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Healthy Development as a Human Right: Lessons from Developmental Science

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Healthy psychological and brain development is not a privilege, but a fundamental right that requires special protections and opportunities for building cognitive, emotional, and social skills necessary for becoming a contributing member of our society.

When Kalief Browder was just 16 years old, he was sent to Rikers Island correctional facility, which sits 250 feet from the runway of New York City's LaGuardia airport and is known for notorious abuse and neglect of inmates. Browder was sent there, not because he was found guilty of any crime, but because his family could not pay his $3,000 bail. More than 80% of those detained at Rikers have not been convicted of a crime, with teens between the ages of 16 and 18 making up almost 15% of those detainees. In Browder's case, he was accused of stealing a backpack, although he maintained his innocence, refusing to take a plea bargain that would have released him. His charges were dropped eventually, but not before he had spent 3 years of his youth at Rikers, two of them in solitary confinement. Two years after his release, Kalief Browder took his own life.

We as scientists and as members of society have an obligation to inform policies that help to promote mental and physical health among our young people. Healthy psychological and brain development is not a privilege for an elite few, but a fundamental right for all, including those in the juvenile justice system. The United Nations (UN) Convention on the Rights of the Child is a treaty that sets out the rights of children and declares that they should receive special protections of their rights due to their immaturity. Yet, no special protections were given to Kalief Browder and too often are not given to youth like him who wind up in the criminal justice system in the United States unable to make bail. For most countries, including the United States, 18 is the age of majority when young people are given rights by law to function as an adult (e.g., to vote and sign legal documents without parental consent). Yet, in the United States, youth can be detained, punished, and prosecuted at much younger ages, with no minimal age depending on the crime and circumstances in many states. These practices in the United States are inconsistent with the UN Convention on Rights of the Child and with emerging developmental and brain science.

Over recent decades, scientific knowledge on behavioral and brain development has been used to challenge the transfer of juveniles to adult court and to mitigate the treatment of children tried as adults in the United States. What does developmental science tell us about when a child reaches the age of maturity? Is there empirical evidence of a single demarcation in age at which an individual reaches adult capacity and therefore has adult responsibility? Likewise, is there a clear age at which point special protections of rights of youth are no longer empirically valid?

When Does the Child Become an Adult?

Exactly when the milestones of adulthood are achieved vary according to what perspective is taken. From a developmental perspective, adolescence serves the function of helping the child develop into an adult. During this developmental phase, the child is rapidly learning about the social world and how to be relatively independent of the caregiver in preparation for their future role as a functioning and contributing adult within society. The adolescent therefore must meet the many challenges of this developmental phase. These include negotiating new intellectual, emotional, social, physical, and sexual demands and conflicts within their complex social world without the buffer of a caregiver.

From a societal perspective, adulthood is achieved when an individual is financially independent, completed formal academic or vocational training, or formed a family. Societal expectations about the timing of these milestones change from generation to generation and from culture to culture. In many western countries, this transition has been extended. For example, the median age of marriage has been extended from 22 years in the 1950s to 28 years today (Census 2017). Thus, when a child is ready to take on adult and societal responsibilities can vary not only by cognitive capacity, but by the experiences and opportunities provided to the individual. These experiences help the child learn how to function as a contributing member of society.

From a legal perspective, the definition of adulthood is more complicated and varies wildly across legal policies and laws in the United States. Age of majority, the age at which an individual is granted by law the rights and responsibilities of an adult, is 18 years in the United States. Individuals can vote, serve in the military, get married, and sign legal documents without parental permission or consent. Yet, within our justice system, every state allows children and adolescents under 18 to be tried as an adult depending on the crime and circumstances. As of 2018, there was no lower age limit for the crime of murder in over 20 states, even though several states recognize the immaturity and vulnerability of young people in other ways (e.g., extending support obligations by parents beyond 18). These different

