

Chapter #11

ADOLESCENT FRONTAL LOBE BRAIN DEVELOPMENT: DISPROPORTIONALITY EFFECTS OF SOCIAL AND ECONOMIC DEPRIVATION AND IMPLICATIONS FOR JUVENILE COURT CASE DISPOSITION, CHILD WELFARE REFORM, AND EDUCATION REMEDIATION

Michael Lindsey

*JD, PhD, Adjunct Professor Psychology Department, Southern Methodist University
and President-Nestor Consultants, Inc., Dallas, Texas, USA*

ABSTRACT

Neuroscience has documented the substantive growth of frontal lobe gray matter during the adolescent years, similar to the brain growth spurt in early childhood – both precursors of preparation for quantitative and qualitative adaptive learning. Several United States Supreme Court decisions (*Roper v. Simmons*; *Graham v. Florida*; *JDB v. North Carolina*; *Miller v. Alabama*) have affirmed the historical chronological age of ‘majority’ being 18 years old, is inconsistent with what it means to be an adult. Mature cognitive processing is more appropriately characterized by the “Jean Piagetian” formal operations stage, i.e., abstract thinking, logical thinking, decision-making, and long-term planning. Formal operations is now acknowledged to be achieved during a young adult’s mid-20’s years of age. Not yet answered is what are the effects on ethnic minority young adults (mid -20’s), who have social, economic, academic, and/or educational deprivation? This chapter will explore these issues.

Keywords: brain, adolescent, judges, child welfare, ethnic minority youth, juvenile justice reform.

1. INTRODUCTION

Neuroscience has documented the substantive growth of frontal lobe gray matter during the adolescent years, similar to the brain growth spurt in early childhood – both precursors of preparation for quantitative and qualitative adaptive learning. Several recent United States Supreme Court decisions.

(*Roper v. Simmons*¹; *Graham v. Florida*²; *JDB v. North Carolina*³; *Miller v. Alabama*⁴) have affirmed that the historical chronological age of ‘majority’ being 18 years old, is inconsistent with what it means to be an adult. Mature cognitive processing is more appropriately characterized by the Jean Piagetian formal operations stage (Wadsworth , 1996), i.e., abstract thinking, logical thinking, decision-making, and long-term planning. Formal operations are now acknowledged to be achieved during a young adult’s mid-20s years of age.

Adult (mature) cognitive functioning is a combination of adequate brain tissue (gray matter), and learning (white matter). White matter is accumulated as a person grows, develops adaptive schema, has experiential practice, is taught, learns from modeling, and observations. We can thus infer that the more diverse are these ways of becoming an adult, the more competent the young adult will be.

Not yet answered is what are the norms for ethnic minority young adults (mid -20s), who have social, economic, academic, and/or economic deprivation?

If such life experiences result in less white matter, and less complex white matter – are consequently, the normative data on economically, educationally, and socially deprived ethnic minority youth significantly different from majority youth? If yes, the implications are enormous for such issues as: (1) educational remediation; (2) juvenile court case disposition, (3) character development, (4) self, and (5) familial sufficiency.

This paper will explore these complex issues and make recommendations for policy reforms.

2. LITERATURE REVIEW

Child and developmental psychologists for many years have explored and chronicled historical perspectives on the emerging and developing human. The identified important milestones (e.g., crying, crawling, talking walking, toilet training, cognitive development, moral reasoning) were reflected among theorists such as Sigmund Freud, Erik Erikson, Jean Piaget, Margaret Mahler, Ivan Pavlov, B.F. Skinner, Abraham Maslow, Albert Bandura, and Lawrence Kohlberg (Myers & DeWal, 2015). However, since Jay Giedd's (2008) groundbreaking neuroscience research on the adolescent brain, adolescent and young adulthood maturation views adulthood not categorically (i.e., as at age 18 or 21 years of age); but more dimensionally (with brain growth continuing until the mid-twenties), and cognitive mastery likely continuing for years later (some suggestions of early 30s years of age (Adamson, 2016).

The focus of this paper is on how adolescent brain development may be impacted by socioeconomic factors for ethnic minority youth particularly as related to their involvement in the child welfare system, school education and discipline policies, case processing in the juvenile and criminal justice systems. But first we will consider some of the important research published to date on neuroscience and adolescent development.

2.1. Legal issues and adolescent brain development

Some of the early publications began to question legal decisions made regarding juvenile competency and legal responsibility. Bradley et al. (2012), note that when compared to adults, juveniles do not have the same understanding and thus lack the decision-making skill necessary to consult with their lawyer. These are important attributes. As noted in *Dusky v. United States*⁵, whether the accused has sufficient present ability to consult with his lawyer with a reasonable degree of rational understanding—and whether he has a rational as well as factual understanding of the proceedings against him. “In a similar context, an article by Steinberg (2013) observes, that adolescents and adults are similar on some cognitive attributes (e.g., logical reasoning about moral, social, and interpersonal matters). However, adolescents are not equally mature on capacities such as impulse control, sensation seeking, reward sensitivity, and resistance to peer influence. Bonnie and Scott (2013) also authored an article on the adolescent brain and law. They write, “[T]his new research provides the basis for understanding why many adolescents become involved in risky activity and desist as they mature into adulthood...The research indicates that the prefrontal cortex matures gradually (into early adulthood) (over time resulting in improvement in impulse control and emotional regulation)...This gap between early increase in sensation seeking and later development of emotional and behavioral controls has been described by one scientist as ‘starting the car without a skilled driver’(Bonnie & Scott , 2013, p. 159). Luna, Paulsen, Padmanabhan, and Geier (2013), also stress the important nexus

between the teenage brain, cognitive control, and development of the (maturing) prefrontal cortex.

