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How Developmental Science Influences Juvenile Justice Reform*

Elizabeth Cauffman,** Adam Fine,***
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I. How Developmental Science Influences Juvenile Justice Reform	21
II. Are Adolescents Different From Adults?.....	23
A. The Age-Crime Curve.....	26
III. Developmental Science in the Justice System	27
A. Culpability and Severe Punishment	28
B. Legal Competency	30
IV. Moving Forward: Potential Areas of Reform.....	32
A. Juvenile Transfer to Adult Court	33
B. Solitary Confinement.....	37
Concluding Remarks.....	39

I. HOW DEVELOPMENTAL SCIENCE INFLUENCES JUVENILE JUSTICE REFORM

Youth who commit crimes challenge society to think deeply about the nature of both adolescent development and justice. On the one hand, behavioral and

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neurological evidence show that youth are still developing their ability to regulate their behavior, to consider the consequences of their actions, and to resist peer pressure. From this developmental perspective, it is unsurprising that adolescence is a time of heightened risk taking and that the vast majority of youth simply age—or more precisely, psychosocially mature—out of these types of behaviors. On the other hand, a central tenant of our justice system is the belief that individuals who break the law deserve to be punished. To put it simply, if you did the crime, you should do the time. The question thus becomes, what should we do with adolescents who commit crimes? Are adolescents different from adults in ways that require different treatment under the law? If so, what developmental factors should be considered?

The establishment of a juvenile justice system in 1899 reflected an appreciation that youthful offenders should be treated differently than adults. Whereas the adult criminal justice system was designed to punish individuals for crimes, with retribution and incapacitation as central objectives, the juvenile justice system was designed to also focus on rehabilitation.¹ The juvenile court's purpose is to protect juvenile delinquents while holding them accountable.² A central component is sanctioning them in a less punitive manner than we punish adult offenders.³

Despite the existence of a juvenile system separate from the adult criminal system, adolescent offenders have been—and in many respects, still are—treated like adult offenders. To decide whether we should treat adolescents differently than adults, one must understand, from a developmental perspective, whether adolescents differ fundamentally from adults. The current review begins with an introduction to adolescence, specifically identifying the advances in developmental science that provide concrete evidence as to how and why adolescents differ from adults in ways that are pertinent to justice system policies. The second section examines how the Supreme Court and other legal entities have utilized this developmental science to reform justice system policies and practices concerning adolescent offenders. Specifically, developmental science has informed changes in whether and how we administer to adolescents the death penalty, mandatory life without parole for both non-homicide and homicide cases, and *Miranda* warnings. Finally, the review discusses how the same developmental science that has informed landmark Supreme Court decisions and justice system policies could be applied to current, pressing questions facing the justice system, such as juvenile transfer to adult court, the “Raise the Age” movement, and the use of solitary confinement.

1. Daniel P. Mears et al., *Public Opinion and the Foundation of the Juvenile Court*, 45 CRIMINOLOGY 223, 226 (2007).

2. ELIZABETH S. SCOTT & LAURENCE STEINBERG, RETHINKING JUVENILE JUSTICE 3–6 (2008).

3. *Id.*

II. ARE ADOLESCENTS DIFFERENT FROM ADULTS?

In certain respects, adolescents cognitively function like adults. Laboratory studies under controlled, structured situations show that adolescents perform just as well as adults on a variety of critical thinking and cognitive functioning tasks, particularly by age sixteen.⁴ Adolescents and adults perform comparably on cognitive tests measuring the sorts of abilities that permit logical, rational reasoning about moral, social, and interpersonal matters.⁵ The literature thus demonstrates that cognitive capabilities tend to develop early in adolescence, such that by age sixteen, adolescents are quite capable of making mature, rational decisions.⁶ So then, if adolescents are capable of thinking like adults, *why* are they so reckless?

Despite advancements in cognitive abilities, adolescents continue to develop what researchers have termed *psychosocial maturity*.⁷ Psychosocial maturity extends beyond simple cognitive functioning, and instead encompasses more complex processes such as *responsibility* (e.g., susceptibility to peer influence), *perspective* (e.g., placing one's actions in the broader social and temporal contexts), and *temperance* (e.g., suppressing impulsive behavior and thinking before acting).⁸ For instance, Steinberg and colleagues compared levels of cognitive capacity (e.g., skills such as working memory and verbal fluency) and psychosocial maturation among adolescents and adults.⁹ Although they found few differences in cognitive abilities between adults and adolescents beyond age sixteen, adolescents were far more psychosocially immature than adults – referred to as the “immaturity gap”. That is, while the cognitive capacities of sixteen-year-olds may approximate those of adults, psychosocial maturation proceeds more slowly, leading to social and emotional differences between adolescents and adults that profoundly affect adolescent decision making.¹⁰ Of particular relevance to the present discussion are developmental differences between adolescents and adults in four domains: how much they consider the consequences of their actions, how sensitive they are to rewards, how susceptible they are to peer influence, and how much they are able to regulate their impulsive behavior. The following sections examine each aspect of psychosocial maturity in turn.

When deciding whether to commit a crime or how to behave in the presence of police, it is essential to consider the long-range consequences beyond immediate

4. Daniel P. Keating, *Cognitive and Brain Development*, in HANDBOOK OF ADOLESCENT PSYCHOLOGY 45–84 (Richard M. Lerner & Laurence Steinberg eds., John Wiley & Sons 2d ed. 2004); see also Sandra Hale, *A Global Developmental Trend in Cognitive Processing Speed*, 61 CHILD DEV. 653 (1990).

5. Laurence Steinberg et al., *Age Differences in Future Orientation and Delay Discounting*, 80 CHILD DEV. 28, 37, 39 (2009).

6. *Id.*

7. Elizabeth Cauffman & Laurence Steinberg, *(Im)maturity of Judgment in Adolescence: Why Adolescents May Be Less Culpable than Adults*, 18 BEHAV. SCI. & LAW 741, 747, 749 (2000).

8. *Id.*

9. Steinberg et al., *supra* note 5.

10. *Id.*

gratification. Future orientation—the capacity to project events into the future— influences judgment because it affects the extent to which individuals consider the long-term consequences of their actions. Over the course of adolescence and into young adulthood, individuals become more future-oriented, evidenced by increases in their concern about the future and in their ability to plan ahead.¹¹ In addition to self-reported and behavioral evidence, neurological and brain development evidence links the development of future orientation to normative growth in brain structure and function, particularly in the prefrontal cortex.¹² Developmental growth in future orientation has implications for assessing adolescent culpability and competence, as explained below.

Developmental research also suggests that relative to adults, adolescents are more sensitive to rewards (particularly immediate rewards) than to punishment.¹³ For example, while driving a car, adolescents and adults may estimate the risks of speeding (e.g., being ticketed, getting into an accident) similarly. Cognitively, they are able to estimate and understand the risk. Crucially, adolescents weigh the potential rewards (e.g., the thrill of driving fast, getting to the destination sooner) more heavily than adults, making them more likely to engage in the behavior despite understanding the risks. Indeed, during early adolescence, the brain rapidly develops the affective neural systems tied to reward sensitivity (e.g., the ventral striatum and anterior insula)¹⁴, helping explain age differences in sensation seeking and risk taking.

