

# Distinct brain region alterations in youth with psychosis spectrum disorders

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Psychotic spectrum (PS) disorders are characterized by abnormalities in beliefs, perceptions and behavior, but how these disorders manifest themselves in earlier development stages is largely unknown. A new study in the *Journal of the American Academy of Child and Adolescent Psychiatry (JAACAP)* reports differences in brain structure among youth with PS disorders relative to typically developing youth.

The study found surface area reductions in a number of cortical brain regions in comparison to typically developing youth; youth with bipolar [spectrum](#) disorders; and youth with both psychosis and bipolar spectrum [disorders](#). The brain regions involved are important for everyday functioning and cognitive abilities.

"Psychosis is viewed as a psychiatric disorder that arises from neurodevelopmental alterations. However, until recently, the focus of neuroimaging studies has been on adults who have already developed a psychotic disorder," said lead author Maria Jalbrzikowski, Ph.D., Assistant Professor in the Department of Psychiatry at the University of Pittsburgh School of Medicine, Pittsburgh, PA, U.S.. "With access to large, publicly available datasets such as the Philadelphia Neurodevelopmental Cohort, we can really start to investigate how alterations in neurodevelopment contribute to the development of psychotic symptoms."

The findings are based on the structural neuroimaging analyses conducted on participants from the Philadelphia Neurodevelopmental Cohort (PNC), a population-based sample of 10,000 youth in the Philadelphia metro area, between the ages of 9 and 22 years old.

Structural magnetic resonance neuroimaging (MRI) data were collected on a subset of the cohort (N= 989), followed by measuring the cortical thickness, surface areas of the brain. Subcortical volumes

were then calculated; study participants were assessed for psychiatric symptomatology using a structured interview and the following groups were created: typically developing (n= 376); psychosis spectrum (n= 113); bipolar spectrum (n= 117); and PS + bipolar spectrum (n= 109).

Compared with all other groups, PS youth exhibited significantly decreased surface area in the orbitofrontal, cingulate, precentral, and postcentral regions. PS youth also exhibited decreased thalamic volume compared with all other groups. The [brain](#) alterations were restricted to youth with only PS symptoms, not [youth](#) who exhibited both psychosis spectrum and bipolar spectrum symptoms.

"This suggests that those who have both types of symptoms (psychosis and bipolar spectrum) may have different underlying neural mechanisms that contribute to symptoms, in comparison to those with psychotic spectrum symptoms only," said Dr. Jalbrzikowski.

**More information:** Maria Jalbrzikowski et al. Structural Brain Alterations in Youth With Psychosis and Bipolar Spectrum Symptoms, *Journal of the American Academy of Child & Adolescent Psychiatry* (2019). [DOI: 10.1016/j.jaac.2018.11.012](https://doi.org/10.1016/j.jaac.2018.11.012)

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