

Mothers' stress rollercoaster while pregnant linked to negative emotions in babies

September 7 2022



Credit: CC0 Public Domain

Pregnant people who had bigger fluctuations in stress from one moment to the next—also called lability—had infants with more fear, sadness and distress at three months old than mothers with less stress variability, reports a new Northwestern University study that examined how a child's developmental trajectory begins even before birth.

Prior research has found that [mothers'](#) distress during pregnancy has been related to infant temperament and behavior, but this is one of the first studies to measure mothers' experience of stress in real time on many occasions, which enables a closer look at whether changes in mothers' stress across pregnancy matter for infant development.

The study will be published Sept. 7 in the journal *Infancy*.

"Research often examines stress as a static, unchanging construct—one that is either high or low, present or absent—but most of us have a lot of ebbs and flows in our stress depending on what is going on around us," said lead study author Leigha MacNeill, research assistant professor of medical social sciences at Northwestern University Feinberg School of Medicine and a member of the Northwestern Institute for Innovations in Developmental Sciences (DevSci).

"That variability is inherent in our daily lives, so this lability is capturing an important aspect of stress and offers insight into how to measure stress going forward. This is of particular importance as we work to closely capture the maternal-fetal environment as it relates to how babies

develop over time."

For instance, one mother who has consistent levels of stress over pregnancy and another mother who moves between very low and very high levels of stress over pregnancy may in the end have a similar average level of stress across that time, but that average may not best capture meaningful differences in what the fetus is exposed to, MacNeill explained.

"There may be something about that gestational experience, when a mother moves between extremes, that shapes the child's disposition toward negative emotions," MacNeill said. "That kind of stress pattern could reflect instability in daily life experiences, unpredictable external stressors or instability in how a mother perceives her lived experiences, which may have important implications for children's emotional development."

Having a better understanding of the nature of stress during pregnancy may inform prevention efforts, such as helping individuals reach a consistent level of calm before or at the onset of pregnancy, especially in the context of uncontrollable life events, MacNeill said. Since most expecting parents receive some form of prenatal care, she said stress measures, and ideally management, could be folded into those visits.

'Stress was unrelated to the timing of the pandemic'

The scientists didn't set out to conduct a study on prenatal stress during a pandemic. They encountered this "natural experiment" because some participants completed their assessments before the pandemic began; some before and during the pandemic; and some completely during the pandemic, MacNeill said.

"We asked about general stress—not pandemic-related stress," MacNeill

said. "But we took advantage of the occurrence of the pandemic during the course of the study to see if we could detect its impact on mothers' experiences.

"We found that mothers' stress patterns were unrelated to the timing of the pandemic. Mothers reported similar levels of stress regardless of whether their stress measurements occurred before or during the pandemic."

How they measured prenatal stress, infant temperament

The study authors measured pregnant individuals' stress up to four different times per day for 14 weeks using questions sent to participants' phones. They identified three types of stress: stress at the first assessment (baseline), average or typical levels of stress across the 14-week period, and the amount a person changed in their stress from one time to the next across the 14-week period (lability).

The authors measured infants' negative emotions via a temperament questionnaire given to mothers when their infants were three months old. Mothers answered questions about their child's sadness, distress to limitations and fearfulness (e.g., how much they clung to their parent when introduced to an unfamiliar adult). This formed an overall negative affect average score.

Studying fluctuations in stress during pregnancy in relation to [infant development](#) is a relatively new idea, and the study authors said there is not yet a clear understanding of how stress and the gestational environment impact the developing fetus. More research in larger, more diverse samples is needed to find out if these patterns hold true for families from different contexts and with different types of supports,

MacNeill said.

"This is a really early index (three months), so we'd want to see how consistent their negative affect levels are in the first year of life," MacNeill said. "Parents are the ones who can soothe their infants and be really responsive to their needs, and as infants grow, there are things parents can do to help the child navigate situations and learn to regulate and cope with their [negative emotions](#)."

"This study illustrates that links between parent and child are based on genes as well as experiences, even before birth," said Dr. Matthew Davis, chair of the department of pediatrics at Feinberg and the Ann & Robert H. Lurie Children's Hospital of Chicago, who was not directly involved with the study. "One of the most important approaches to having a less distressed child is to support expectant parents and minimize their [stress](#) during pregnancy. That can be accomplished through clinical care, social supports and policies that are family- and pregnancy-friendly."

More information: Liability of prenatal stress during the COVID-19 pandemic links to negative affect in infancy, *Infancy* (2022). onlinelibrary.wiley.com/doi/full/10.1111/infa.12499

Provided by Northwestern University

Citation: Mothers' stress rollercoaster while pregnant linked to negative emotions in babies (2022, September 7) retrieved 18 July 2024 from <https://medicalxpress.com/news/2022-09-mothers-stress-rollercoaster-pregnant-linked.html>

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