courts have upheld rulings finding defendants who were on medication to be capable to proceed. *See State v. Buie*, 297 N.C. 159, 161 (1979) (upholding finding that defendant was capable of proceeding and stating that the “fact that defendant was competent only as a result of receiving medication does not require a different result”); *State v. Cooper*, 286 N.C. 549, 566 (1975) (medication was necessary to prevent exacerbation of mental illness and did not dull defendant’s mind), *disapproved on other grounds in State v. Leonard*, 300 N.C. 223 (1980); *State v. McRae*, 163 N.C. App. 359, 368 (2004) (trial court properly found defendant capable where there was evidence that he took antipsychotic medication during the trial).

It is less clear when the State can use forcible medication to render defendants and juveniles capable to proceed. North Carolina statutes do not specifically authorize treatment or medication to restore capacity. *See, e.g.*, G.S. 122C-54(b) (statute states that forensic examiner must provide treatment recommendation after completing capacity evaluation, but it does not specifically authorize treatment or medication to restore capacity); *see also* 1 NORTH CAROLINA DEFENDER MANUAL § 2.1C, Medication (2d ed. 2013).

In addition, the United States Supreme Court has set constitutional limits on forcible medication. The use of forcible medication to render an adult defendant capable to proceed violates the defendant’s right to due process unless it is (1) medically appropriate, (2) substantially unlikely to have side effects that might undermine a trial’s fairness, (3) is done only after considering less intrusive alternatives, and (4) is necessary to further important government trial-related issues. *Sell v. United States*, 539 U.S. 166, 179 (2003). The Court held that the use of forcible medication should be “rare” and occur only in “limited circumstances.” *Id.* at 169, 180. Applying the criteria in *Sell*, the Fourth Circuit held that the government could not use forcible medication to render the defendant capable to proceed because, among other things, the alleged crimes were non-violent and the defendant had already been confined for a significant amount of time as compared to her possible sentence. *United States v. White*, 620 F.3d 401, 413–14 (4th Cir. 2010). The Fourth Circuit also vacated an order permitting the State to forcibly medicate the defendant where the trial court failed to consider less intrusive means for administering medication, such as a court order backed by contempt sanctions. *United States v. Chatmon*, 718 F.3d 369, 376 (4th Cir. 2013).

### D. Time of Determination

The juvenile’s capacity to proceed is evaluated as of the time of the adjudicatory hearing or other proceeding. The question of capacity may be raised at any time by the juvenile, the court, or the prosecutor. *See* G.S. 15A-1002(a); *Drope v. Missouri*, 420 U.S. 162 (1975) (capacity issues may arise during trial). When the question of capacity arises before the adjudicatory hearing, the court should determine the question before proceeding with the hearing. *See State v. Silvers*, 323 N.C. 646, 653 (1989); *State v. Propst*, 274 N.C. 62, 69 (1968).

Because capacity to proceed is measured as of the time of the proceeding, more recent examinations or observations of the juvenile tend to carry more weight. *See State v. Silvers*, 323 N.C. 646, 654–55 (1989) (conviction vacated where trial judge based finding of capacity entirely on psychiatric examinations conducted three to five months before trial and excluded more recent observations by lay witnesses); *State v. Robinson*, 221 N.C. App. 509, 516 (2012) (trial judge erred in denying motion for capacity examination at beginning of trial; earlier evaluations finding defendant capable indicated that his condition could deteriorate, and defense counsel’s evidence in support of current motion for examination indicated that defendant’s mental condition had significantly declined); *State v. Reid*, 38 N.C. App. 547, 549–50 (1978) (trial court’s finding of capacity *not* supported by evidence where State’s expert testified as follows: defendant was suffering from chronic paranoid schizophrenia; defendant was capable at time of examination two to three months earlier, but condition could worsen without medication; and State’s expert had not reexamined defendant and had no opinion on defendant’s capacity at time of capacity hearing).

#### **E. Compared to Other Standards**

**Insanity.** Incapacity to proceed refers to the juvenile’s ability to understand and participate in the adjudicatory hearing and other proceedings. The question of whether the juvenile is capable to proceed is determined after a juvenile has been alleged to have committed a delinquent act and before or during the adjudicatory hearing on the allegations. In contrast, an insanity defense relates to the juvenile’s state of mind at the time the alleged delinquent act occurred. A juvenile who is “insane” at the time of hearing might be found incapable of proceeding. An insanity defense cannot be raised, however, unless the juvenile is capable of proceeding to the adjudicatory hearing. *See State v. Propst*, 274 N.C. 62, 69–70 (1968) (comparing capacity to proceed with insanity).

**Admission by the juvenile.** The standard of capacity for entering an admission to the allegations is the same as the standard of capacity to proceed to the adjudication hearing with the added proviso that the juvenile also must act knowingly and voluntarily in making any admission. *See Godinez v. Moran*, 509 U.S. 389, 398–99 (1993) (holding that the standard of capacity for a defendant to plead guilty is the same as the standard to stand trial); G.S. 7B-2407 (When admissions by juvenile may be accepted).

#### **F. Burden of Proof**

The juvenile has the burden of proof to show incapacity to proceed. *See In re H.D.*, 184 N.C. App. 188 (2007) (unpublished) (*citing State v. O’Neal*, 116 N.C. App. 390, 395 (1994)); *see also Medina v. California*, 505 U.S. 437, 450–51 (1992) (burden of proof to show incapacity to proceed may be placed on defendant). The burden may not be higher than by the preponderance of the evidence. *See Cooper v. Oklahoma*, 517 U.S. 348, 366–67 (1996).

## G. Retrospective Capacity Determination

If an appellate court finds that the trial court erroneously failed to determine the juvenile's capacity to proceed, the appellate court has two main options. First, the appellate court can remand the case for a new adjudication hearing. *State v. Robinson*, 221 N.C. App. 509, 516 (2012) (finding that the “proper remedy” where trial court proceeds to trial notwithstanding evidence that the defendant was incapable of proceeding is to vacate the judgment and remand for a new trial if and when defendant is capable of proceeding). Second, the appellate court can remand the case to the trial court to determine whether a retrospective capacity hearing is possible and, if so, determine whether the juvenile was capable of proceeding to trial. *State v. McRae (McRae I)*, 139 N.C. App. 387, 392 (2000) (first North Carolina case on issue authorizing such a hearing, but stating that such a hearing may be conducted “only if a meaningful hearing on the issue of the competency of the defendant at the prior proceedings is still possible”); *see also State v. Whitted*, 209 N.C. App. 522 (2011) (remanding to trial court to determine whether retrospective capacity hearing was possible). This remedy is disfavored. *See State v. McRae (McRae II)*, 163 N.C. App. 359, 367 (2004) (recognizing “the inherent difficulty in making such *nunc pro tunc* evaluations”). In the few cases in which retrospective capacity hearings were held and the results appealed, the court upheld the procedure. *See id.*; *State v. Blancher*, 170 N.C. App. 171, 174 (2005).

