

# How Pregnancy Changes a Woman's Brain

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We know a lot about the links between a pregnant mother's health, behavior, and moods and her baby's cognitive and psychological development once it is born. But how does pregnancy change a mother's brain? "Pregnancy is a critical period for central nervous system development in mothers," says psychologist Laura M. Glynn of Chapman University. "Yet we know virtually nothing about it."

Glynn and her colleague Curt A. Sandman, of University of the California Irvine, are doing something about that. Their review of the literature in [\*Current Directions in Psychological Science\*](#), a journal published by the [Association for Psychological Science](#), discusses the theories and findings that are starting to fill what Glynn calls "a significant gap in our understanding of this critical stage of most women's lives."

At no other time in a woman's life does she experience such massive hormonal fluctuations as during pregnancy. Research suggests that the reproductive hormones may ready a woman's brain for the demands of motherhood—helping her become less rattled by stress and more attuned to her baby's needs. Although the hypothesis remains untested, Glynn surmises this might be why moms wake up when the baby stirs while dads snore on. Other studies confirm the truth in a common complaint of pregnant women: "Mommy Brain," or impaired memory before and after birth. "There may be a cost" of these reproduction-related cognitive and emotional changes, says Glynn, "but the benefit is a more sensitive, effective mother."

The article reviews research that refines earlier findings on the effects of the prenatal environment on the baby. For instance, evidence is accumulating to show that it's not prenatal adversity on its own—say, maternal malnourishment or depression—that presents risks for a baby. Congruity between life *in utero* and life on the outside may matter more. A fetus whose mother is malnourished adapts to scarcity and will cope better with a dearth of food once it's born—but could become obese if it eats normally. Timing is critical too: maternal anxiety early in gestation takes a toll on the baby's cognitive development; the same high levels of stress hormones late in pregnancy enhance it.

Just as Mom permanently affects her fetus, new science suggests that the fetus does the same for Mom. Fetal movement, even when the mother is unaware of it, raises her heart rate and her skin conductivity, signals of emotion—and perhaps of pre-natal preparation for mother-child bonding. Fetal cells pass through the placenta into the mother's bloodstream. "It's exciting to think about whether those cells are attracted to certain regions in the brain" that may be involved in optimizing maternal behavior, says Glynn.

Glynn cautions that most research on the maternal brain has been conducted with rodents, whose pregnancies differ enormously from women's; more research on human mothers is needed. But she is optimistic that a more comprehensive picture of the persisting brain changes wrought by pregnancy will yield interventions to help at-risk mothers do better by their babies and themselves.