

Are there sex-based differences in brain development during early childhood?

March 22 2023



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New research published in *Human Brain Mapping* reveals sex differences and developmental changes in the brain's white matter—which provides communication between different parts of the brain—in healthy, typically developing infants and 5-year-olds.

The results, which highlighted sexual dimorphism in [brain structure](#) during development with significant detectable differences in multiple regions at the age of 5 years, agree with prior studies showing earlier brain development in females.

Also, changes in white matter asymmetry patterns occurred during early childhood, and in 5-year-olds the pattern already resembled adult-like patterns.

"We observed [sex differences](#) in white matter microstructure of 5-year-olds that may, in light of previous literature, be a transient feature during brain development," said corresponding author Venla Kumpulainen, MSc, MD, of the University of Turku, in Finland. "More investigations are required to examine whether these findings associate with developmental cognitive and emotional differences between girls and boys."

More information: Sex differences, asymmetry and age-related white matter development in infants and 5-year-olds as assessed with Tract-Based Spatial Statistics, *Human Brain Mapping* (2023). [DOI: 10.1002/hbm.26238](#)

Provided by Wiley

Citation: Are there sex-based differences in brain development during early childhood? (2023, March 22) retrieved 2 May 2024 from <https://medicalxpress.com/news/2023-03-sex-based-differences-brain-early-childhood.html>

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