

Deficiencies in early brain activity linked to delinquent behavior in teens

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Credit: Florida International University

Lower levels of brain activity during childhood may lead to decreased self-control and, eventually, delinquent behavior in adolescence, according to a new study published by a team of researchers from FIU and the University of Michigan.

Adolescents who exhibited less activity in the part of the [brain](#) responsible for decision-making and [impulse control](#) showed lower self-control, as rated by their parents, one year later. Those same adolescents

were more likely to engage in delinquent behavior five years later.

Lower levels of brain activity can be the result of a myriad of factors, including head injury, exposure to abuse or neglect and genetics. Although the study did not examine the causes of low brain activity, it identified a link between brain activity and behavior later in life.

"Criminologists have spent more than a quarter of a century investigating the causes of low self-control, with most of the attention being directed at social factors like parenting practices, peer groups and neighborhood environments," said [criminal justice](#) professor Ryan Meldrum, who co-authored the study with clinical psychology professor Elisa Trucco. "Recently, however, there has been growing interest in identifying the neural underpinnings of low self-control. Our work identifies a key region of the brain that appears to play an important role in shaping an adolescent's ability to engage in self-control."

Published in the *Journal of Criminal Justice*, the study is one of the first in criminology to use neuroimaging technology that measures [brain activity](#). Meldrum and Trucco accessed data from the Michigan Longitudinal Study, an ongoing multi-generational study of the causes of substance abuse and other forms of antisocial behavior.

"This study highlights the importance of forming a team of researchers from different disciplines to understand a common problem, such as [delinquent behavior](#)," Trucco said. "Understanding early differences in the brain and behavior that are linked to later delinquency can help clinicians develop more targeted prevention programs for youth."

More information: Ryan Charles Meldrum et al. Brain activity, low self-control, and delinquency: An fMRI study of at-risk adolescents, *Journal of Criminal Justice* (2017). [DOI: 10.1016/j.jcrimjus.2017.07.007](#)

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