

Stress in the womb can last a lifetime, say researchers behind new exhibit

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Visitors can see how their stress levels could affect the heart rate of their unborn baby and find out why pregnant women should reduce their anxiety, at a new exhibit at the Royal Society Summer Science Exhibition, which opens today.

The researchers behind the exhibit, from Imperial College London, hope that it will raise families' awareness of the importance of reducing levels of stress and [anxiety](#) in expectant [mothers](#). They say that reducing stress during pregnancy could help prevent thousands of children from developing emotional and [behavioural problems](#).

Visitors to the Exhibition will have the chance to play a game that shows how a mother's stress can increase the heart rate of her unborn baby. They will also be able to touch a real placenta, encased safely in plastic. The placenta is crucial for fetal development and it usually protects the unborn baby from the stress hormone [cortisol](#). However, when the mother is stressed, the placenta becomes less protective and the mother's cortisol may have an effect on the fetus.

The Imperial researchers' work has shown that maternal stress and anxiety can alter the development of the baby's brain. This in turn can result in a greater risk of emotional problems such as anxiety or depression, behavioural problems such as [Attention Deficit Hyperactivity Disorder](#), and being considerably slower at learning. Some studies have even suggested that it may increase the likelihood of later violent or criminal behaviour. Their findings have suggested that the

effects of stress during pregnancy can last many years, including into adolescence.

Professor Vivette Glover, the lead researcher behind the exhibit from the Institute of Reproductive and Developmental Biology at Imperial College London, said: "We all know that if a mother smokes or drinks a lot of alcohol while pregnant it can affect her fetus. Our work has shown that other more subtle factors, such as her emotional state, can also have long-term effects on her child. We hope our exhibit will demonstrate in a fun way why we all need to look after expectant mothers' emotional wellbeing.

"Our research shows that stress due to the mother's relationship with her partner can be particularly damaging. We want fathers visiting our exhibit to see how they can help with the development of their child even before the birth, by helping their partner to stay happy," added Professor Glover.

The researchers say that the [stress](#) hormone cortisol may be one way in which the fetus is affected by the mother's anxiety during pregnancy. Usually the placenta protects the unborn baby from the mother's cortisol, by producing an enzyme that breaks the hormone down. When the mother is very stressed, this enzyme works less well and lets her cortisol through the placenta. By studying the amount of cortisol in the amniotic fluid, the Imperial researchers' latest study suggests that the higher the level of cortisol in the womb, the lower the toddler's cognitive development or "baby IQ" at 18 months.

Kieran O'Donnell from the Institute of Reproductive and Developmental Biology at Imperial College London said: "We are very excited to have this opportunity to talk with the public about our work. We think that by promoting awareness of this subject we may be able to benefit many families in the future."

Source: Imperial College London ([news](#) : [web](#))

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