

No. 08-7412, No. 08-7621

In The
Supreme Court of the United States

TERRANCE JAMAR GRAHAM,

Petitioner,

v.

STATE OF FLORIDA,

Respondent.

JOE HARRIS SULLIVAN,

Petitioner,

v.

STATE OF FLORIDA,

Respondent.

On Writs of Certiorari
To The District Court of Appeal,
First District, State Of Florida

BRIEF OF *AMICI CURIAE* J. LAWRENCE ABER, MARC
S. ATKINS, CAMILLA P. BENBOW, MARY M.
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COLEMAN, JANE C. CONOLEY, KENNETH A. DODGE,
MICHELLE FINE, DOUGLAS FUCHS, LYNN S.
FUCHS, FRANCES M. JENSEN, BRINTON LYKES,
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QUESTION PRESENTED

Whether the Eighth Amendment's ban on cruel and unusual punishments prohibits the imprisonment of a juvenile for life without the possibility of parole as punishment for the juvenile's commission of a non-homicide.

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INTERESTS OF *AMICI CURIAE*¹

Amici Curiae are an interdisciplinary group of psychologists, social scientists, and neuroscientists who have devoted their careers to the study of adolescent development and behavior. *Amici* respectfully submit this Brief to bring to the attention of the Court the overwhelming body of academic and professional literature and scientific evidence demonstrating — consistent with everyday experience and common sense — that an adolescent is fundamentally different in critical respects than he or she will be at the age of maturity and beyond. Although adolescents must be held responsible for their actions, they generally lack mature decisionmaking capability, have an inflated appetite for risk, are prone to influence by peers, and do not accurately assess future consequences. At the same time, adolescents' minds and selves are highly malleable and capable of enormous change. Indeed, professional interventions with even seriously antisocial adolescents show that deviant behavior in youth can be abated, a phenomenon that is far less common among adults.

For these reasons, although *Amici* recognize that the Court has held that a sentence of life imprisonment without parole is within the judgment of the legislature to authorize or mandate for crimes committed by adults,² *Amici* submit that the same

¹ Pursuant to this Court's Rule 37.6, *Amici* state that no counsel for any party authored this Brief in whole or in part, and no person or entity other than *Amici* made a monetary contribution to fund or intended to fund the preparation or submission of this Brief. Counsel of record for all parties have consented to the filing of this Brief, and letters of consent have been filed with the Clerk.

² *Harmelin v. Michigan*, 501 U.S. 957 (1991).

sentence is categorically different for adolescents.³ It is inherently cruel to lock up an adolescent and throw away the key, in disregard of the person's immaturity and the character-transforming changes that are virtually certain to occur in his or her near lifetime. *Amici* submit that the fundamental principles of justice and dignity embodied in the Eighth Amendment bar the State from condemning an adolescent to spend the rest of his or her life in prison with no possibility of parole.

Individual *Amici* are as follows:

- *J. Lawrence Aber* is Professor of Applied Psychology and Public Policy at the Steinhardt School of Culture, Education, and Human Development at New York University. He also is a Director of the Children's Institute at the University of Cape Town, South Africa. He is an internationally recognized expert in child development and social policy and testifies frequently before Congress, state legislatures, and other deliberative bodies. Professor Aber's research examines the influence of poverty and violence at the family and community levels on the social, behavioral, and cognitive development of children and youth. He also has designed and conducted evaluations of a variety of programs for children and youth, including violence prevention, literacy development, and antipoverty initiatives.
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³ See *Roper v. Simmons*, 543 U.S. 551 (2005).

school-based mental health services in urban and high-poverty communities. He has published extensively on children's mental health. He is a consultant to the Chicago Public Schools and the Illinois Department of Mental Health.

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- *Hardin L.K. Coleman* is Dean of the School of Education and Professor of Counseling Psychology at Boston University. Dr. Coleman's research focuses on socio-cultural factors in minority student achievement and the use of developmental guidance to promote social and emotional intelligence in children. Dr. Coleman has published in a variety of journals including *The Counseling Psychologist* and *The Professional School Counselor*. He has co-edited several handbooks, including *The Handbook of School Counseling*. Dr. Coleman has served as a

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- *Pedro Noguera* is Professor of Teaching and Learning at the Steinhardt School of Culture, Education, and Human Development at New York University. Dr. Noguera has served as Executive Director of the Metropolitan Center for Urban Education and as co-director of the Institute for the Study of Globalization and Education in Metropolitan Settings. Professor Noguera's research focuses on the influence of social and economic conditions in the urban environment on schools. He also has conducted research into education and social conditions throughout the world, including in the Caribbean and Latin America. Professor Noguera has published over 100 works on youth violence, urban public schools, and race and ethnic relations in American society. He has served as a member of the U.S. Public Health Service Centers for Disease Control Taskforce on Youth Violence and on many advisory boards.
- *Isaac Prilleltensky* is The Erwin and Barbara Mautner Chair in Community Well-Being, Dean of the University of Miami School of Education and

Professor of Educational and Psychological Studies. He is a leader in the field of community psychology and has written numerous works regarding the link between psychology and social justice. Dr. Prilleltensky's scholarship focuses on community psychology, the prevention of child abuse, the promotion of mental health and social well-being, and organizational change in the not-for-profit sector. Dr. Prilleltensky is a Fellow of the American Psychological Association and of the American Educational Research Association. In 2002 he was a Visiting Fellow of the British Psychological Society. He has written or co-edited seven books and more than 100 articles and book chapters on child, family, and community well-being. Dr. Prilleltensky sits on the board of several psychology journals.

- *Niobe Way* is Professor of Applied Psychology at New York University and President-Elect of the Society For Research on Adolescence. She is the author of numerous journal articles and award-winning books in the field of psychology. Dr. Way's research focuses on the social and emotional development of urban youth and the ways in which the school and family contexts shape developmental trajectories. She serves on the editorial boards of numerous journals focusing on child and adolescent development and served as Associate Editor of the Journal of Adolescent Research. Her work has been funded by the National Science Foundation, The National Institute of Mental Health, The Spencer Foundation, and The W.T. Grant Foundation.

