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Abstract

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EEG activity of men and women with DSM-5 adult AD/HD

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Aims: Despite knowledge that AD/HD often persists into adulthood, there have been minimal investigations of the EEG activity of adults with AD/HD. This study aimed to explore the EEG activity of adult males and females who were initially diagnosed with AD/HD as children, and then reassessed, as unmedicated adults, using the new DSM-5 criteria. A secondary aim of this study was to explore gamma power within this population. **Method:** Participants included 16 females and 16 males with AD/HD, and sex-matched control groups. A five minute eyes-closed resting EEG was recorded from 19 electrode sites. The EEGs were Fast Fourier transformed and estimates for total power, absolute and relative power in the delta, theta, alpha, beta and gamma bands, and the theta/beta ratio, were analysed in nine cortical regions. **Results:** Males with AD/HD, compared with male controls, had globally reduced absolute beta, globally elevated relative theta, and a larger theta/beta ratio. In contrast, no global effects emerged between females with and without AD/HD. Significant sex by group interactions found that globally elevated relative theta and elevated frontal-midline theta/beta ratio noted in males with AD/HD differed significantly from results in females. Also, relative to male controls, males with AD/HD had reduced posterior absolute gamma activity. No significant gamma differences were found between women with and without AD/HD. **Conclusions:** There are statistically significant EEG differences in relative theta and the theta/beta ratio between males and females with and without AD/HD. These results indicate that AD/HD affects the EEG activity of males and females differently. The male gamma findings are similar to findings reported in children with AD/HD, suggesting a continuing gamma deficit in males with AD/HD, but not in females.

Keywords: Attention-Deficit/Hyperactivity Disorder, adults, DSM-5, EEG, sex differences

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