

Anti-Poverty Programs May Help Reduce Disparities in Brain Development and Mental Health Symptoms in Children

NIH study identifies potential value of financial support programs to decrease health impacts of socioeconomic inequities.

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States that provide stronger social safety nets have lower socioeconomic disparities in the brain development and mental health of children 9 to 11 years old, according to research supported by the National Institute on Drug Abuse (NIDA) at the National Institutes of Health. The disparity in brain structure between children from high- versus low-income households was more than a third lower in states with greater cash assistance than in those offering less, and the disparity in mental health symptoms was reduced by nearly a half.

The study, published in [Nature Communications](#), highlights the impact that socioeconomic inequities can have on a child's brain development, but demonstrates that this gap can be mitigated through state anti-poverty programs, such as Earned Income Tax Credit, Temporary Assistance for Needy Families, and Medicaid.

The findings reflect data from the large, multisite Adolescent Brain Cognitive Development Study (ABCD Study), led by NIDA. Researchers from Harvard University in Cambridge, Mass.; and Washington University, St. Louis, analyzed ABCD Study data from more than 10,000 youth across 17 states that differ in their cost of living and anti-poverty policies.

Emerging evidence has shown that children from families with lower income relative to children from families with higher income exhibit smaller hippocampal volume. The hippocampus plays a critical role in memory and emotional learning.

"Multiple studies have found associations between the brain changes shown in this research and meaningful impacts such as low test scores, lack of school readiness, and risk factors for mood disorders," said NIDA Director Nora Volkow, MD. "Investigating the policy factors that are associated with brain development and mental health is an important part of better understanding health inequities that impact people throughout their lives, starting in critical periods of

development.”

Replicating findings from smaller studies, the research team first validated that lower family income is associated with smaller hippocampal volume and more symptoms of mental health conditions like anxiety, depression, aggression, impulsivity, and inattention among the 9-to 11-year-old participants. They expected these disparities among families with a high versus low income to be exacerbated in more expensive states, where the high cost of living places additional strain on low-income households.

As hypothesized, differences in hippocampal volume between children from high- and low-income families were greater in states with a higher cost of living. However, the availability and benefit value of monetary assistance programs in higher cost-of-living states reduced this disparity by 34%, and similarly, in states with Medicaid expansion, the disparity was reduced by 43%. Overall, more expensive cost-of-living states with anti-poverty programs in more expensive states had narrower gaps in income-associated differences in brain structure.

Similar levels were observed in states with the lowest cost of living.

Additionally, the income-associated disparity in some mental health symptoms like anxiety and depression was 48% lower in expensive states with larger cash benefits than in states with lower cash benefits. These patterns remained significant when controlling for numerous state-level social, economic, and political characteristics, including population density, education equity, incarceration rates, and gender equity.

“The association between brain structure and a low-resource environment is not an inevitability,” said study author David Weissman, PhD, a postdoctoral fellow in the Stress and Development Lab at Harvard University. “Children’s brains are undergoing substantial development and have enhanced plasticity or capacity for further change based on their environment. These data suggest that policies and programs that work to reduce social and health inequities can directly reach children in disadvantaged environments and help support their mental health.”

Weissman and his team – which included Katie McLaughlin, PhD; Mark Hatzenbuehler, PhD; and Mina Cikara, PhD, at Harvard and Deanna Barch, PhD, at Washington University, St. Louis – also note that this is a correlational study, and there are many other factors for consideration to pinpoint exactly why disparities in brain development and mental health exist along different income levels. In future research, they hope to explore impacts of experimental cash-assistance interventions as well as other real-world policy changes to see how they relate to differences in mental health and brain structure in children.

For more information on substance and mental health treatment programs in your area, call the free and confidential [National Helpline](https://www.findtreatment.gov) 1-800-662-HELP (4357) or visit [www.FindTreatment.gov](https://www.findtreatment.gov).

This [news release](#) was published by the National Institutes of Health on May 2, 2023.

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