It is sometimes difficult to understand the creative ways children and adolescents seem to get themselves into trouble, and at the same time understand the research that indicates their brains are still developing. Much of it is explained by the uneven development of the brain. We have long observed these differences in the physical development of adolescents as they enter the phase of puberty; i.e., primary characteristics (sexual organs) and secondary characteristics (height and shape). Monahan, Steinberg and Piquero (2015), identify ways in which the brain's neurological development helps explain the uneven, and risk-prone decision making of adolescents. Their Abstract notes that, "Adolescents are less blameworthy than adults. Responses to juvenile offending should take account of malleable aspects of psychosocial functioning in a developmentally informed manner." At page 584 of the article they state, "[O]ne reason why susceptibility to peer pressure declines as adolescents mature into adulthood; they are better able to put the brakes on an impulse aroused by friends." Further insights into the inconsistent and reckless behavior has been observed by Kramers-Olen (2015) in the article on neuroscience, moral development and the criminal capacity of youth. She writes, "[P]rior to adulthood, there is less communication between brain regions involved in rational decision making and the regulation of emotional arousal. Hence, in adolescence, strong emotional material is less likely to be regulated by those parts of the brain that regulate impulse control and compare risks and rewards." (Kramers-Olen, 2015, p. 470).

Policy advocates increasingly advocate for ways in which traditional system reforms should be modified based on adolescent brain development research. The National League of Cities (Furr, 2016) highlighted the following issue, "First offenses committed by young adults often occur as a consequence of their stage of development, rather than any deep-seated criminality. Recent brain development research concluded that the risk-taking and poor decision-making characteristic of adolescence continue through age 25. Second, the young adult age range represents the most common time as which serious mental illness first appears and when substance use peaks." Given that many decisions that lead to negative outcomes for youth, the issue of moral development was explored in a study by Chiasson, Vera-Estay, Lalonde, Dooley, & Beauchamp (2017, pp. 515-516) Their perspectives on the impact of moral development indicate that, "Moral reasoning (MR) is an important socio-cognitive skill that refers to the ability to analyze and evaluate social situations in light of moral criteria in order to establish judgments about right and wrong behaviors ... From a neuropsychological point of view, this higher order socio-cognitive skill is underpinned by neural networks that combine affective, cognitive, and motivational processes across development and are rooted in social experience. As such, MR development promotes the establishment of healthy social behaviors and positive interpersonal interactions while regulating and inhibiting the emergence of socially inappropriate behaviors." Kemp, et. al. (2017), in the conclusion of their study wrote, "Continued integration of adolescent development research findings across multiple specialties, such as independent functioning, decision making, emotion regulation, and cognitive ability, may help to improve outcomes for juvenile justice-involved youth." (p. 90). To these important considerations must now always include the impact of socio-economics of adolescent brain development, particularly for ethnic minority youth. Although intuitively most would agree this dimension is important, in order for all related research communities to embrace this aspect, we must be intentional and insistent that all future research include this overly neglected component. Failing to do so has resulted in disparate treatment of ethnic minority youth in the child welfare, education, behavioral health, juvenile justice and criminal justice systems. Laurence Steinberg (2017) has been a prolific contributor to the important implications adolescent brain development must inform every part of the way we see, raise, educate, and socialize children and youth.

We now have rigorous teeth to the folklore maxim that, *children are different... they are not just little adults*. In a recent article he writes, “Although the United States today continues to punish juveniles who commit serious crimes more harshly than does the rest of the industrialized world, research has played a role in pushing the pendulum back toward a more progressive position, in which legislators, practitioners, and judges have become more likely to acknowledge that juveniles differ from adults in important ways that warrant their differential treatment under criminal law” (Steinberg, 2017, p. 411). He also states, “Adolescence is a critical period with regard to many aspects of development, not only academic achievement, such as social relationships, mental health, vocational preparation, and psychological maturity. Life events (such as incarceration) that disrupt functioning in one or more of these areas may have greater long-term consequences for adolescents than they do for adults (p. 417)”. And, finally in his conclusion he writes, “It is astonishing that it took more than a decade of concerted effort to persuade policymakers, practitioners, and the public that, “kids are different ... (p. 418).” Although, many lives will have been negatively affected by these delays in attention – it is hoped that in less than a decade policy will also bring to the undeniable conscious that many ethnic minority adolescents are different than some of their peers, not because of any inherent deficit, but because we have not brought their needs to the attention of service providers, policy makers, and researchers that inadequate socioeconomic access creates anemic environments for healthy brains to grow. With this acknowledgement future adolescent brain development research must include this variable in their studies. The absence – now known, if not addressed approximates ethical malpractice in research on these populations.