Both conventional wisdom and empirical research confirm that compared with adults, adolescents are also more oriented towards their peers and more responsive to peer influence.¹⁵ Behavioral studies show that in the presence of peers, adolescents tend to engage in more risky behavior and seek more immediate rewards.¹⁶ Gardner and Steinberg¹⁷ evaluated how adolescents and adults performed on a computerized driving task while in the presence of their peers. The

11. Cauffman & Steinberg, *supra* note 7, at 756; *see also* Jari-Erik Nurmi, *How Do Adolescents See Their Future? A Review of the Development of Future Orientation and Planning*, 11 DEVELOPMENTAL REV. 1, 47–48 (1991).

12. Elizabeth Cauffman, Laurence Steinberg & Alex R. Piquero, *Psychological, Neuropsychological, and Psychophysiological Correlates of Serious Antisocial Behavior in Adolescence: The Role of Self-Control*, 43 CRIMINOLOGY 133 (2005).

13. Elizabeth Cauffman et al., *Age Differences in Affective Decision Making as Indexed by Performance on the Iowa Gambling Task*, 46 DEVELOPMENTAL PSYCHOL. 193, 194 (2010); *see also* Adriana Galvan et al., *Risk-Taking and the Adolescent Brain: Who is at Risk?*, 10 DEVELOPMENTAL SCI. F8, F8 (2007); Laurence Steinberg, *Risk-Taking in Adolescence: What Changes, and Why?*, 1021 ANNALS N.Y. ACAD. SCI. 51, 54 (2004).

14. Linda Van Leijenhorst et al., *Adolescent Risky Decision-Making: Neurocognitive Development of Reward and Control Regions*, 51 NEUROIMAGE 345, 354 (2010).

15. Laurence Steinberg & Kathryn Monahan, *Age Differences in Resistance to Peer Influence*, 43 DEVELOPMENTAL PSYCHOL. 1531 (2007).

16. Margo Gardner & Laurence Steinberg, *Peer Influence on Risk Taking, Risk Preference, and Risky Decision Making in Adolescence and Adulthood: An Experimental Study*, 41 DEVELOPMENTAL PSYCHOL. 625, 629 (2005).

17. *Id.*

results indicated clearly that adolescents took more driving risks in the presence of peers.¹⁸ Subsequent research using a similar driving-task study also measured participants' brain activity during the task.¹⁹ This study confirmed that not only did adolescents take more risks in the presence of peers, they also demonstrated greater brain activation in regions related to reward processing. In fact, research has shown that peers not only affect whether adolescents take risks, but also whether they perceive the justice system as fair and legitimate.²⁰ These studies provide compelling evidence that adolescents are more motivated by rewards than are adults, and that peers are particularly influential during this developmental period. Importantly, resistance to peer influence increases throughout adolescence as individuals begin to form an independent sense of self. Research showing that adolescents become more resistant to peer influence as they mature is therefore also relevant to discussions of factors that lead adolescents to desist from crime since, presumably, crimes committed as a consequence of peer pressure should become less frequent with age. Questions concerning the extent to which adolescents may be more susceptible to the influence of others are raised in a variety of different legal contexts, including assessments of whether an individual may have been coerced into committing a crime, confessing to a crime, or waiving an important legal right.

Finally, adolescents and adults differ significantly in their ability to regulate their own behavior and control their impulses. In general, studies show gradual but steady increases in the capacity for self-direction and self-control through adolescence and into young adulthood.²¹ In a study of over 1,000 participants of ages twelve to forty-eight, Cauffman and colleagues found that self-control, more so than age, was associated with the ability to make more socially responsible decisions.²² Problematically, this cognitive control system of the brain, which enables youth to regulate their behavior, matures much more slowly than the affective neural system, which is responsible for reward sensitivity and develops by mid-adolescence.²³

The cognitive control system, particularly the prefrontal cortex, undergoes synaptic pruning (i.e., the process which eliminates unused neural connections to increase processing efficiency) and the myelination (e.g., the process which insulates neural circuitry using fatty myelin sheaths) maturation processes well into young

18. *Id.*

19. Jason Chein et al., *Peers Increase Adolescent Risk Taking by Enhancing Activity in the Brain's Reward Circuitry*, 14 DEVELOPMENTAL SCI. F1, F2–F3 (2011).

20. Fine et al., *The Role of Peer Arrests on the Development of Youths' Attitudes Towards the Justice System*, 40 L. & HUM. BEHAV. 211, 216 (2015).

21. Laurence Steinberg et al., *Age Differences in Sensation Seeking and Impulsivity as Indexed by Behavior and Self-Report: Evidence For a Dual Systems Model*, 44 DEVELOPMENTAL PSYCHOL. 1764, 1774 (2008).

22. Cauffman & Steinberg, *supra* note 7, at 755.

23. *Id.*

adulthood.²⁴ That is, the brain's incentive and social processing systems outpace the slower, steadier, and later-occurring changes in areas related to executive function and self-control. The implication of this developmental neuroscience for the present discussion is that the temporal gap between the increase in sensation seeking in mid-adolescence and the later development of mature self-regulatory competence may make adolescence a time of inherently immature judgment and increased risk taking. Put another way, the time during which adolescents are *most* likely to seek rewards and peer approval is also the time during which adolescents are *least* capable of controlling their impulses.

A. *The Age-Crime Curve*

Adolescents continue to develop psychosocially well into young adulthood. Because youth are particularly susceptible to peer influence and are motivated by rewards yet are still developing their regulatory capacities, adolescence is a time of heightened risk taking.²⁵ Indeed, risk-taking behaviors such as accidental drowning and driver deaths occur more frequently during adolescence than during any other period.²⁶ Just as risk taking peaks during adolescence, studies that have been conducted in different historical epochs and in countries around the world have found that crime engagement peaks at about age seventeen (slightly younger for nonviolent crimes and slightly older for violent ones), and declines significantly thereafter.²⁷ Longitudinal studies have shown that the majority of adolescents who commit crime desist as they mature into adulthood.²⁸ Only a small percentage—generally between five and ten percent—become chronic offenders or continue offending during adulthood.²⁹

Considering the parallels between adolescent crime and general risk taking, from a psychological perspective, adolescent crime is therefore considered a specific type of risk taking. The developmental processes that help explain adolescent risk

24. Alexandra O. Cohen et al., *When Is an Adolescent an Adult? Assessing Cognitive Control in Emotional and Nonemotional Contexts*, 27 *PSYCHOL. SCI.* 1 (2016); see also Tomáš Paus, *Mapping Brain Maturation and Cognitive Development During Adolescence*, 9 *TRENDS COGN. SCI.* 60 (2005).

25. Laurence Steinberg, *A Social Neuroscience Perspective on Adolescent Risk-Taking*, 28 *DEVELOPMENTAL REV.* 78, 83 (2008).

26. Rebecca B. Naumann et al., *Incidence and Total Lifetime Costs of Motor Vehicle-Related Fatal and Nonfatal Injury by Road User Type, United States, 2005*, 11 *TRAFFIC INJ. PREVENTION* 353, 356 (2010); see also *Web-Based Injury Statistics Query and Reporting System*, CENTERS FOR DISEASE CONTROL & PREVENTION (Feb. 5, 2018), <http://www.cdc.gov/injury/wisqars> [<https://perma.cc/TZR9-KEXP>].

