Application of the dual-component model of working memory to ADHD: Greater secondary memory deficit despite confounded cognitive differences.

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Abstract

The dual-component model postulates that working memory capacity consists of two dissociable components: maintenance in primary memory (PM) and retrieval from secondary memory (SM). Recent application of this model to attention-deficit/hyperactivity disorder (ADHD) has revealed that the SM component is more deficient than the PM component across both verbal and spatial modalities. The present study attempts to strengthen this conclusion by addressing two weaknesses in the previous study. First, the present study shows that the SM component continues to be more deficient than the PM component across both modalities under conditions in which (1) all participants were instructed to use the same recall strategy (resulting in the exclusion of fewer participants); and, (2) individual differences in this strategy were controlled. Second, the present study also documents a group difference in word reading efficiency that is confounded with diagnostic status and that might have influenced estimates of PM and SM capacities in the verbal modality. However, although the SM component is more deficient than the PM component in the ADHD group, the magnitude of this interaction does not vary as a function task modality. These findings are interpreted to suggest that the pattern of WM deficiencies observed are part of a causal pathway that can lead to the symptoms of ADHD, as well as to impairments in reading (and intelligence) due to overlapping cue-dependent retrieval mechanisms. These findings provide additional support for the notion that the SM component of WM is an important and neglected target for treatment.