

# Inside the teenage brain: New studies explain risky behavior

August 28 2014, by Doug Carlson

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It's common knowledge that teenage boys seem predisposed to risky behaviors. Now, a series of new studies is shedding light on specific brain mechanisms that help to explain what might be going on inside juvenile male brains.

Florida State University College of Medicine Neuroscientist Pradeep Bhide brought together some of the world's foremost researchers in a quest to explain why teenagers—boys, in particular—often behave erratically.

The result is a series of 19 studies that approached the question from multiple scientific domains, including psychology, neurochemistry, brain imaging, clinical neuroscience and neurobiology. The studies are published in a special volume of *Developmental Neuroscience*, "Teenage Brains: Think Different?"

"Psychologists, psychiatrists, educators, neuroscientists, criminal justice professionals and parents are engaged in a daily struggle to understand and solve the enigma of teenage [risky behaviors](#)," Bhide said. "Such behaviors impact not only the teenagers who obviously put themselves at serious and lasting risk but also families and societies in general.

"The emotional and economic burdens of such behaviors are quite huge. The research described in this book offers clues to what may cause such maladaptive behaviors and how one may be able to devise methods of countering, avoiding or modifying these behaviors."

An example of findings published in the book that provide new insights about the inner workings of a teenage boy's brain:

- Unlike children or adults, teenage boys show enhanced activity in the part of the brain that controls emotions when confronted with a threat. Magnetic resonance scanner readings in one study revealed that the level of activity in the limbic brain of adolescent males reacting to threat, even when they've been told not to respond to it, was strikingly different from that in adult men.
- Using brain activity measurements, another team of researchers found that [teenage boys](#) were mostly immune to the threat of punishment but hypersensitive to the possibility of large gains from gambling. The results question the effectiveness of punishment as a deterrent for risky or deviant behavior in adolescent boys.
- Another study demonstrated that a molecule known to be vital in developing fear of dangerous situations is less active in adolescent male brains. These findings point towards neurochemical differences between teenage and adult brains, which may underlie the complex behaviors exhibited by teenagers.

"The new studies illustrate the neurobiological basis of some of the more unusual but well-known behaviors exhibited by our teenagers," Bhide said. "Stress, hormonal changes, complexities of psycho-social environment and peer-pressure all contribute to the challenges of assimilation faced by teenagers.

"These studies attempt to isolate, examine and understand some of these potential causes of a teenager's complex conundrum. The research sheds light on how we may be able to better interact with teenagers at home or outside the home, how to design educational strategies and how best to treat or modify a teenager's maladaptive behavior."

Bhide conceived and edited "Teenage Brains: Think Different?" His co-editors were Barry Kasofsky and B.J. Casey, both of Weill Medical College at Cornell University. The book was published by Karger Medical and Scientific Publisher of Basel, Switzerland.

Provided by Florida State University

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