SUMMARY OF ARGUMENT

A sentence of life without parole usually reflects society's conclusion that an offender's culpability is so great, the benefit of deterrence so high, and the potential for change and rehabilitation so low that the person must be incapacitated for the rest of his or her days. The overwhelming body of scientific and academic study shows that these conclusions cannot be drawn with any degree of certainty for adolescents as a class, including adolescents who commit serious crimes. This body of work, which has only deepened since the Court relied upon it in *Roper v. Simmons*, demonstrates that the principal purposes of sentencing — punishing the culpable and deterring the rational — are not furthered by denying the possibility of parole to adolescents. Denying the possibility of parole also irrationally ignores the fact that adolescents as a class are substantially more likely than adults to change, transform, and rehabilitate during their remaining lifetimes — especially if they are subject to appropriate social interventions.

This Brief focuses on the state of the science regarding the neurological, physiological, psychological, and emotional development of adolescents. *First*, medical research and scientific studies continue to confirm post-*Roper* that human brain development occurs in distinct phases, with critical immaturities in judgment persisting throughout adolescence. In particular, the brain's frontal lobes are developing throughout the teen years, leading to fundamental differences between the decisionmaking ability of adolescents and adults. Adolescent brains also have a heightened sensitivity to immediate rewards, a deficit in sensitivity to long-

term risks, and immature psychosocial controls that make adolescents less able than adults to balance benefits and risks properly. These developmental and biological characteristics render adolescents categorically less culpable for the deficient decisions they make and diminish the deterrent effect of subjecting adolescents to the most severe adult punishments.

Second, adolescents are substantially more influenced than adults by peer pressure to engage in risky behaviors, as well as by environmental factors over which they have little control. Indeed, adolescents' underdeveloped psychosocial functions and reduced impulse control make them especially vulnerable to peer pressure and outside influences. This elevated susceptibility to negative pressures and influences renders adolescents less culpable for their decisions. It also is highly likely to change or be outgrown over time.

Third, adolescents are capable of enormous change. The Court recognized in *Roper* that the reckless and impetuous behavior of adolescents subsides with maturity, in part as a result of growth and development in the brain and in sense of self. Recent empirical studies have confirmed the effectiveness of rehabilitation for adolescents, including for adolescents who commit serious crimes. Specifically, studies show that adolescents' recidivism rate decreases when rehabilitative programs are provided, a finding that is less frequent with adults. In short, the same immaturity and brain plasticity that render youth more vulnerable to outside influences also make them highly receptive to rehabilitation.

Fourth, to the extent society depends on the protections of the legal process to identify and account for adolescent deficiencies and capabilities on a case-by-case basis, research shows that adolescents are far less capable than adults of participating effectively in legal proceedings, including by relating to and communicating with authority figures such as the police, judges, and even their own counsel. One cannot assume that the system will fairly and accurately identify only those thirteen- to seventeen-year-olds who are most deserving of the most severe punishments. Independent judgment regarding the constitutional acceptability of the punishment is required.

In sum, the purposes of a sentence of life without the possibility of parole are not served by imposing that sentence on adolescents. Consequently, a sentence of life without the possibility of parole cannot be said to be proportionate or fair in this context. For these reasons, *Amici* respectfully submit that the judgments of the courts below should be reversed.

ARGUMENT

I. SCIENTIFIC AND ACADEMIC RESEARCH CONTINUES TO CONFIRM POST-*ROPER* THAT ADOLESCENTS ARE CATEGORICALLY LESS MATURE AND MORE PRONE TO ENGAGE IN RISKY BEHAVIORS THAN ADULTS.

In *Roper* the Court relied upon scientific and academic studies in determining that certain punishments appropriate for adults do not necessarily fit adolescents. *Roper* prohibited the death penalty for all juveniles based in part on studies demonstrating that youths exhibit pronounced differences from adults — including a

lack of maturity, an underdeveloped sense of responsibility, heightened vulnerability to negative influences, still-developing character, and transitory personality traits. As a result of each of these factors, the Court concluded that adolescents' decisionmaking processes are inherently less reliable than those of adults and do not necessarily reflect the decisionmaking processes that the same individuals will exhibit upon maturity.⁴ Consequently, although responsible for their actions, adolescents are generally less culpable than fully-mature adults, and "cannot with reliability be classified among the worst offenders" deserving of the most severe punishments.⁵ Research since *Roper* only reinforces those conclusions.

A. Adolescents Engage in Risky Behavior.

Society has long understood that adolescents in their formative years lack the experience, perspective, and judgment expected of adults.⁶ Indeed, adolescents' elevated appetite for risky behaviors has been widely observed.⁷ Statistics support that observation and show that adolescents are far more likely than adults to engage in antisocial behavior of all types, including fighting, joining gangs, driving recklessly or drunk, using illegal drugs, and having unprotected sex.⁸ These behaviors

⁴ *Roper*, 543 U.S. at 569-70 (2005).

⁵ *Id.* at 569.

⁶ *See, e.g., Thompson v. Oklahoma*, 487 U.S. 815, 834 (1988).

⁷ *See, e.g., Laurence Steinberg, A Social Neuroscience Perspective on Adolescent Risk-Taking*, 28 DEVELOPMENTAL REV. 78, 78 (2008).

⁸ Jeffrey Arnett, *Reckless Behavior in Adolescence: A Developmental Perspective*, 12 DEVELOPMENTAL REV. 339 (1992); Lawrence B. Finer & Stanley K. Henshaw, *Disparities in*

are particularly acute for adolescents subject to conditions that routinely place them in risky situations and deprive them of positive role models, such as extreme poverty, poor schools, and violent communities.⁹ Psychologists and social scientists have documented and examined these factors in numerous empirical studies.¹⁰

B. Adolescents Take More Risks in Part Due to Differences in Neurological Development.

In recent years, science has identified a biological basis for these common-sense and empirical observations of adolescent decisionmaking and behavior. Research is making it increasingly clear that adolescence is a time of great structural change in the composition and workings of the brain. These studies — including studies relied upon in *Roper* and

Rates of Unintended Pregnancy in the United States, 1994 and 2001, 38 PERSP. ON SEXUAL REPROD. HEALTH 90 (2006); Eve K. Moscicki, *Epidemiology of Completed and Attempted Suicide: Toward a Framework for Prevention*, 1 CLINICAL NEUROSCI. RES. 310 (2001); Alex R. Piquero et al., *The Criminal Career Paradigm*, 30 CRIME & JUST. 359 (2003); NATIONAL RESEARCH COUNCIL, INSTITUTE OF MED. & TRANSPORTATION RESEARCH BD., PREVENTING TEEN MOTOR CRASHES: CONTRIBUTIONS FROM BEHAVIORAL AND SOCIAL SCIENCE, WORKSHOP REPORT (2007), available at <http://www.nap.edu/catalog/11814.html>.

