

# Domestic abuse in pregnancy linked to structural brain changes in babies

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Domestic abuse against women during pregnancy can potentially have a significant impact on how the unborn baby's brain develops, according to a new study.

Researchers at the University of Bath, working in collaboration with

researchers from the University of Cape Town, analyzed [brain scans](#) of 143 South African infants whose mothers had been subject to [intimate partner violence](#) (IPV) during pregnancy. Intimate partner violence includes emotional, physical and/or sexual abuse or assault. Brain MRI scans were taken when infants were just 3 weeks old on average so any changes that were observed are likely to have developed inside the womb.

Publishing their findings in the journal *Developmental Cognitive Neuroscience*, the research team report that [maternal exposure](#) to IPV during pregnancy is associated with alterations in [brain structure](#) in young infants identified shortly after birth. This was evident even when the researchers took into account maternal alcohol use and smoking throughout pregnancy as well as pregnancy complications.

Importantly, the effects of IPV exposure may differ by the baby's sex. For girls, their mother's exposure to IPV during pregnancy was linked to a smaller amygdala, an area of the [brain](#) involved in emotional and [social development](#). For boys, IPV exposure was instead associated with a larger caudate nucleus, an area of the brain involved in multiple functions including the execution of movement, learning, memory, reward, and motivation.

Early changes to brain structures may explain why children whose mothers experience high levels of stress during pregnancy are more likely to have psychological issues in childhood or later life. Sex differences in brain development may also help explain why girls and boys often develop different mental health problems. However, the researchers cautioned that the study did not analyze emotional and [cognitive development](#) in children.

Lead researcher, Dr. Lucy Hiscox from the Department of Psychology at Bath, explained, "Our findings are a call to act on the three Rs of

domestic violence awareness: recognize, respond, and refer. Preventing or quickly acting to help women escape domestic violence may be an effective way of supporting healthy brain development in children."

While previous studies have looked at the impact of maternal stress in pregnancy and its impacts on children's [brain development](#), this is the first to examine [domestic abuse](#). The children involved in this study are now aged 8-9 years and follow-up research is testing whether the differences in brain structure seen at 3 weeks old persist, or are altered, as they age.

For this study, the team from Bath worked with researchers at the University of Cape Town (UCT) to analyze data from a major South African cohort study, the Drakenstein Child Health Study (DCHS), led by South African pediatrician Professor Heather Zar. The DCHS has been tracking 1,143 children since birth with data collection ongoing.

Co-author, Professor Kirsty Donald, a pediatric neurologist and Head of the Division of Developmental Pediatrics at UCT added, "Strategies that help identify and support pregnant mums for multiple potential risks to their unborn babies will require an integrated health system approach and should be considered a public health priority."

**More information:** Lucy V. Hiscox et al, Antenatal maternal intimate partner violence exposure is associated with sex-specific alterations in brain structure among young infants: Evidence from a South African birth cohort, *Developmental Cognitive Neuroscience* (2023). [DOI: 10.1016/j.dcn.2023.101210](https://doi.org/10.1016/j.dcn.2023.101210)

Provided by University of Bath

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