## 7.6 Investigating Capacity to Proceed

### A. Duty to Investigate

Counsel has a duty to make a “reasonable investigation” into the juvenile's capacity to proceed to an adjudicatory hearing. *See Becton v. Barnett*, 920 F.2d 1190, 1192–93 (4th Cir. 1990) (counsel must make reasonable investigation into defendant's capacity to proceed and must use reasonable diligence in investigating capacity; counsel may not rely on own belief that defendant was incapable of proceeding). Counsel should first try to discuss with the juvenile the issue of raising capacity and its consequences. However, when counsel has a “good faith doubt” as to the juvenile's capacity to proceed, counsel should file an *ex parte* motion for a mental health expert or a motion for a capacity hearing. *See* ABA Criminal Justice Standards, Standard 7-4.2(c) (Responsibility for raising the issue of incapacity to stand trial) and Commentary; *see also infra* Appendix 7-1: Practical Tips for Attorneys on Using Capacity; *see generally* 1 NORTH CAROLINA DEFENDER MANUAL § 2.3A, Ethical Considerations (2d ed. 2013). For a further discussion of moving for funds for an expert or for a capacity hearing, *see infra* § 7.8, Obtaining an Expert Evaluation.

### B. Sources of Information

**Personal interview.** A face-to-face meeting—at which counsel can observe the juvenile's speech, thinking, appearance, mannerisms, and other behavior—provides the best opportunity to assess the juvenile's condition and its potential effect on capacity to

proceed. Counsel may observe unusual or inappropriate behavior while interacting with the juvenile. The juvenile's inability to understand a simple explanation of the proceedings, repeatedly asking the same questions, responding to internal stimuli, giddiness, or extreme sadness may be signs of an underlying condition affecting capacity to proceed. Counsel should obtain permission from the juvenile during the meeting to talk with parents or other people who may have information about the juvenile's condition.

**Medical history.** Counsel should obtain the juvenile's medical history, including any history of mental health treatment, and ask that the juvenile and the parent, guardian, or custodian authorize the release of medical and other records for the juvenile. If the hospital or facility has its own release form, counsel should have the juvenile and the parent, guardian, or custodian sign that form. A sample release form is available on the [Juvenile Defender website](#). Parents and other caretakers may be able to provide more specific information concerning past treatment and diagnoses.

**Witnesses.** The juvenile's family and friends may have helpful information about the juvenile's condition. Other people who see the juvenile daily, including staff at the detention center if the juvenile is in secure custody, teachers, foster parents, group home staff, and social workers, may have observations relevant to the issue of capacity to proceed.

**School records.** School records that reflect poor academic performance, repeated suspensions, or an expulsion may be indicative of mental illness or other disability. Past or continuing concerns about the juvenile's level of functioning may be disclosed in school records. Counsel should review report cards, disciplinary records, and other school records that describe the juvenile's behavior. Under the Family Educational Rights and Privacy Act (FERPA), the school can release such records with the written consent of the juvenile's parent or guardian. 20 U.S.C. § 1232g. A sample release form is available on the [Juvenile Defender website](#). The school can also release the records in response to a subpoena or court order. See 1 NORTH CAROLINA DEFENDER MANUAL § 4.7F, Specific Types of Confidential Records (2d ed. 2013). For additional information on obtaining school records, see Jason B. Langberg & Barbara A. Fedders, *How Juvenile Defenders Can Help Dismantle the School-to-Prison Pipeline: A Primer on Educational Advocacy and Incorporating Clients' Education Histories and Records into Delinquency Representation*, 42 J. L. & EDUC. 653 (2013).

**Individualized education program.** School records are a particularly good source of information if the juvenile has an Individualized Education Program (IEP), mandated by the federal government for each child in public school who has been identified as having a disability requiring a special education plan. The IEP must be tailored to the juvenile's needs as determined by evaluations and assessments by qualified professionals. As with other school records, the school can release records related to the juvenile's IEP with the written consent of the juvenile's parent or guardian or in response to a subpoena or court order.

**Commitment proceedings.** The juvenile may have been voluntarily admitted or involuntarily committed in the past. To obtain court records from prior proceedings, counsel may make a motion to the district court that heard the case. *See* G.S. 122C-54(d). For medical records not in the court file, the juvenile and the parent, guardian, or custodian can authorize the appropriate hospital or other facility to release those records. Counsel also may make a motion to the juvenile court to compel production of records from other court proceedings or medical records in the possession of a nonparty. *See generally* 1 NORTH CAROLINA DEFENDER MANUAL § 4.6A, Evidence in Possession of Third Parties (2d ed. 2013).

**Other records.** Several other types of records may contain relevant information. For example, counsel should review any prior juvenile court records for the juvenile. Similarly, counsel should ask whether the juvenile's parent receives a monthly payment from the Social Security Administration as a result of the juvenile's disability. If so, counsel should review any available records related to the disability payments.

## 7.7 Consequences of Questioning Capacity

While counsel has a good faith duty to ensure that the juvenile is legally capable of proceeding, counsel should be aware of the potential repercussions, positive and negative, of questioning capacity.

### A. Potential Benefits

Some of the benefits of questioning capacity to proceed include the following:

- The petition may be dismissed by the prosecutor.
- The examination may lead to needed treatment.
- A juvenile found incapable of proceeding cannot be adjudicated delinquent, precluding both an adjudication and dispositional order.
- Even if the juvenile is found capable to proceed, the examination and hearing may generate evidence in support of a mental health defense, a favorable disposition, or a motion to suppress a confession on the ground that the juvenile did not knowingly and voluntarily waive *Miranda* or statutory rights.
- Information about the juvenile's mental condition may have a positive impact on discussions with the prosecutor and the juvenile court counselor.

### B. Potential Adverse Consequences

Some of the adverse consequences that result from questioning capacity include the following:

- The evaluation may result in disclosure of information that is damaging to the juvenile at disposition and could potentially be admitted during the adjudicatory hearing. Counsel may be able to reduce this risk by moving for an *in camera* review

- of the evaluation and for an order limiting the use of the evaluation. *See infra* § 7.9E, Limiting Scope and Use of Examination.
- An evaluation on capacity to proceed before the juvenile makes a motion for funds for an expert (*see infra* § 7.8A, Procedures to Obtain Expert Evaluation) may hurt the juvenile's chance for success on a motion for an expert.
  - If found incapable of proceeding and involuntarily committed, the juvenile will be confined for some period, even though there might have been no confinement if adjudicated delinquent, or the confinement might be for a longer period than under a dispositional order, particularly if the underlying offense is a misdemeanor or the juvenile does not have a significant history of delinquency.
  - The juvenile may be confined while proceedings to determine capacity are pending. *See* G.S. 15A-1002(b)(2) (court may place defendant in state hospital for up to 60 days for capacity evaluation, although the stay is ordinarily shorter); G.S. 15A-1002(c) (court may order defendant confined after evaluation and pending hearing). It is not uncommon for a juvenile to be placed in a detention facility pending an evaluation. Counsel should request a hearing to review secure custody and argue for release if the juvenile does not meet the statutory criteria. *See infra* § 8.6C, Criteria for Secure Custody Pending Adjudication.
  - A finding of incapacity to proceed and subsequent involuntary commitment may stigmatize the juvenile.