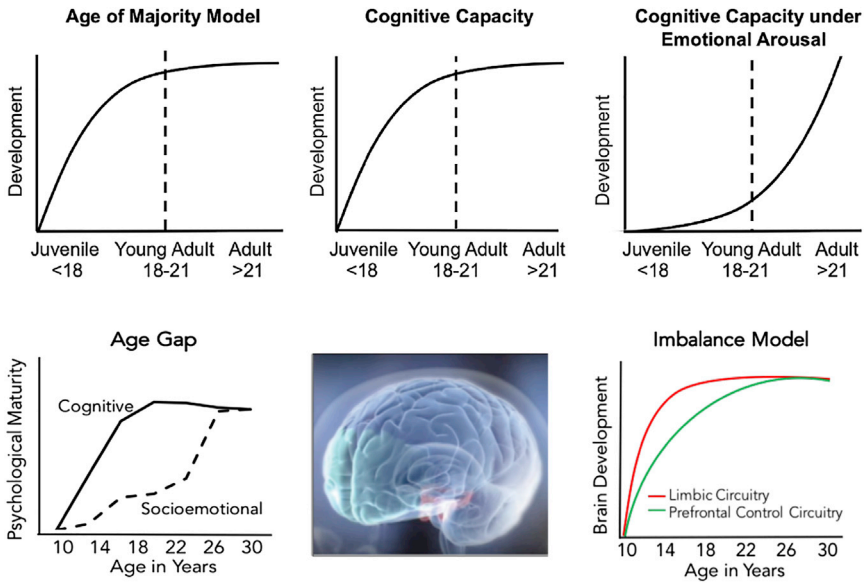

Figure 1. Legal, Psychological, and Brain-Based Accounts of When an Adolescent Is an Adult
Adapted from Cohen et al. (2016b) and Icenogle et al. (2019).

perspectives on the onset of adulthood raise the important question of whether age boundaries drawn by US laws and policies reflect or contradict what we know about human psychological development.

When Does Psychological Functioning Reach a Mature State?

I am asserting that healthy development requires special protections of and opportunities for building the requisite cognitive, emotional, and social skills necessary for becoming a healthy prosocial adult. However, when do these psychological abilities reach mature or asymptotic levels? Do all psychological abilities mature simultaneously? A basic premise of the age of majority model is that an individual reaches adult cognitive capacity by 18 years of age (Figures 1A and 1B), but what about emotional or social capacity? Rarely is the contact that a youth has with the law *not* emotionally arousing. Does a single demarcation of adult cognitive capacity accurately reflect the individual's capacity in emotionally arousing situations? When does cognitive capacity under emotional influences develop (Figure 1C)? Is the age of majority model consistent with empirical findings from developmental science on this aspect of psychological development?

A wealth of empirical studies reveals no single magical age of psychological maturity but rather different ages for different psychological abilities (Steinberg et al., 2009). Each process has been proposed to serve as a building block or hierarchical instantiation for the next (Casey et al., 2019). Figure 1D illustrates the developmental trajectory of basic cognitive processes (e.g., digit span, verbal fluency, resistance of memory against interference) from late childhood to 30 years of age. Taking a composite score of these abilities, Steinberg and colleagues showed that developmental asymptote is reached by mid adolescence (16–17 years). This trajectory is distinct from that of socioemotional processes involving balancing both cognitive and emotive processes (e.g., peer influences on decision making, risk perception, sensation seeking, and impulsivity). These abilities, unlike cognitive ones, show a more gradual pattern of development that continue to change into the 20s (Figure 1D, delta from 26- to 30-year olds). These later abilities parallel prolonged development of sex hormones (testosterone and estradiol) and their association with risky behavior (Peper et al., 2018). The age gap in the development of cognitive and socioemotional processes holds for young people not only in the United States, but across cultures and countries (Figure 1D; Icenogle et al., 2019).

Distinct developmental trajectories of psychological processes are paralleled by hierarchical developmental changes in the brain that are thought to result in an imbalance between emotional and cognitive control circuitry (Casey et al., 2019). The emotional centers develop relatively early, making adolescents highly responsive to emotional and social stimuli. By contrast, prefrontal control circuitry that regulate self-control takes a while to catch up and continues to develop beyond adolescence. The differential pace of development in these systems can lead to an imbalance in communication among them, allowing prefrontal circuitry that supports rational behavior to be high-jacked by limbic circuitry involved in emotion (Figures 1E and 1F; Cohen et al., 2016b).