⁹ Michelle Fine & Jessica Ruglis, *Circuits and Consequences of Dispossession: The Racialized Realignment of the Public Sphere for U.S. Youth*, 17 TRANSFORMING ANTHROPOLOGY 20, 30 (2009).

¹⁰ See, e.g., Robert W. Blum et al., *The Effects of Race/Ethnicity, Income, and Family Structure on Adolescent Risk Behaviors*, 90 AM. J. PUB. HEALTH 1879 (2000); Robert J. Sampson & John H. Laub, *Urban Poverty and the Family Context of Delinquency: A New Look at Structure and Process in a Classic Study*, 65 CHILD DEV. 525 (1994); Patrick H. Tolan et al., *The Developmental Ecology of Urban Males Youth Violence*, 39 DEVELOPMENTAL PSYCHOL. 274 (2003).

studies completed since — provide one explanation for the differences in adolescent behavior that psychologists and social scientists have long documented through empirical work.

This explanation is based on the trajectory of brain development. During the early teen years, the brain undergoes at least five principal growth processes. The *first* is “arborization,” a process by which connections between brain cells branch and increase in number as the brain grows more gray matter.¹¹ *Second*, from the early teens through early adulthood, the brain undergoes “neural pruning,” a process by which the brain fine-tunes connections between neurons. Connections that are used most often — which can vary based on an individual’s experience and environment — grow stronger, while those that are unused disappear.¹² As unnecessary connections are eliminated, the brain becomes more efficient in carrying information.¹³

The *third* process is myelination, whereby nerve pathways are insulated to increase the speed at

¹¹ See Jay N. Giedd, *Structural Magnetic Resonance Imaging of the Adolescent Brain*, 1021 ANNALS N.Y. ACAD. SCI. 77, 82 (2004).

¹² Linda P. Spear, *The Adolescent Brain and Age-Related Behavioral Manifestations*, 24 NEUROSCI. & BIOBEHAV. REVIEWS, 417, 439 (2000).

¹³ Sarah-Jayne Blakemore & Suparna Choudhury, *Development of The Adolescent Brain: Implications for Executive Function and Social Cognition*, 47 J. CHILD PSYCHOL. & PSYCHIATRY 296, 297 (2006); B.J. Casey et al., *The Adolescent Brain*, 28 DEVELOPMENTAL REV. 62, 66-67 (2008); Deanna Kuhn, *Do Cognitive Changes Accompany Developments in the Adolescent Brain?*, 1 PERSP. PSYCHOL. SCI. 59, 59, 65 (2006).

which signals are conducted through them.¹⁴ *Fourth*, a rapid increase followed by a gradual decrease of dopamine receptors occurs in the prefrontal cortex.¹⁵ Dopamine plays a critical role in heightening the brain's sensitivity to rewards, and dopaminergic activity is at its peak during the ages of twelve through eighteen. *Finally*, neural connections between the cortical and subcortical regions increase during later adolescence, which allows the area of the brain providing psychosocial control to begin to govern the area that generates emotional responses.¹⁶

Research shows that the primitive areas of the brain that produce emotions are the first to mature, while areas of the brain involved in higher-level control functions develop later.¹⁷ Post-mortem histological studies have long suggested that the frontal lobes continue to develop through pruning and myelination from early adolescence through a person's early twenties.¹⁸ More recently, tests using magnetic resonance imaging ("MRI") technology have confirmed that the frontal lobes — in particular, the prefrontal cortex, or the anterior part of the frontal lobes, which are responsible for "executive functions" such as self-control, judgment, emotional regulation,

¹⁴ Heather M. Conklin et al., *Working Memory Performance in Typically Developing Children and Adolescents: Behavioral Evidence of Protracted Frontal Lobe Development*, 31 DEVELOPMENTAL NEUROPSYCHOL. 103, 104 (2007).

¹⁵ Spear, *supra* note 12, at 440, 443.

¹⁶ Casey et al., *supra* note 13, at 67; Thomas J. Eluvathingal, *Quantitative Diffusion Tensor Tractography of Association and Projection Fibers in Normally Developing Children and Adolescents*, 17 CEREBRAL CORTEX 2760 (2007).

¹⁷ Casey et al., *supra* note 13, at 66.

¹⁸ Conklin et al., *supra* note 14, at 104.

organization, and planning — are among the last regions of the brain to mature.¹⁹ Neurological research conducted through recent advances in MRI testing suggests that even as adolescents’ brains mature in other areas, adolescents still do not reason in the same manner as adults because they lack fully formed frontal lobes.²⁰

Studies also suggest that the immature controls associated with underdeveloped frontal lobes are at least partly responsible for higher rates of risk-taking among adolescents. Indeed, studies confirm that adolescents use different areas of the brain to complete tasks that, in adults, would normally be completed by the frontal lobes.²¹ For example, the better-developed limbic system, which is the emotional center of the brain, has been observed to “stand in” for adolescents’ immature control functions, meaning that the adolescent may process emotionally what the adult processes through logic and reason.²²

¹⁹ Casey et al., *supra* note 13, at 66; Conklin et al., *supra* note 14, at 104-105.

²⁰ See Casey et al., *supra* note 13, at 66; Jay N. Giedd, *The Teen Brain: Insights from Neuroimaging*, 42 J. ADOLESCENT HEALTH 335, 340 (2008); Nitin Gogtay et al., *Dynamic Mapping of Human Cortical Development During Childhood Through Early Adulthood*, 101 PROC. NAT’L ACAD. SCI. 8174, 8177 (May 25, 2004), available at www.pnas.org/cgi/doi/10.1073/pnas.0402680101.

²¹ See Mary Beckman, *Crime, Culpability, and the Adolescent Brain*, 305 SCIENCE 596, 599 (2004).

²² Coalition for Juvenile Justice, *Applying Research to Practice: What Are the Implications of Adolescent Brain Development for Juvenile Justice* 6-7 (May 5, 2006), available at http://www.juvjustice.org/media/resources/resource_138.pdf; see also Casey et al., *supra* note 13, at 63-64.