## 7.8 Obtaining an Expert Evaluation

### A. Procedures to Obtain Expert Evaluation

There are three ways that counsel may obtain expert assistance to evaluate capacity.

**Ex parte motion.** Counsel may obtain the assistance of a mental health expert for the juvenile by filing an ex parte motion with the court. *See* 1 NORTH CAROLINA DEFENDER MANUAL § 5.5, Obtaining an Expert Ex Parte in Noncapital Cases (2d ed. 2013). The motion does not ask the court to determine the defendant's capacity. Rather, it seeks funds for counsel to hire an expert of counsel's choosing to provide assistance on all applicable mental health issues. Once the expert has evaluated the juvenile, counsel will be in a better position to determine whether there are grounds for questioning capacity to proceed. Moving for funds for an expert affords counsel the best opportunity to obtain an expert who is well versed in evaluating, diagnosing, and treating children and adolescents. Counsel should include in the ex parte motion the amount necessary to pay for expert's services. A sample ex parte motion and order for funds for an expert is available on the [Juvenile Defender website](#).

One of the principal benefits of the above procedure is greater confidentiality. Because the motion is ex parte, it does not reveal to the prosecution that counsel has a question about the juvenile's mental condition. Also, if counsel decides not to raise lack of capacity or call the expert as a witness, the prosecution generally does not have a right to the results of the examination. *See* 1 NORTH CAROLINA DEFENDER MANUAL § 4.8C,

Results of Examinations and Tests (2d ed. 2013) (discussing general prohibition in criminal cases on disclosure to State of nontestifying expert's report and circumstances in which disclosure may be allowed).

**Motion requesting court to appoint a particular expert.** Typically, courts use state facilities or local mental health centers to perform evaluations of capacity to proceed, discussed next, but counsel may request appointment of a specific expert as part of a motion questioning the juvenile's capacity to proceed. *See* G.S. 15A-1002(b)(1a) (court may appoint one or more impartial medical experts). While uncommon in adult criminal cases, in juvenile cases such an appointment may help ensure that the examiner has the necessary qualifications to evaluate children and adolescents.

**Motion for examination by local examiner or state facility.** Counsel may begin the evaluation of the juvenile's capacity to proceed by obtaining an examination of the juvenile at a state or local mental health facility rather than moving for funds for an expert. *See infra* § 7.9, Examination by Local Examiner or State Facility. Examination by a local examiner or state facility may be the only means of obtaining an expert's assistance in some cases. Counsel should ask if the local examiners use testing designed to evaluate children and adolescents and request that testing and techniques designed especially for children and adolescents be employed.

## **B. Choosing which Motion to Make**

In appropriate cases, counsel should consider obtaining an evaluation of the juvenile by moving *ex parte* for funds for an expert rather than moving initially for an examination at a state or local mental health facility. In determining whether to seek funds for the juvenile's own expert, counsel should consider factors such as the seriousness of the charges, the presence of other mental health issues, the importance of keeping the juvenile's statements confidential, the likelihood that the case will proceed to adjudication, and the opportunity to obtain an examiner who employs tools and techniques specifically tailored to evaluate children and adolescents.

## **C. Choosing an Expert**

Most examiners have much more experience evaluating the capacity to proceed of adult defendants. Counsel should consider using an evaluator who employs tools and techniques specifically tailored to evaluate children and adolescents. *See* THOMAS GRISSO, *What is Different about Evaluating Youths' Competence to Stand Trial?*, in CLINICAL EVALUATION FOR JUVENILES' COMPETENCE TO STAND TRIAL: A GUIDE FOR LEGAL PROFESSIONALS 15 (2005). When searching for an examiner, counsel should consider the [database of experts](#) compiled by the Forensic Resource Counsel at the Office of Indigent Defense Services. Counsel can use the database to identify psychiatric or psychological experts who have experience working with juveniles. The Forensic Resource Counsel cannot guarantee that any individual expert is qualified or is the appropriate expert for a specific case. Consequently, if the database includes an expert who has experience working with juveniles, counsel should independently evaluate the



expert to determine whether he or she is appropriate for conducting a capacity evaluation of the juvenile.

#### **D. Basis for Motion**

Counsel should detail the specific conduct or information that warrants funds for an expert or a capacity examination at a state or local facility, including observations of counsel. If the showing for a capacity examination contains confidential information, including information obtained in the course of privileged attorney-client communications, counsel may ask the court to review the information in camera. *See infra* “Contents of motion” in § 7.9A, Moving for Examination. If the motion is for funds for an expert, the motion and accompanying showing should always be made ex parte. *See* 1 NORTH CAROLINA DEFENDER MANUAL Ch. 5, Experts and Other Assistance (2d ed. 2013).

### **7.9 Examination by Local Examiner or State Facility**

Counsel may begin the evaluation of capacity to proceed by obtaining an examination of the juvenile at a state or local mental health facility (rather than moving for funds for an expert, discussed *supra* in § 7.8, Obtaining an Expert Evaluation).

#### **A. Moving for Examination**

**Time limit.** There is no formal time limit on a motion questioning the juvenile’s capacity and requesting an examination. Lack of capacity may be raised at any time. *See* G.S. 15A-1002(a). A court may be less receptive, however, to a last-minute motion. *See, e.g., State v. Washington*, 283 N.C. 175, 185 (1973) (characterizing as “belated” a motion for initial examination two weeks before trial).

**Contents of motion.** Counsel may obtain a state or local examination by filing a motion questioning the juvenile’s capacity to proceed and asking that the juvenile be evaluated. A sample motion and order is available on the [Juvenile Defender website](#). *See also* [Form AOC-CR-207B](#), “Motion and Order Appointing Local Certified Forensic Evaluator” (Dec. 2013); and [Form AOC-CR-208B](#), “Motion and Order Committing Defendant to Central Regional Hospital – Butner Campus for Examination on Capacity to Proceed” (Dec. 2013). Counsel should provide sufficient information to the court in support of the request for an examination, particularly if counsel anticipates resistance to the request. *See* G.S. 15A-1002(a) (requiring moving party to detail conduct in support of motion); *State v. Grooms*, 353 N.C. 50, 78 (2000) (where defendant demonstrates or matters indicate there is a significant possibility that defendant is incapable of proceeding, trial court must appoint expert to inquire into defendant’s mental health); *State v. Taylor*, 298 N.C. 405, 409–10 (1979) (motion must contain sufficient detail to cause “prudent judge” to call for psychiatric examination before determining capacity); *State v. Robinson*, 221 N.C. App. 509, 516 (2012) (trial court erred by denying motion for capacity examination

where defense counsel provided an affidavit detailing his observation that the defendant's mental condition had significantly declined during the week before trial).

