Perceptual and Response-Dependent Profiles of Attention in Children with ADHD.

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Abstract

OBJECTIVE:
Attention-deficit hyperactivity disorder (ADHD) is a complex developmental neuropsychiatric disorder, characterized by inattentiveness, impulsivity, and hyperactivity. Recent literature suggests a potential core deficit underlying these behaviors may involve inefficient processing when contextual stimulation is low. In order to specify this inefficiency, the aim of the present study was to disentangle perceptual and response-based deficits of attention by supplementing classic reaction time (RT) measures with an accuracy-only test. Moreover, it was explored whether ADHD symptom severity was systematically related to perceptual and response-based processes.

METHOD:
We applied an RT-independent paradigm (Bundesen, 1990) and a sustained attention task (Dockree et al., 2006) to test visual attention in 24 recently diagnosed, medication-naïve children with ADHD, 14 clinical controls with pervasive developmental disorder, and 57 healthy controls. Outcome measures included perceptual processing speed, the capacity of visual short-term memory, and errors of commission and omission.

RESULTS:
Children with ADHD processed information abnormally slow (d = 0.92), and performed poorly on RT variability and response stability (d's ranging from 0.60 to 1.08). In the ADHD group only, slowed visual processing speed was significantly related to response lapses (omission errors). This correlation was not explained by behavioral ratings of ADHD severity.

CONCLUSIONS:
Based on combined assessment of perceptual and response-dependent variables of attention, the present study demonstrates a specific cognitive profile in children with ADHD. This profile distinguishes the disorder at a basic level of attentional functioning and may define subgroups of children with ADHD in a way that is more sensitive than clinical rating scales.