ADHD patients fail to maintain task goals in face of subliminally and consciously induced cognitive conflicts.

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doi: 10.1017/S0033291717000216. [Epub ahead of print]

Abstract

BACKGROUND:
Attention deficit hyperactivity disorder (ADHD) patients have been reported to display deficits in action control processes. While it is known that subliminally and consciously induced conflicts interact and conjointly modulate action control in healthy subjects, this has never been investigated for ADHD.

METHOD:
We investigated the (potential) interaction of subliminally and consciously triggered response conflicts in children with ADHD and matched healthy controls using neuropsychological methods (event-related potentials; ERPs) to identify the involved cognitive subprocesses.

RESULTS:
Unlike healthy controls, ADHD patients showed no interaction of subliminally and consciously triggered response conflicts. Instead, they only showed additive effects as their behavioural performance (accuracy) was equally impaired by each conflict and they showed no signs of task-goal shielding even in cases of low conflict load. Of note, this difference between ADHD and controls was not rooted in early bottom-up attentional stimulus processing as reflected by the P1 and N1 ERPs. Instead, ADHD showed either no or reversed modulations of conflict-related processes and response selection as reflected by the N2 and P3 ERPs.

CONCLUSION:
There are fundamental differences in the architecture of cognitive control which might be of use for future diagnostic procedures. Unlike healthy controls, ADHD patients do not seem to be endowed with a threshold which allows them to maintain high behavioural performance in the face of low conflict load. ADHD patients seem to lack sufficient top-down attentional resources to maintain correct response selection in the face of conflicts by shielding the response selection process from response tendencies evoked by any kind of distractor.