2.1.1. Socioeconomic impacts on adolescent brain development

The literature in this area is emerging. In 2018, Farah published this article, *Socioeconomic status and the brain: prospects for neuroscience-informed policy*. Her conclusions seem to reflect the somewhat kneejerk reactions to established paradigms in most fields of inquiry. First, she tempers this area of research with the following statements, “The neuroscience of SES (socioeconomic status, *added*) is a young field. Many of the questions and controversies discussed in this Perspective can be traced to its fledgling status... Scientifically, we have only scratched the surface of the SES-brain function relationship, and many questions remain open. Which findings will replicate and generalize and which will not? What can we say with confidence about the mechanisms linking SES and the brain? To what extent do the answers to these questions depend on specific dimensions of SES, such as income or neighborhood characteristics, or on poverty per se as opposed to graduations between higher levels of SES?... Do they vary across cultures or ethnicities or between urban and rural communities? There is little that we can say with confidence. This is particularly true when we remember the findings on adverse experience more generally (including trauma, maltreatment and institutionalization) cannot be applied automatically to the understanding of socioeconomic adversity” (Farah, 2018, p. 436). One of the critics she cites said the following, “Neuroscience has little or nothing to contribute to addressing these problems [of low SES] and is unlikely to add anything of significance in the future” (Farah, 2018, p. 436). This critic should consider how socioeconomics may affect a kindergarten child whose reasoning and decision making may result in being led out of school in handcuffs. Or, how poor ethnic minority male and female youth are arrested when initially only stopped for questioning. Or those youth who are die from police shootings. The absence of effective parenting styles, problem solving experiences and dialogue with poor youth deprive them of important cognitive processing skills that can be protective factors mediating life altering and life ending risk factors. The criticism seems more than a critique; it seems

cynical – not new for disenfranchised populations. Just a reminder that the world too, was thought to be flat.

Notably, this vein of important research continued with report of the following study, *Childhood socioeconomic status and executive function in childhood and beyond* (Last, Lawson, Breiner, Steinberg, & Farah, 2018). In the discussion they write, “It suggests that the SES disparity in EF (executive function, *added*) is established early in life and holds steady into adulthood... [T]he present findings provide the most relevant evidence at hand on the stability of SES effects on the EF from childhood through adulthood. It suggests that SES disparities in EF observed in childhood cannot be expected to be resolved in adulthood” (Last et al., 2018, p.6).

3. 21st CENTURY SOCIETAL CONSEQUENCES OF SOCIOECONOMICS, RACE, CHILD, AND ADOLESCENT DEVELOPMENT⁶

Before chronicling the troubling reports that are included in this section, I am recall how often – when presenting these data – particularly in community settings, I was reminded that many ethnic minority families (parents, caretakers and the children) overcome these odds, and lead successful lives, and go forward to raise other healthy children. Those children say thanks to their mothers and fathers, older siblings, other extended family members, neighbors, babysitters, child care workers, kindergarten teachers, Head Start, elementary and secondary teachers, faith community, coaches, enrichment and intramural programs, mentors, and others who helped. But for those who were not so helped; those who we say may have fallen through the cracks, the following statistics are far too normative.

4. DISPROPORTIONALITY EFFECTS ON ADOLESCENT BRAIN DEVELOPMENT

4.1. Racial disproportionality effects in child welfare

- The child welfare community has moved from acknowledging the problem of racial and ethnic disproportionality and disparity in the child welfare system to formulating and implementing possible solutions (Child Welfare Information Gateway, 2016, p. 1).
- A significant amount of research has documented the overrepresentation of certain racial and ethnic populations – including African Americans and Native Americans – in the child welfare system when compared with their representation in the general population (Child Welfare Information Gateway., 2016, p. 2).
- Although there is widespread recognition of the problem, there is a paucity of research about the causes (and consequences, *emphasis added*) of disproportionality and disparity and of promising practices to address them (Child Welfare Information Gateway, 2016, p. 17).
- Disproportionality of Minority Children in Child Welfare Investigations
- Even a cursory look at the number of children in “substantiated” cases of child maltreatment versus the number of children in the general population reveals a startling and concerning level of disproportionality based on race or ethnicity. (“Substantiated” is not the same as a finding of guilt in a criminal court. It means only that the agency believes abuse or neglect occurred. In most states, the investigator need only believe that there is slightly more evidence of maltreatment than not, to reach this conclusion) (Child Welfare Information Gateway, 2016, p. 7).

- Forty-seven states and D.C. (District of Columbia) show a clear pattern of disproportionality in at least one race/ethnic group, whether it involves primarily African-Americans; Hispanics; those of mixed race; or even Whites. Ten states showed disproportionality in the number of African Americans and those of Multiple Races, which may be related. And more than twenty states showed significant disproportionality against several minority groups across the board (at The Parental Rights Foundation, 2018, p. 8).

4.1.1. Disproportionality Effects on Adolescent Brain Development in School Discipline

- Major racial disparities in student discipline rates have been documented for decades. Most recently, the 2013-14 Civil Rights Data Collection (CRDC) documented that black students, who make up 16 percent of enrollment, accounted for 40 percent of suspensions nationally (Gordon, 2018, p. 1).
- Racial inequity in school discipline practices is a major civil rights challenge in U.S. schools. Non-dominant students, particularly Black students, are referred, suspended and expelled from K-12 public schools at significantly higher rates than White students (Gordon, 2018, p. 4).
- It is also important to note that when Black students are disciplined they are more likely to be disciplined for subjective offenses, such as “disrespect” or “defiance,” and more likely to receive harsher punishments than White students for the same infractions” (Gordon, 2018, p. 4).
- The consequences of exclusionary discipline practices are significant. A recent study estimated that lost instruction due to school discipline amounted to over 12 million days each year. Importantly, when students are removed from classrooms and schools due to harsh disciplinary policies and practices, often they do not receive the adequate opportunities to learn. Not only are suspensions and expulsions correlated with negative academic outcomes, the long-term effects are significant as well. Students who have been suspended or expelled have higher rates of entry into the juvenile justice system and incarceration as adults (Tefera, Siegel-Hawley, & Levy, 2107, p. 5).

