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| **Experts link teen brains' immaturity, juvenile crime** |

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**By Malcolm Ritter, Associated Press**

NEW YORK — The teenage brain, Laurence Steinberg says, is like a car with a good accelerator but a weak brake. With powerful impulses under poor control, the likely result is a crash.

And, perhaps, a crime.

Steinberg, a Temple University psychology professor, helped draft an American Psychological Association brief for a 2005 case in which the U.S. Supreme Court outlawed the death penalty for crimes committed before age 18. That ruling relies on the most recent research on the adolescent brain, which indicates the juvenile brain is still maturing in the teen years and reasoning and judgment are developing well into the early to mid 20s. It is often cited as state lawmakers consider scaling back punitive juvenile justice laws passed during the 1990s.

"As any parent knows," wrote Justice Anthony Kennedy for the 5-4 majority, youths are more likely to show "a lack of maturity and an underdeveloped sense of responsibility" than adults. "... These qualities often result in impetuous and ill-considered actions and decisions." He also noted that "juveniles are more vulnerable or susceptible to negative influences and outside pressures, including peer pressure," causing them to have less control over their environment.

Some child advocates have pointed to the Supreme Court decision and the research as evidence that teens — even those accused of serious crimes — should not be regarded in the same way as adults in the criminal justice system. Dr. David Fassler, a psychiatry professor at the University of Vermont College of Medicine who has testified before legislative committees on brain development, says the research doesn't absolve teens but offers some explanation for their behavior. "It doesn't mean adolescents can't make a rational decision or appreciate the difference between right and wrong," he said. "It does mean, particularly when confronted with stressful or emotional decisions, they are more likely to act impulsively, on instinct, without fully understanding or analyzing the consequences of their actions."

Experts say that even at ages 16 and 17, when compared to adults, juveniles on average are more:

• Impulsive.

• Aggressive.

• Emotionally volatile.

• Likely to take risks.

• Reactive to stress.

• Vulnerable to peer pressure.

• Prone to focus on and overestimate short-term payoffs and underplay longer-term consequences of what they do.

• Likely to overlook alternative courses of action.

Violence toward others also tends to peak in adolescent years, says psychiatrist Peter Ash of Emory University. It's mostly likely to start around age 16, and people who haven't committed a violent crime by age 19 only rarely start doing it later, he said. The good news here, he said, is that a violent adolescent doesn't necessarily become a violent adult. Some two-thirds to three-quarters of violent youth grow out of it, he said. "They get more self-controlled."

**PROSECUTING KIDS AS ADULTS:**

Some of the changes found in behavioral studies are paralleled by changes in the brain itself as youths become adults. In fact, in just the past few years, Steinberg said, brain scans have given biological backing to commonsense notions about teen behavior, like their impulsiveness and vulnerability to peer pressure.

It's one thing to say teens don't control their impulses as well as adults, but another to show that they can't, he said. As for peer pressure, the new brain research "gives credence to the idea that this isn't a choice that kids are making to give in to their friends, that biologically, they're more vulnerable to that," he said.

Consider the lobes at the front of the brain. The nerve circuitry here ties together inputs from other parts of the brain, said Dr. Jay Giedd of the National Institute of Mental Health.

This circuitry weighs how much priority to give incoming messages like "Do this now" versus "Wait! What about the consequences?" In short, the frontal lobes are key for making good decisions and controlling impulses. Brain scans show that the frontal lobes don't mature until age 25, and their connections to other parts of the brain continue to improve to at least that age, Giedd said.

The inexplicable behavior and poor judgments teens are known for almost always happen when teens are feeling high emotion or intense peer pressure, conditions that overwhelm the still-maturing circuitry in the front part of brain, Giedd said.

As Steinberg sees it, a teenager's brain has a well-developed accelerator but only a partly developed brake. By around 15 or 16, the parts of the brain that arouse a teen emotionally and make him pay attention to peer pressure and the rewards of action — the gas pedal — are probably all set. But the parts related to controlling impulses, long-term thinking, resistance to peer pressure and planning — the brake, mostly in the frontal lobes — are still developing. "It's not like we go from becoming all accelerator to all brake," Steinberg said. "It's that we go from being heavy-foot-on-the-accelerator to being better able to manage the whole car."

Giedd emphasized that scientists can't yet scan an individual's brain and draw conclusions about how mature he is, or his degree of responsibility for his actions. Brain scans do show group differences between adult and teen brains, he said, "but whether or not that should matter (in the courtroom) is the part that needs to be decided more by the judicial system than the neuroscientist."

Steinberg, who frequently testifies on juvenile justice policy and consults with state legislators on the topic, said it's not clear to him how much the research on teen brains affects lawmakers. They seem more swayed by pragmatic issues like the cost of treating teens as adults, he said. But he noted that he has been asked to testify more in the past few years than before.

In any case, experts say, there's nothing particularly magic about the age 18 as a standard dividing line between juveniles and adults in the courtroom. Different mental capabilities mature at different rates, Steinberg notes. Teens as young as 15 or 16 can generally balance short-term rewards and possible costs as well as adults, but their ability to consider what might happen later on is still developing, he said. A dividing line of age 18 is better than 15 and not necessarily superior to 19 or 17, but it appears good enough to be justified scientifically, he said. Steinberg said he thinks courts should be able to punish some 16- or 17- year olds as adults. That would be reserved for repeat violent offenders who've resisted rehabilitation by the juvenile justice system, and who could endanger other youth in the juvenile system if they returned. "I don't think there are a lot of these kids," Steinberg said.

For the rest, he thinks it makes sense to try rehabilitating young offenders in the juvenile justice system. That's better than sending them through the adult system, which can disrupt their development so severely that "they're never going be able to be a productive member of society," Steinberg said. "You're not doing society any favor at all."

Even if a 14-year-old murderer is held morally responsible for the crime, he will have matured by the time he's 18, and in the meantime he may be more amenable to rehabilitation than an adult murderer is, Ash said. In fact, most experts conclude that rehabilitation works better for juveniles than for adult offenders, he said. And just as parents know how irrational juveniles can be, Ash said, they also know that rehabilitation is a key goal in punishing them.

"What we really want," he said, "is to turn delinquent kids into good adults."

*Contributing: Associated Press writer Sharon Cohen*