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Deficit in interval timing may be a candidate endophenotype for attention-deficit hyperactivity disorder

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Introduction and objective: Limited attention capacity may be the underlying mechanism for deficit in interval timing in ADHD. We tested whether attention capacity related to the time reproduction and temporal processing without motor processing can be an endophenotypes of ADHD.
Methods: We assessed 223 patients with ADHD, 112 unaffected siblings, and 84 unaffected controls (ages 8–17) by using the time estimation task and the time reproduction tasks (single and dual tasks) at 5-, 12-, and 17-s intervals. Gender, age, IQ and comorbidities were controlled in data analysis.
Results: Patients with ADHD were less precise in all tasks except for 5 s in the time reproduction single task. Unaffected siblings performed at the intermediate between the other two groups in the time reproduction dual tasks and time estimation tasks. Increased group difference was associated with increased time intervals.
Discussions: Although unaffected siblings only showed subtle impairment on dual tasks, their performance was at the intermediate position in other tasks.
Conclusion: Findings suggest that inadequate attention capacity measured by the time reproduction paradigm with dual tasks may be an endophenotype of ADHD.
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Does a shortage of working memory capacity cause attentional control problems in adolescents with attention-deficit/hyperactivity disorder: an ERP study

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Introduction and objective: Several studies have indicated that a lack of attentional control to successfully ignore distracting stimuli (often seen in ADHD) might be related to a shortage in working memory capacity (WMC) (Vogel et al. 2005; Burgess et al. 2010). Since the development of attentional control functions mediated by the frontal lobe shows continued maturation into adolescence, this study compares effects of manipulation of WM-load and distraction (within one paradigm) on behavior and brain measures in adolescents with and without ADHD.
Methods: Adolescents with ADHD and controls perform a visuo-spatial WM task manipulating WM-load and presence of distractors. Effects on RT and accuracy will be studied as well as effects on specific event-related potential measures that are thought to reflect neural correlates of maintenance of information in WM (Vogel et al. 2005).
Results/conclusions: We expect to find worse behavioral performance and enhanced ERP amplitudes representing maintenance of more items in memory. Furthermore, distracting stimuli are expected to affect measures at the behavioral and ERP level to a larger extent in adolescents with ADHD compared to healthy adolescents, especially in situations requiring high WMC.
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The bifactor model as a working framework for understanding the symptom presentation of ADHD

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The conceptualization of the symptom structure in ADHD has implications for research and clinical conceptualizations of ADHD. The most recent conceptualization in factor analytic studies has separated inattention from hyperactivity and impulsivity. Our group examined the bifactor model as a framework for examining the factor analytic structure of ADHD (Toplak, Pitch, Flora, Iwenofu, Ghelani, Jain, and Tannock 2009). The bifactor model involves considering a general factor first, that includes the commonality among all symptoms, followed by specific factors that include the remaining variance after the general factor has been taken into account. We tested correlated and bifactor models in a sample of 201 adolescents referred for ADHD. A bifactor model with two specific factors best accounted for adolescent ADHD symptoms, according to both parent and adolescent interview data, and also in parent and teacher questionnaire data. The idea of a general factor is consistent with models that acknowledge the integral associations between inattention, hyperactivity, and impulsivity. This is also consistent with theoretical models that recognize the multiple pathways that interact synergistically to give rise to the phenotypic presentation of ADHD.