27. Alex R. Piquero, David P. Farrington & Alfred Blumstein, *The Criminal Career Paradigm*, 30 *CRIME & JUST.* 359, 424 (2003); see also PAR A. QUETELET, *RECHERCHES SUR LE PENCHANT AU CRIME AUX DIFFÉRENS AGES* (1833); David P. Farrington, Rolf Loeber & James C. Howell, *Young Adult Offenders: The Need for More Effective Legislative Options and Justice Processing*, 11 *CRIMINOLOGY & PUB. POL'Y* 729, 735–36 (2012).

28. Laurence Steinberg, *Adolescent Development and Juvenile Justice*, 5 *ANN. REV. CLINICAL PSYCHOL.* 459 (2009).

29. Terrie E. Moffitt, *Adolescence-Limited and Life-Course-Persistent Antisocial Behavior: A Developmental Taxonomy*, 100 *PSYCHOL. REV.* 674, 675 (1993).

taking also apply to adolescent crime involvement.³⁰ For instance, just as the temporal gap between the development of the affective and cognitive-control systems may account for increased driver accidents, these same developmental differences may explain why adolescents engage in crime. Considering adolescents are more susceptible to peer influence and are more driven by peer approval, it is unsurprising that adolescents are far more likely than adults to commit crimes in groups.³¹ Indeed, adolescents who are involved in crime are also generally less future oriented than those who are not.³²

Importantly, developmental processes may also explain why crime declines after adolescence. For instance, the Pathways to Desistance Study, a prospective longitudinal study of over 1,300 felony-level adolescent offenders, was specifically designed to understand patterns of desistance among adolescent offenders.³³ The findings from the Pathways study demonstrated there is immense heterogeneity in offending among serious adolescent offenders.³⁴ Despite the fact that these adolescents committed serious – felony level - offenses, the majority of youth desisted from crime: fewer than ten percent of the participating youth persisted in high-level offending after seven years.³⁵ In line with the research presented above, a major factor distinguishing youth who persist in crime from those who desist is normative psychosocial development.³⁶ Indeed, evidence suggests that once researchers account for levels of psychosocial maturation, there may no longer be a direct effect of age on crime.³⁷ These findings indicate that because crime is tied more to developmental stage than to age, psychosocial maturation is essential to understanding not only why adolescents engage in crime in the first place, but ultimately why the overwhelming majority desist.

III. DEVELOPMENTAL SCIENCE IN THE JUSTICE SYSTEM

The tension between early-maturing cognitive capacities and the continued maturation of psychosocial characteristics into young adulthood has important implications for how we view and respond to the criminal behavior of juveniles. As

30. Steinberg, *supra* note 28.

31. Asha Goldweber et al., *The Development of Criminal Style in Adolescence and Young Adulthood: Separating the Lemmings from the Loners*, 40 J. YOUTH & ADOLESCENCE 332, 332, 333 (2011); see also Franklin E. Zimring, *Kids, Groups and Crime: Some Implications of a Well-Known Secret*, 72 J. CRIM. L. & CRIMINOLOGY 867, 867 (1981).

32. Cauffman et al., *supra* note 12, at 154, 158; see also Kathryn C. Monahan et al., *Trajectories of Antisocial Behavior and Psychosocial Maturity from Adolescence to Young Adulthood*, 45 DEVELOPMENTAL PSYCHOL. 1654, 1665 (2009).

33. Carol A. Schubert et al., *Operational Lessons from the Pathways to Desistance Project*, 2 YOUTH VIOLENCE & JUV. JUST. 237, 238–39 (2004).

34. Edward P. Mulvey et al., *Trajectories of Desistance and Continuity in Antisocial Behavior Following Court Adjudication Among Serious Adolescent Offenders*, 22 DEV. AND PSYCHOPATHOLOGY 453 (2010).

35. *Id.*

36. Monahan et al., *supra* note 32.

37. Gary Sweeten, Alex R. Piquero & Laurence Steinberg, *Age and the Explanation of Crime, Revisited*, 42 J. YOUTH & ADOLESCENCE 921, 934–35 (2013).

a young offender moves through the justice system, there are numerous decision points where information about the juvenile's stage of development is relevant. For example, a juvenile's developmental status is relevant with respect to the adjudication process, because a just and fair hearing requires competent participation of the individual in her defense. Certain competencies are expected to be in place, including those that potentially affect the youth's ability to understand the charges, assist counsel, and enter pleas. Further, under the law, characteristics of the offender and the circumstances of the offense can mitigate criminal responsibility and lessen the punishment ordered.³⁸ For instance, crimes committed impulsively, due to coercion, or due to diminished capacity are punished less severely. As enumerated below, recent advances in developmental science have informed justice system policies at each of these key decision points.

A. Culpability and Severe Punishment

The legal concept of "culpability" allows that two people who engaged in the same wrongful conduct may differ in their blameworthiness. One may be less culpable because that person: (1) inadvertently (rather than purposely) caused harm; (2) is subject to some endogenous deficiency or incapacity that impairs decision making (e.g., mental illness or immaturity); or (3) acted in response to an extraordinary external pressure (e.g., a gun to the head).³⁹ A person deserves full punishment if he or she purposefully committed a crime, had the capacity to make a rational decision without external pressure, and did not have a deficiency or incapacity that impaired the person's decision-making ability at the time of the crime.⁴⁰ Under a bedrock principle of American criminal law known as "penal proportionality," the punishment a guilty party receives should be in proportion to his or her culpability for the criminal act.⁴¹ Under this view, the individual whose thinking was substantially impaired or whose freedom was significantly constrained is less culpable and, accordingly, deserves less punishment.

Adolescence is a developmental period marked by endogenous traits or conditions that undermine adolescents' decision-making capacity.⁴² Although adolescents can make mature, reasoned decisions under non-emotional circumstances, adolescents are highly susceptible to contextual factors. Adolescents are likely to exhibit poor judgment when in the presence of peers, when decisions

38. Laurence Steinberg & Elizabeth S. Scott, *Less Guilty by Reason of Adolescence: Developmental Immaturity, Diminished Responsibility, and the Juvenile Death Penalty*, 58 AM. PSYCHOLOGIST 1009, 1015 (2003).

39. RICHARD J. BONNIE ET AL., CRIMINAL LAW (4th ed. 2015); PAUL H. ROBINSON ET AL., CRIMINAL LAW: CASE STUDIES & CONTROVERSIES (4th ed. 2016).

40. BONNIE ET AL., *supra* note 39.

41. *Id.*

42. Laurence Steinberg et al., *Are Adolescents Less Mature than Adults? Minors' Access to Abortion, the Juvenile Death Penalty, and the Alleged APA "Flip-Flop"*, 64 AM. PSYCHOLOGIST 583, 592 (2009).

are highly emotional, when rewards are salient, and when the decision is rushed.⁴³ Compared with adults, the adolescent's ability to assess the long-term consequences of wrongful acts and to control conduct in the face of external pressures is severely impaired. Youth are more susceptible to peer influence, focus more on rewards than on risks, and are more impulsive and volatile in their emotional responses.⁴⁴ When these characteristics are considered within the conventional criminal law framework for assessing blameworthiness and mitigating conditions (e.g., diminished capacity and coercive circumstances), the unsurprising conclusion is that adolescent offenders are *less* culpable than adults.⁴⁵ If youth are not as capable of mature judgment as adults, it stands to reason that they are also less culpable for their crimes and should be punished less harshly. This certainly does not excuse adolescents from criminal responsibility, but it does render them less blameworthy and less deserving of adult punishment.

