

Offspring of mothers with depression show asymmetric frontal brain activity

Frontal asymmetry (FA) describes differences in engagement between the left and right frontal brain, and is measured in terms of alpha wave-band frequencies. Numerous studies have linked depression with FA, specifically reduced left frontal alpha-band activity¹, and suggested that FA may be a vulnerability marker for depression². Thus, researchers have proposed that FA should be evident in the offspring of depressed parents, but the supporting data thus far are unclear. Researchers have now assessed this hypothesis longitudinally, by measuring FA (by electroencephalography, EEG) in a sample of 253 children with no prior diagnosis of depression at ages 3 and 6 years. Maternal history of depressive disorders was determined using the Structured Clinical Interview for DSM-IV non-patient (SCID-NP) edition at the first EEG, and child depressive disorder diagnoses were evaluated using the Preschool Age Psychiatric Assessment (PAPA). The researchers found a significant interaction between maternal depression and child age, whereby offspring of mothers with depression developed significantly reduced left frontal alpha-band activity compared to right frontal activity over time. By contrast, offspring of mothers without a history of depression showed symmetrical frontal brain activity at both time points. These findings highlight the importance of a longitudinal study design in delineating the role of FA in depression. Work remains to investigate whether the association between FA and familial risk for depression increases even further at later time points, and to determine the clinical utility of these findings.

Goldstein, B.L., Shankman, S.A., Kujawa, A., Torpey-Newman, D.C., Olino, T.M. & Klein, D.N. (2016), *Developmental changes in electroencephalographic frontal asymmetry in young children at risk for depression*. *J Child Psychol Psychiatr*. 57: 1075-1082. doi:10.1111/jcpp.12567

Glossary:

Electroencephalography: A non-invasive technique to record and interpret electrical brain activity

Structured Clinical Interview for DSM-IV Non-patient (SCID-NP): A semi-structured interview for making the major DSM-IV Axis I diagnoses. The non-patient edition is for use in studies where the subjects are not identified as psychiatric patients (e.g., community surveys, family studies, research in primary care). Here, no assumption of a chief complaint is made, and other questions are used to inquire about a history of psychopathology.

Preschool Age Psychiatric Assessment (PAPA): A parent report-only assessment for children aged 2 to 5 years. PAPA is derived from the Child and Adolescent Psychiatric Assessment (aimed at children aged 9 to 18 years) but has been substantially revised in interview content and structure to be relevant to children of a very young age. PAPA includes all DSM-IV criteria relevant to young children.

Further reading:

¹Thibodeau, R. et al. (2006) *Depression, anxiety, and resting frontal EEG asymmetry: A meta-analytic review*. *Journal of Abnormal Psychology*, 115: 715 - 729.

²Allen, J.J.B. et al. (2015) *Frontal EEG asymmetry as a promising marker of depression vulnerability: Summary and methodological considerations*. *Current Opinion in Psychology*, 4: 93 - 97.

