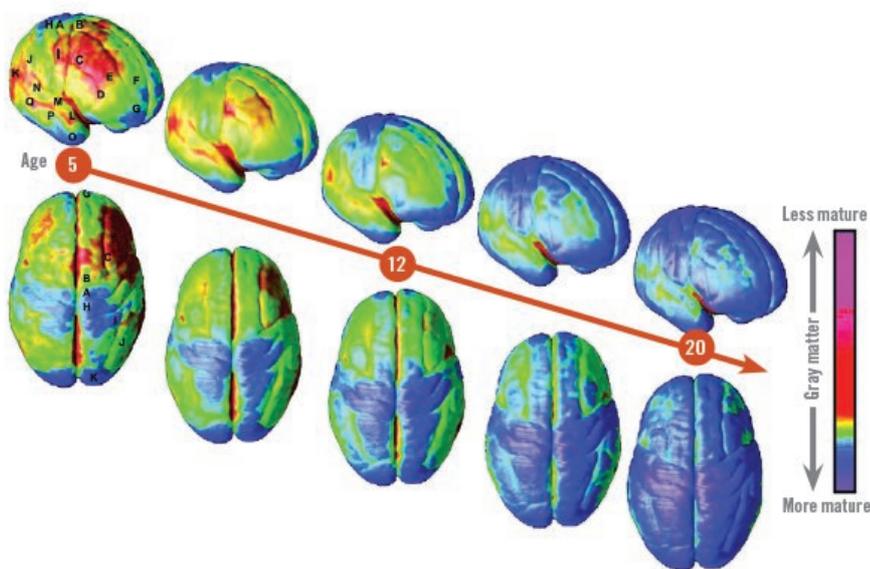


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The Teen Brain: How Schools Can Help Students Manage Emotions and Make Better Decisions



In this series of brain scans taken from age 5 through age 20, blue areas indicate more mature and efficient networks within the brain. In mid-to-late adolescence, the brain rapidly matures, beginning with spatial perception (center line visible from the top). The front areas associated with critical thinking and planning continue to develop through the teenage years to the early 20s, and the temporal lobe, located in the bottom curve and associated with learning and memory, is among the last areas to fully mature.
—Source: "Dynamic Mapping of Human Cortical Development During Childhood Through Early Adulthood," Proceedings of the National Academy of Sciences

Research highlights supportive strategies

By Sarah D. Sparks

October 9, 2018

Los Angeles

Adolescence tends to be seen by parents—and many teachers—with dread. Teenagers are likelier to engage in risky behaviors and disengage from school. But emerging cognitive and neuroscience research suggests ways schools can help leverage teens' strengths in this unique developmental period.

In symposia at International Mind, Brain, and Education Society research conference here last week, and a consensus report funded by the Alliance for Excellent Education released here, cognitive and neuroscientists called for educators to foster school cultures that better support adolescent development.

"For some reason, when we talk about brain development in adolescents, we talk about it like we're terrified: 'Oh my god, their grades in school are dropping, they're driving cars, this is so alarming,'" said Sarah Enos Watamura, an associate professor at the University of Denver who studies the effects of stress on learning and spoke at the conference. "But

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they're testing their limits, they're doing things for the first time. ... That's hard work, and they need a safe space to try out risks."

Adolescence, she said, is coming to be understood as a "second critical window" for developing skills to regulate emotions, making and evaluating decisions, and judging risk and reward. After years of childhood brain development, teenagers' brains focus on making strong connections.

"We need adolescents to hang out in this sensitive period and all that allows to develop ... versus rushing them through it," Watamura said.

A Different Trajectory

Throughout their lives, students get steadily better at inhibitory control—the ability to avoid distractions and stay focused amid changing situations. The prefrontal cortex, an area of the brain associated with attention, decisionmaking and self-control, develops rapidly in the mid-to-late teens. And teenagers are better than children and nearly as good as adults at focusing on unemotional tasks or situations.

But that pattern of development looks very different in emotionally charged situations.

In a series of studies discussed at the conference, Gregoire Borst, a professor of developmental psychology and neuroscience at the Paris Descartes University in France, found teenagers are significantly worse at avoiding emotional distractions than unemotional ones compared to either children or adults. However, teenagers who participated in computer-based training to improve their ability to avoid distractions for 15 minutes a day for five weeks showed significantly better attention and focus than students who had studied in a control group.

"What is surprising is that despite the fact that adolescence is a developmental period in which you find incredible improvement of inhibitory control ... you traditionally have no inhibitory control training during adolescence," Borst said.

Good Risks

Developmentally, research shows teenagers are more open to risky behavior, and taking risks releases more of the chemical dopamine in adolescents than in either children or adults. Studies from the Centers for Disease Control's Youth Risk Behavior Surveillance find that teaching students about the objective risks of things like drug use or unprotected sex **doesn't much lower their likelihood of doing them.**

But that doesn't mean that teenagers don't evaluate potential harm, just that they put a higher priority on social approval. Imaging studies show that until their late teens, young people do not develop a part of the brain that reduces stress during peer evaluation or social isolation. The immediate danger of classmates' teasing can seem more threatening than the health or legal consequences of taking drugs.