One MRI study published in June 2006 demonstrates how emotional centers of the brain can overbalance the caution and forethought exerted by the frontal areas in adolescents. Subjects were asked to respond quickly to cues in a video game in order to earn rewards of various amounts. Scientists captured MRI images showing which areas of the brain were most active during the task. The study found that adolescents showed child-like levels of activity in the areas of the brain that control decisionmaking (the orbital frontal cortex), but more adult-like levels of activity in the better-developed accumbens, an impulse-producing region of the brain. As the rewards in the game grew, the activity levels in the accumbens of adolescents' brains also increased dramatically. This study demonstrates the biological nature of adolescents' exaggerated preferences for rewards.²³ Other studies have shown similar results.²⁴

Adolescents' impulsiveness also results from an innate under-appreciation of cost and overvaluation of short-term rewards, which together

²³ Adriana Galvan et al., *Earlier Development of the Accumbens Relative to Orbitofrontal Cortex Might Underlie Risk-Taking Behavior in Adolescents*, 26 J. NEUROSCI. 6885 (2006).

²⁴ See, e.g., James M. Bjork et al., *Developmental Differences in Posterior Mesofrontal Cortex Recruitment by Risky Rewards*, 27 J. NEUROSCI. 4839 (2007); Neir Eshel et al., *Neural Substrates of Choice Selection in Adults and Adolescents: Development of the Ventrolateral Prefrontal and Anterior Cingulate Cortices*, 45 NEUROPSYCHOLOGIA 1270 (2007); Adriana Galvan et al., *Risk-Taking and the Adolescent Brain: Who Is at Risk?*, 10 DEVELOPMENTAL SCI. F-8 (2007); Scott C. Matthews et al., *Selective Activation of the Nucleus Accumbens During Risk-Taking Decision Making*, 15 NEUROREPORT 2123 (2004).

create a heightened preference for risk.²⁵ Research conducted under controlled conditions has attempted to parse the bases for this decisionmaking, and shows that adolescents systematically overvalue immediate rewards while undervaluing both future rewards and future costs. In a series of studies published in 2004 and 2005, subjects were asked to choose playing cards from “bad” decks, which include the potential for very large one-time rewards but generally lead to net losses over time, or “good” decks, which offer smaller one-time rewards but lead to net gains over time (known as the “Iowa Gambling Task”). Adults learned to choose the good decks and avoid the bad decks more quickly than their thirteen- through fifteen-year-old counterparts, demonstrating a superior ability to learn from experience, reduced preference for immediate reward, and higher aversion to punishment.²⁶ Another gambling task study, currently in press, shows that the period between ages fifteen and seventeen is exceedingly important for the development of decisionmaking abilities. The study shows that immediate “reward sensitivity,” or preference for the good decks, peaks

²⁵ Laurence Steinberg, *Risk Taking in Adolescence: What Changes and Why?*, 1021 ANNALS N.Y. ACAD. SCI. 51, 54 (2004); see also Stephanie M. Holm et al., *Reward-Related Brain Function and Sleep in Pre/Early Pubertal and Mid/Late Pubertal Adolescents*, J. ADOLESCENT HEALTH (forthcoming 2009).

²⁶ Eveline A. Crone & Maurits W. van der Molen, *Developmental Changes in Real Life Decision Making: Performance on a Gambling Task Previously Shown to Depend on the Ventromedial Prefrontal Cortex*, 25 DEVELOPMENTAL NEUROPSYCHOL. 251 (2004).

during adolescence, while avoidance of the bad decks develops more slowly — linearly with age.²⁷

A study published in 2009 provides further confirmation of adolescents' elevated perception of the benefits of future rewards.²⁸ The study found the starkest differences in ability between adolescents and young adults, including with respect to self-reported likelihood of planning ahead and consideration of the future, self-reported inclination to anticipate the future consequences of today's actions, and demonstrable preferences for immediate rewards. For example, compared to young adults, adolescents tended to choose smaller immediate rewards (*e.g.*, \$600 tomorrow) even when offered much larger delayed rewards (*e.g.*, \$1000 one year later).²⁹ These results confirm that the adolescents' consideration of the future import of their actions differs from that of adults, and is likely to change over time.

Another factor leading to impulsiveness and poor decisionmaking in adolescents is the elevated

²⁷ Elizabeth Cauffman et al., *Age Differences in Affective Decision Making as Indexed by Performance on the Iowa Gambling Task*, DEVELOPMENTAL PSYCHOL. (forthcoming 2009); see also Catalina J Hooper et al., *Adolescents' Performance on the Iowa Gambling Task: Implications for the Development of Decision Making and Ventromedial Prefrontal Cortex*, 40 DEVELOPMENTAL PSYCHOL. 1148 (2004); Katya Rubia et al., *Progressive Increase of Frontostriatal Brain Activation from Childhood to Adulthood During Event-Related Tasks of Cognitive Control*, 27 HUM. BRAIN MAPPING 973 (2006).

²⁸ Laurence Steinberg, *Adolescent Development and Juvenile Justice*, 5 ANN. REV. CLINICAL PSYCHOL. 459, 470 (2009) (citing Laurence Steinberg et al., *Age Differences in Future Orientation and Delay Discounting*, 80 CHILD DEV. 28 (2009)).

²⁹ *Id.*

impact of stress. Stress causes the release of high levels of dopamine in adolescent brains, which further impairs the already-underdeveloped prefrontal cortical regulation of behavior and thought.³⁰ High levels of dopamine combined with immature prefrontal activity may lead to insufficient control over the reward-processing regions of the brain. Accordingly, compared to adults, adolescents experience dramatic loss of judgment during emotional or stressful situations.³¹

The cumulative result of these normal developments in adolescents is a period of vulnerability during the ages of twelve to eighteen, when adolescents have an enhanced biological propensity to value immediate sensory rewards at the cost of long-term consequences, but have not developed the brain connections to regulate impulses and make more well-reasoned decisions. Adolescent brains differ from adult brains in this fundamental respect, particularly with respect to the areas governing judgment and decisionmaking.

It has been said that the very part of the brain that is judged by the legal process — the frontal lobes — develops last, and may not be fully mature until long after the offense has been committed, reducing culpability.³² Moreover, as a result of their

³⁰ Amy F. T. Arnsten & Rebecca M. Shansky, *Adolescence: Vulnerable Period for Stress-Induced Prefrontal Cortical Functioning?*, 1021 ANNALS N.Y. ACAD. SCI. 143, 144 (2004); Coalition for Juvenile Justice, *Applying Research to Practice: What Are the Implications of Adolescent Brain Development for Juvenile Justice* 5-6 (May 5, 2006), http://www.juvjustice.org/media/resources/resource_138.pdf.