4.1.2. Disproportionality Effects on Adolescent Brain Development of Ethnic Minority Youth in the Justice System

- The landmark 1988 report to Congress, *A Delicate Balance*, highlighted concerns regarding disparate *confinement*, and led to an amendment to the Juvenile Justice and Delinquency Prevent Act (JJDP) of 1974 to track those differences through the Disproportionate Minority Confinement (DMC) core requirement. Later amendments, passed in 2002, expanded the concept of DMC, seeking to measure disproportionate *contact* beyond the point of *confinement* (The Sentencing Project., 2014, p. 1).
- What is not in dispute is that the differences exist. The extent to which jurisdictions experience racial and ethnic disparities has been exhaustively studied. A 2002 literature review found that two-thirds of studies on minority overrepresentation in the criminal justice system showed negative race effects at one or more steps in the process (The Sentencing Project., 2014, p. 1).
“He’s not crazy. He’s hurting”: Suicides are rising for black and Latino men in Texas

Adolescent Frontal Lobe Brain Development: Disproportionality Effects of Social and Economic Deprivation and Implications for Juvenile Court Case Disposition, Child Welfare Reform, and Education Remediation

As if on cue, I saw this article on the front page of the *Dallas Morning News* (Jaramillo, 2019). Here are some highlights from the article.

- For communities of color in Texas, suicide rates are on the rise for young men, as are reported thoughts of suicide.
- Suicide was the third-leading cause of death for black and Latino males under 24 in Texas, after accidents and homicide.
- While mental health problems affect every demographic, these young men are more likely to live in poverty, experience trauma or be exposed to violence. And, they are less likely than whites to seek help. The cost of mental health treatment adds another barrier to care.
- And for some, the ongoing immigration crisis causes anxiety, with fears about deportation.
- The Rev. Donald Parish Jr., who founded A Steady Hand, a mentoring organization for boys at Carter High School in Oak Cliff (Dallas), said he often sees anxious and depressed students. Ninety-eight percent of Carter students are black or Latino and 73 percent are low-income.
- “I think mental health has been stigmatized for black men, and my Latino brothers. We can’t have that conversation because we worry that our brothers are going to laugh at us,” Parish said.
- “We just say stuff like, ‘Man he’s crazy,’” he said. “He’s not crazy. He’s hurting.”

5. STRATEGIES FOR IMPROVING ADOLESCENT BRAIN DEVELOPMENT FOR SOCIOECONOMICALLY DEPRIVED ETHNIC MINORITY YOUTH

When I provided direct services to, principally, African American male youth in the juvenile justice system – sometimes I had to make home visits. After a number of these visits I was struck by after spending more than 90 minutes with a parent, I had few progress notes about my male youth client. What I realized was the time was consumed by the parent telling me the stories of their pain(s). It was not that they weren’t interested in help for their child. The problem was that here, they had a relationship with a professional they could talk to, and they savored this opportunity. Telling ‘stories’ is important. As my career progressed from individual service delivery to consulting – I was again struck with what seemed like such little progress when bringing all the community “stakeholders” to the table. The beauty of these forums was that everyone got a chance to speak. All voices were heard. Such was the devil in the details. The judge, police officer, minister, lawyer, probation officer, parent, youth teacher all had an equal voice. The professionals wanted to problem solve, to create action plans, outcome measures, and accountabilities for next steps. Though each participant agreed on the agenda – most community members did not easily move beyond their turn to tell their story. Even when a previous speaker’s comments were poignant – and “nailed” the issue – the next person effectively said, “Let me tell you how this has happened to me.” As a planner it can be frustrating because it does not seem during these forums like much progress has been made. And, from an action perspective that is probably true. But, what has occurred is the need for community members to vent, to exercise some degree of catharsis; to validate, “Me too.”

It is impossible to generalize across the vast United States, but I often listen to talk radio, and some programs on those stations that have urban African American audiences have callers that seem to be living in a time warp, given that it is now the 21st Century. The

comments mirror reflections of the 1960's – and not because they are not valid now; but because many in those communities do not feel the progress that has been made. Some say there are no more black businesses. Of course, there are, many on much larger scales. However, those businesses are not accessible to residents who may have to rely on public transportation to get around. There are complaints that blacks who have made it, do not reach back to help others. On the contrary, there are many who have made it, who have established programs in communities, and in other ways contribute. But for the radio callers, they don't feel the benefits of those who are paying it back or paying it forward. Some general perspectives are that the system is corrupt, and the little guy will never get ahead. And, there is not much conversation about climate change, yoga, meditation, childhood obesity, and mindfulness. It can be tough to talk about planting grass when your house is on fire.

I recall many years ago I was asked to speak during a plenary session at a national conference. My notes included comments on the issue of the over representation of minority youth in the juvenile justice system; then as an emerging issue in the United States. The program coordinator asked me not to bring up that topic because it was not on the conference agenda. I agreed not to do so. But during my extemporaneous comments from the podium, the overrepresentation issue very naturally came up because of how important the issue was to me. Whether because of the conscious press of the subject to me, or a Freudian slip – I talked about the issues of disproportionality and overrepresentation. After my comments the program coordinator said with some irritation that I was told not to bring up that issue. Today, that organization is a major champion of disparate treatment of youth in child welfare, education, behavioral health, juvenile justice, etc. In a similar vein, organizations that I am a member, if invited to make suggestions for agenda topics, I began to request that we include the issues of disparate treatment of minority youth on the agenda. Increasingly, it was, but always the last item on the agenda. And, when the meeting was short on time you can fill in the blank on what we did not have time to discuss. Fortunately, now for those youth and families it is a no brainer that disproportionality is the headliner issue in meetings and at conferences. There remains a bit of a dog chasing its tail phenomena to resolving the issue. Since many efforts are funded by state agencies, somehow when new personnel are brought on board instead of moving the issue forward from where the responses were prior to them being hired (or assuming a new position), they go back to some of the very elementary steps of how to address the problem. There was often a request for a new study of the issue; almost assuredly another twelve to eighteen months before strategies would be implemented.

