



# ECHO

Environmental influences  
on Child Health Outcomes

A program supported by the NIH

## Study Summary

### ***The relationship between prenatal obesity and child autism-related social behaviors***

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#### Who sponsored this study?

This research was supported by the Environmental influences on Child Health Outcomes (ECHO) program, Office of The Director, National Institutes of Health.

#### Why was this study needed?

Many studies have linked childhood autism diagnosis back to maternal health conditions during pregnancy—like obesity, gestational diabetes (high blood sugar during pregnancy), gestational hypertension (high blood pressure during pregnancy), and preeclampsia (high blood pressure during pregnancy and signs of kidney/liver damage). But less is known about how these conditions may relate to subtler changes in child social development. This research looks at how risk factors of obesity, gestational diabetes, gestational hypertension, and preeclampsia relate to autism-related traits like social communication more broadly.

#### Who was involved?

This study included nearly 7,000 participants from 40 ECHO cohorts across the United States. Eight of these cohorts included participants considered to be at higher risk for autism spectrum disorder (ASD) based on known risk factors. The study only included cohorts that collected information on at least one of the four pregnancy conditions listed above and child social development/autism-related behaviors. Children were between the ages of 2.5-18 years, with an average age of approximately 8 years old.

#### What happened during the study?

The research team pulled together information on maternal health conditions during pregnancy, maternal age, child social development/autism-related behaviors, and participant demographics. They then examined the relationship between each pregnancy condition, separately and in combination, and child social development outcomes.

#### What were the study results?

Maternal obesity and gestational diabetes were associated with indicators of autism-related social behaviors. Investigators did not see increases in these behaviors for children of mothers with preeclampsia or gestational hypertension. Neither preterm birth or low birth weight, which are common complications of obesity and gestational diabetes, did not seem to drive the associations with these pregnancy conditions.

## Impact

Obesity and gestational diabetes are common pregnancy conditions, so understanding their impact on the developing child is an important public health issue. This study suggests that these conditions may increase the likelihood of ASD-related traits, highlighting the need for better prenatal care and more monitoring of pregnant women experiencing conditions like obesity.

## What happens next?

More work is needed to determine the underlying biologic and social mechanisms linking maternal obesity to child social behaviors and autism.

## Where can I learn more?

Access the [full journal article](#), titled “Cardiometabolic pregnancy complications in association with autism-related traits as measured by the Social Responsiveness Scale in ECHO” in the *American Journal of Epidemiology*.

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