If the showing contains confidential information, such as information obtained in the course of privileged attorney-client communications, counsel should ask the court to review that information in camera.

**Subsequent examinations.** The juvenile may be able to obtain additional examinations if the report from the first examination has become stale or the juvenile's condition has changed. *See supra* § 7.5D, Time of Determination.

**Motion by prosecutor or court for examination.** The prosecutor may request an evaluation of capacity to proceed. As with a motion by the juvenile for an examination, the prosecutor must detail the specific conduct warranting an examination. *See* G.S. 15A-1002(a). The prosecutor should give counsel for the juvenile notice of the motion. *See State v. Jackson*, 77 N.C. App. 491, 496–97 (1985) (disapproving of entry of order for examination without notice to defendant); *see also infra* § 7.12B, Fifth and Sixth Amendment Protections (discussing Sixth Amendment right to notice of examination).

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**Practice note:** If the trial court grants a motion by the prosecutor for a capacity examination, defense counsel should consider requesting that the court limit the scope of the examination. *See infra* § 7.9E, Limiting Scope and Use of Examination.

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The trial court has the power on its own motion to order an evaluation of the juvenile's capacity to proceed. *State v. Grooms*, 353 N.C. 50, 78 (2000). Further, the court is obligated to inquire into capacity, even in the absence of a request by defense counsel, if there is a bona fide doubt about the juvenile's capacity to proceed. *State v. Staten*, 172 N.C. App. 673, 678 (2005).

## B. Who Does Examination

**Misdemeanors.** On a motion for a capacity examination when the underlying offense alleged is a misdemeanor, the juvenile is evaluated by a local forensic examiner. G.S. 15A-1002(b)(1a). An earlier version of G.S. 15A-1002 permitted the court to refer a juvenile charged with a misdemeanor to a State facility for evaluation after the local examination was completed. However, the General Assembly amended G.S. 15A-1002, effective for offenses committed on or after December 1, 2013, to remove the court's authority to order examinations at State facilities in misdemeanor cases. 2013 N.C. Sess. Laws Ch. 18 (S 45). Local examinations tend to be brief.

**Felonies.** If the underlying offense alleged is a felony, the court may order a local evaluation or may order the juvenile to a State psychiatric facility. G.S. 15A-1002(b)(1a), (2). To order the juvenile to a State facility without ordering a local evaluation first, the court must find that a state facility examination is more appropriate. G.S. 15A-1002(b)(2). Examinations at state facilities may take longer than local examinations.

There are three state psychiatric hospitals in North Carolina: Central Regional Hospital in Butner, Cherry Hospital in Goldsboro, and Broughton Hospital in Morganton. Of those three facilities, only Central Regional Hospital provides capacity evaluations for juveniles. Juveniles referred to Central Regional Hospital are placed in a separate unit, which complies with the provision in G.S. 7B-2401 prohibiting courts from referring juveniles to facilities where they will come into contact with adults.

### C. Providing Information to Examiner

Counsel should ensure that the examiner has access to relevant information concerning the juvenile's mental health. Counsel may relate his or her observations of the juvenile, identify people knowledgeable of the juvenile's condition, transmit copies of relevant records, and provide other relevant information. The National Juvenile Defender Center also recommends that counsel submit a written request to the examiner outlining the specific areas to be addressed in the evaluation. *See* National Juvenile Defender Center, [Juvenile Defender Delinquency Notebook](#) at 51–55 (2d ed. Spring 2006).

### D. Confidentiality

Subject to certain exceptions, an examination at a state or local mental health facility is confidential. *See* G.S. 122C-52 (Right to confidentiality). According to G.S. 122C-53, disclosure is allowed to a "client," which is defined by statute as "an individual who is admitted to and receiving service from, or who in the past had been admitted to and received services from, a facility." G.S. 122C-3(6). Disclosure is also allowed pursuant to a written consent to release of information to a specific person, in certain court proceedings, and for treatment and research. G.S. 122C-54 through 122C-56. For juvenile court purposes, the most significant of these exceptions are as follows:

- The facility may provide a report of the examination to the court and prosecutor in the circumstances described in subsection F., below. *See* G.S. 122C-54(b).
- The results of the examination, including statements by the juvenile, could be admissible at subsequent court proceedings. *See infra* § 7.11, Hearing on Capacity to Proceed, § 7.12, Admissibility at Adjudication of Results of Capacity Evaluation; *see also* G.S. 122C-54(a1) (use in involuntary commitment proceedings).
- The facility may disclose otherwise confidential information if a court of competent jurisdiction orders disclosure. *See* G.S. 122C-54(a).

### E. Limiting Scope and Use of Examination

A central part of any court-ordered examination is the interview of the juvenile. The interview will likely cover the alleged offense, as the juvenile's understanding of the allegations may bear on capacity to proceed. For recommendations on statutory changes creating greater protections for juveniles, see Lourdes M. Rosado and Riya S. Shah, [Protecting Youth from Self-Incrimination when Undergoing Screening, Assessment and Treatment within the Juvenile Justice System](#) (2007). Discussed below are options for limiting the scope of an examination. For a discussion of the admissibility of the

examination results, see *infra* § 7.12, Admissibility at Adjudication of Results of Capacity Evaluation.

**Refusal to discuss offense.** North Carolina courts have not addressed the question of whether the juvenile may refuse to discuss the alleged offense when the examination concerns only capacity to proceed. The juvenile's refusal may result in an incomplete report, however, and may make it difficult to show incapacity.

**Presence of counsel.** There is no constitutional right to the presence of counsel during an examination concerning capacity to proceed. *State v. Davis*, 349 N.C. 1, 20 (1998). There is no prohibition on counsel attending the examination, however. Thus, counsel may request that the examiner allow counsel to be present during the interview portion of the evaluation. If the examiner refuses, counsel may ask the court to exercise its discretion to order that counsel be permitted to attend the interview portion of the examination. *But see Estelle v. Smith*, 451 U.S. 454, 470 n.14 (1981) (noting that presence of counsel during psychiatric interview may be disruptive in some instances).

**Court order.** Counsel for the juvenile may request a court order limiting the scope and use of the evaluation. Such an order might provide that the examiner is to report to the court on the issue of capacity to proceed only and is not to inquire into any area not necessary to that determination; that the results are to be used for the determination of capacity only and for no other purpose; and that information obtained during the evaluation regarding the alleged offense may not be divulged to the prosecution. Additionally, counsel should request that the evaluation be submitted and remain under seal in the juvenile court file, to be disclosed only pursuant to further order of the court. See *infra* § 7.9F, Report of Examination.