Several landmark Supreme Court cases have utilized developmental evidence to decide whether juveniles are as culpable as adults and, by extension, whether they should be subject to the same treatment as adults. The first Supreme Court case to address juvenile culpability was *Roper v. Simmons* (2005).⁴⁶ In this seminal case, the Court's ruling prohibited the death penalty for juveniles. The majority opinion referenced findings from developmental science, including detailing several features of adolescence that distinguish young offenders from their adult counterparts in ways that mitigate adolescent culpability.⁴⁷ They found that because youth have a diminished decision-making capacity, their behavior is not as morally reprehensible as that of adults.⁴⁸ Further, the court pointed to the increased vulnerability of youth to external coercion, such as peer pressure.⁴⁹ Justice Kennedy reached as far back as Erikson's (1968) work on identity⁵⁰ to argue that one's character is not well formed until adulthood, and combining that with research from Steinberg and Scott (2003)⁵¹, the justices concluded that most teenagers ultimately desist from crime once they mature and establish their identity.⁵² In sum, the Court found that adolescents are less blameworthy than adults in large part because the traits that contribute to adolescent crime are transient, meaning that most adolescents will outgrow such behavior as they mature.⁵³

43. Dustin Albert & Laurence Steinberg, *Judgment and Decision Making in Adolescence*, 21 J. RES. ON ADOLESCENCE 211 (2011).

44. Steinberg et al., *supra* note 21; *see also* Steinberg et al., *supra* note 5; Steinberg & Monahan, *supra* note 15.

45. Steinberg et al., *supra* note 42.

46. *Roper v. Simmons*, 543 U.S. 551 (2005).

47. *Id.* at 569–70.

48. *Id.* at 570.

49. *Id.* at 569.

50. *Id.* at 570 (citing ERIK H. ERIKSON, *IDENTITY: YOUTH AND CRISIS* (1968)).

51. *Id.* at 569 (citing Steinberg & Scott, *supra* note 38, at 1014).

52. *Id.* at 570.

53. *Id.* at 573–75.

Although the Supreme Court's ruling in *Roper* (2005) prohibited the death penalty for juveniles, other severe forms of punishment were still being implemented with juveniles, such as mandatory life without the possibility of parole.⁵⁴ In a subsequent case, *Graham v. Florida* (2010), the Supreme Court ruled that the constitution prohibits juvenile life without parole sentences for non-homicide cases.⁵⁵ Relying on much of the same evidence and arguments used in *Roper*, the majority opinion again noted that juveniles are more capable of change and that their actions are less likely to be indicative of stable characteristics.⁵⁶ Just a few years later, in *Miller v. Alabama* and *Jackson v. Hobbs* (2012),⁵⁷ which are jointly referred to as *Miller*, the Supreme Court extended its decision to mandatory life without parole sentences for juveniles in homicide cases.⁵⁸ Developmental neurological evidence had been gaining prominence in the field, thus several amici briefs submitted to the Court explained how the brain systems that govern aspects of emotion processing and self-regulation mature at different rates during adolescence.⁵⁹ The disconnectedness between these systems—which is greatest in early and middle adolescence and narrows as individuals mature into young adulthood—is likely the cause of adolescent risk taking. Relying in large part on this neurological evidence, the justices ruled that adolescents are immature relative to adults in ways that inherently make them less culpable for their crimes, thus ruling against mandatory life without parole sentences for juvenile offenders convicted of homicide cases.⁶⁰ The Court's remarks on how convincing it found the developmental neuroscience⁶¹ demonstrated a new way in which developmental science was being used to inform the legal system's view of adolescent culpability.

B. Legal Competency

Whereas culpability focuses on an individual's blameworthiness for the crime, legal competency refers to a constellation of abilities related to legal decision-making, including one's ability to consult with their attorney or stand trial.⁶² Although culpability and competency are separate legal inquiries, because culpability refers to a defendant's mental state at the time of the crime and competency refers to the mental state at the time of the court proceeding, many of the same

54. *Graham v. Florida*, 560 U.S. 48 (2010); *see also id.* at 551.

55. *Graham*, 560 U.S. at 82.

56. *Id.* at 68.

57. *Miller v. Alabama*, 132 S. Ct. 2455 (2012).

58. *Id.* at 2475.

59. Brief for American Psychological Association et al. as Amici Curiae Supporting Respondent, *Roper v. Simmons*, 543 U.S. 551 (2005) (No. 03-633); *see also* Brief for American Psychological Association et al. as Amici Curiae Supporting Petitioner, *Miller v. Alabama*, 132 S. Ct. 2455 (2012) (Nos. 10-9646, 10-9647); Brief for American Psychological Association et al. as Amici Curiae Supporting Petitioner, *Graham v. Florida*, 560 U.S. 48 (2010) (No. 08-7412).

60. *Graham*, 560 U.S. at 82.

61. *Id.*

62. *Dusky v. United States*, 362 U.S. 402, 402 (1960).

developmental incapacities that mitigate criminal responsibility may also render a defendant incompetent.

In 1960, the Supreme Court announced a legal standard for trial competence in *Dusky v. United States* that has since been adopted uniformly by American courts.⁶³ The three broad types of abilities implicated under the *Dusky* standard for competence to stand trial include: (1) a factual understanding of the proceedings; (2) a rational understanding of the proceedings; and (3) the ability to assist counsel.⁶⁴ The requirement that criminal defendants be competent to stand trial became relevant to juvenile cases after *In re Gault* (1967), which restructured delinquency proceedings to conform to the requirements of constitutional due process.⁶⁵

Today, it is generally accepted that requirements of due process and fundamental fairness are satisfied only if youth facing charges in juvenile court are competent to stand trial.⁶⁶ But are adolescents and adults equally competent to stand trial? Is a twelve-year-old just as competent to stand trial as a sixteen-year-old? To address this question, Grisso and colleagues conducted an investigation of individuals between the ages of eleven and twenty-four in order to examine the relation between developmental immaturity and the abilities of young defendants to participate in their trials.⁶⁷ The findings indicated that although sixteen- and seventeen-year-olds do not differ from young adults in competence-related abilities, competence-related abilities improve significantly between the ages of eleven and sixteen.⁶⁸ The developmental science indicates that youth, particularly ages eleven to fifteen, are simply not as cognitively competent to stand trial as adults.⁶⁹ This research provides convincing evidence that younger adolescents facing criminal charges may function less capably as criminal defendants than do their adult counterparts.

