

Brain changes seen in kids with conduct disorder

July 17 2024, by Ernie Mundell



Defiance, tantrums, aggression: All signs of a condition called conduct disorder, which [Mental Health America](#) says affects up to 16% of boys and 9% of girls.

Now, research is revealing real differences in the brain structure of children and youths with [conduct disorder](#), compared to those without the condition.

Specifically, the study of the brains of people ages 7 through 21 found that the brain's outer layer, the [cerebral cortex](#), was smaller than is typical for people with conduct disorder.

"Conduct disorder has among the highest burden of any mental disorder in youth," noted study co-author Dr. Daniel Pine. "However, it remains understudied and under-treated."

"Understanding brain differences associated with the disorder takes us one step closer to developing more effective approaches to diagnosis and treatment, with the ultimate aim of improving long-term outcomes for children and their families," said Pine. He's chief of the Section on Development and Affective Neuroscience at the National Institute of Mental Health (NIMH).

The new study was published July 16 in the journal [Lancet Psychiatry](#). In their research, Pine and his colleagues used MRI scans to examine the brains of about 2,400 children and youth who'd enrolled in 15 different studies from around the world. About half of the participants had been diagnosed with conduct disorder while the other half had not.

The scans looked specifically at the thickness of each person's cerebral cortex, as well as the volume of deeper "subcortical" [brain regions](#).

Compared to kids and [young adults](#) unaffected by conduct disorder, those with the condition differed in terms of the thickness of their cerebral cortices.

They also "had lower volume in several subcortical brain regions,

including the amygdala, hippocampus and thalamus," according to a news release from the NIMH. These regions are known to be key to behavioral regulation.

In prior studies, the [prefrontal cortex](#) and amygdala had already been implicated as playing possible roles in conduct disorder, but the new study has pinpointed other brain regions.

No differences in terms of brain changes were noted between girls and boys with conduct disorder.

However, young people with more severe forms of conduct disorder—for example, they had low levels of empathy, remorse or guilt—tended to display the largest [brain differences](#) on MRI, the research team said.

According to the authors, the new study is the largest to date and supports the notion that physical changes in the brain might drive conduct disorder.

"The study also provides novel evidence that brain changes are more widespread than previously shown, spanning all four lobes and both cortical and subcortical regions," according to the NIMH news release.

The good news: The findings could give researchers a new foothold in pursuing the cause and treatment of conduct disorder, the team said.

More information: Yidian Gao et al, Cortical structure and subcortical volumes in conduct disorder: a coordinated analysis of 15 international cohorts from the ENIGMA-Antisocial Behavior Working Group, *The Lancet Psychiatry* (2024). [DOI: 10.1016/S2215-0366\(24\)00187-1](#)

Find out more about conduct disorder at [Yale Medicine](#).

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Citation: Brain changes seen in kids with conduct disorder (2024, July 17) retrieved 17 August 2024 from <https://medicalxpress.com/news/2024-07-brain-kids-disorder.html>

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