When Does the Brain Reach Maturity?

The age of maturity becomes even more of a "gray" area as we begin to consider findings from neuroscience. Establishing a point of reference that would indicate or demarcate when a brain is mature poses many challenges. Even the suggestion of a point in time when the brain is mature (i.e., stable) challenges neuroscientific evidence of a dynamically changing brain that adapts to new information and situations across the lifespan. However, I would argue that not all brain changes across the lifespan are legally relevant to the question of when does an adolescent have adult capacity and responsibility. Nonetheless, there have been exciting attempts to develop a human brain maturity index or growth curve from developmental human structural and functional brain imaging data. These studies highlight significant brain changes into the 20s, and even into the 30s, but also present challenges as Somerville (2016) eloquently articulates in her article "In search of a signature of brain maturity: What are we searching for?" Specifically, the literature reveals significant variability in the estimated age of developmental asymptote depending on the brain region, measure, imaging modality (Somerville, 2016), and sex (Kaufmann et al., 2017). Even with this variability, however, there

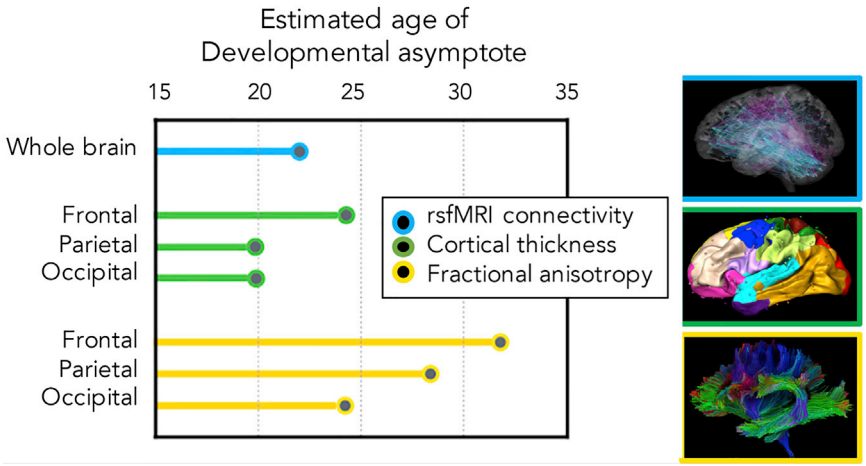

Figure 2. Indices of Brain Maturity
Adapted from Somerville (2016).

is a general pattern of prolonged development of prefrontal control circuitry that is important for regulation of emotions, relative to development of sensorimotor or subcortical systems (Figure 2).

To further complicate the picture, recent work suggests that functional brain maturation appears less mature under emotionally arousing states relative to non-arousing states in both teens and 18- to 21-year olds. This pattern of development parallels increased impulsivity under emotional influences and risky behavioral tendencies and preferences (Cohen et al., 2016a; Rudolph et al., 2017). So, social and emotional contexts influence the estimated age of developmental asymptote in neural and psychological processes. Together, these studies portray brain maturation and function not as a single process that is miraculously achieved over night as the child suddenly awakes on their 18th birthday, but rather as a dynamic and protracted set of processes that extend into young adulthood.

How Has Developmental Science Informed Law and Policy on Juvenile Rights?

Unfortunately, our field has been accused of spinning the science in whatever way necessary to support youth advocacy in the United States (Steinberg et al., 2009). US Supreme Court Justice Antonin Scalia accused American scientists of flip flopping their position in two amicus briefs: (1) Roper v. Simmons (2005) to abolish the death penalty for individuals under 18 and 2) Hodgson v. Minnesota (1990) to give minors the right to obtain an abortion without parental involvement. He claimed that scientific evidence used to show that persons under 18 lack the ability to take moral responsibility for their decisions in the case of abolishing the death penalty for juveniles was used to show precisely the opposite position in the case of abortion without parental consent.

