

# Scientists seek to identify predictors of risky behaviors among teenagers

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What makes the adolescent brain so susceptible to taking risks? Virginia Tech scientists are recruiting as many as 150 teenagers to help them find out.

"We're trying to identify early predictors of substance abuse and risky sexual behavior among [adolescents](#)," said Brooks King-Casas, an assistant professor at the Virginia Tech Carilion Research Institute and

one of the new study's leaders. "The years between 13 and 17 are critical in a young person's brain development. During that span, adolescents tend to become more sensitive to high-reward stimuli – sex, drugs, rock 'n' roll. At the same time, the brain's prefrontal regions, which help inhibit impulsive behaviors, are still developing. Problems in either or both of the two trends can translate into [risky behaviors](#)."

In fact, the leading causes of morbidity and mortality among adolescents in the United States involve decisions to engage in risky behaviors, including tobacco, alcohol, and drug use, as well as sexual behaviors that contribute to unintended pregnancy and [sexually transmitted diseases](#). Individual differences do exist, of course – and that's in part what has the research team so intrigued.

"We need to understand why a subset of adolescents are at risk for making the poor decisions that lead to drug addiction, sexually transmitted diseases, and other problematic health outcomes," said Jungmeen Kim-Spoon, an associate professor of psychology at Virginia Tech and the other study leader. "Identifying the adolescents most at risk is a critical public health priority."

In recognition of that priority, the National Institutes of Health recently awarded Kim-Spoon and King-Casas a five-year, \$3.5-million grant for research into the neurobehavioral determinants of [health risk behaviors](#) in adolescents.

"We expect our study to make a significant contribution to the field for several reasons," said Kim-Spoon. "Not only will we have a good-sized study population, but we'll also be combining longitudinal data with an emphasis on the individual trajectories of teenagers. In addition, we'll be complementing structural and functional brain imaging with self-report measures and a battery of behavioral and laboratory tasks aimed at teasing out underlying mechanisms for real-life risk-taking tendencies."

The scientists are now actively recruiting 13- and 14-year-olds to participate at the Virginia Tech Carilion Research Institute site in Roanoke or in Blacksburg to answer questionnaires, play computer games, and undergo structural and [functional brain imaging](#). Each adolescent will be participating alongside a primary caregiver.

After the initial visit, the families will return to one of the sites annually for the following three years, to enable the research team to map out the development of key brain regions and to understand what makes teens more or less likely to engage in risky behaviors. Both adolescents and caregivers will receive compensation for time and travel; each adolescent will also receive a compact disc with magnetic resonance images of his or her own brain. (Families interested in participating can visit the [study webpage](#) to learn more.)

Collaborating with King-Casas and Kim-Spoon on the study are Pearl Chiu, an assistant professor at the Virginia Tech Carilion Research Institute; Kirby Deater-Deckard, a professor of psychology at Virginia Tech; and Warren Bickel, director of the Addiction Recovery Research Center at the Virginia Tech Carilion Research Institute.

Together those scientists will be seeking an answer to a question parents have been asking about their teenagers for generations, if not millennia: What were they thinking?

Provided by Virginia Tech

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