How Brain Science is Changing Juvenile Justice Sentencing

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Even though most of our brain structure is formed by age 5 or 6, our brains are still changing well into adulthood. Specifically, changes in the prefrontal cortex, the area of the brain that coordinates planning, impulse control, working memory, and attention, are not completed until we are in our twenties. The abilities regulated by the prefrontal cortex allow us to pause and plan a course of action after considering our options.

Children produce more grey matter than they’ll need as adults, but less-used neural connections within the brain are “pruned” starting at puberty. This occurs in stages, starting in the back of the brain and working toward the front. The surviving neural connections are strengthened through a process called myelination, which allows nerve impulses to be transmitted faster. Once the brain begins pruning those extra connections, the connections that remain will become hard-wired. So, skills that a teenager is routinely practicing are likely to remain with her into adulthood.

The adolescent brain is also known to be extra-sensitive to dopamine, meaning that the reward systems associated with drug addictions are in overdrive. These changes cause teenagers to minimize negative effects and overinflate the positive aspects of choices that appeal to their thrill-seeking sides.

Neuroscientists point out that it’s not all bad news. The same features of adolescence that cause teenagers to take risks and ignore consequences also allow teenage brains to be highly adaptable to a constantly changing environment, making adolescent humans uniquely vulnerable as well as responsive to positive input. Rather than assuming that teenagers are impulsive, thrill-seeking machines, we might instead think of the brain as readying children to leave their parents.

MRI studies showing these gradual transitions have affected how we think about juvenile crime.

Over the past decade, the United States Supreme Court has consistently held that juveniles should be treated differently than adults. In 2005, the court ruled in Roper v. Simmons that the death penalty was unconstitutional when applied to juveniles under 18. The defendant was supported by an amicus brief filed by a number of medical associations, citing research that was new at the time.
Following that decision, the court in 2010 held that juveniles could not be sentenced to life in prison without parole if convicted of crimes other than homicide. And finally, in Miller v. Alabama in 2012, the court extended that ruling to hold that states may not require life without parole for any crimes committed by juveniles, including homicide. This did not eliminate all life sentences without parole, but discouraged them by stating that very few juvenile offenders should be considered deserving of a life sentence in prison.

States have attempted to comply with the court’s ruling. Many states have held that Miller applies retroactively to include individuals currently serving life sentences. Illinois is the most recent state to rule that Miller applies retroactively; Louisiana, Texas, Nebraska, Massachusetts, Mississippi, and Iowa have also ordered resentencing for any juvenile offender currently serving a life sentence. On March 15, West Virginia passed a law that completely eliminated life without parole for juveniles. Florida will soon vote on legislation that would allow review of life sentences, but not ban them completely. On a national level, too, the Office of Juvenile Justice and Delinquency Prevention asked the National Research Council to assemble a committee to make recommendations for juvenile justice reform in 2013, in light of advances in neuroscience research.

Other state and local efforts to reform the way we think about sentencing juveniles in general are underway. In North Carolina, chief District Court judge Marcia Morey has initiated a program that would send certain 16- or 17-year old defendants to an individually-tailored rehabilitation program instead of jail. In 2013, Georgia passed a revised Children’s Code to support providing juveniles with treatment options to prevent recidivism. These approaches to rehabilitating rather than punishing juvenile offenders recognize that adolescence can be a time to focus on a child’s potential.

Scientists stress that neuroimaging is still new, and that there is more work to do. Researchers may be concerned that the public relies on their findings too much, because the lure of scientific evidence is hard to resist. Ultimately, behavior at any age is based on a complex combination of social, environmental, and genetic factors. Continued collaboration among researchers, public policy advocates, and health professionals will ensure that children can thrive during adolescence.

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