³¹ Casey et al., *supra* note 13, at 64.

³² See Mary Beckman, *supra* note 21, at 596.

impulsiveness and lack of cognitive function, adolescents are comparatively immune to the deterrent effects of severe sentences.³³ As the adolescent matures, however, his or her decisionmaking ability likely will improve, such that the same individual will make different and better decisions as an adult.

II. THE ADOLESCENT BRAIN IS PLASTIC, RENDERING ADOLESCENTS HIGHLY SUSCEPTIBLE TO OUTSIDE INFLUENCES (INCLUDING PEER PRESSURE AND ENVIRONMENTAL STRESSES) YET CAPABLE OF ENORMOUS CHANGE THROUGH REHABILITATION.

A. Adolescents Are Unusually Susceptible to Peer Influence.

No one reasonably disputes that “juveniles are more vulnerable or susceptible to negative influences and outside pressures, including peer pressure,” than adults.³⁴ Anyone familiar with young people knows that susceptibility to peer pressure is particularly high in late childhood and early adolescence. In confirmation of this point, laboratory experiments show that the presence of peers doubles the risky behavioral decisions of middle adolescents but has no effect on adults.³⁵

³³ Eric L. Jensen, *The Waiver of Juveniles to Criminal Court: Policy Goals, Empirical Realities, and Suggestions for Change*, 31 IDAHO L. REV. 173, 186-87 (1994-95) (citing Eric L. Jensen & Linda K. Metsger, *A Test of the Deterrent Effect of Legislative Waiver on Violent Juvenile Crime*, 40 CRIME & DELINQUENCY 96, 100-102 (1994)).

³⁴ *Roper*, 543 U.S. at 569.

³⁵ Margo Gardner & Laurence Steinberg, *Peer Influence on Risk Taking*, 41 DEVELOPMENTAL PSYCHOL. 625 (2005).

Ironically, heightened sensitivity to the influence of peers also is a necessary part of adolescents' normal development into functional adults.³⁶ Identity formation involves a series of trials and errors in which adolescents gauge reactions from others to select and integrate elements of their personality into a realized self.³⁷ Formation of the adult brain requires this experimentation and risk-taking,³⁸ and adolescents' desire for peer approval (or fear of rejection) can affect their decisions even without direct coercion by peers.³⁹ The ability to resist peer influence develops over time, particularly during the ages of fourteen through eighteen.⁴⁰

Susceptibility to peer pressure may in the wrong circumstances translate into susceptibility to committing crimes. It is well-established that adolescents tend to commit crimes in group settings, because group settings provide strong incentives for conformity and compliance.

The nature and extent of peer influence on adolescent criminal behavior has been documented through rigorous science, including laboratory experiments, field observations, clinical

³⁶ Ann E. Kelley et al., *Risk Taking and Novelty Seeking in Adolescence*, 1021 ANNALS N.Y. ACAD. SCI. 27, 28 (2004).

³⁷ ELIZABETH S. SCOTT & LAURENCE STEINBERG, RETHINKING JUVENILE JUSTICE 51 (2008).

³⁸ Kelley et al., *supra* note 36, at 28.

³⁹ Laurence Steinberg & Elizabeth S. Scott, *Less Guilty by Reason of Adolescence: Developmental Immaturity, Diminished Responsibility, and the Juvenile Death Penalty*, 58 AM. PSYCHOLOGIST 1009, 1012 (2003).

⁴⁰ Laurence Steinberg & Kathryn C. Monahan, *Age Differences in Resistance to Peer Influence*, 43 DEVELOPMENTAL PSYCHOL. 1531, 1538-39 (2007).

interventions, and brain-imaging studies.⁴¹ In one experiment, deviant adolescents were randomly placed into a group setting with either all deviant peers or mixed deviant and non-deviant peers. The adolescents placed with all deviant peers displayed more deviant behaviors, demonstrating peer influence.⁴² In a field study, exposure to delinquent peers was found to result in increased criminal behavior by adolescents over time, independent of any self-selection into deviant peer groups, further demonstrating the influence of peers.⁴³ Indeed, numerous studies have shown that adolescent criminal behavior increases after entry into peer gangs and declines after exit from these gangs.⁴⁴ Two recent comprehensive reviews of the literature concluded that peer influence effects on serious antisocial behavior are robust and strongest among young adolescents who are in the presence of slightly older, slightly more deviant peers.⁴⁵ In short,

⁴¹ See generally DEVIANT PEER INFLUENCES IN PROGRAMS FOR YOUTH (Kenneth A. Dodge, Thomas J. Dishion & Jennifer E. Lansford eds., 2006); Philip Cook et al., *The Negative Impact of Starting Middle School in Sixth Grade*, 27 J. POL'Y ANALYSIS & MGMT. 104 (2008); Marie-Helene Grosbras et al., *Neural Mechanisms of Resistance to Peer Influence in Early Adolescence*, 27 J. NEUROSCI. 8040, 8040 (2007).

⁴² RONALD A. FELDMAN ET AL., *THE ST. LOUIS CONUNDRUM: THE EFFECTIVE TREATMENT OF ANTISOCIAL YOUTHS* (1983).

⁴³ Kristan Glasgow Erickson et al., *A Social Process Model of Adolescent Deviance: Combining Social Control and Differential Association Perspectives*, 29 JOURNAL OF YOUTH AND ADOLESCENCE 395, 420-21 (2000).

⁴⁴ Terence P. Thornberry et al., *The Role of Juvenile Gangs in Facilitating Delinquent Behavior*, 30 J. RES. CRIME & DELINQUENCY 55, 80 (1993).

⁴⁵ DEVIANT PEER INFLUENCES IN PROGRAMS FOR YOUTH, *supra* n. 41, at 367; UNDERSTANDING PEER INFLUENCE IN CHILDREN AND

adolescents exhibit a predisposition to follow peer influence that is profound, that is reversible, and that adults simply do not share.

B. Adolescents Are Highly Influenced by — and Live at the Mercy of — Psychosocial Conditions, Socioeconomic Variables, and Other Environmental Factors.