It is against this backdrop that the critical issues regarding child and adolescent brain development for youth in socioeconomically deprived communities are discussed. These points are likely familiar to career veterans in human services, education, and the justice systems. We can claim success when they are the also conversational among those whose lives are most negatively affected by them.

When future research is conducted on adolescent brain development, and when forum are planned for related discussions it is vital to include ways in which socioeconomics affects the brain development of adolescent ethnic minority youth.

5.1. Prenatal care

Most youth either know of, or are told about the importance of good nutrition, and medical visits for expectant parents. Awareness of the impact of drugs on a fetus are probably intuitive even if the expectant mother does not abstain. It does not appear that the message is generally known about the harmful and permanent effects on the developing child when the mother drinks alcohol during her pregnancy. The damage is often irreversible. During every stage of pregnancy some part of the baby's development may be impaired by the consumption

of alcohol. There can be information overload. But through social media and community advertising, the word must get out on the permanent negative consequences of drinking alcohol when pregnant.

5.1.1. Sensorimotor development

Babies are fun. Watching them and playing with them comes naturally. Challenges with them do require patience. Hungry babies, fussy babies, sick babies can evoke negative reactions from the most patient adult caregivers in the child's life. I wonder how many young parents can guess the number of words is suggested to be spoken to the child each day? Any brief internet search reveals that answer to be between 21,000 to 30,000 spoken words to preschoolers per day (Wagner, 1985). Talking helps them to develop not just vocabulary, but their language skills, listening, memory and speaking. Can this threshold be met if the child is in daycare? What about parents who meet some child needs while, for example, using electronic devices, watching television, or who are otherwise involved while attending to the child?

5.1.2. Parenting styles

Three parenting styles are identified authoritative parents, permissive parents, and authoritarian parents (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987). The following are very general characterizations: permissive parents set fewer limits for their children; and thus, less corrective acts toward their behaviors. Authoritarian parents are often described as "Do as I say, not as I do parenting." This parent is less likely to give long explanations for why a child should do what a parent says they must do. The child learns to understand they must do so because the parent says so. The authoritative parent engages the child in why there are expectations for a particular behavior. If the child asks why they have to go to bed, the benefits of sleep may be shared. If the child must have a consequence or discipline for an inappropriate behavior, the child may be included in what the consequence should be. If the child's suggestion is too lenient or too excessive, the child is asked to discuss why. Such interaction helps the child develop problem solving skills, creativity, and being able to see others' point of view.

5.1.3. Trauma

The familiar traumas are child neglect, and abuse. Most can also name the differences between physical abuse and sexual abuse; excessive yelling and screaming at a child is emotional abuse. Young parents should also be informed about witness/observational abuse, that is, the trauma the child experiences by seeing adults having heated disagreements with one another. We are now also observing the traumas which result from cyber bullying – in this case because the perpetrator is anonymous. The victimization is relived recurrently as the posted abuse is reshared. Research in this field now identify these trauma as Adverse Childhood Experiences (ACE). The lifelong implications are such that interventions are now therapeutically identified as Trauma-Informed-Care (TIC).

These are so important the following were published by Child Trends (Bartlett & Sacks, 2019).

- It is important to understand how ACEs differ from other commonly used terms, including childhood adversity, trauma, and toxic stress.
- Childhood adversity is a broad term that refers to a wide range of circumstances or events that pose a serious threat to a child's physical or psychological well-being. Common examples include child abuse and neglect, domestic violence, bullying, serious accidents or injuries, discrimination, extreme poverty, and community

violence. However, adversity does not predestine children to poor outcomes, and most children are able to recover when they have the right supports – particularly the consistent presence of a warm, sensitive caregiver.

- Adverse childhood experiences (ACEs) – are a subset of childhood adversities ... Researchers found that the more ACEs adults reported from their childhoods, the worse their physical and mental health outcomes.
- Trauma is one possible outcome of exposure to adversity. Trauma occurs when a person perceives an event or set of circumstances as extremely frightening, harmful, or threatening – either emotionally, physically, or both. With trauma, a child’s experience of strong negative emotions (e.g., terror or helplessness), and physiological symptoms (e.g., rapid heartbeat, bedwetting, stomach aches) may develop soon afterward and continue well beyond their initial exposure. One may recover quickly without significant distress, whereas another may develop posttraumatic stress disorder (PTSD) and benefit from professional help.
- Toxic stress can occur when a child experiences adversity that is extreme, long-lasting, and severe (e.g., chronic neglect, domestic violence, severe economic hardship) without adequate support from a caregiving adult.

5.1.4. Myelination

This is a critical process in healthy adolescent brain development. It is not adequately communicated to urban families who may be more flexible than helpful to adolescent bed time, nutrition, time on electronic devices, exposure to violence, exposure to instruments of violence, illegal substance use, and the harmful effects of racism and discrimination. Many of the key considerations are highlighted in a *Psychology Today* post by Daniel J. Siegel, M.D. (2014).

