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Assessing Attention Deficit Hyperactivity Disorder via Quantitative Electroencephalography: An Initial Validation Study

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Spectral analysis of the electrophysiological output at a single, midline prefrontal location (the vertex) was conducted in 482 individuals, ages 6-30 years old, to test the hypothesis that cortical slowing in the prefrontal region can serve as a basis for differentiating patients with attention deficit hyperactivity disorder (ADHD) from nonclinical control groups. Participants were classified into 3 groups (ADHD, inattentive; ADHD, combined; and control) on the basis of the results of a standardized clinical interview, behavioral rating scales, and a continuous performance test. Quantitative electroencephalographic (QEEG) findings indicated significant maturational effects in cortical arousal in the prefrontal cortex as well as evidence of cortical slowing in both ADHD groups, regardless of age or sex. Sensitivity of the QEEG-derived attentional index was 86%; specificity was 98%. These findings constituted a positive initial test of a QEEG-based neurometric test for use in the assessment of ADHD.