Legal competence also refers to the ability to understand legal processes in the moment, such as understanding *Miranda* warnings. In the 1994 case *Stansbury v. California*, the Supreme Court determined that when police decide whether issuing a *Miranda* warning is necessary, a police officer is required to take into account all of the “circumstances surrounding the interrogation,”⁷⁰ including any circumstance that “would have affected how a reasonable person” in the suspect’s position “would perceive his or her freedom to leave.”⁷¹ The ruling meant that even though an individual may not have been *Mirandized*, an officer can argue that a confession

63. *Id.*

64. Elizabeth S. Scott & Thomas Grisso, *Developmental Incompetence, Due Process, and Juvenile Justice Policy*, 83 N.C. L. REV. 793 (2005).

65. *In re Gault*, 387 U.S. 1 (1967).

66. Elizabeth Cauffman & Laurence Steinberg, *Emerging Findings from Research on Adolescent Development and Juvenile Justice*, 7 VICTIMS & OFFENDERS 428, 439 (2012).

67. Thomas Grisso et al., *Juveniles’ Competence to Stand Trial: A Comparison of Adolescents’ and Adults’ Capacities as Trial Defendants*, 27 L. & HUM. BEHAV. 333, 336 (2003).

68. *Id.* at 356.

69. *Id.*

70. *Stansbury v. California*, 511 U.S. 318, 322 (1994).

71. *Id.* at 325.

obtained from that individual was given freely and voluntarily if the *police officer* felt as though a “reasonable person” would feel free to leave the interrogation.⁷² This becomes highly problematic considering the developmental research that clearly shows how adolescents are susceptible to social influence, unlikely to consider the consequences of their actions, and susceptible to making false confessions.⁷³ Consider, too, that compared with adults, youth are more likely to recommend waiving constitutional rights during an interrogation and to accept a plea deal.⁷⁴ For example, in a study of fourteen- to seventeen-year-old incarcerated males, approximately thirty-five percent claimed to have made a false admission to legal authorities, and the majority of youth described experiencing high-pressure interrogations (e.g., interrogation techniques including deception, insult, and threat).⁷⁵ Despite researchers and advocates calling for greater protections for juveniles during police interrogations, recent research suggests the continued use of similar interrogation methods among adolescents and adults.⁷⁶ More recently, in *J.D.B. v. North Carolina* (2011), the Court addressed adolescents’ ability to even appraise whether they are in custody.⁷⁷ The Court found that children will likely feel bound to submit to questioning, and thus ruled that officers must consider the age of the individual being questioned when determining whether to issue a *Miranda* warning.⁷⁸

IV. MOVING FORWARD: POTENTIAL AREAS OF REFORM

Developmental science has informed changes to legal practices and policies particularly surrounding culpability and competence. Most notably, research has informed the Supreme Court’s decisions abolishing the death penalty, eliminating mandatory life without parole for both non-homicide and homicide cases, and requiring police to consider the age of the defendant for *Miranda* warnings. However, the same developmental science that has guided decisions on culpability and competence issues may also inform several other key legal practices concerning adolescents in the justice system. Although an exhaustive list of applicable issues is beyond the scope of this review, we discuss several critical justice system policies that may benefit from developmental research, primarily transfer to adult court, the “Raise the Age” movement, and the use of solitary confinement.

72. *Id.*

73. Cauffman & Steinberg, *supra* note 7, at 756; *see also* Lindsay C. Malloy, Elizabeth P. Shulman & Elizabeth Cauffman, *Interrogations, Confessions, and Guilty Pleas Among Serious Adolescent Offenders*, 38 L. & HUM. BEHAV. 181 (2014).

74. Grisso et al., *supra* note 67, at 355–56.

75. Malloy et al., *supra* note 73, at 189.

76. Hayley M. D. Cleary & Todd C. Warner, *Police Training in Interviewing and Interrogation Methods: A Comparison of Techniques Used with Adult and Juvenile Suspects*, 40 L. & HUM. BEHAV. 270, 276 (2016).

77. *J.D.B. v. North Carolina*, 564 U.S. 261 (2011).

78. *Id.* at 264–65.

A. Juvenile Transfer to Adult Court

When the juvenile justice system was established in 1899, it reflected an early appreciation that youthful offenders should be treated differently than adults.⁷⁹ The system was created as a separate entity that was specifically designed for both punishing and rehabilitating juvenile offenders. However, simply because a juvenile system was created separate from the adult system did not mean that all youth would be tried and sentenced in the juvenile system. In fact, juveniles were, and still are, often transferred to adult court.

In the Supreme Court case *Kent v. United States* (1966), the Court mandated that the judge had to provide reasons for the transfer.⁸⁰ *Kent* sought to buffer the transfer process, which had inherently removed some of the protections youth would have received had they stayed in the juvenile justice system. Although *Kent* provided certain protections for juveniles who could potentially be tried as adults, rising juvenile crime in the latter half of the twentieth century negatively shifted public perception of young offenders, giving rise to the “get tough” policy agendas across the country.⁸¹ For instance, despite the decreasing trend in youth offending overall,⁸² the number of detained youth,⁸³ the number of youth transferred to adult court,⁸⁴ and the number of youth housed in adult facilities⁸⁵ increased. Many states lowered the age of judicial transfer and used the type of the offense, rather than the characteristics of the youth, as a basis for transfer.⁸⁶ In effect, juvenile transfer was no longer limited to serious and chronic offenders, and across many states, a long list of transferable offenses could be subject to automatic waivers.⁸⁷ These provisions also shifted discretion from juvenile court judges to the prosecutors.⁸⁸ However, as the fear of adolescent crime subsided in many states, the pendulum swung back in favor of judicial discretion. For instance, although California voters had in 2000 voted to shift the decision-making power to prosecutors, in November

79. SCOTT & STEINBERG, *supra* note 2.

80. *Kent v. United States*, 383 U.S. 541, 543 (1966).

81. Barry C. Feld, *Juvenile and Criminal Justice Systems' Responses to Youth Violence*, 24 CRIME & JUST. 189 (1998).

82. FED. BUREAU OF INVESTIGATION, UNIFORM CRIME REPORT: CRIME IN THE UNITED STATES, 2009 2 (2010).

83. MELISSA SICKMUND, U.S. DEP'T OF JUSTICE, OFFICE OF JUVENILE JUSTICE & DELINQUENCY PREVENTION, JUVENILES IN CORRECTIONS 18 (2004).

84. Donna M. Bishop, *Juvenile Offenders in the Adult Criminal Justice System*, 27 CRIME & JUST. 81, 83–84 (2000).

85. JAMES AUSTIN ET AL., U.S. DEP'T OF JUSTICE, BUREAU OF JUSTICE ASSISTANCE, JUVENILES IN ADULT PRISONS AND JAILS: A NATIONAL ASSESSMENT 4 (2000).

86. PATRICK GRIFFIN ET AL., U.S. DEP'T OF JUSTICE, OFFICE OF JUVENILE JUSTICE & DELINQUENCY PREVENTION, TRYING JUVENILES AS ADULTS: AN ANALYSIS OF STATE TRANSFER LAWS AND REPORTING (2011).

87. Donna Bishop & Charles Frazier, *Consequences of Transfer*, in THE CHANGING BORDERS OF JUVENILE JUSTICE 227, 227–28 (Jeffrey Fagan & Franklin E. Zimring eds., 2000).

