

# Depression during pregnancy is associated with abnormal brain structure in children

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Depressive symptoms in women during and after pregnancy are associated with reduced thickness of the cortex—the outer layer of the brain responsible for complex thought and behavior—in preschool-age kids, according to a new study published in *Biological Psychiatry*. The findings suggest that a mother's mood may affect her child's brain development at critical stages in life.

"Mothers generally want to do everything they can to give their offspring the best possible chance of success in life. They often make sure to eat well and to take special vitamins," said John Krystal, Editor of *Biological Psychiatry*. "This new study now suggests that another thing they may be able to do is to make sure that they are treated for their depression."

Eighteen percent of women experience depression some time during pregnancy, and both perinatal and postpartum depression have been associated with negative outcomes in children. The new study, led by Catherine Lebel of the University of Calgary in Alberta, is the first to report associations between maternal depression and abnormal [brain structure](#) in kids at this age.

The researchers screened 52 women for [depressive symptoms](#) during each trimester of pregnancy and a few months after the child was born. The women ranged in the presence of symptoms, some with no or few symptoms, and some meeting the screening criteria for depression. When the children reached about 2.5 to 5 years old, the researchers used magnetic resonance imaging to measure their brain structure.

Women with higher depressive symptoms tended to have children with thinner frontal and temporal areas, cortical regions implicated in tasks involving inhibition and attention control. The researchers also found an association between depressive symptoms and abnormal white matter in the frontal area, the fiber tracts connecting the region to other areas in the brain.

These associations were only found when symptoms occurred during the second trimester and postpartum, suggesting these periods are particularly critical times for child brain development.

Cortical thinning is a normal aspect of brain development during early childhood, so Lebel says the findings suggest that the brain may be developing prematurely in children whose mothers experience more depressive symptoms.

Abnormalities in brain structure during critical periods in development have often been associated with negative outcomes, such as learning disabilities and behavioral disorders. Additionally, the [brain](#) structure

abnormalities identified in this study reflect those found in children with depression or at high risk for developing the disorder, suggesting that these alterations may be why children of mothers with perinatal depression are more vulnerable to [depression](#) later in life.

Although the mechanism behind the association remains a mystery, the findings may have implications for minimizing risks of atypical [brain development](#) in [children](#).

"Our findings underscore the importance of monitoring and supporting mental health in mothers not just in the postpartum period, but also during pregnancy," said Lebel.

**More information:** Catherine Lebel et al, Prepartum and Postpartum Maternal Depressive Symptoms Are Related to Children's Brain Structure in Preschool, *Biological Psychiatry* (2016). [DOI: 10.1016/j.biopsych.2015.12.004](#)

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