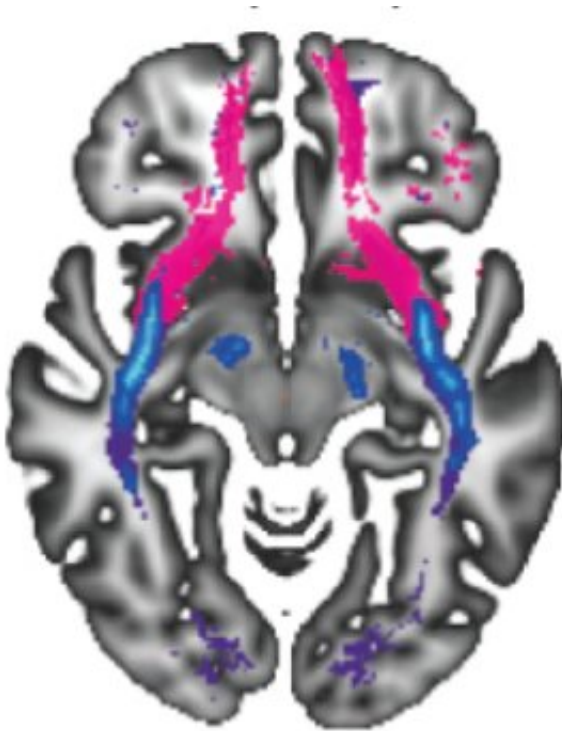


# Pathways in the young brain are associated with susceptibility for mental disorders

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Brain map showing the fiber tracts that were associated with higher levels of psychiatric symptoms in youth. Credit: University of Oslo

Adolescence is a period for individual growth and opportunities, but it also coincides with the emergence of many mental disorders. In a study that was recently published in *JAMA Psychiatry*, Norwegian researchers revealed that the pathways between brain regions are associated with

early signs of mental illness in youth.

The researchers analyzed a wide range of clinical, cognitive, and genetic data from more than 6000 children and adolescents. They derived a score of general cognitive ability as well as early signs of psychiatric symptoms for each individual, and analyzed images of pathways in the brain of more than 700 of the participants using advanced machine learning techniques.

The study showed that the score of preclinical psychiatric symptoms was heritable and associated with disruption of specific pathways in the brain.

"We found that disruption of fiber tracts connecting [brain regions](#) involved in emotional regulation and complex cognitive behavior was linked to higher levels of [psychiatric symptoms](#). Although follow-up studies are needed, this suggests that aberrant connections between specific brain regions present at a young age may be associated with increased susceptibility for [mental illness](#) later in life, says lead author Dag Alnæs.

Even though [mental disorders](#) typically manifest in adolescence and early adulthood, the vulnerability for developing disease may be present before any overt symptoms arise. "The ultimate goal is to be able to predict which individuals are at risk before clinical symptoms appear," associate professor Lars T. Westlye says. "Advanced brain imaging has been proposed to represent one promising approach for such early detection. However, at present there is no robust [brain](#) imaging marker that allows us to identify single individuals at risk with any clinically relevant certainty, but our study is one of several recent attempts to provide a first step towards this goal."

**More information:** Dag Alnæs et al. Association of Heritable

Cognitive Ability and Psychopathology With White Matter Properties in Children and Adolescents, *JAMA Psychiatry* (2018). [DOI: 10.1001/jamapsychiatry.2017.4277](https://doi.org/10.1001/jamapsychiatry.2017.4277)

Provided by University of Oslo

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