88. Barry C. Feld, *Legislative Exclusion of Offenses from Juvenile Court Jurisdiction: A History and Critique*, in THE CHANGING BORDERS OF JUVENILE JUSTICE 83, 86 (Jeffrey Fagan & Franklin E. Zimring eds., 2000).

of 2016, California voters reversed their decision and passed Proposition 57, which shifted the decision-making power back to juvenile court judges.⁸⁹

Presently, juvenile transfer policies vary from state to state. In some states, juveniles may be transferred to adult court based on the crime and not their age, and in others, youth may be transferred if the juvenile court resources are no longer sufficient for repeat offenders.⁹⁰ Some states have no lower age limit, meaning that a child of any age can be processed as an adult.⁹¹ For example, at the time of this writing, the upper age limit in most states is eighteen, but some states, including New York and North Carolina, prosecute all youth older than sixteen as adults.⁹² That said, recent legislation in New York will raise the age of adult court processing in a stepwise fashion. Specifically, the age at which a youth can be prosecuted as an adult will be raised from sixteen to seventeen on October 1, 2018 and subsequently raised from seventeen to eighteen on October 1, 2019.⁹³ Although most states set a minimum age for waiver eligibility, the thresholds can be low.⁹⁴ For particular crimes such as murder, some states, such as Nevada and Pennsylvania, do not even have age limits.⁹⁵ It is important to note that the pendulum continues to swing and what is current at the time of this writing may have changed today.

Developmental science can inform our understanding of juvenile transfer policies in two ways. First, the developmental evidence cited in *Roper*,⁹⁶ *Graham*,⁹⁷ and *Miller*⁹⁸ aids our understanding of whether processing juveniles in the adult criminal court is appropriate and effective. The Court previously found that youth psychosocial immaturity, in the form of impulsivity, susceptibility to peer influence, and unformed character, mitigates their culpability for crimes.⁹⁹ Although adolescents need to be held accountable for their behaviors, adolescents'

89. MARGARET R. PRINZING, SUBMISSION OF AMENDMENT TO STATEWIDE INITIATIVE MEASURE – THE JUSTICE AND REHABILITATION ACT, NO. 15-0121 (2016), https://oag.ca.gov/system/files/initiatives/pdfs/15-0121%20%28Prison%20Sentence%20Reform%29_1.pdf [<https://perma.cc/BF2R-TX2V>] (requesting that the California Office of the Attorney General prepare a circulating title and summary of the proposed initiative).

90. Carol Schubert et al., *Predicting Outcomes for Youth Transferred to Adult Court*, 34 L. & HUM. BEHAV. 460, 462 (2010).

91. PATRICK GRIFFIN ET AL., *supra* note 86.

92. CAMPAIGN FOR YOUTH JUSTICE, KEY FACTS: YOUTH IN THE JUSTICE SYSTEM 4 (2016), <http://www.campaignforyouthjustice.org/images/factsheets/KeyYouthCrimeFactsJune72016final.pdf> [<https://perma.cc/4JJ9-5WZ3>]; *see also* *Statistical Briefing Book: Juvenile Justice System Structure & Process*, OFF. JUVENILE JUST. & DELINQ. PREVENTION, U.S. DEP'T JUST. (Mar. 27, 2017), https://www.ojjdp.gov/ojstatbb/structure_process/qa04101.asp [https://web.archive.org/web/20170516212528/https://www.ojjdp.gov/ojstatbb/structure_process/qa04101.asp].

93. Press Release, Governor Andrew M. Cuomo, Governor Cuomo Signs Legislation Raising the Age of Criminal Responsibility to 18-Years-Old in New York (Apr. 10, 2017), <https://www.governor.ny.gov/news/governor-cuomo-signs-legislation-raising-age-criminal-responsibility-18-years-old-new-york> [<https://perma.cc/6EL9-M5YH>].

94. PATRICK GRIFFIN ET AL., *supra* note 86.

95. *Id.*

96. *Roper*, 543 U.S. 551.

97. *Graham*, 560 U.S. 48.

98. *Miller*, 132 S. Ct. 2455.

99. *Roper*, 543 U.S. at 573–74; *see also* Steinberg et al., *supra* note 42.

developmental immaturity brings into question *how* adolescents should be held accountable. Removing them from a juvenile court system that is specifically designed for these purposes to try them instead in adult court would inherently treat juveniles as adults. If a youth's developmental immaturity deems adult punishments like the death penalty and mandatory life without parole sentences to be inappropriate or unconstitutional, why are other adult sanctions any different?

Second, empirical research indicates that transferring youth to adult court leads to more problematic outcomes for both youth and the community. For example, studies show that compared to youth tried in the juvenile court for the same offense, juveniles transferred to adult court receive harsher sentences.¹⁰⁰ Further, adolescents tried as adults are also at risk of being incarcerated in adult facilities where they have less access to rehabilitation and education programs.¹⁰¹ One concern of housing juveniles tried as adults in juvenile facilities is that they pose a danger to other youth in juvenile facilities.¹⁰² That is, because their crime was serious enough to warrant transfer to adult court, they are perceived to be a greater threat within juvenile facilities. Research, however, shows that youth incarcerated in adult facilities do not commit more institutional offenses than youth incarcerated in juvenile facilities.¹⁰³ This empirical evidence suggests that transferred youth may not actually pose a greater threat. There is evidence, however, that placing youth in adult facilities puts adolescents at greater risk for sexual and physical victimization.¹⁰⁴ Although adolescents constitute a small minority of inmates in adult facilities, juveniles younger than eighteen constitute twenty-one percent of all victims of substantiated incidents of sexual violence.¹⁰⁵ Furthermore, incarceration may adversely affect adolescents' development of psychosocial maturity. For example, incarceration in a secure facility was associated with the slowing of gains in

100. Aaron Kupchik, Jeffrey Fagan & Akiva Liberman, *Punishment, Proportionality, and Jurisdictional Transfer of Adolescent Offenders: A Test of the Leniency Gap Hypothesis*, 14 STAN. L. & POL'Y REV. 57, 82 (2003); see also Megan C. Kurlychek & Brian D. Johnson, *The Juvenile Penalty: A Comparison of Juvenile and Young Adult Sentencing Outcomes in Criminal Court*, 42 CRIMINOLOGY 485, 491 (2004); David L. Myers, *Adult Crime, Adult Time: Punishing Violent Youth in the Adult Criminal Justice System*, 1 YOUTH VIOLENCE & JUV. JUST. 173, 173 (2003).

101. CAMPAIGN FOR YOUTH JUSTICE, JAILING JUVENILES: THE DANGERS OF INCARCERATING YOUTH IN ADULT JAILS IN AMERICA 4 (2007), http://www.campaignforyouthjustice.org/images/nationalreports/jailingjuveniles/CFYJ-Jailing_Juveniles_Report_2007-11-15.pdf [<https://perma.cc/3G2P-DLW9>].

102. Jordan Bechtold & Elizabeth Cauffman, *Tried as an Adult, Housed as a Juvenile: A Tale of Youth from Two Courts Incarcerated Together*, 38 L. & HUM. BEHAV. 126, 128 (2014); see also Kimberly Burke, *All Grown Up: Juveniles Incarcerated in Adult Facilities*, 25 J. JUV. L. 69 (2005).