Children’s brains adapt to children’s environments. Beginning when a child is still in the womb, the brain organizes itself so that neurons and neural systems change in a “use-dependent” way.⁴⁶ Brain cells connect to each other via synapses, and synapses grow and become stronger when they are used. If an environment or set of experiences is frequent, the same synapses repeatedly are used and strengthened. This strengthening process is crucial for building memory and skill.

The moldability of brain connections through external experience is termed “plasticity.” As a result of plasticity, the more often an individual is exposed to threatening environments — including difficult home and neighborhood environments — the more quickly the brain learns to respond to those threats.⁴⁷ Frequent exposure to threatening or

ADOLESCENTS 9 (Mitchell J. Prinstein & Kenneth A. Dodge eds., 2008).

⁴⁶ Bruce D. Perry, Inaugural Lecture at the Margaret McCain Lecture Series: Maltreatment and the Developing Child: How Early Childhood Experience Shapes Child and Culture, (Sept. 23, 2005), *available at* <http://www.lfcc.on.ca/mccain/perry.pdf>.

⁴⁷ See R.M. Post, *Transduction of Psychosocial Stress into the Neurobiology of Recurrent Affective Disorder*, 149 AM. J. PSYCHIATRY 999, 1004-05 (1992); *see also* DEBRA NIEHOFF, THE BIOLOGY OF VIOLENCE: HOW UNDERSTANDING THE BRAIN,

violent environments strains the adolescent's immature prefrontal lobe, and this strain further impairs an adolescent's ability to control his or her own impulses.⁴⁸

More than 100 studies have demonstrated that early exposure to threatening or traumatic environments leads a young person to develop hypervigilance in responding to certain threat cues.⁴⁹ This type of upbringing also instills a biased readiness to attribute hostile intent to other persons. A child whose brain has adapted to an environment of chaos will continue in a physiological state of alarm even when the environment has stabilized and the threat is not immediately present.⁵⁰ Although these adaptive responses are designed to help the child cope in a threatening environment, they also lead to growth in violent behavior.⁵¹ Traumatized children may simply have less capacity to respond appropriately to the everyday demands and stresses of life.⁵² Indeed, childhood abuse or neglect has been shown to increase the likelihood of arrest as a

BEHAVIOR, AND ENVIRONMENT CAN BREAK THE VICIOUS CIRCLE OF AGGRESSION 182-87 (1999).

⁴⁸ Jane Rutherford, *Community Accountability for the Effect of Child Abuse on Juvenile Delinquency in the Brave New World of Behavioral Genetics*, 56 DEPAUL L. REV. 949, 953 (2007).

⁴⁹ See Kenneth A. Dodge, *Translational Science in Action: Hostile Attributional Style and the Development of Aggressive Behavior Problems*, 18 DEV. & PSYCHOPATHOLOGY 791, 792, 807 (2006).

⁵⁰ See Perry, *supra* note 46.

⁵¹ See Kenneth A. Dodge, *supra* note 49.

⁵² See Kenneth A. Dodge et al., *Aggression and Antisocial Behavior in Youth*, in 3 HANDBOOK OF CHILD PSYCHOLOGY: SOCIAL, EMOTIONAL, AND PERSONALITY DEVELOPMENT 719, 757 (6th ed., 2006) [hereinafter Dodge et al., HANDBOOK].

juvenile by 59%. Abuse also correlates with a younger age of first arrest.⁵³

Studies also indicate that criminal behavior in adolescents correlates with socioeconomic conditions, which are outside the control of the adolescent and subject to change. Research consistently shows that neighborhoods with high rates of juvenile offenders tend to be characterized by poverty, population heterogeneity, and family disruption.⁵⁴ One 2005 study indicated that: (1) family poverty, measured by welfare receipt, is positively related to juvenile's involvement in robbery, burglary and theft; (2) county poverty, measured by per capita welfare spending, is positively related to the likelihood of selling drugs, assault, and robbery; and (3) lack of employment opportunities, as measured by the county employment rate, is correlated with the selling of drugs and robbery.⁵⁵

Poverty also exacerbates adolescents' susceptibility to peer influence. Adolescents who live in high-crime neighborhoods may find that the pressures to join in criminal activity are overwhelming, and a young person may feel that participation in criminal activity is necessary to avoid

⁵³ Cathy S. Widom & Michael G. Maxfield, *An Update on the "Cycle of Violence"*, NAT'L INST. JUST. RES. BRIEF, Feb. 2001. Conversely, greater attachment to family and school reduces the prevalence, intensity, and frequency of deviant behavior. Sanford M. Dornbusch et al., *The Relation of Family and School Attachment to Adolescent Deviance in Diverse Groups and Communities*, 16 J. ADOLESCENT RES. 396, 416 (2001).

⁵⁴ See, e.g., ROBERT JOSEPH BURSIK, JR. & HAROLD G. GRASMICK, NEIGHBORHOODS AND CRIME 25-26, 50, 82 (1993).

⁵⁵ H. Naci Mocan & Daniel I. Rees, *Economic Conditions, Deterrence and Juvenile Crime: Evidence from Micro Data*, 7 AM. L. ECON. REV. 319, 341 (2005).

threats to his or her own safety.⁵⁶ Indeed, studies demonstrate that adolescents with less education or from socioeconomically disadvantaged backgrounds score lower in tests of future orientation than juveniles from more privileged backgrounds.⁵⁷

Aggressive survival responses, antisocial conditions, and deprived backgrounds may or may not manifest as criminal behavior, and it is important to note that juveniles' responses to these stresses develop throughout adolescence. Indeed, adolescents are capable of reversing or outgrowing these effects if discipline and socialization are introduced.⁵⁸ The same brain plasticity that renders an adolescent susceptible to these stressors makes them capable of rehabilitation and reform.

C. Rehabilitation in Adolescents Is Highly Effective.

The Court recognized in *Roper* the simple truth that the “signature qualities of youth are transient; as individuals mature, the impetuosity and recklessness that may dominate in younger years can subside.”⁵⁹ Research confirms that risky or

⁵⁶ Jeffrey Fagan, *Atkins, Adolescence, and the Maturity Heuristic: Rationales for a Categorical Exemption for Juveniles from Capital Punishment*, 33 N.M. L. REV. 207, 241 (2003).

⁵⁷ Laurence Steinberg et al., *Age Differences in Future Orientation and Delay Discounting*, 80 CHILD DEV. 28, 29 (2009) (citing Jari-Erik Nurmi, *Age, Sex, Social Class, and Quality of Family Interaction as Determinants of Adolescents' Future Orientation: A Developmental Task Interpretation*, 22 ADOLESCENCE 977 (1987)).

