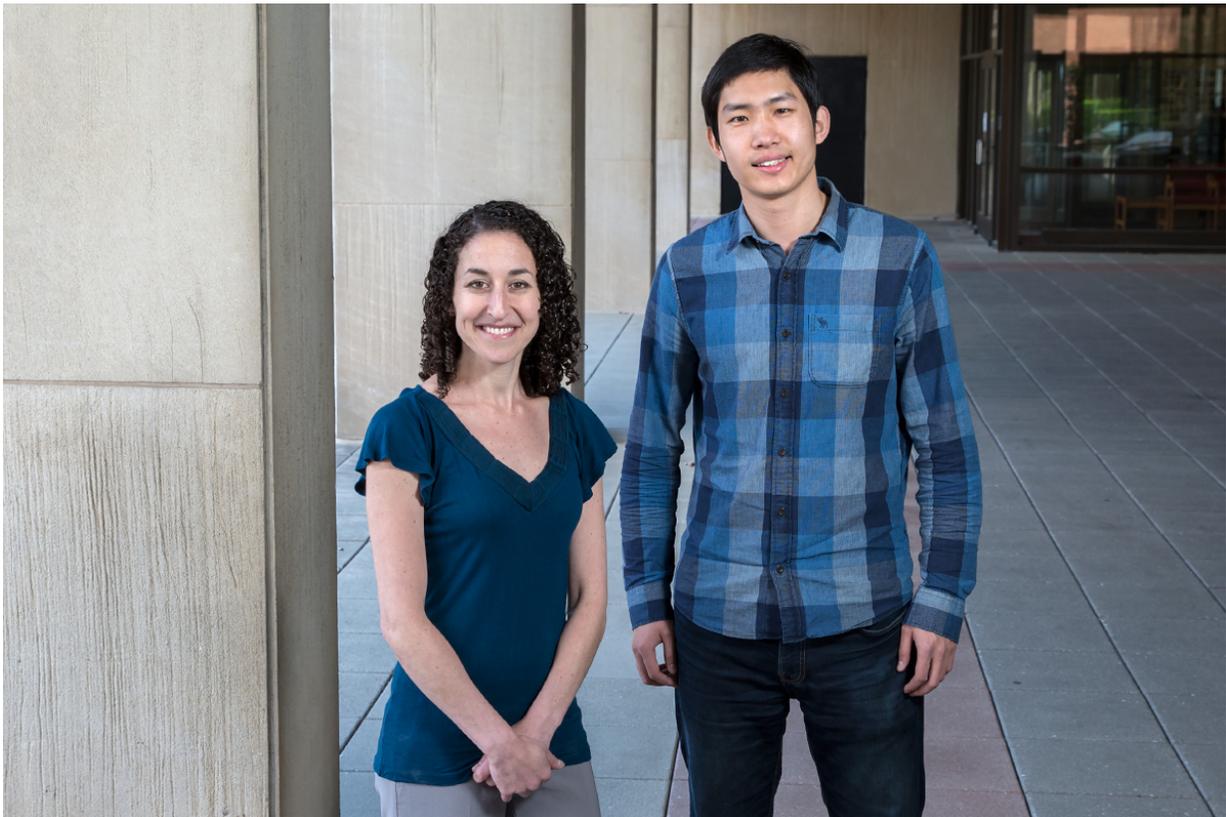


Study links parental depression to brain changes and risk-taking in adolescents

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University of Illinois professor Eva Telzer and graduate student Yang Qu linked parental depression to increases in risky behaviors and brain changes in adolescents. Credit: Joyce Seay-Knoblach

A new study concludes that parental depression contributes to greater

brain activity in areas linked to risk taking in adolescent children, likely leading to more risk-taking and rule-breaking behaviors. While previous research has found associations between clinically depressed parents and their teenagers' risk taking, the new study is the first to find corresponding changes in the adolescents' brains.

The study is reported in the journal *Social Cognitive and Affective Neuroscience*.

"This is the first empirical evidence to show that [parental depression](#) influences children's behavior through the change in the adolescent's brain," said University of Illinois graduate student Yang Qu, who led the study with U. of I. psychology professor Eva Telzer.

"There are a lot of changes happening in the teen years, especially when we are thinking about risk-taking behaviors," Telzer said.

The researchers followed a group of 23 adolescents, 15 to 17 years old, with cognitive testing and brain imaging at the beginning and end of the 18-month study. Using [functional magnetic resonance](#) imaging, the researchers measured changes in [blood oxygen levels](#) in the brain while the study subjects clicked a button to inflate a computerized balloon. The goal was to inflate the balloon as much as possible without popping it. More clicks earned the teens a greater monetary reward, but if it popped, they earned nothing.

"The more risky they are in real life, the more risky they are on the task as well," Telzer said.

The researchers also collected information on the adolescents' rule-breaking behaviors, such as sneaking out without parental permission, substance abuse and partying.

To measure parental depression, the team collected data from the parents on their own [depressive symptoms](#), including feelings like "I couldn't shake off the blues" and "Everything I did was an effort." Telzer and Qu measured these symptoms in parents who were not currently being treated for clinical depression.

They found that [adolescents](#) whose parents had greater depressive symptoms increased their risk taking over the course of the study. The team also saw changes in how the teens' brains responded to risk taking.

"At the neural level, they show increases over time in activation in the ventral striatum," Telzer said. "The [ventral striatum](#) is a key brain region involved in risk taking, and it has also been linked in some studies to depression."

These new findings help to explain the relationship between parental depression and an adolescent's risky behaviors, Qu said.

"Even if you are not clinically depressed and seeking out help, your teen is probably picking up on the negative emotions that you may be experiencing," Telzer said. This unconscious awareness can influence teens' [risk-taking](#) behaviors and also shape the way their brains respond to risky situations.

More information: Yang Qu et al, Links Between Parental Depression and Longitudinal Changes in Youths' Neural Sensitivity to Rewards, *Social Cognitive and Affective Neuroscience* (2016). [DOI: 10.1093/scan/nsw035](#)

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