## F. Report of Examination

**Time of report.** Examination reports must be completed within the following time limits, which are described in G.S. 15A-1002(b2). The statute does not set time limits on the holding of the examination, however, except in the last circumstance.

- If the juvenile was charged with a misdemeanor and was in custody at the time of the examination, the report must be completed no later than 10 days after the examination.
- If the juvenile was charged with a misdemeanor and was not in custody at the time of the examination, the report must be completed no later than 20 days after the examination.
- If the juvenile was charged with a felony, the report must be completed no later than 30 days after the examination.
- If the juvenile challenges the determination of the local screener or state facility and the court orders an independent psychiatric examination, that examination and report to the court must be completed no later than 60 days after entry of the order.

The statute allows the court to grant extensions for the preparation of the report of up to 120 days beyond the limits described in G.S. 15A-1002(b2). The statute does not specify a remedy for the failure to complete a report within the statutory time limits.

**Limiting disclosure of the report.** A copy of the examination report is to be provided to the clerk of court in a sealed envelope addressed to the attention of the presiding judge with a covering statement to the clerk of the fact of the examination and any conclusion as to whether the juvenile has or lacks capacity to proceed. G.S. 15A-1002(d).

Additionally, a copy of the report must be provided to defense counsel or to the defendant if not represented by counsel. *Id.* G.S. 15A-1002(d) then states that “if the question of the defendant’s capacity to proceed is raised at any time, a copy of the full report must be forwarded to the district attorney.” This statutory scheme appears to contemplate that the court and the defense are to get a copy of the report automatically after a capacity examination, but that the prosecutor is to get a copy of the report only if capacity is questioned after the examination and further court proceedings are necessary.

The above-quoted provision of G.S. 15A-1002(d) was added by the General Assembly to limit the prosecution’s access to capacity evaluations. Previously, the statute provided for reports to be sent automatically to the defense and the prosecution. 1979 N.C. Sess. Laws Ch. 1313 (S 941). In 1985, the General Assembly added the current language of the statute as part of a bill entitled: “An act to provide that an indigent defendant’s competency evaluation report will not be forwarded to the district attorney.” 1985 N.C. Sess. Laws Ch. 588 (S 696). Therefore, the statute appears to allow a prosecutor to receive a copy of the evaluation only if capacity continues to be an issue and a hearing is necessary.

In 2003, the General Assembly amended G.S. 122C-54(b) to require facilities to disclose a capacity examination as provided in G.S. 15A-1002(d). 2003 N.C. Sess. Laws Ch. 313 (H 826). This change was part of a larger act dealing with mental health system reform. *Id.* Previously, G.S. 122C-54(b) stated that a facility “may” send the capacity report to the specified persons as provided in G.S. 15A-1002(d). Now, G.S. 122C-54(b) provides that the facility “shall” send the report as provided in G.S. 15A-1002(d). Thus, the disclosure provisions in G.S. 122C-54(b) continue to be linked to the requirements of G.S. 15A-1002(d), authorizing the facility to disclose a capacity examination report only to the extent provided in G.S. 15A-1002(d). As discussed above, G.S. 15A-1002(d) appears to authorize disclosure to the prosecutor only if the defendant’s capacity is questioned after the examination and further court proceedings are necessary.

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**Practice note:** State psychiatric facilities have interpreted the 2003 change to G.S. 122C-54(b) as authorizing automatic disclosure of capacity evaluations to the prosecutor. Some local examiners may follow the same practice. Therefore, when requesting a capacity evaluation, defense counsel should ask the court to enter an order prohibiting the facility and evaluators from disclosing the evaluation to the prosecutor except on further order of the court. Counsel should also ensure that the order is transmitted to the facility and the examiner.

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## 7.10 Post-Examination Procedure

### A. Reviewing the Examination Report

Counsel should carefully review the examination report once it is completed. For a helpful resource for understanding examination reports, see THOMAS GRISSO, *CLINICAL EVALUATIONS FOR JUVENILES' COMPETENCE TO STAND TRIAL: A GUIDE FOR LEGAL PROFESSIONALS* (Professional Resource Press, 2005). The book describes some of the clinical and psychological factors that are relevant to the question of the juvenile's capacity and explains what attorneys should expect to see in examination reports.

### B. After Examination Finding Juvenile Capable of Proceeding

G.S. 15A-1002(b) states that the court "shall" hold a hearing to determine the juvenile's capacity to proceed after the capacity examination. However, the court might decline to hold a hearing if the evaluation report states that the juvenile is capable of proceeding and counsel does not request a hearing.

If defense counsel fails to request a hearing after the examination and the court fails to hold one, the juvenile's statutory right to a hearing will likely be deemed waived. *See State v. Young*, 291 N.C. 562, 568 (1977) (defendant waived right to a capacity hearing "by his failure to assert that right"). Nevertheless, as a constitutional matter the trial court must hold a hearing, even when defense counsel fails to request one, when the evidence raises a bona fide doubt as to the juvenile's capacity. *State v. McRae*, 139 N.C. App. 387, 391 (2000).

### C. After Examination Finding Juvenile Incapable of Proceeding

The provisions of Chapter 15A-1004 through 15A-1008, which list the options available for resolution of a criminal case when the defendant is found incapable of proceeding, are not incorporated into the Juvenile Code. *See* G.S. 7B-2401. Counsel may consider the following alternatives.

**Dismissal.** Counsel may advocate to the prosecutor that dismissal is the appropriate resolution of the case when the juvenile lacks capacity to proceed. Arrangement for treatment or other plans to address the juvenile's underlying problems will bolster this argument. Dismissal is most appropriate if the juvenile's incapacitating condition is permanent or long-term or if the juvenile is in ongoing or residential treatment. *See also* 1 NORTH CAROLINA DEFENDER MANUAL § 2.8A, *Constitutional Backdrop* (2d ed. 2013) (discussing constitutional grounds for dismissal of charges against defendant who is unlikely to gain capacity to proceed). Under earlier versions of the Juvenile Code, there was no provision that specifically authorized the State to dismiss a case. In 2015, the General Assembly amended G.S. 7B-2404 to include language expressly permitting prosecutors to dismiss juvenile petitions. 2015 N.C. Sess. Laws Ch. 58 (H 879). The new law, which is effective for offenses committed on or after December 1, 2015, does not

provide any limitations on the grounds for dismissing a case. Thus, dismissal under G.S. 7B-2404 would be an appropriate alternative if the juvenile is incapable to proceed.

**Hearing on capacity to proceed.** If the prosecutor or court are unwilling to dismiss the case and counsel believes that the client is incapable of proceeding, counsel must request a formal hearing on the juvenile's capacity to proceed. G.S. 15A-1002(b). The statute now bars the parties from stipulating that the juvenile lacks capacity. The statute allows the parties to stipulate that the juvenile has the capacity to proceed, but a court may be unwilling to accept a stipulation if it has a bona fide doubt about capacity. *See supra* § 7.10B, After Examination Finding Juvenile Capable of Proceeding.