- Longitudinal investigations reveal that there is a remodeling of the brain that starts often just before the teen years begin and continues well into the mid-twenties.
- For adolescents, this means that the *pruning* down of existing neurons and the laying down of *myelin* sheaths connecting the remaining neurons will continue years after we stop referring to them as “teenagers.”
- *Pruning* means the abundance of neural connections achieved during the childhood period will be whittled down, shaped like a garden. What is surprising to many was that such a pruning process would be so robust, a process that can be intensified with stress.
- And it is this pruning process that may explain the finding that most of the major psychiatric disorders – of thought, mood, and anxiety – have their major onset during this vulnerable period, Pruning may reveal genetically or experientially vulnerable circuits.
- The classic, “use it or lose it” principle applies to adolescence – the circuits that are actively engaged may remain, those underutilized may be subject to systematic destruction. And so for an adolescent, this means if you want to learn a foreign language well, play a musical instrument, or be proficient at a sport, engaging in those activities before and during adolescence would be a good idea. We move from open potential in childhood to specialization during and following adolescence.
- Myelin enables the remaining and connected neurons to communicate with each other with more coordination and speed.
- The development of myelination is impaired by inadequate sleep; smoking; poor diets; substance abuse and stress.

6. DISCUSSION

6.1. The facts

In part, this chapter was inspired by the following experience. In December 2018 I was driving to a medical appointment. My mobile phone rang, but when I looked at the number, I decided not to answer it because I did not recognize the number; and there was no caller name identification. It occurred to me that I was quite early for the appointment and decided to take the call. It was from a lawyer who said that we met when she attended a training where I was a guest speaker. She said that there was a case to which she had been appointed by the court and asked if I might be able to help her in the defense of the client.

The client was then nineteen years old. He had been in a county jail for thirteen months waiting for a trial date. He was charged with capital murder and aggravated assault. The crime facts are troublesome. Three persons went to a family home to get even with a teenager who lived there because that teen (and others) did not pay from some marijuana they said they wanted to buy. The three of them drove by the house; two of whom had guns (one being the defendant here). The two of them shot at the house. Several of the bullets went through a window; an eleven-year-old was injured (and recovered). A five-year-old was struck by one of the bullets and died. Though not exculpatory, the bullet that killed the child did not come from the gun of the defendant we are discussing here.

Since my principal task was to conduct a psychological assessment of the defendant, I went to the county jail to meet him. As with any client, if time permits, I like to meet with them at least once before the assessment to build rapport and answer questions. Because this person was in jail and had been for more than a year, I met with him twice before the testing began. During the testing he wore iron ankle shackles and handcuffs. Given that some tasks require him to write I initially had concerns that he would not be able to complete those tasks. However, he was able to during the examination to such an extent that I stated in the report that he was able to satisfactorily complete those parts of the examination without being hampered by the handcuffs. The facts of the case are heinous. That a five-year-old died over less than \$25.00 of marijuana speaks for itself. For purposes of the chapter I want you to meet the one charged, whose lawyer I am assisting. At this writing the defendant – who I will call – John, is still in the county jail awaiting trial. In November 2019 he will have been in trial for 2 years.

My clinical intuition and instinct have been at the forefront of this case. When I met ‘John’ I am not sure what I expected, but it was not the demeanor I anticipated. He looked very young; he was polite; and he did not seem stressed. After two visits I continued to process who this person was, and if I was having difficulty reading him correctly. On the day of the psychological assessment we were not put in office, but in a large open room surrounded by fencing from the floor to the ceiling. A corrections officer initially stood in the room until I stated that I had requested permission to do the testing without an officer present. He checked; it was confirmed. He did not stay in the room during the testing but did come by periodically to look in; which was understandable. The remainder of the assessment period was unremarkable, except at the very end John seemed a little agitated. I could not tell whether he knew he was getting a few more items wrong, or if he did not want the testing to end. He seemed to enjoy the process.

Before writing the report, I wanted to meet his parents. I arranged a time to meet them at their home. They live in the same city as the jail where he is incarcerated. In fact, they live in easy walking distance to the jail. His family and life history are more bizarre than the crimes committed. His mother is white. She is in her third relationship with African American men. She has children from the first two relationships. John and an older sister were born of the first. A younger brother and sister from the second. John’s dad was not in his life. It seems the relationship with his mother was short term. John did get to meet his father. However,

describes having been in touch with him several times. When the stepfather's two younger children were born John seemed to be disfavored in the household. Both John, his mother, and John's sister (whom I also met and interviewed) said his stepfather beat him to the point of being child abusive. His mother did not intervene as much as his sister did to try to stop the beatings. The interview with John's mother was unsettling (the current stepfather was present but did not speak much). When she spoke, it was as if you were listening to a neighbor talk about a kid who lived next door. There was a kind of distancing talk, without the emotion or affect of a parent. At times I wondered if she realized our impersonal, she was when she talked about her son who was in jail and had been for more than a year. We should not here that although they could have walked to the jail (maybe less than two miles), they had visited him in jail about three times.

When John was nine years old the beatings were so frequent and intense that he began to not stay at home. It was not quite the same as him running away from home because he was sleeping at friends' homes in the neighborhood; and his parents knew that he was sleeping there. He said he would sometimes come home to get clothes. But, when he was there, there was often an argument – and was he allowed to eat. He continued to stay friends' homes until he was about sixteen years old. Although these are not his words, it seems he was too old for these sleep overs, so he began to sleep in abandoned cars, or sheds in people's backyards. I asked him what those experiences were like, expecting to hear him say fearful, or afraid. What he said was all he could remember was always being cold.

