

Study suggests neighborhood opportunities influence infant development and cognition

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Growing up in neighborhoods with more educational and socioeconomic

opportunities has a positive impact on infants' brain activity, according to new research from Boston Medical Center (BMC). The study, [published](#) in *The Journal of Developmental & Behavioral Pediatrics*, suggests that enhancing neighborhood opportunities, particularly in education, can be a promising approach to promoting early childhood development.

A team of early childhood researchers examined how neighborhood opportunity—the socioeconomic, educational, health, and [environmental conditions](#) relevant to [child health](#) and development—is associated with infant [brain activity](#) and cognitive development.

The researchers found that infants in neighborhoods with more opportunities have greater brain function at six months of age. In areas with better educational opportunities, these brain differences are also related to better cognition at 12 months old.

"This study highlights that even in infancy, neighborhoods matter for [child development](#). Our findings suggest that focusing on neighborhood opportunities, like increasing access to high-quality education, can promote child neurodevelopment," said Mei Elansary, MD, MPhil, a developmental behavioral pediatrician at BMC and Assistant Professor of Pediatrics at Boston University Chobanian & Avedisian School of Medicine.

The researchers collected their data from 65 infants in community pediatric practices in the Boston and Los Angeles areas. The team examined whether associations between neighborhood opportunity and children's [cognitive development](#) at 12 months of age could be explained by differences in brain activity at six months of age, measured by electroencephalography (EEG). Cognitive development was measured using the Mullen Scales of Early Learning (MSEL), a standardized play-based developmental assessment.

Elansary and colleagues found that higher levels of neighborhood opportunity are associated with greater absolute EEG power in mid-to-high-frequency bands in six months old infants. These EEG measurements are related to better language and cognitive scores later in childhood, suggesting a neuroprotective role of living in higher opportunity neighborhoods early in life.

The team also found that higher levels of educational opportunity, specifically, are associated with better MSEL scores. This means that neighborhoods with more [educational opportunities](#), like high quality center-based care, may provide more resources to get kids engaged in cognitively simulating activities and enhance their development.

"Prior work has focused on the role of socioeconomic disadvantages in child development. Our study aims to shift the conversation towards solutions for improving the environments that kids experience in [early childhood](#) to support their development and address inequalities," says Elansary.

"Given that race and ethnicity have been strongly associated with differential access to high opportunity neighborhoods, it is important to think about ways to promote access to these places for all families."

More information: Mei Elansary et al, Association of Neighborhood Opportunity with Infant Brain Activity and Cognitive Development, *Journal of Developmental & Behavioral Pediatrics* (2024). [DOI: 10.1097/DBP.0000000000001249](#)

Provided by Boston Medical Center

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