

Biological differences in brain found in psychopaths: Study

Clara Chong

People with larger striatum are more likely to exhibit impulsive and sometimes psychopathic behaviour, which includes anti-social and egocentric traits, a study has found.

Researchers noted that the striatum, a region of the forebrain, was on average 9 per cent larger in psychopathic individuals compared with a control group who had low or no psychopathic traits.

The striatum coordinates multiple aspects of cognition such as decision-making, while the forebrain controls the display of emotions and motor function and is the centre of language, intelligence and thinking.

The research team comprised neuroscientists from Nanyang Technological University (NTU), the University of Pennsylvania and California State University.

The study has established a biological link, where a larger striatum has been associated to a larger appetite for stimulation and impulsive behaviour.

Previously, studies have linked an overly active striatum to psychopathic behaviour but did not con-



The study found that having a larger striatum – a region of the forebrain – is associated with more psychopathy, said Assistant Professor Olivia Choy, a member of the research team. PHOTO: NTU

clusively establish the relationship between the striatum's size and a person's behaviour.

The striatum typically becomes smaller as a child matures, suggesting that psychopathy could be related to differences in how the brain develops or some developmental abnormality.

In general, about one in 100 people are psychopaths, who are generally defined as individuals who have an egocentric and anti-social personality.

This is normally marked by a lack of remorse for their actions, a lack of empathy for others, and often criminal tendencies.

People in the community can have psychopathic traits to different extents, but not everyone with psychopathic traits end up breaking the law.

Not all criminals are psychopaths as well, and for psychopaths, legal action is taken only on those whose psychopathic traits have led them to engage in criminal activities, said Assistant Professor Olivia Choy from NTU's School of Social Sciences yesterday.

Through analyses of the magnetic resonance imaging scans and results from in-person interviews of 120 participants in the United States in 2016, researchers linked

having a larger striatum to an increased need for stimulation, through thrills and excitement, and a higher likelihood of impulsive behaviour.

The results of the study were published in March in peer-reviewed academic publication *Journal of Psychiatric Research*.

The study considered previous research done on the striatum and psychopathy, and found that having a larger striatum is associated with more psychopathy, said Prof Choy, a neurocriminologist who co-authored the study. This mirrored findings across different samples of people and geography.

Prof Choy noted that other than having a larger striatum, there are also other factors that cause a person to have criminal or aggressive tendencies.

As for curbing aggressive and impulsive tendencies before people turn to criminal acts, Prof Choy said that one line of research involves looking at safe, non-invasive ways, such as via nutrition.

"Omega-3 fatty acids have been shown to help the development of the prefrontal cortex – the frontal part of the brain – which is related to impulse control," she said.

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