⁵⁸ See Cathy Spatz Widom, *The Cycle of Violence*, 244 SCIENCE 4901 (1989); see also John Paul Wright & Francis T. Cullen, *Parental Efficacy and Delinquent Behavior: Do Control and Support Matter?*, 39 CRIMINOLOGY 677 (2001).

⁵⁹ *Roper*, 543 U.S. at 570.

antisocial behavior in adolescence is fleeting. Only a small proportion of adolescents who engage in illegal activities continues to commit offenses as adults.⁶⁰ As noted above, neurological studies show that adolescent brains are still learning, developing, and creating new connections, which in turn suggests that juveniles are likely to be more responsive than adults to rehabilitation. In short, “it would be misguided to equate the failings of a minor with those of an adult, for a greater possibility exists that a minor’s character deficiencies will be reformed.”⁶¹

The potential for rehabilitation exists even for the most difficult adolescents. For example, despite the detrimental effects of early childhood neglect or trauma, evidence indicates that a child’s brain can be repaired by repetitive exposure to developmentally-appropriate experiences. Studies have shown that repeated exposure to positive developmental experiences will influence precisely those parts of the brain that were altered by the neglect or other trauma the child faced.⁶² Adolescents change rapidly — in response to both trauma and rehabilitation. Longitudinal empirical studies confirm that a sizable percentage of antisocial early adolescents stop their antisocial behavior by adulthood, as a result of structured intervention or

⁶⁰ See Steinberg & Scott, *supra* note 39, at 1014; see also Scott & Steinberg, *supra* note 37, at 52-53 (citing U.S. DEP’T OF JUSTICE, BUREAU OF JUSTICE STATISTICS, CORRECTIONAL POPULATION IN THE UNITED STATES, 1995 (1997)).

⁶¹ *Roper*, 543 U.S. at 570.

⁶² See Perry, *supra* note 46.

natural life events such as starting a family or joining the workforce.⁶³

Treatment of Conduct Disorder serves as an example. Conduct Disorder, a high-risk psychiatric condition in which a child repeatedly violates basic social rules and which was once believed to be impervious to treatment, has been proven treatable through intervention programs.⁶⁴ Numerous intervention studies show that even the highest-risk youths can be treated effectively, resulting in a reduced likelihood that they will engage in violence in the future.⁶⁵ A panel of eminent scientists and practitioners assembled in 2003 by the National Institute of Health to review the state of the science concluded that intervention programs are effective in preventing serious violence, even in highest-risk youths.⁶⁶ The President's New Freedom Commission on Mental Health came to a similar conclusion in 2003.⁶⁷ The United States Surgeon General has

⁶³ Robert J. Sampson & John H. Laub, *A Life-Course View of the Development of Crime*, 602 ANNALS AM. ACAD. POL. & SOC. SCI. 12, 17-18 (2005).

⁶⁴ Paul J. Frick, *Effective Interventions for Children and Adolescents With Conduct Disorder*, 46 CANADIAN J. PSYCHIATRY 597, 605 (2001).

⁶⁵ See Dodge et al., HANDBOOK, *supra* note 52, 765-69; CONDUCT PROBLEMS PREVENTION RESEARCH GROUP, *Fast Track Randomized Controlled Trial to Prevent Externalizing Psychiatric Disorders: Findings From Grades 3 to 9*, 46 J. AM. ACAD. CHILD & ADOLESCENT PSYCHIATRY 1250-1262 (2007).

⁶⁶ Linda S. Chan et al., Evidence Report/Technology Assessment No. 107, *Preventing Violence and Related Health-Risking Social Behaviors in Adolescents* (Oct. 2004).

⁶⁷ See PRESIDENT'S NEW FREEDOM COMM'N ON MENTAL HEALTH, *ACHIEVING THE PROMISE: TRANSFORMING MENTAL HEALTH CARE IN AMERICA* (2003).

reached the same conclusion.⁶⁸ Because even the most difficult conditions may be treatable in adolescents, “[i]t is difficult even for expert psychologists to differentiate between the juvenile offender whose crime reflects unfortunate yet transient immaturity, and the rare juvenile offender whose crime reflects irreparable corruption.”⁶⁹

III. ADOLESCENTS ARE FAR LESS CAPABLE THAN ADULTS TO AID IN THEIR DEFENSE BEFORE AND DURING TRIAL.

The Court may reasonably inquire whether the legal system can account for the unique characteristics of adolescents during trial and sentencing. It cannot. For the reasons stated above, no one — not professional psychiatrists, and certainly not the judicial system — can reliably identify those few (if any) adolescents for whom hope can or should be abandoned at an early age.

Adolescents are at a particular disadvantage in a legal process designed for adults. To be sure, many of these cases involve adolescents who are “competent” within the legal understanding of the term. Nonetheless, fairness requires that defendants be able to participate effectively in the proceedings against them, which requires an understanding of the nature of the proceedings, an ability to consult with counsel, and the ability to assist in preparing their defense.⁷⁰

⁶⁸ U.S. PUB. HEALTH SERV., YOUTH VIOLENCE: A REPORT OF THE SURGEON GENERAL (2001).

⁶⁹ *Roper*, 543 U.S. at 573.

⁷⁰ *Drope v. Missouri*, 420 U.S. 162, 171 (1975); *Dusky v. United States*, 362 U.S. 402 (1960).

Even competent adolescents lag behind adults in each of these areas of legal and functional capability. Accordingly, *Amici* respectfully submit that the Court should take great pause before assuming that the legal system — which depends greatly upon the participation of the accused — will fairly and accurately identify only those thirteen- to seventeen-year-olds who are most deserving of the most severe punishment.

First, adolescents are far less able than adults to understand the nature of the legal proceedings against them — including the charges pending, the costs and benefits of available pleas, the roles of key courtroom figures, the import of potential penalties, and the rights that are constitutionally guaranteed to them.⁷¹ Even “[t]he most informal and well-intentioned of judicial proceedings” — which criminal prosecutions are not — “are technical; few adults without legal training can influence or even understand them; certainly children cannot.”⁷²

Studies show that adolescents are at great risk of failing to comprehend fundamental aspects of the justice system, and adolescents from disadvantaged backgrounds are at particular risk. For example, one study found that only 28% of sixteen- to eighteen-year-old students living in areas with low rates of income and education understood that the right to remain silent protects them from being ordered to

⁷¹ See THOMAS GRISSO & ROBERT G. SCHWARTZ, *YOUTH ON TRIAL: A DEVELOPMENTAL PERSPECTIVE ON JUVENILE JUSTICE* 163, 147, 158 (2000).

