



Study Summary

ECHO Researchers Study the Relationship Between Maternal Education and Children's Neurocognitive Development Over Time

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Who sponsored this study?

The Environmental influences on Child Health Outcomes (ECHO) Program, Office of the Director, National Institutes of Health supported this research.

Why was this study needed?

Previous research has found a relationship between maternal education and children's neurocognitive functions, but many of these studies have focused on early childhood. In addition, many previous studies have treated maternal education as something that doesn't change over time. Few studies have explored whether a mother's education level over the course of their child's development might associate with neurocognitive function. ECHO researchers wanted to examine the relationship between changes in a mother's education over time and their children's later neurocognitive functioning, such as executive function and language skills.

What were the study results?

A mother's education level during pregnancy and infancy was associated with children's language and executive function. Increases in maternal education were related to improved language performance but were not associated with executive functioning performance.

Footnote: Results reported here are for a single study. Other or future studies may provide new information or different results. You should not make changes to your health without first consulting your healthcare professional.

What was the study's impact?

The study suggests that early maternal education is strongly associated with later child neurocognitive outcomes. In the study, changes in maternal education were also associated with some of these outcomes. These results suggest that further examining these associations can provide important insights that can help inform policies and interventions designed to foster neurocognitive development.

Who was involved?

The study included 2,688 children, adolescents, and young adults from 3 to 20 years of age at ECHO research sites in 42 states across the U.S.

What happened during the study?

Mothers reported their own education levels during pregnancy and their child's infancy, and again, years later when their children's neurocognitive functions were also assessed. For both periods, the study categorized the mother's education level into one of five groups—less than high school; high school or GED equivalent degree; some college, associate degree or trade school; bachelor's degree; and graduate degree. The same categories were used to measure maternal education during childhood. Maternal education and income are two commonly used indicators of socioeconomic status. However, missing income data in this study prevented investigators from fully assessing the impact of socioeconomic status and income on neurocognitive skills.

Researchers also measured child participants' cognitive abilities during childhood, adolescence, or young adulthood using the [NIH Toolbox Cognition Battery](#). These tests assess aspects of cognition including language, memory, and problem solving. Test results created scores that reflected language skills, executive function, and overall brain function. The analysis included child participants who contributed at least one score.

What happens next?

While this study suggests an association between maternal education and a child's neurocognitive function, this research doesn't necessarily explain the factors or mechanisms involved in that association. Future studies might further explore these factors to provide additional insights.

Where can I learn more?

Access the full journal article, "Maternal Education Prospectively Predicts Child Neurocognitive Function: An ECHO Study," in [Developmental Psychology](#).

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