



# Mothers' prenatal BMI is linked with foetal brain connectivity

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New data suggest that a high maternal prenatal body mass index (BMI) is associated with differences in functional connectivity in the foetal brain that might confer a risk of mental health and cognitive problems in childhood. Megan Norr and colleagues used non-invasive magnetic resonance imaging in utero to see how foetal neural networks in the brain varied with maternal prenatal BMI. They performed their analyses in 109 fetuses at 26-39 weeks' gestation.

The researchers found that connectivity between foetal frontal and insular brain regions varied with maternal BMI, with a tendency for increased within-hemisphere connectivity and reduced cross-hemisphere connectivity between these regions when maternal BMI was higher. These brain regions later support behavioural regulation (including control of eating behaviour) and integrative processes (including processing food- and appetite-related information). These findings therefore provide initial evidence that neural differences associated with maternal BMI begin before birth affecting key brain regions that underlie behaviour impairments.

Further research is now needed to determine whether and how these differences in foetal brain connectivity effect future physical health, mental health, and cognition. With this information, it might be possible to develop interventions for mothers' prenatal health to improve their children's health and functioning.

## Referring to:

Norr, M.E., Hect, J.L., Lenniger, C.J., Van den Heuvel, M. & Thomason, M.E. (2020), An examination of maternal prenatal BMI and human fetal brain development. *J. Child Psychol. Psychiatr.* doi: 10.1111/jcpp.13301.