⁷² *In re Gault*, 387 U.S. 1, 38 n.65 (1967) (quoting REPORT OF THE PRESIDENT’S COMM’N ON LAW ENFORCEMENT AND ADMINISTRATION OF JUSTICE, *THE CHALLENGE OF CRIME IN A FREE SOCIETY* 86-87 (1967)).

speak in a courtroom. By comparison, 52% of students from middle-income backgrounds understood this fact. The low-income students also were comparatively less likely to understand the significance of a confession or the right to be represented by counsel.⁷³

Second, adolescents are far less able than adults to assist their own counsel. The Court has long recognized that an adolescent has special needs in the legal process and requires the “guiding hand of counsel at every step of the proceedings against him.”⁷⁴ However, adolescents’ immaturities affect their ability to communicate meaningfully with their counsel, to provide counsel with information relevant to a defense, and to preserve the attorney-client relationship.⁷⁵ Adolescents lack adult levels of concentration, which impedes their ability to provide information regarding events relevant to the crime.⁷⁶ Adolescents’ lack of life experience can prevent them from recognizing exculpatory facts. Adolescent offenders also suffer from psychological disorders at alarming rates, which generally go without treatment.⁷⁷ These deficiencies are only exacerbated

⁷³ Shavaun M. Wall & Mary Furlong, *Comprehension of Miranda Rights by Urban Adolescents with Law-Related Education*, 56 PSYCHOL. REP. 359, 366-68 (1985).

⁷⁴ *In re Gault*, 387 U.S. at 36 (quoting *Powell v. Alabama*, 287 U.S. 45, 68 (1932)).

⁷⁵ Laurence Steinberg, *Adolescent Development and Juvenile Justice*, 5 ANN. REV. CLINICAL PSYCHOL. 459, 475 (2009).

⁷⁶ Elizabeth S. Scott & Thomas Grisso, *Developmental Incompetence, Due Process, and Juvenile Justice Policy*, 83 N.C. L. REV. 793, 819 (2005).

⁷⁷ See Laurence Steinberg et al., *Reentry of Young Offenders from the Justice System: A Developmental Perspective*, 2 YOUTH VIOLENCE & JUVENILE JUST. 21, 30 (2004).

in situations of deep deprivation or poverty. Indeed, one 2007 study showed that living in a deeply impoverished neighborhood reduces the verbal ability of children by a magnitude equivalent to one missed year of school.⁷⁸

Due to age and inexperience, adolescents may fundamentally misapprehend their attorney's role. Effective trial participation requires "a personally relevant understanding of the lawyer's advocacy role and the confidential nature of the attorney-client relationship, as well as comprehension of one's own directive role in the process."⁷⁹ Adolescent defendants often lack this understanding — for example, they may be prone to question an attorney's allegiance and withhold relevant information out of fear that such information will be used against them.⁸⁰ One study showed that while 96% of juveniles reported that they believed attorney-client confidentiality prevented their attorney from disclosing their conversations, 26% of those participants also believed that a lawyer could disclose any information to the judge and 30% believed that the lawyer could tell their parents what they had said.⁸¹ Another study found that one-in-three to one-

⁷⁸ Robert J. Sampson et al., *Durable Effects of Concentrated Disadvantage on Verbal Ability Among African-American Children*, 105 PROC. NAT'L ACAD. SCI. 845 (2008).

⁷⁹ Melinda G. Schmidt et al., *Effectiveness of Participation as a Defendant: The Attorney-Juvenile Client Relationship*, 21 BEHAV. SCI. & L. 175, 177 (2003) (citing EMILY BUSS, THE ROLE OF LAWYERS IN PROMOTING JUVENILES' COMPETENCE AS DEFENDANTS (R.G. Schwartz ed., 2000)).

⁸⁰ *Id.*

⁸¹ Michele Peterson-Badali et al., *Young People's Experience of the Canadian Youth Justice Systems: Interacting with Police and Legal Counsel*, 17 BEHAV. SCI. & L. 455, 461 (1999)

in-four juvenile offenders, as compared to one-in-ten adult offenders, believed that if they told their attorney that they had committed the act in question, then their attorney would not be able to defend them at all.⁸²

Third, adolescents are far less capable of making important legal decisions and assisting in their own defense. The four basic dimensions of psychosocial maturity most relevant to decisionmaking are susceptibility to peer pressure, risk perception, future orientation, and impulsivity.⁸³ As stated, adolescents differ substantially from adults in all four areas. Compared to adults, adolescents attach more value to short-term results than to long-term consequences — positive or negative — when making decisions.⁸⁴ Likewise, adolescents are more likely to seek immediate gains, such as curtailing of difficult questioning by over- or under-emphasizing their role in a crime. They are less likely to focus on long-term benefits, such as the advantages that come with plea agreements. Adolescents are even more likely to avoid admitting or communicating difficult facts to their attorneys.⁸⁵ These fundamental judgmental deficiencies put adolescents at a severe disadvantage in the formal legal process, significantly undermining the

(discussing Canadian youth's understanding of legal concepts similar to those found in U.S. law).

⁸² Thomas Grisso, *Juveniles' Capacities to Waive Miranda Rights: An Empirical Analysis*, 68 CAL. L. REV. 1134, 1158 (1980).

⁸³ Steinberg & Scott, *supra* note 39, at 1012.

⁸⁴ Schmidt et al., *supra* note 79, at 176, 191; Steinberg & Scott, *supra* note 39, at 1012, 1019.

⁸⁵ Schmidt et al., *supra* note 79, at 176, 191.

possibility that individual capabilities or deficiencies will be caught in the ordinary workings of our system.

CONCLUSION

Well-established, growing, and uniform scientific and academic study shows that the purposes of a sentence of life without parole — punishing the culpable, deterring the sensible, and incapacitating the incorrigible — are not reliably or rationally served by the imposition of that sentence upon adolescents. For these reasons, *Amici* respectfully submit that the judgments of the courts below should be reversed.

Respectfully Submitted,

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