Electroencephalogram Theta/Beta Ratio and Spectral Power Correlates of Executive Functions in Children and Adolescents with AD/HD

Da-Wei Zhang, Hui Li, Zhanliang Wu, Qihua Zhao, Yan Song, Lu Liu, Qijin Qian, Yufeng Wang, Steven Roodenrys, Stuart J. Johnstone, Frances M. De Blasio, Li Sun

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Abstract

Objective:
The electroencephalogram (EEG) has been widely used in AD/HD research. The current study firstly aimed to replicate a recent trend related to EEG theta/beta ratio (TBR) in children and adolescents. Also, the study aimed to examine the value of resting EEG activity as biomarkers for executive function (EF) in participants with AD/HD.

Method:
Fifty-three participants with AD/HD and 37 healthy controls were recruited. Resting EEG was recorded with eyes closed. Participants with AD/HD additionally completed EF tasks via the Cambridge Neuropsychological Test Automated Battery.

Results:
TBR did not differ between groups; however, TBR was positively correlated with inattentive symptoms in AD/HD. Other correlations were found between EEG activity and neuropsychological functions including spatial planning and decision making in the AD/HD group.

Conclusion:
The results do not support the diagnostic value of TBR. Instead, given the heterogeneous features, the results support the prognostic value of EEG in AD/HD.