



# ECHO

Environmental influences  
on Child Health Outcomes

A program supported by the NIH

## Study Summary

### ***Perceived Stress During Pregnancy Associated with Autism-related Traits in Children, ECHO Study Finds***

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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?

Many mothers experience higher levels of stress and other mental health challenges during pregnancy. Previous studies have found that pregnancy stress may be associated with increased risk of autism spectrum disorder (ASD) in children, but these studies have mostly focused on the occurrence of isolated adverse or stressful events that occur in the mother's life during pregnancy. Fewer studies have measured general perceived stress among mothers during pregnancy. This study examined the potential association between perceived stress during pregnancy and autism-related traits in children and evaluated how that association may differ according to the child's sex or the mother's experience of depression during pregnancy.

#### What were the study results?

Higher perceived stress during pregnancy was associated with slightly more severe autism-related traits in children. At higher prenatal perceived stress levels, children showed slightly higher scores on tests measuring social and behavioral traits related to autism. Children whose mothers had either moderate or high categorical stress scored higher than those whose mothers reported low or no stress. The link between pregnancy stress and autism-related traits did not differ between boys and girls. The relationship between prenatal stress and autism-related traits remained consistent even when the researchers accounted for mothers' co-occurring prenatal depressive symptoms.

#### What was the study's impact?

Stress during pregnancy is normal and common to experience. While the results of this study indicate that there may be a small association between pregnancy stress and autism-related traits, they do not imply that stress during pregnancy causes autism spectrum disorder or autism-related traits to occur in children.

#### Who was involved?

The study included 4,115 mother-child pairs from 20 ECHO Cohort Study Sites across the United States. Children ranged in age from about 2.5 to 18 years old.

### What happened during the study?

Mothers reported their stress levels during pregnancy using a standard questionnaire. Later, parents reported on their children's autism-related traits using a validated survey. Researchers analyzed the data using statistical models that accounted for factors such as child age, sex, and study site.

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 happens next?

Future studies could help researchers better understand the specific periods in pregnancy when stress may have the greatest association with child health and development and how other related social and emotional factors may influence this effect.

### Where can I learn more?

Access the full journal article, titled "Associations between Prenatal Perceived Stress and Child Autism-Related Traits in the ECHO Cohort," in [The Journal of Pediatrics](#).

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