## 7.11 Hearing on Capacity to Proceed

### A. Request for Hearing

A hearing on capacity is typically calendared on receipt of the examiner's report, but if one has not been calendared, counsel should specifically request a hearing on capacity to proceed. *See also supra* § 7.10B, After Examination Finding Defendant Capable to Proceed.

### B. Nature of Hearing

In practice, a hearing on the juvenile's capacity may be somewhat informal. Nevertheless, a capacity hearing must, at a minimum, afford the juvenile the opportunity to present any evidence relevant to the question of the juvenile's capacity to proceed. *State v. Gates*, 65 N.C. App. 277, 283 (1983).

Although no appellate court has yet addressed the question of whether the North Carolina Rules of Evidence apply at capacity hearings, the operation of Rules of Evidence 101 and 1101 indicate that they apply. *See, e.g., State v. Foster*, 222 N.C. App. 199, 202–03 (2012) (holding that the Rules of Evidence apply to post-conviction DNA testing proceedings because such proceedings are not listed as excluded under N.C. R. Evid. 1101(b) and no statute bars their application to the proceedings). At the least, the courts have stated that the "safer practice" is for the courts to follow the rules of evidence because they may not base findings on inadmissible evidence. *State v. Willard*, 292 N.C. 567, 592 (1977).

G.S. 15A-1002(b1) mandates that the trial court make findings of fact, based on evidence presented at the hearing, to support its determination of the juvenile's capacity to proceed. G.S. 15A-1002(b1). Previously, findings were recommended but not required. *See State v. O'Neal*, 116 N.C. App. 390, 395–96 (1994) (the "better practice" is for judge to make findings).

### C. Evidentiary Issues

**Examination results.** Either party may call the examiner from a court-ordered examination, and the examiner's report is admissible. G.S. 15A-1002(b)(1a), (b)(2).

**Opinion testimony.** Both lay and expert witnesses may give opinions about whether the juvenile is able to perform the functions listed in G.S. 15A-1001(a). *State v. Silvers*, 323 N.C. 646, 654 (1989). However, neither lay nor expert witnesses may testify that the juvenile is or is not capable to proceed because such testimony involves a legal conclusion. *Id.* If the trial court prevents counsel from presenting proper opinion testimony on the question of the juvenile's capacity to proceed, counsel must make an offer of proof to preserve the testimony in the event of an appeal. *State v. Simpson*, 314 N.C. 359, 370 (1985); *In re H.D.*, 184 N.C. App. 188 (2007) (unpublished).

Testimony by lay witnesses may support or even override expert testimony. In addition to testifying about the functions in G.S. 15A-1001(a), lay witnesses may be in a good position to relate their observations of and dealings with the juvenile. *See State v. Silvers*, 323 N.C. 646 (1989) (vacating conviction and remanding case for failure to allow defendant to present testimony of lay witnesses); *State v. Willard*, 292 N.C. 567 (1977) (upholding finding of capacity based in part on testimony of lay witnesses).

**Counsel's observations and opinion.** Defense attorneys may offer their own observations and opinions about the juvenile's capacity, but such statements without more may be unpersuasive and may not even be permitted. *See State v. Gates*, 65 N.C. App. 277 (1983) (upholding capacity finding where counsel offered own observations of defendant's behavior but presented no medical evidence); *In re H.D.*, 184 N.C. App. 188 (2007) (unpublished) (counsel's statement that he felt juvenile lacked capacity was not competent evidence and did not provide basis for reversing finding of capacity; court also found no error in trial court's ruling that counsel could not testify about his juvenile client's capacity unless he withdrew from representation). *But see State v. McRae*, 163 N.C. App. 359 (2004) ("Because defense counsel is usually in the best position to determine that the defendant is able to understand the proceedings and assist in his defense, it is well established that significant weight is afforded to a defense counsel's representation that his client is competent"); N.C. Rules of Professional Conduct, Rule 3.7(a)(3) (lawyer may act as advocate at trial in which lawyer is likely to be necessary witness if disqualification of lawyer would work substantial hardship on client), Rule 1.14(c) (lawyer is impliedly authorized to reveal confidential information about client with diminished capacity to extent reasonably necessary to protect client's interest).

### D. Objection to Finding of Capacity

If the trial court enters an order finding the juvenile capable to proceed, counsel should object at the conclusion of the capacity hearing and again at the beginning of the adjudicatory hearing to ensure the issue is preserved for appeal. The failure to object waives the issue. *State v. Robertson*, 161 N.C. App. 288, 290 (2003) (requiring that the defendant make a capacity objection at the beginning of trial); *In re Pope*, 151 N.C. App.



117, 119 (2002) (noting lack of objection to capacity at the capacity or adjudication hearing). Counsel should also assert that the finding would violate the juvenile's right to due process. The failure to specify due process as a ground for objection waives the argument on appeal. *State v. Wiley*, 355 N.C. 592, 624 (2002). *But see* 1 NORTH CAROLINA DEFENDER MANUAL § 2.7E, Objection to Finding of Capacity (2d ed. 2013) (suggesting that failure to object may not waive issue).

### **E. Effect of Finding of Incapacity by Court**

When the court finds a juvenile incapable of proceeding, it is authorized by G.S. 15A-1003 to initiate commitment proceedings under Part 7 of Article 5 of Chapter 122C of the General Statutes. *See* G.S. 7B-2401 (stating that G.S. 15A-1003 applies). For a discussion of commitment procedures, see NORTH CAROLINA CIVIL COMMITMENT MANUAL Ch. 2, Involuntary Commitment of Adults and Minors for Mental Health Treatment (2d ed. 2011).

G.S. 15A-1006 and 15A-1007 permit a court to hold supplemental hearings to determine if the defendant in a criminal case has gained capacity to proceed and calendar the criminal case for trial. However, the General Assembly did not make these statutes applicable to juvenile delinquency cases. G.S. 7B-2401. The procedure for bringing a juvenile back to court if he or she later becomes capable is therefore uncertain. Rather than leave the case pending while the juvenile is incapable, some prosecutors may choose to dismiss the case and refile the petition later if the juvenile appears to have gained capacity. Language recently added to G.S. 7B-2404 authorizes a prosecutor to take a voluntary dismissal of a juvenile petition. *See* 2015 N.C. Sess. Laws Ch. 58 (H 879). The statute is unclear about the circumstances in which the prosecutor may refile.

## **7.12 Admissibility at Adjudication of Results of Capacity Evaluation**

The admissibility at the adjudicatory hearing of the results of a court-ordered capacity examination is a complicated topic, reviewed only briefly here. Several arguments, legal and factual, exist for excluding or at least limiting the use of the examination, including the juvenile's statements to and the opinions formed by the examiners. Nevertheless, counsel should anticipate the possibility that the results of a court-ordered examination of capacity to proceed may be admitted. *See supra* § 7.9E, Limiting Scope and Use of Examination.

