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Antisocial behavior shows in teenage brain scans

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LONDON Brain scans of aggressive, antisocial teenage boys with the condition known as conduct disorder have found differences in the size and structure of parts of the brain that may be linked to their behavior.

A study by British scientists showed the differences were there regardless of the age at which the patients developed the disorder -- a finding which challenges the view that adolescents who develop conduct disorder are merely imitating badly behaved peers and do not have differences in their brains.

Conduct disorder (CD) is a psychiatric condition characterized by higher than normal levels of aggressive and antisocial behavior. It is more common in boys than girls, can develop in childhood or in adolescence, and experts say it affects around five out of every 100 teenagers. Children and adolescents with CD are at greater risk of developing further mental and physical health problems when they are adults.

In the study, neuroscientists at the University of Cambridge and the Medical Research Council's Cognition and Brain Sciences Unit used magnetic resonance imaging to measure the size of particular regions in the brains of 63 teenage boys with conduct disorder compared with 27 teenage boys who showed no symptoms of behavioral disorder.

Their findings, published in the American Journal of Psychiatry on Friday, showed that the amygdala and insula -- regions of the brain that contribute to emotion perception, empathy and recognizing when other people are in distress -- were strikingly smaller in teenagers with antisocial behavior.

The changes were present both in those with childhood-onset CD and in adolescence-onset CD, and the greater the severity of the behavior problems, the greater the reduction in the volume of the insula, the scientists said.

"Changes in grey matter volume in these areas of the brain could explain why teenagers with conduct disorder have difficulties in recognizing emotions in others," said Graeme Fairchild, who led the research and is now based at the Britain's Southampton University.

He said more studies were needed to investigate whether these changes in brain structure are a cause or a consequence of conduct disorder.

(Editing by Steve Addison)

**TELEGRAPH**

**Brain link to anti-social and yobbish behaviour in teenagers**

[Richard Alleyne](http://www.telegraph.co.uk/journalists/)

By [Richard Alleyne](http://www.telegraph.co.uk/journalists/richard-alleyne/), Science Correspondent

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**Bad behaviour in teenagers could be explained by stunted growth of the "caring-sharing" areas of their brains, study suggests.**

Scientists have found that yobs and hoodies have smaller regions of the brain that deal with emotions especially fear and the ability to feel the pain of others.

This suggests that their anti-social behaviour could have a biological basis and could lead to possible new treatments.

The study led by Cambridge University attempted to explain why five per cent of school age children suffer from Conduct Disorder (CD), a recognised psychiatric condition characterised by aggressive and anti-social traits.

They looked at 63 boys with an average age of 18 with CD, some of whom developed problems at an early age and some who began to display anti-social behaviour in adolescence.

They were compared with a group of 27 "normal" teenagers from similar backgrounds.

Brain scans showed that two regions were significantly smaller in affected teenagers, including those who only became badly behaved when they reached adolescence.

The two areas were the amygdala and insula, which contribute to emotional perception, empathy, and the ability to recognise when others are in distress.

Rates of CD have increased sharply around the world since the 1950s.

The condition can develop in young children, or not show itself until the teenage years.

Those affected are at greater risk of mental problems, substance abuse and criminality in later life.

It has long been thought that adolescent-onset CD is merely the result of susceptible teenagers imitating badly-behaved peers.

But the new research challenges this view, pointing to brain changes that affect all youngsters with the condition.

The scientists are cautious about how to interpret the findings, published in the American Journal of Psychiatry.

Professor Ian Goodyer, one of the researchers, said: "We hope that our results will contribute to existing psychosocial strategies for detecting children at high risk of developing anti-social behaviour."

He stressed their study had not demonstrated a foolproof "test" and only provided a springboard for further, more extensive, research.

He said environmental and family factors also played a part.

Dr Graeme Fairchild, co-author from the University of Southampton, said: Changes in grey matter volume in these areas of the brain could explain why teenagers with conduct disorder have difficulties in recognising emotions in others.

"Further studies are now needed to investigate whether these changes in brain structure are a cause or a consequence of the disorder."

Dr Andy Calder, from the Medical Research Council's Cognition and Brain Sciences Unit, another author, said: "Only when we are confident that we understand why the disorder develops can we apply this knowledge to the further development and evaluation of treatments.

"The disorder has a devastating impact on families and communities and at the moment we have few effective treatments."