Are we as scientists guilty of advocating rather than carrying out objective rigorous science that informs law and policy? Do the heuristics we use to explain differences between the child and adult obscure the complexities of developmental change? It is perhaps not surprising that there is confusion among judges and policymakers about when a child has adult responsibilities given that there is no magical age of maturity. The brief overview of developmental psychological and brain imaging studies highlights distinct developmental trajectories and "maturity" for different psychological and neural processes. A goal of my own research has been to delineate these distinct trajectories so that in protecting young people from harm, we do not take away their rights or their opportunities that enable their healthy development. I want to specifically underscore here that protecting the rights of the child not only includes special protections against cruel and unusual punishment, but special protection and promotion of opportunities for the child to learn to master the skills needed to meet the many challenges of adulthood, including learning to negotiate emotional and social demands and conflicts. The detainment and solitary confinement of Kalief Browder as a child did neither. He was not protected from cruel and unusual punishment or given opportunities to promote healthy development.

Recent Policy Challenges in the Treatment of Young Offenders

The United States still incarcerates more youth than any other country in the world and, to date, has not ratified the Convention on the Rights of Child, which ensures special protections of all youth. In fact, the United States places a higher proportion of youth per 100,000 (convicted or not) in secure confinement than western countries combined (e.g., England, Finland, France, Germany, Italy, Scotland, Sweden, and the Netherlands). However, many changes are occurring that are consistent with the special protections and rights of the child over the past two decades. Specifically, there have been several majority decisions by the US Supreme Court on the treatment of juvenile offenders. In 2005, a majority decision on Roper v. Simmons abolished the death penalty for juvenile offenders, ruling that it was unconstitutional under the 8th Amendment that prohibits cruel and unusual punishment. Five years later, in Graham v. Florida, the court ruled to abolish a mandatory sentence of life without parole for juvenile offenders of any crime, except for crimes of murder. Just 2 years later in 2012, this decision was extended to any crime including murder in Miller v. Alabama and Jackson v. Hobbs. To be clear, a juvenile offender still can receive a sentence of life without parole; it just cannot be implemented as a mandatory sentence for any crime. These four decisions by the court impacted only a few hundred individuals. The ruling with the potential to impact thousands of lives is the decision in Montgomery v. Louisiana (2016) that held that the Miller v. Alabama decision be applied retroactively. Each of these opinions reflect acknowledgment by the US justice system that youth are different from adults in important ways and therefore should be treated differently.

Now, with emerging science on psychological and brain development into

the 20s, the justice system is beginning to recognize young adulthood as a distinct phase of development that may require different treatment. Young adult courts are emerging across the country from California to Nebraska to New York that consider the circumstances and rehabilitation in sentencing young adults. In Connecticut, a special unit for incarcerated young adults (18–25) focuses on rehabilitation over punitive treatment, building on European correctional facilities in Germany. Now, cases are being argued across the United States that prohibition of the death penalty and mandatory life without parole for juveniles should extend to 18- or even 20-year olds. These policies and petitions are not suggesting that young people should not be held accountable for their crimes, but rather that they should be held accountable and given the opportunity to learn and earn the right to re-enter society.

Conclusion

There is nothing we can do for Kalief Browder. We are too late. He is gone, but his tragic death has raised awareness and action in the United States. We can have hope in the recent changes in the US justice system from abolishment of cruel and unusual punishment of juvenile offenders and of their solitary confinement at the federal level, to the creation of young adult courts and less punitive correctional units for young adults, to plans for bail reform and the closing of correctional institutions like Rikers. Working together, we may be able to save young people like Kalief from the injustices that too often occur within the confines of our justice system in the United States. Recognition and education about the gaps in maturity of different psychological and neural processes may help to inform and direct the protection of the rights of young people for a healthy development and in so doing build a healthier society in which they can contribute in positive ways.

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