103. Bechtold & Cauffman, *supra* note 101.

104. *Children in Adult Jails*, BUILDING BLOCKS FOR YOUTH, <http://www.buildingblocksforyouth.org/issues/adultjails/factsheet.html> [<https://web.archive.org/web/20100620010852/http://www.buildingblocksforyouth.org/issues/adultjails/factsheet.html>] (last visited June 20, 2010); see also AUSTIN ET AL., *supra* note 85, at 9.

105. ALLEN J. BECK & PAIGE M. HARRISON, U.S. DEP'T OF JUSTICE, BUREAU OF JUSTICE STATISTICS, NCJ 219414, SEXUAL VICTIMIZATION IN STATE AND FEDERAL PRISONS REPORTED BY INMATES, 2007 (2008).

psychosocial maturity across development.¹⁰⁶ Even youth housed in residential treatment facilities, environments focused on rehabilitation, experienced decreases in psychosocial maturity over time.¹⁰⁷ Incarceration, therefore, may adversely affect the developmental skills that are crucial for desistance from crime. Although doing adult time for an adult crime may seem fair, doing worse time for committing the same crime seems far from just.¹⁰⁸

Perhaps the hope is that transfer to adult court will deter future crime. Unfortunately, studies have found no evidence that transfer policies deter crime.¹⁰⁹ Further, the existing research indicates that youth transferred to adult court recidivate more frequently, even after accounting for the initial offense severity.¹¹⁰ Indeed, in their comprehensive review of juvenile transfer policies, Hahn and colleagues (2007) concluded that transfer policies result in increased recidivism rates, including increased rates of violent reoffending, among transferred youth.¹¹¹

Based on the empirical evidence, some researchers have recommended against juvenile transfer laws for the purposes of reducing violence.¹¹² Juvenile transfer policies, however, remain in effect and the ages at which youth can be tried as adults still vary widely between states.¹¹³ In order to increase the likelihood that youthful offenders are tried as juveniles, a movement referred to as “Raise the Age” has promoted raising both upper and lower age limits across the United States.¹¹⁴ Leaders and advocates of this movement hope to establish nation-wide legal boundaries between adolescence and adulthood that are consistent with scientific evidence on adolescent development, maturity of judgment, culpability, and amenability to treatment.¹¹⁵

Developmental science has consistently shown that factors pertinent to adolescents’ criminal culpability have not finished developing until after adolescence. Although adolescents may develop some adult-like cognitive abilities by age sixteen, the cognitive capacities that are crucial for impeding risk-taking behaviors continue to develop through age twenty-five.¹¹⁶ Furthermore, in

106. Julia Dmitrieva et al., *Arrested Development: The Effects of Incarceration on the Development of Psychosocial Maturity*, 24 DEV. & PSYCHOPATHOLOGY 1073, 1080 (2012).

107. *Id.*

108. EDWARD P. MULVEY & CAROL A. SCHUBERT, U.S. DEP’T OF JUSTICE, OFFICE OF JUVENILE JUSTICE & DELINQUENCY PREVENTION, NCJ 232932, TRANSFER OF JUVENILES TO ADULT COURT: EFFECTS OF A BROAD POLICY IN ONE COURT 4 (2012).

109. Donna Bishop & Charles Frazier, *Consequences of Transfer*, in THE CHANGING BORDERS OF JUVENILE JUSTICE 227 (Jeffrey Fagan & Franklin E. Zimring eds., 2000).

110. Angela McGowan et al., *Effects on Violence of Laws and Policies Facilitating the Transfer of Juveniles from the Juvenile Justice System to the Adult Justice System: A Systematic Review*, 32 AM. J. PREVENTATIVE MED. 7 (2007).

111. Robert Hahn et al., *Effects on Violence of Laws and Policies Facilitating the Transfer of Youth from the Juvenile to the Adult Justice System*, 56 MORBIDITY & MORTALITY WKLY. REP. 1 (2007).

112. *Id.*

113. CAMPAIGN FOR YOUTH JUSTICE, *supra* note 92.

114. Elizabeth Cauffman et al., *Raising the Age*, 16 CRIMINOLOGY & PUB. POL. 73 (2017).

115. *Id.*

116. Cohen et al., *supra* note 24.

comparison to adults, youth demonstrate a greater capacity for growth, may be more amenable to treatment, and may be more receptive to interventions that address psychosocial deficiencies.¹¹⁷ The pertinent question then becomes just how much the age should be raised. On one hand, the scientific evidence suggests that development, both neurological and psychosocial, continues well into young adulthood, and therefore twenty-five could be argued as a reasonable age. On the other hand, the needs of a twelve-year-old are quite different from the needs of a twenty-five-year old, and it may be unrealistic for the juvenile system to handle both populations adequately.

In some respects, the line drawn between the juvenile and adult justice systems will always be arbitrary. However, based on the evidence currently available, it is reasonable to conclude that states that have maintained lower age bounds (e.g., New York, North Carolina) are either in the process of raising or should consider raising the age of juvenile court jurisdiction to at least eighteen years of age. Doing so would move the justice system past the era when age cutoffs were made completely void of scientific support. Raising the age to eighteen appears to be the most developmentally appropriate method for addressing juvenile crime in a manner that is consistent with the scientific evidence on maturity of judgment, culpability, competence, and amenability to treatment.

B. Solitary Confinement

The developmental differences between adults and adolescents can also inform the reformation of *how* we incarcerate juvenile offenders. Solitary confinement is the practice of placing incarcerated individuals alone in a cell for longer than twenty-two hours. Juvenile offenders may experience solitary confinement for disobeying institution rules, behaving in a way that is a risk to others, or because some aspect of their prison environment poses a significant risk to their own well-being.¹¹⁸ Overuse and abuse of this practice can have severe consequences for juvenile well-being. For instance, Kalief Browder was sixteen years old when he was sent to Rikers Island, an adult prison in New York.¹¹⁹ Accused of stealing a backpack, Kalief spent 1,110 days in the institution, 800 of those days in solitary confinement.¹²⁰ Kalief's extended time in solitary confinement took a toll on his mental health. Even though the charges against

117. Elizabeth S. Scott & Thomas Grisso, *The Evolution of Adolescence: A Developmental Perspective on Juvenile Justice Reform*, 88 J. CRIM. L. & CRIMINOLOGY 137 (1997).

118. Abigail Q. Cooper, *Beyond the Reach of the Constitution: A New Approach to Juvenile Solitary Confinement Reform*, 50 COLUM. J. L. & SOC. PROBS. 343 (2016).

119. Michael Schwirtz & Michael Winerip, *Kalief Browder, Held at Rikers Island for 3 Years Without Trial, Commits Suicide*, N.Y. TIMES (June 8, 2015), <https://www.nytimes.com/2015/06/09/nyregion/kalief-browder-held-at-rikers-island-for-3-years-without-trial-commits-suicide.html> [<https://web.archive.org/web/20180214180609/https://www.nytimes.com/2015/06/09/nyregion/kalief-browder-held-at-rikers-island-for-3-years-without-trial-commits-suicide.html>].

