

# Study links maternal obesity during pregnancy to behavioral problems in boys

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Maternal obesity and child neurodevelopmental problems have both increased in the U.S. and scientists have suggested a possible link. A new study has found that the heavier mothers were when they entered

pregnancy, the higher the risk of behavior problems for their sons. However, it did not show the same effects in girls. The results are reported in the *American Journal of Preventive Medicine*.

"The study results suggest that early intervention with women to attain healthy weights before they become pregnant is critical to their health and the health of their future [children](#)," commented senior investigator Barbara Abrams, DrPH, of the Division of Epidemiology, School of Public Health, University of California, Berkeley.

The Centers for Disease Control and Prevention estimates that 15 out of every 100 women of childbearing age are severely obese. Recent studies have linked high maternal weight, before and during pregnancy, to child behavior and particularly to problems such as attention deficit hyperactivity disorder. Some evidence also points to a possible link with internalizing problems, such as depression. These problems can have negative effects on school performance and relationships with others.

Researchers used the U.S. National Longitudinal Survey of Youth 1979 (NLSY79) to investigate whether maternal pre-pregnancy body-mass index (BMI) is associated with behavioral problems among school-age children. They assessed whether the effect is modified by race or gender, as well as by race and gender simultaneously. This analysis included nearly 5,000 female NLSY79 study participants and their biological children, who were studied between 1986 and 2012 as part of the NLSY Children and Young Adults (NLSYCYA) cohort. Behavioral problems were assessed every two years for children aged 4-14 years using maternal report of the Behavior Problems Index (BPI), a widely used 28-item questionnaire, to determine whether they exhibited specific behaviors in the past three months. Because early puberty is a time when behavioral problems tend to emerge, this study focused on children aged 9-11 years.

Approximately 65% percent of the mothers were normal weight, 8% underweight, and 10% obese, of whom 3.5% were BMI 35 or higher. Underweight women were younger, less likely to be married, and had the lowest education, income, and Armed Forces Qualifying Test scores.

The study showed that boys whose mothers entered pregnancy obese were at higher risk for behavior problems at ages 9-11 years. Data indicated that the heavier mothers were when they entered pregnancy, the higher the risk for [behavioral problems](#) to develop in their sons. Boys whose mothers were underweight pre-pregnancy also showed higher risk for behavior problems. The study did not show the same effects in girls, and there were no differences for race.

"Past research looking at a variety of exposures during pregnancy (ranging from stress to chemicals) has shown that boys tend to be more vulnerable to these exposures in utero than girls," explained investigator Juliana Deardorff, PhD, of the Community Health Sciences Division, School of Public Health, University of California, Berkeley. "Our study extends this work to [maternal obesity](#)."

"It is the first study to document gender differences, and one of a handful of studies to show that pre-pregnancy underweight, in addition to obesity, may be problematic," she continued. "Future research should examine whether the gender differences reported here for ages 9-11 years persist into adolescence or shift as children get older."

**More information:** "Maternal Prepregnancy Weight and Children's Behavioral and Emotional Outcomes," *American Journal of Preventive Medicine*, [DOI: 10.1016/j.amepre.2017.05.013](https://doi.org/10.1016/j.amepre.2017.05.013)

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