



Boys and girls show different vulnerabilities to maternal postnatal depression

By Dr. Jessica K Edwards

In 2019, Jonathan Hill and colleagues published data arising from the Wirral Child Health and Development Study (WCHADS) on the sex differences in foetal origins of child emotional symptoms. Their findings suggested that prenatal anxiety and depression confer risk in different ways in boys and girls,^{1,2} and later work confirmed that there might be sex differences in the biological underpinning of psychopathology.^{3,4}

“The hypothesis driving this previous work was that children’s vulnerability to postnatal maternal depression or anxiety is altered by how anxious or depressed their mothers have been during pregnancy”, says Hill. “We found preliminary evidence that boys are more vulnerable to the cumulative effects of prenatal and postnatal depression and that girls are more vulnerable when postnatal depression occurs in mothers who were not depressed during pregnancy.” This paradigm essentially means that both prenatal depression and child sex alter the effect of postnatal depression. However, because such a three-way interaction is vulnerable to chance, the findings require extensive statistical replication.

In an attempt to replicate their original findings, Braithwaite et al. pre-registered analyses of data on >8,000 children at 3.5 years-of-age who were included in the Avon Longitudinal Study of Parents and Children (ALSPAC). As they now report in the *Journal of Child Psychology and Psychiatry*, their analyses from the ALSPAC cohort do replicate those from the WCHADS. As before, the daughters of mothers with elevated postnatal depression (but who had not been depressed during pregnancy), exhibited higher emotional problems scores than sons. The sons were more vulnerable to the combination of high prenatal depression and high postnatal depression. In contrast to the WCHADS finding, the effect in ALSPAC was stronger in boys than in girls.

“If other investigators confirm this finding it will imply that trials aimed at improving outcomes for the children of mothers with depression, and commissioners of clinical services, will need to identify vulnerability by levels of prenatal depression and sex of the child, as well as by postnatal depression”, explains Hill. “The clinical question arising from this and other recent studies is whether Child and Adolescent Mental Health practitioners should take account of the sex of the child in treatment planning.”

Referring to:

Braithwaite, E.C., Pickles, A., Wright, N., Sharp, H. & Hill, J. (2020), *Sex differences in foetal origins of child emotional symptoms: a test of evolutionary hypotheses in a large, general population cohort*. *J. Child Psychol. Psychiatr.* doi: 10.1111/jcpp.13229.

References:

- ¹Hill, J. et al. (2019). *Mismatched prenatal and postnatal maternal depressive symptoms and child behaviours: A sex-dependent role for NR3C1 DNA methylation in the Wirral Child Health and Development Study*. *Cells*, 8:943. doi: 10.3390/cells8090943.
- ²Hill, J. et al. (2019). *Predictions of children’s emotionality from evolutionary and epigenetic hypotheses*. *Sci. Rep.* 9:1-11. doi: 10.1038/s41598-019-39513-7.
- ³Wright, N et al. (2019). *Sex-dependent associations between maternal prenatal cortisol and child callous-unemotional traits: Findings from the Wirral Child Health and Development Study*. *Psychoneuroendocrinology*, 109: 104409. doi: 10.1016/j.psyneuen.2019.104409.
- ⁴Wright, N. et al. (2019). *Callous-unemotional traits, low cortisol reactivity and physical aggression in children: findings from the Wirral Child Health and Development Study*. *Transl. Psychiatry*, 9: 79. doi: 10.1038/s41398-019-0406-9.

See also:

<http://www.bristol.ac.uk/alspac/>
<https://www.liverpool.ac.uk/institute-of-life-and-human-sciences/schools-and-departments/departments-of-psychological-sciences/research/first-steps/about/>