### **A. Doctor-Patient Privilege**

The doctor-patient privilege does not protect the results of a court-ordered evaluation of capacity to proceed. *See State v. Williams*, 350 N.C. 1, 20–21 (1999); *State v. Mayhand*, 298 N.C. 418, 429 (1979).

## B. Fifth and Sixth Amendment Protections

Subject to certain key exceptions (discussed in C., below), the Fifth Amendment privilege against self-incrimination generally applies to capacity evaluations and precludes the admission of evaluation results during the guilt and sentencing phases of criminal trials. See *Estelle v. Smith*, 451 U.S. 454, 468 (1981). The Sixth Amendment right to counsel also precludes the admission of evaluation results during criminal trials if the defendant’s counsel does not have notice of the scope and nature of the examination. *Estelle* relied on this additional ground in holding that the results of a capacity examination were inadmissible at trial, reasoning that the defendant was denied the assistance of an attorney in deciding whether to submit to the examination. 451 U.S. at 471. This protection is also subject to certain key exceptions (discussed in C., below).

## C. Rebuttal of Mental Health Defense

If the juvenile presents a mental status defense and introduces expert testimony in support of the defense, the results of a capacity evaluation are not protected by the Fifth Amendment and may be admitted to rebut the expert testimony. *Buchanan v. Kentucky*, 483 U.S. 402, 422–23 (1987); *State v. Huff*, 325 N.C. 1, 44 (1989), *vacated on other grounds*, 497 U.S. 1021 (1990); *State v. Atkins*, 349 N.C. 62, 107–08 (1998). A mental status defense includes not only a mental disease or defect, but also an inability to form the requisite intent to commit a crime, which includes the defense of voluntary intoxication. *Kansas v. Cheever*, \_\_\_ U.S. \_\_\_, \_\_\_, 134 S. Ct. 596, 602 (2013). In addition, the Sixth Amendment does not bar the use of the evaluation results because counsel should have anticipated and advised the client that the examination could be used to rebut a mental health defense. *Buchanan v. Kentucky*, 483 U.S. at 425; *State v. Davis*, 349 N.C. 1, 43–44 (1998); *State v. McClary*, 157 N.C. App. 70, 79 (2003). *But see Delguidice v. Singletary*, 84 F.3d 1359 (11th Cir. 1996) (defense counsel did not have notice that an evaluation report from a separate case against the defendant would be used to rebut an insanity defense to unrelated charges).

Under the reasoning of the above decisions, the Fifth Amendment may protect the examination results if the juvenile relies on a mental status defense but does not introduce expert testimony. For example, the U.S. Supreme Court held in *Cheever* that the State may present psychiatric evidence when a defense expert “testifies” or the defendant “presents evidence through a psychological expert . . . .” 134 S. Ct. at 601.

## D. Waiver

The U.S. Supreme Court suggested in dicta in *Estelle* that the State might be able to obtain, through *Miranda* warnings, a waiver of the defendant’s Fifth Amendment rights for statements made during a capacity evaluation. *Estelle*, 451 U.S. at 469. However, a review of federal and state case law indicates that such waivers are uncommon and, even if obtained, are not a basis for admitting evidence from a capacity evaluation. See 1 NORTH CAROLINA DEFENDER MANUAL § 2.9F, Waiver (2d ed. 2013).

## Legislative Changes to Required Mental Health Assessments Before Entering a Delinquency Disposition: New Provisions of G.S. 7B-2502

This is the third in a series of blogs about the changes contained in Session Law 2021-123. It summarizes the new requirement for court ordered mental health assessments, including a new care review team process. (see [Raise the Age Legislative Changes](#) and [From 6 to 10: New Minimum Age for Juvenile Delinquency and Undisciplined Jurisdiction](#) for previous blogs about the other provisions in S.L. 2021-123).

A steady stream of appellate caselaw, beginning with [In re E.M., 263 N.C.App. 476 \(2019\)](#), established that [G.S.7B-2502\(c\)](#) requires the trial court to refer a juvenile who is adjudicated delinquent to the local management entity (LME) prior to ordering a disposition when there is any amount of evidence that the juvenile has a mental illness. The purpose of the referral is for the LME to conduct an interdisciplinary evaluation and mobilize resources. Beginning with petitions filed on December 1, 2021, this statutory mandate is changing. The court will be required to order mental health assessments under different circumstances and, in some cases, to order a care review team after the assessment is completed.

### Where We Have Been under G.S. 7B-2502(c)

*In re E.M.* relied on the statutory language of G.S. 7B-2502(c) that “the court shall refer the juvenile” to the LME to hold that failure to make the referral was reversible error. (For more information about *In re E.M.*, see my previous blog post [here](#)). The holding of *In re E.M.* was reaffirmed by three more published decisions: [In re E.A., 267 N.C.App. 396 \(2019\)](#), [In re A.L.B., 849 S.E.2d. 352 \(2020\)](#), and [In re K.M., 854 S.E.2d 453 \(2021\)](#). The central issue in each case was the trial court’s failure to make a referral to the LME prior to entering a disposition. The Court of Appeals consistently held that the trial court committed reversible error despite the fact that there were often mental health assessments from other sources available to the court.

The requirement that the court make a referral to the LME in the many cases in which there is evidence of a juvenile’s mental illness created practical problems:

- Many localities have processes in place to obtain timely mental health assessments for juveniles who have been adjudicated delinquent, but those processes sometimes do not go through the LME;
- Juvenile court counselors sometimes make the referral to the LME and a second referral from the court is duplicative and slows the time to disposition; and
- LME’s are not funded to work with youth who have private insurance, making referral of these youth to the LME unproductive.

## **Where We are Going under the Amended G.S. 7B-2502**

Part VI of Session Law 2021-123 significantly changes the mandate on the court to order an assessment and it creates a new process to follow once a court-ordered assessment is completed. The statute that formed the basis of the holding in *E.M.*, G.S. 7B-2502(c), will be deleted in its entirety. Beginning with petitions filed on December 1, 2021, the mandate on the court to order an assessment will be contained in a new 7B-2502(a2) – (a4).

### *When the Court Must Order an Assessment*

Under the new statutory language (G.S. 7B-2502(a2)), the court must order that Juvenile Justice make a referral for a comprehensive clinical assessment (CCA) or equivalent mental health assessment when

1. The juvenile is suspected of having a mental illness, developmental disability, or intellectual disability;
2. The juvenile has been adjudicated delinquent; and
3. A CCA or equivalent mental health assessment has NOT been conducted within the 45 days before the adjudication hearing.

This new statute contains two fundamental changes to the current structure. First, the court is not required to order an assessment if there is an assessment that was conducted up to 45 days before the adjudication hearing. This applies no matter when disposition is being heard. Therefore, if a new disposition is being entered in a case as a result of a probation violation, the court must still look to the date of the assessment in relation to the adjudication hearing.