He was not involved in any serious juvenile offenses. There were property offenses for breaking and entering of uninhabited dwellings. He says to steal food, or too steal things to sell for money and food. His school attendance was poor. Once his mother went to a school a signed an agreement that she would be home-schooling John. Both she and he said she never did so. I asked her if she signed the agreement to avoid going to the school for his truancy issues. She said yes. In spite of not going to school John is quite literate. He wrote me a letter, and I was so impressed that I strongly assumed a "jail-house" letter writer had written it for him. This is an excerpt. There are no edits.

January 17, 2018

Mike,

How have you been holding up? I've been doing alright since the last time that we talked to one another & me and my mother have been talking more to! ... I do look forward to seeing you again. Honestly I feel like you actually want to help me out, out of the few people I know that say they're here. Hows your report on me to the judge going? ... I've been thinking about writing you these past couple weeks i've just been procrastinating & being lazy. I have been in this jail for way too long & i am ready to move forward from this.

The letter is handwritten in print and is about one-page long.

I needed to write the report, so I scheduled one meeting with John as I was writing the report. And another once the report was finished. I found him and his case to be interesting and asked if he would like me to meet with him about one time per month until his case was scheduled for trial. He said yes. I asked him when he would like me to come again, and his very earnest and straightforward reply was, "Can you come next week?" That was in January 2019; at this writing it is the last week of September. I have visited John in the county jail once per week since then. With two exceptions; once when he said he did not feel well (no sleep and stomachache); and once when I was out of the country attending a conference. The county jail where he is housed is about sixty miles each way from where I work.

6.1.1. The why

This case reflects my life's work. I have taught fifth and sixth grade; worked in state department of corrections for youthful offenders; directed a program for emotionally

disturbed children at a status offender facility; psychological assessments for children at a private psychiatric school; completed psychological assessments, and therapy for adolescents and their parents; been a counselor at a narcotic addiction out-patient clinic; director of the adolescent unit of a private psychiatric hospital. For the past thirty plus years I have done university teaching, research, consultation, and training across the United States and internationally. The principal audiences are people who work in primary and secondary education, child welfare, juvenile justice, psychologists, lawyers, judges, probation officers, social workers, elected officials, community advocates, community-based programs; state-federal-private staff in programs that provide services to youth and their families.

John is the epitome of a career of work.

6.1.2. The challenge

This case is not about excusing John's behavior. A child died. Another was shot and must live with the trauma of that experience. Although it is parenthetical and not dispositive, neither of the bullets that struck these children came from the gun that John used. In an America with multiple victims of gun violence. With increased advocacy groups in support of victim's rights; balanced and restorative justice. A family with these losses, how do you impress a judge to not give John a harsh and long sentence at trial?

6.1.3. The resources

The Supreme Court of the United States in successive opinions have detailed how the juvenile and adult criminal justice systems must view youthful offenders through the lens of childhood, not mature adult standards. Those decisions reflect each and every stage of the system process, from arrest, sentencing, and post-adjudication review. Every judicial scholar acknowledges how monumental are these decisions. Courts tread slowly. Maxims in the law are steadiness, certainty, predictability, and reliability. When communities and societies know the norms, mores, and the law, expectations for conformity become normalized. Thus, especially the U.S. Supreme Court does not change existing law often, nor without substantive reflection and support. Thus, one resource are the opinions of the United States Supreme Court.

Remedial education is proved both in traditional elementary and secondary schools, as well as private schools for children with learning differences, opportunities to earn GEDs (General Education Diploma), and with degrees at local community colleges. Many complete their education or enhance their skills because our education systems have strategies that work. Also, now a best practice in the realm of psychological support is our clinical understanding of trauma, how it affects an individual's emotional health over a life time, and how the impact of trauma can be reduced through trauma-informed-care.

However, there is no greater support from no longer locking up and throwing away the key on serious offenders than the advances made in the areas of neuroscience and neuropsychology. The fact that brain tissue – the frontal lobe is still growing until a person is in their mid-twenties, and the frontal lobe is the area associated with adult cognitive processes, e.g., planning, appreciation of long term consequences, impulse control, delayed gratification, reasoning, abstract thinking – affirms that humans are the smartest living species on planet Earth, and they perform life best when fully mature. John is the epitome of all these resources, trauma, education, justice systems, neurological development. John was arrested as an adult and is being held in an adult jail. On the face of it, there is not an "initial" question given that he was eighteen years old when the crime was committed. However, consider that his birthday is at the end of February, so he had been eighteen for about eight months. Given what we know about brain development, any person that age would be thought

more likely to have the neural equipment more of a sixteen or seventeen-year-old rather than an adult. And, given his life history probably less mature than sixteen. He had street smarts; he lived on the streets. Remarkably, with so little time in school he has good reading and writing skills; thus, we can see his potential. But as noted, his brain development has been impoverished. Also noted is that I have been seeing him weekly since December 2018 – in two months it will be one year. He has no real sense of planet Earth beyond the small-town neighborhood he has grown up in. If he is worldly at all that I pick up in our conversations, it is either from what he has seen on television, or what someone has told him. To some extent he has exposure from social media. But, he has not had a phone, or computer, nor gone to school.

6.1.4. Can we turn his life around

I think the answer is yes. There is tremendous irony in this chapter. I initially thought of the topic as a submission to be presented at a conference. After the submission was accepted and I attended the conference I was asked to assist John's lawyer on his case. This has truly been an experience of parallel universes. On one hand my chapter paper must meet publication requirements and deadlines. On the other hand I sit in jail for about two hours per visit, looking this kid in the face, wondering how do I help convince a judge not to give him a death sentence, a forty year sentence, or any other length or years in prison which ensures his brain will finish growing in a prison, living in a cell, with a community of felons. I have no doubt that he is different. He is different in a way that makes a difference; and, how do I ensure that I communicate that effectively to the judge. He has confidence in me. His lawyer has confidence in me. I'm scared as hell that perceptions may override facts.

