Reduced Value-Driven Attentional Capture Among Children with ADHD Compared to Typically Developing Controls.

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Abstract

The current study examined whether children with ADHD were more distracted by a stimulus previously associated with reward, but currently goal-irrelevant, than their typically-developing peers. In addition, we also probed the associated cognitive and motivational mechanisms by examining correlations with other behavioral tasks. Participants included 8-12 year-old children with ADHD (n = 30) and typically developing controls (n = 26). Children were instructed to visually search for color-defined targets and received monetary rewards for accurate responses. In a subsequent search task in which color was explicitly irrelevant, we manipulated whether a distractor item appeared in a previously reward-associated color. We examined whether children responded more slowly on trials with the previously-rewarded distractor present compared to trials without this distractor, a phenomenon referred to as value-driven attentional capture (VDAC), and whether children with and without ADHD differed in the extent to which they displayed VDAC. Correlations among working memory performance, immediate reward preference (delay discounting) and attentional capture were also examined. Children with ADHD were significantly less affected by the presence of the previously rewarded distractor than were control participants. Within the ADHD group, greater value-driven attentional capture was associated with poorer working memory. Although both ADHD and control participants were initially distracted by previously reward-associated stimuli, the magnitude of distraction was larger and persisted longer among control participants.