

Stress and trauma in earliest years linked to reduced hippocampal volume in adolescence

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Stressful or traumatic experiences occurring in a child's earliest years—birth to age 5—have been linked to reduced hippocampal volume in adolescence, according to a new Vanderbilt University report

published in *Developmental Science*.

"These findings tell us that there may be a 'sensitive period' in which stress is more likely to affect the development of the hippocampus, which is connected to learning, memory and mood," said lead author Kathryn L. Humphreys, assistant professor of psychology at Vanderbilt. "Given that the hippocampus undergoes rapid changes in the first years of life, the effects of stressful experiences during this period, even those the child doesn't remember, may be particularly important in understanding the development of this region of the brain."

In the study, 178 early adolescents underwent structural magnetic resonance imaging. They were interviewed using a modified version of the Traumatic Events Screening Inventory for Children. More than 30 different stressors were examined, including parental divorce, moving to a new community, separation from a loved one, illness or death of a close friend or family member, witnessing violence and experiencing abuse.

"This work underscores the plasticity and vulnerability of the brain in [early life](#)," Humphreys said. "Our findings have important clinical implications given that smaller [hippocampal volume](#) has been prospectively linked to a number of outcomes, including vulnerability to psychopathology following trauma, poorer antidepressant treatment response and memory deficits."

More information: Kathryn L. Humphreys. Future Directions in the Study and Treatment of Parent–Child Separation, *Journal of Clinical Child & Adolescent Psychology* (2018). [DOI: 10.1080/15374416.2018.1534209](#)

Kathryn L. Humphreys et al. Evidence for a Sensitive Period in the Effects of Early Life Stress on Hippocampal Volume, *Developmental*

Science (2018). [DOI: 10.1111/desc.12775](https://doi.org/10.1111/desc.12775)

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