But, every day I think about this case. Every day I think about this opportunity. Every day I think about the tools the Court, psychology, education and neuroscience have at my disposal to turn basic research into applied research.

With that, in sum – we reflect on Future Direction below.

7. FUTURE DIRECTION: THE PATH TO SUSTAINED SYSTEMIC REFORM

It is essential that every conversation and each context (publications, research, academia, policy making, conferences, revenue sources, community forum, et.al.) the issues that negatively affect adolescent brain development be taken in account. Including:

- Child welfare – abuse, neglect, trauma, removal from home placement, foster care, adoption, termination of parental rights, dual system involvement, aging out of foster care; LGBTQ⁷ youth (Kelleher 2009).
- School assessment, school remediation, school intervention, school discipline, bullying, psychological assessment.
- Juvenile and criminal court investigations, arrests, charging decisions, prosecutions, evaluations, case processing, case disposition, probation, and parole oversight.

With greater emphasis we must consider that one of the significantly negative contributors to ethnic minority youths maladaptive adolescent frontal lobe development (and subsequent maladaptive behaviors) is the low socioeconomic status of their families. All correction and intervention programs must intentionally acknowledge, control for, intervene, and remediate this variable at each of their key systemic decision points.

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M. Lindsey

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KEY TERMS & DEFINITIONS

Brain: an organ of soft nervous tissue contained in the skull of vertebrates, functioning as the coordinating center of sensation and intellectual and nervous activity.

Adolescent: process of developing from a child into an adult involving five leading characteristics of adolescence are biological growth and development, an undefined status, increased decision making, increased pressures, and the search for self.

Judges: public/government official appointed to decide cases in a court of law.

Child welfare: continuum of services designed to ensure that children are safe and that families have the necessary support to care for their children successfully.

Ethnic minority youth: group of youth who differ in race or color or in national, religious, or cultural origin from the majority population of the community in which they live.

Juvenile justice reform: designed to reduce the prejudice pertaining to racial and ethnic disparities of juveniles in the criminal justice system while lowering recidivism of youth.

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Adolescent Frontal Lobe Brain Development: Disproportionality Effects of Social and Economic Deprivation and Implications for Juvenile Court Case Disposition, Child Welfare Reform, and Education Remediation

AUTHOR INFORMATION

Full name: Michael L. Lindsey JD, PhD

Institutional affiliation: Southern Methodist University, Adjunct Professor Department of Psychology and Nestor Consultants

Institutional address: P.O. BOX 110759, Dallas, TX 75011, USA and P.O. BOX 110759, Dallas, TX 75011, USA

Short biographical sketch: Lawyer and clinical psychologist. Received his B.A. degrees in psychology and political science from Johnson C. Smith University (Charlotte, N.C.). His Masters degrees were earned at the University of Louisville (teaching), and the University of Alabama (clinical-correctional psychology). Dr. Lindsey's legal studies were completed at Villanova Law School (Villanova, Pa), his doctorate in clinical psychology was awarded at Hahnemann University (Philadelphia, Pa.). Currently an adjunct professor in the department of psychology, at Southern Methodist University in Dallas, TX; adjunct professor at the University of Nevada – Reno; and adjunct faculty for The National Council of Juvenile and Family Court Judges, in Reno, Nevada. He is a past member of the Juvenile Justice Committee of the American Bar Association, and the American Psychological Association and serves as a consultant to numerous juvenile and judicial organizations. Nestor Consultants, Inc. (founded 1985 by Dr. Lindsey), is the primary consulting organization for the work which he performs providing these and related services since 1976.

¹543 U.S. 551 (2005). The imposition of the death penalty for crimes committed by juveniles is cruel and unusual punishment within the meaning of the 8th Amendment [J]juveniles lack maturity and have an underdeveloped sense of responsibility resulting in impetuous and ill-considered actions and decisions. Second, juveniles are more vulnerable and susceptible to negative influence of outside pressure, including peer pressure. Third, the character of a juvenile is not well formed as that of an adult. Thus, they possess more potential for rehabilitation.

²560 U.S. 48 (2010). Expanding upon the analysis in and logic of *Roper*, the Supreme Court held that it is unconstitutional to impose the penalty of life imprisonment without the possibility of parole on juveniles.

³564 U.S. 261 (2011). [I]n some circumstances, a child's age 'would have affected how a reasonable person' in the suspect's position 'would perceive his or her freedom to leave.' A child's age is far 'more than a chronological fact' Children, 'generally are less mature and responsible than adults,' they 'often lack experience, perspective, and judgment to recognize an avoid choices that could be detrimental to them,' and they 'are more vulnerable or susceptible to outside pressures' than adults.

⁴567 U.S. 460 (2012). Juveniles cannot be sentenced to life without the possibility of parole for homicide crimes, where such a sentence is the only option. Mitigating factors must be taken into account before a juvenile can be sentenced to life without the possibility of parole.

⁵362 U.S. 402 (1960).

⁶In 1990 this authors' work began as a consultant and technical assistance provider in the area of disparate and disproportional treatment of ethnic minority youth with OJJDP (Office of Juvenile Justice and Delinquency Prevention) when the issues were first defined as "disproportionate minority confinement (DMC)," and subsequently (and currently defined) as "disproportionate minority contact (DMC).

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⁷Lesbian, Gay, Bisexual Transgender, Questioning.