Impaired memory for instructions in children with attention-deficit hyperactivity disorder is improved by action at presentation and recall

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Abstract

Children with attention deficit hyperactivity disorder (ADHD) often fail to comply with teacher instructions in the classroom. Using action during presentation or recall can enhance typically developing children’s abilities to complete multi-step instruction sequences. In this study, we tested instruction following skills in children with ADHD under different conditions to explore whether they show the same beneficial effects of the action. A total of 24 children with ADHD and 27 typically developing children either listened to or viewed demonstrations of instructions during encoding, and then either verbally repeated or physically performed the sequences during the recall. This resulted in four conditions: spoken-verbal, spoken-enacted, demonstration-verbal, and demonstration-enacted. Children with ADHD were significantly impaired in all conditions of the following instructions task relative to the typically developing group. Both groups showed an enacted-recall advantage, with superior recall by physical performance than oral repetition. Both groups also benefitted from a demonstration over spoken presentation, but only when the instructions were recalled verbally. These findings suggest that children with ADHD struggle to complete multi-step instructions, but that they benefit from action-based presentation and recall in the same way as typically developing children. These findings have important implications for educators suggesting that motor-based methods of instruction-delivery might enhance classroom learning both for children with and without developmental disorders.