Brain functional connectivity abnormalities in attention-deficit hyperactivity disorder

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Abstract

Introduction
Recent evidence suggests that attention-deficit hyperactivity disorder (ADHD) is associated with brain functional connectivity (FC) abnormalities.

Methods
In this study, we use steady-state visually evoked potential event-related partial coherence as a measure of brain FC to examine functional connectivity differences between a typically developing (TD) group of 25 boys and an age/IQ-matched group of 42 drug naive boys newly diagnosed with ADHD (ADHD group). Functional connectivity was estimated while both groups performed a low-demand reference task and the A-X version of the continuous performance task (CPT A-X).

Results
While the TD and ADHD groups exhibited similar prefrontal FC increases prior to the appearance of the target in the reference task, these groups demonstrated significant FC differences in the interval preceding the appearance of the target in the CPT A-X task. Specifically, the ADHD group exhibited robust prefrontal and parieto-frontal FC increases that were not apparent in the TD group.

Conclusion
The FC differences observed in the ADHD group are discussed in the context of inadequate suppression of cortical networks that may interfere with task performance.