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Scans Show Psychopaths Have Brain Abnormalities

By JANICE WOOD Associate News Editor
Reviewed by John M. Grohol, Psy.D. on May 11, 2012

New research shows that psychopathy is linked to specific structural abnormalities in the brain.

The study, published in the *Archives of General Psychiatry* and led by researchers at King's College London, also confirmed that psychopathy is a distinct sub-group of [antisocial personality](#) disorder (ASPD), said Nigel Blackwood, M.D., from the College's Institute of Psychiatry and lead author of the study.

He noted that most violent crimes are committed by a small group of male offenders with ASPD, but only about a third of these men are true psychopaths (ASPD+P). Psychopaths are characterized by a lack of empathy and remorse, and use aggression in a planned way to secure what they want, whether it is status or money.

Previous research has shown that psychopaths' brains differ structurally from healthy brains, but until now, none have examined these differences within a population of violent offenders with ASPD, Blackwood said.

"Using MRI scans we found that psychopaths had structural brain abnormalities in key areas of their 'social brains' compared to those who just had ASPD," he said.

He noted there is a clear difference between those with ASPD and those with ASPD+P.

"We describe those without psychopathy as hot-headed and those with psychopathy as cold-hearted," he said.

"The cold-hearted psychopathic group begin offending earlier, engage in a broader range and greater density of offending behaviors, and respond less well to treatment programs in adulthood, compared to the hot-headed group. We now know that this behavioral difference corresponds to very specific structural brain abnormalities which underpin psychopathic behavior, such as profound deficits in empathizing with the distress of others."

The researchers used magnetic resonance imaging (MRI) to scan the brains of 44 violent offenders diagnosed with ASPD. Crimes committed included murder, rape, attempted murder and grievous bodily harm. Of these, 17 met the diagnosis for psychopathy (ASPD+P) and 27 did not (ASPD-P). They also scanned the brains of 22 healthy non-offenders.

The study found that ASPD+P offenders displayed significantly reduced grey matter volumes in the anterior rostral prefrontal cortex and temporal poles compared to ASPD-P offenders and healthy non-offenders.

These areas are important in understanding other people's emotions and intentions and are activated when people think about moral behavior, the researchers noted. Damage to these areas is associated with impaired empathizing with other people, a poor response to fear and distress, and a lack of self-conscious emotions such as guilt or embarrassment.

"Identifying and diagnosing this sub-group of violent offenders with brain scans has important implications for treatment," Blackwood continued. "Those without the syndrome of psychopathy, and the associated structural brain damage, will benefit from cognitive and behavioral treatments. Optimal treatment for the group of psychopaths is much less clear at this stage."

Source: [King's College London](#)



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APA Reference

Wood, J. (2012). Scans Show Psychopaths Have Brain Abnormalities. *Psych Central*. Retrieved on February 9, 2013, from <http://psychcentral.com/news/2012/05/11/scans-show-psychopaths-have-brain-abnormalities/38540.html>

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Site last updated: 9 Feb 2013