Second, the court no longer orders the LME to complete an evaluation. Instead, the court must order Juvenile Justice to make a referral for a CCA or equivalent mental health assessment. This new structure allows for use of locally established processes to obtain an assessment, which may or may not involve the LME.

### *Procedure Following the Assessment*

The new G.S. 7B-2502(a3) requires that if the court orders a referral for an assessment because the three criteria in G.S. 7B-2502(a2) (listed above) are present, then the court must review the assessment prior to the date of disposition in the case. If the court finds there is sufficient evidence that certain statutory criteria are met, then the court must order that Juvenile Justice convene a care review team. Those criteria are that

1. The juvenile has severe emotional disturbance, a developmental disability, or an intellectual disability;
2. The disturbance or disability substantially contributed to the juvenile's delinquent behavior;

and

3. The juvenile is eligible for a Level 3 disposition and/or is recommended for a psychiatric residential treatment facility placement.

Severe emotional disturbance is defined as “[a] diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within the DSM-5 that resulted in functional impairment which substantially interferes with or limits the child’s role or functioning in family, school, or community activities in a person who is under the age of 18.” G.S. 7B-1501(24a).

Developmental Disability is defined as “[a] severe, chronic disability of a person that satisfies all of the following:

1. Is attributable to one or more impairments.
2. Is manifested before the person attains age 22, unless the disability is caused by a traumatic brain injury, in which case the disability may be manifested after attaining age 22.
3. Is likely to continue indefinitely.
4. Results in substantial functional limitations in three or more of the following areas of major life activity: self-care, receptive and expressive language, capacity for independent living, learning, mobility, self-direction, and economic self-sufficiency.
5. Reflects the person's need for a combination and sequence of special interdisciplinary, or generic care, treatment, or other services that are of a lifelong or extended duration and are individually planned and coordinated; or when applied to children from birth through age four, may be evidenced as a developmental delay.” [G.S. 122C-3\(12a\)](#).

Intellectual Disability is defined as “[a] developmental disability characterized by significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested before age 22.” [G.S. 122C-3\(17a\)](#).

### *The Care Review Team*

If the court orders Juvenile Justice to convene a care review team, that team must develop a “recommendation plan for appropriate services and resources that address the identified needs of the juvenile.” G.S. 7B-2502(a4). The team must submit its recommendation to the court within 30 calendar days of the date the court ordered the team to be convened. The care review team must be comprised of, at least

- The juvenile;
- The juvenile's parents, guardian, or custodian;
- Representatives from Juvenile Justice;
- Representative from the local management entity/managed care organization or prepaid health plan in which the juvenile is enrolled; and
- Representatives from any State agency or local department of social services that is

currently providing services to the juvenile or the juvenile's family.

### *Intersection of Care Review Team Recommendation and Disposition*

The new statute, G.S. 7B-2502 (a4), requires the court to review the recommendation plan submitted by the care review team. However, the court is not bound by that recommendation when ordering a disposition. Instead, the court is only required to review the recommendation when determining the disposition in accordance with the existing statute that governs the court's selection of a disposition—[G.S. 7B-2501\(c\)](#).

### *Payment*

Part VI of S.L. 2021-123 also enacts changes to the statutory language regarding payment for assessment, evaluation, or treatment that is ordered pursuant to G.S. 7B-2502. Under the new law, G.S. 7B-2502(b), if the juvenile does not have health insurance coverage for the recommended treatment, the court must hold a hearing to determine who should pay the cost of assessment, evaluation, or treatment. Notice of the hearing must be provided to the county manager, or any other person who is designated by the chair of the board of county commissioners, in the county of the juvenile's residence. That person must have the opportunity to be heard at the hearing addressing payment.

Under G.S. 7B-2502(b), the court has following options:

1. The court must allow the parent, guardian, custodian, or other responsible person to arrange for the juvenile's evaluation or treatment.
2. If the parent, guardian, or custodian declines or is unable to arrange for the juvenile's evaluation or treatment, the court may order the needed evaluation or treatment and the parent may be ordered to pay the cost of care pursuant to [Article 27](#) of Chapter 7B of the General Statutes.
3. If the court finds that the parent and funding from Juvenile Justice are unable to pay for the cost of evaluation or treatment, the court must order the county to arrange for evaluation or treatment of the juvenile and to pay for the cost of the evaluation or treatment.

While these options reference a guardian or custodian in relation to the individuals who must be allowed to arrange for the juvenile's evaluation or treatment, the guardian or custodian is not included in the payment language. The statute does not permit the court to order the guardian or custodian to pay for the cost of care and the guardian or custodian's ability to pay is not referenced in relation to ordering the county to pay. Therefore, it appears that the court cannot consider a guardian or custodian's ability to pay, nor can the court order a guardian or custodian to pay.

### **Court Still Not Permitted to Commit Juveniles Adjudicated Delinquent to State Hospitals or**

## Developmental Centers

G.S. 7B-2502(c) contains more than the current mandate for the court to make a referral to the LME prior to ordering a disposition under certain circumstances. It also contains language that prohibits the court from committing a juvenile to a State Hospital or State Developmental Center, other than for an examination to determine capacity to proceed. That language is preserved in S.L. 2021-123 by adding it as a new 7B-2502(c1).

## The Effective Date is Based on the Date the Petition is Filed

Part VI of S.L. 2021-123 contains its own effective date, different from the effective date that applies to the rest of the amendments contained in the other Parts of the session law. The provisions discussed in this post apply to petitions filed on or after December 1, 2021. It will therefore be critical to check the date the petition was filed in any delinquency case prior to a disposition hearing. Some cases with petitions filed well before the effective date will likely continue to return to court on probation violations. If the petition in those cases was filed before December 1, 2021, then the law under *E.M.* and its progeny will continue to apply. This new law will apply to those cases in which the petition is filed on or after December 1, 2021.

The chart below outlines which law applies to which cases.

### Law Governing Court's Duty to Refer for Mental Health Evaluation

Petition filed before 12/1/21

G.S. 7B-2502(c) \*will be deleted from statutes after 12/1/21, so look to a statute book published before 2022

Duty triggered by evidence, or court belief, of mental illness or developmental disability

Order the LME to arrange for an interdisciplinary evaluation and mobilizing resources to meet the juvenile's needs  
No further orders required

Petition filed on or after 12/1/21

G.S. 7B-2502(a2) – (a4)

Duty triggered by suspected mental illness, developmental disability, or intellectual disability; adjudication of delinquency; and lack of CCA (or its equivalent) in the 45 days before the adjudication hearing

Order Juvenile Justice to make a referral for a comprehensive clinical assessment (or its equivalent)  
Court may be required to order a care review team after reviewing the assessment. See G.S.7B-2502(a3)

Absent a major development in delinquency law before the end of 2021, this will be my last blog post until the new year. Happy holidays to all of you. I hope you find time to relax and rejuvenate.

