



Research Finds Psychopathic Individuals Are More Likely to Have a Larger Striatum Region in the Brain

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Neuroscientists have found that a region of the forebrain known as the striatum was on average 10% larger in individuals with psychopathy compared to a control group of individuals who had low or no psychopathic traits, according to a study.

Psychopathic individuals are generally defined as those who have an egocentric and antisocial personality, marked by a lack of remorse for their actions, a lack of empathy for others, and often criminal tendencies. The striatum is the subcortical region of the brain that contains the entire cerebrum and coordinates multiple aspects of cognition, including motor and action planning, decision-making, motivation, reinforcement, and reward perception.

Notably, although not all individuals with psychopathic traits end up breaking the law and not all criminals meet the criteria for psychopathy, there is a correlation. Clear evidence has linked psychopathy to more violent behavior, according to the study. Understanding the role of biology in antisocial and criminal behavior may help improve existing theories of behavior, as well as inform policy and treatment options.

"Our study's results help advance our knowledge about what underlies antisocial behavior such as psychopathy," said Olivia Choy, PhD, an assistant professor at Nanyang Technological University, in the press release. "We find that in addition to social environmental influences, it is important to consider that there can be differences in biology—in this case, the size of brain structures—between antisocial and non-antisocial individuals."

Earlier research has suggested that psychopaths may have an overly active striatum but have not conclusively determined the impact of its size on behaviors. The new study, conducted by researchers at Nanyang Technical University Singapore, the University of Pennsylvania, and California State University, reveals a significant biological difference between individuals who have psychopathic traits and those who do not.

In their study, the researchers scanned the brains of 120 participants in the United States and interviewed them using the Revised Psychopathy Checklist, which helps determine the presence of psychopathic traits in individuals. Through an analysis of the MRI scans and interviews, the researchers linked having a larger striatum to an increased need for stimulation through thrills and excitement, and a higher likelihood of impulsive behaviors.



receives signals from the cerebral cortex, which controls cognition, social behavior, and discerning which sensory information warrants attention. In the past 20 years, however, the understanding of the striatum has expanded, with hints that the region is linked to difficulties in social behavior.



However, earlier studies have not addressed whether striatal enlargement is observed in adult women with psychopathic traits. Within the study of 120 individuals, the researchers examined 12 women and observed, for the first time, that psychopathy was linked to an enlarged striatum in females, just as in males. In human development, the striatum typically becomes smaller as a child matures, suggesting that psychopathy could be related to differences in brain development.

"A better understanding of the striatum's development is still needed," Choy said in the press release. "Many factors are likely involved in why one individual is more likely to have psychopathic traits than another individual. Psychopathy can be linked to a structural abnormality in the brain that may be developmental in nature. At the same time, it is important to acknowledge that the environment can also have effects on the structure of the striatum."

REFERENCE

Study finds psychopathic individuals are more likely to have larger striatum region in the brain. News release. Nanyang Technological University; May 10, 2022. Accessed May 11, 2022. https://www.ntu.edu.sg/docs/default-source/corporate-ntu/hub-news/study-finds-psychopathic-individuals-are-more-likely-to-have-larger-striatum-region-in-the-brain.pdf?sfvrsn=fd7259b3_1

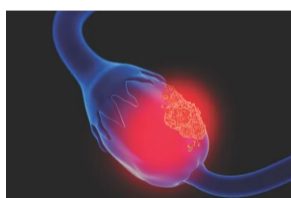
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