That's one reason David Yaeger, a developmental psychologist at the University of Texas at Austin, suspects that many **traditional anti-bullying programs** that work for elementary and middle school students become ineffective in 8th grade—and can do more harm than good in high school. In a separate 2015 meta-analysis of these programs, Yaeger and his colleagues found bullying often switches in secondary school from physical attacks to the less-visible rumors, isolation and social media attacks, and students looking to gain status among their peers are likely to engage in bullying, even of friends. Programs that depict bullies as physically aggressive and socially inept stereotypes or focus mainly on punishments do not address the more complex social situations.

"Does this mean that schools and researchers should not attempt to change bullying among older adolescents? No," Yaeger and his colleagues concluded in the study. To the contrary, they suggested that programs which focus on changing broader culture and using peer pressure to "nudge" bullies, victims, and bystanders into better behavior in positive

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ways.

The Alliance consensus report released at the conference recommended principals and educators teach students ways to recognize and develop healthy relationships with friends and romantic partners beginning early in adolescence, and help students find social benefits from "positive risks," such as leading class discussions or tackling challenging projects.

For example, developing a growth mindset—the belief that skills are not innate, but can be improved through effort—can be particularly important for teenagers, who are developing their sense of identity.

In a separate study presented at the conference, University of Amsterdam researcher Tieme Janssen tracked students' choice of problems on a challenging open test. While both students with growth and fixed mindsets slowed down after making mistakes, those with growth mindsets continued to explore and attempt even very difficult questions. By contrast, after making a mistake, students with a fixed mindset consistently picked problems well below their ability.

"We should be looking at agency and voice for students," said Winsome Waite, a co-author of the Alliance consensus report. "Students taking their own path in class may seem to be a negative. We want them to have the opportunity to manage [their] own thinking and take ownership of their learning."

Active learning, such as team projects, can provide students with positive ways for classmates to challenge each other, she said.

The Alliance for Excellent Education, a Washington advocacy group, plans two additional reports on the state of adolescent research, looking at the effects of culture and identity on how teenage students learn.

"Under [the Every Student Succeeds Act] 13,000 school districts will be handed lists of their lowest-performing schools and required to develop evidence-based plans for addressing them," said Bob Wise, president of the alliance, "It's an incredibly important time to recognize the science of adolescent learning to address the needs of your secondary schools."

Vol. 38, Issue 08, Page 7

Published in Print: October 10, 2018, as **How Schools Can Help as Teen Brains Mature**

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Here is another piece of research educators either will ignore, or incorrectly implement

[^](#) | [v](#) • [Reply](#) • [Share](#)**John Harris Loflin** • 12 days ago

Can this research be universalized? Do the researchers imply the teen brains of the Semi (Laplander) peoples in the Arctic Circle or the teen brains of the Pygmy peoples in Equatorial Africa develop like the teen brains they've researched?

[^](#) | [v](#) • [Reply](#) • [Share](#)**SarahDSparks** → **John Harris Loflin** • 12 days ago

Good question! Most of this research has been done on U.S. and European students (as well as some from Asian countries, I believe)--and as has been often noted, the "WEIRD" populations (Western, educated, industrialized, rich, and democratic) tend to be over-sampled in research and not representative of all humans. However, for U.S. educators, this is likely to be more generalizable, isn't it? Particularly since emerging studies seem to suggest adults should be more careful in general of what preconceptions they put on teenagers' intents and how they learn.

[^](#) | [v](#) • [Reply](#) • [Share](#)**GEresearch** • 12 days ago

Fascinating piece. Well done. This needs to be put into the hands of school administrators. More importantly in the packet of training information administrators get. Since their tenure is usually around the same length as that of a high school student.

[^](#) | [v](#) • [Reply](#) • [Share](#)**Davesci** • 7 days ago

Of what value, really, is research in neuroscience to the work class room teachers are doing already? Is grant money spent for (make work) spurious claims of expertise...money poorly spent? The article states-

"In symposia at International Mind, Brain, and Education Society research conference here last week, and a consensus report funded by the Alliance for Excellent Education released here, cognitive and neuroscientists called for educators to foster school cultures that better support adolescent development."

Consider this analogy to claims made at the symposia: If we were to map the topography of the earth's surface, we would produce an interesting image of those topographies. Then we use those gee whiz images as a basis for understanding (let alone managing) developmental behaviors, customs, and learning processes of people indigenous to various topographical areas.

The point is, brain scans and bits of neuro-chemical material evidence concerning a tiny portion of brain function does not, cannot, be used to establish policy for behavior management in schools. There is simply nowhere

[see more](#)

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Susan Kennedy Marx · 5 days ago

Supporting adolescents in drawing on their agency and voice...YES!!! Such important evidence based info for those of us who teach and want every student to belong and excel!

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