

Psychopathy linked to white-matter abnormalities in impulsive male offenders

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Credit: Radboud University

Impulsive offenders with psychopathic traits have abnormal brain connections. The integrity of their so called 'white-matter' tracts between brain areas is decreased. Researchers from Radboud University and the

Dutch Institute for Forensic Psychiatry and Psychology publish these findings in *Neuropsychology*.

Psychopathy is characterized by a lack of empathy and remorse, shallow affect, and manipulative, impulsive and [antisocial behaviour](#). Many criminals show [psychopathic traits](#), but the severity and expression vary strongly from person to person.

One psychopath is unlike the other

Psychopathy is not a one-dimensional construct: some psychopaths are manipulative and show thought out [behaviour](#), other psychopaths act impulsively and are antisocial. Previous research into the link between [psychopathy](#) and abnormalities in the brain did not distinguish these subtypes of psychopathy. To research a homogenous group, the researchers distinguished between impulsive males and non-impulsive males. Impulsivity is a predictor for [criminal behaviour](#): the more impulsive you are, the more likely you are going to commit a crime.

The researchers investigated 25 males suspected of committing a serious crime, such as murder or rape. They were scored on the presence of psychopathic traits and white-matter tracts in the brain were looked at via brain scans. White-matter tracts are like highways, they are important for the conjunction of different [brain areas](#). From these scans, the researchers determined that there is link between psychopathic traits and white-matter abnormalities in impulsive offenders.

When the researchers further looked at this finding, it appeared that the emotional traits of psychopathy were primarily linked to white-matter abnormalities. An important abnormality is the tract between the frontal part of the brain, the prefrontal cortex, and a brain area at the side of the brain, the amygdala. These two parts of the [brain](#) are involved in control and processing of emotions. Anouk Vermeij, researcher at the Dutch

Institute for Psychiatry and Psychology: "You can compare these abnormalities in white matter to bad quality highways: if the quality of the pavement is insufficient, traffic will stop. You can imagine that white-matter abnormalities may cause problems consistent with criminal behaviour, such as problems with impulse control and processing of emotions."

These findings emphasize the need to map the differences between criminals with psychopathic traits. "On a group level, when there was no distinction in impulsivity, we saw no link between psychopathic traits and white-matter integrity. At this moment, there is no sufficient treatment for psychopathy, because of these large differences in behaviour. Further research should focus on gaining insight in the cognitive functions that are disturbed in impulsive offenders. These disturbances could be targets for treatment: if you know which cognitive functions are disturbed, you are able to target these with training. In addition, the distinction in subtype of psychopathy is important for early diagnosis," as said by Vermeij.

More information: Anouk Vermeij et al. Affective traits of psychopathy are linked to white-matter abnormalities in impulsive male offenders., *Neuropsychology* (2018). DOI: [10.1037/neu0000448](https://doi.org/10.1037/neu0000448)

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