

Childhood Adversity Impacts Brain Structure

A new study emphasizes the impact structural racism plays in brain development.

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Black children face adversity more often than white children, which can lead to changes in regions of the [brain](#) connected to psychiatric conditions, such as [posttraumatic stress disorder](#), according to a new study led by McLean Hospital, a member of Mass General Brigham.

MRIs showed that Black children had lower gray matter volumes in important parts of the brain compared with white children. The affected brain areas include the amygdala, which influences the way a person processes fear; the hippocampus, which aids in memory formation; and the prefrontal cortex, which regulates the emotional and threat response to fear.

Nathaniel Harnett, PhD, the director of the Neurobiology of Affective Traumatic Experiences Laboratory at McLean Hospital, and his team analyzed surveys and MRI brain scans of about 1,800 Black children and 7,300 white children between ages 9 and 10. Researchers emphasized that the experience of adversity was the significant differentiating factor between Black and white children, with household income being the most common predictor of differences in brain volume. However, the study also found that white children's parents were three times more likely to be employed than Black children's parents and attained a higher level of education compared with Black children's parents.

"Our research provides substantial evidence of the effects structural racism can have on a child's developing brain, and these small differences may be meaningful for their mental health and well-being through adulthood," Harnett said in a [Mass General Brigham news release](#). "The disparities in lived adversity is what drove these differences."

Published in the [American Journal of Psychiatry](#), the study aims to fill a gap in the limited research covering the way racism may cause changes in the brain for different groups of people.

"The dataset in our study included children younger than 10 years old—children who have no choice in where they are born, who their parents, are and how much adversity they are exposed to," Harnett said. "These findings offer another chilling reminder of the public health impact of structural racism and how crucial it is to address these disparities in a meaningful way."