120. *Id.*

Kalief were eventually dismissed, Kalief took his own life in 2015.¹²¹ In response to this tragic event and many others like it, eliminating the use of solitary confinement on youth at the state and local levels has become a top priority for many justice organizations, including the U.S. Department of Justice's Office of Juvenile Justice and Delinquency Prevention.¹²²

There is a significant gap in research on the impact of solitary confinement on youth involved in the justice system. However, the findings of other areas of psychological research certainly indicate the ways in which solitary confinement likely affects youth development. For example, it is well known that positive interactions with peers facilitates psychosocial maturity growth, thus isolating youth offenders directly deprives them of positive, developmentally-appropriate environments.¹²³ Both animal and human research studies clearly indicate that supportive environments actively promote healthy brain development, whereas negative environments akin to isolation profoundly affect brain development.¹²⁴ It is thus unsurprising that studies of adult prisoners show that those who have experienced isolation are at greater risk for mental illness and suicide.¹²⁵ Indeed, considering many incarcerated youth have experienced trauma or suffer from an undiagnosed mental illness,¹²⁶ it is likely that youth are particularly vulnerable to the harmful effects of solitary confinement, or that solitary confinement may exacerbate pre-existing conditions. Although systematic, randomized controlled studies have not yet examined the effects of solitary confinement on juvenile offenders' well-being and development, the available evidence indicates that because this practice is harmful for adults, most certainly the practice is, at a minimum, just as harmful for adolescents.¹²⁷

Despite being condemned by numerous international laws, treaties, and regulatory organizations, the practice of isolating juvenile prisoners continues within the United States.¹²⁸ However, there have been several recent notable changes on

121. *Id.*

122. See *Eliminating Solitary Confinement for Youth*, OFF. JUV. JUST. & DELINQ. PREVENTION, <https://www.ojjdp.gov/programs/eliminating-solitary-confinement.html> [https://web.archive.org/web/20170714215321/https://www.ojjdp.gov/programs/eliminating-solitary-confinement.html] (last visited July 14, 2017).

123. Patrick Bayer, Randi Hjalmarsson & David Pozen, *Building Criminal Capital Behind Bars: Peer Effects in Juvenile Corrections*, 124 Q.J. ECON. 105 (2009).

124. For a review, see Nim Tottenham & Adriana Galván, *Stress and the Adolescent Brain: Amygdala-Prefrontal Cortex Circuitry and Ventral Striatum as Developmental Targets*, 70 NEUROSCIENCE & BIOBEHAVIORAL REV. 217, 220–22 (2016).

125. Stuart Grassian, *Psychiatric Effects of Solitary Confinement*, 22 WASH. U.J.L. & POL'Y 325, 332 (2006).

126. Robert Vermeiren, Ine Jespers & Terrie Moffitt, *Mental Health Problems in Juvenile Justice Populations*, 15 CHILD & ADOLESCENT PSYCHIATRIC CLINICS N. AM. 333 (2006).

127. See Elizabeth M. Rademacher, *The Beginning of the End: Using Ohio's Plan to Eliminate Juvenile Solitary Confinement as a Model for Statutory Elimination of Juvenile Solitary Confinement*, 57 WM. & MARY L. REV. 1019 (2016).

128. Elizabeth Vasiliades, *Solitary Confinement and International Human Rights: Why the U.S. Prison System Fails Global Standards*, 21 AM. U. INT'L L. REV. 71, 98 (2005).

both federal and state levels. In 2016, President Barack Obama instituted a ban on solitary confinement for juveniles held in federal prisons.¹²⁹ Additionally, several states, such as Indiana and Massachusetts, have either eliminated or significantly reduced the use of solitary confinement for juvenile offenders.¹³⁰ The scientific evidence indicates that eliminating the use of solitary confinement for juvenile offenders would be an important step toward improving developmental, behavioral, and mental health outcomes for youthful offenders.¹³¹ Indeed, a recent U.S. Department of Justice report specifically drew from the developmental science on adolescent immaturity and research on the harmful psychological effects of solitary confinement when they concluded that the practice should no longer be permitted in federal prisons.¹³²

CONCLUDING REMARKS

It is now incontrovertible that psychological development continues throughout adolescence in ways that are relevant to how the justice system treats youthful offenders. Although basic cognitive competence matures by the time individuals reach age sixteen, the social and emotional capacities that influence adolescents' judgment (e.g., impulse control, future orientation, resistance to peer influence) mature well into young adulthood. Considering that the vast majority of adolescents who commit crime desist from such activity as they mature into adulthood and that adolescents are still acquiring the psychological capacities they will need to successfully transition into adult work and family roles, it is critically important that the way the justice system treats youthful offenders does not constrain their development and limit their life chances.

Developmental science provides concrete evidence to support the argument that youthful offenders warrant different treatment in the justice system than do adults. Indeed, time and again, the Supreme Court and other legal entities have incorporated developmental science into their decision-making processes, most notably concerning adolescent culpability and competence. Developmental evidence on adolescent neurological, cognitive, and psychosocial immaturity have affected multiple policy changes, including requiring police to Mirandize juveniles prior to questioning, banning the death penalty for youth, and prohibiting mandatory life without parole.

129. Juliet Eilperin, *Obama Bans Solitary Confinement for Juveniles in Federal Prisons*, WASH. POST (Jan. 26 2016), https://www.washingtonpost.com/politics/obama-bans-solitary-confinement-for-juveniles-in-federal-prisons/2016/01/25/056e14b2-c3a2-11e5-9693-933a4d31bcc8_story.html [https://web.archive.org/web/20180223111235/https://www.washingtonpost.com/politics/obama-bans-solitary-confinement-for-juveniles-in-federal-prisons/2016/01/25/056e14b2-c3a2-11e5-9693-933a4d31bcc8_story.html?utm_term=.e0e697ba8b76].

130. Rademacher, *supra* note 126.

131. Cooper, *supra* note 117; *id.*; see also Carina Muir, *Protecting America's Children: Why an Executive Order Banning Juvenile Solitary Confinement Is Not Enough*, 44 PEPP. L. REV. 151 (2016).

132. See OFF. JUV. JUST. & DELINQ. PREVENTION, *supra* note 121.

Still, the available developmental evidence can be readily applied to several other pressing issues concerning the way the justice system *currently* treats adolescent offenders. Adolescent offenders are still at risk of being treated as adults through policies such as juvenile transfer to adult court and solitary confinement. For instance, some states continue to prosecute all youth over age sixteen as adults despite the scientific evidence showing detrimental effects across domains. Similarly, research on the impact of isolation on development and behavior, while not explicitly developmental in nature, indicates that exposing adolescents to especially harsh sanctions like solitary confinement does little to deter offending and may have iatrogenic effects on adolescents' mental health, psychosocial development, and antisocial behavior. Although justice system policy and practice should not be dictated solely by studies of adolescent development, the ways in which the justice system responds to juvenile offending should be informed by developmental knowledge.

Taken together, the lessons of developmental science offer strong support for the maintenance of a separate juvenile justice system in which adolescents are judged, tried, and sanctioned in developmentally appropriate ways. The implications of the developmental research are clear for policies regarding juvenile transfer to adult court and solitary confinement. The prospects of many youthful offenders will be harmed by a system that holds them to adult levels of accountability for behavior that is quite often transitory. Utilizing developmental research to guide effective, appropriate, and just treatment of youthful offenders will undoubtedly enhance public safety in the long run.