Abstract

The present study examined the impact of engaging frontal-mediated, working memory processes on implicit and explicit category learning. Two stimulus dimensions were relevant to categorization, but in some conditions a third irrelevant dimension was also presented. Results indicated that, in both implicit and explicit conditions, the inclusion of the irrelevant dimension impaired performance by increasing the reliance on sub-optimal unidimensional strategies. With three-dimension stimuli a striking dissociation was observed between implicit and explicit category learning when participants performed the secondary, working memory task. With explicit category learning, performance was impaired further and there was an increased use of sub-optimal unidimensional strategies. However, with implicit category learning, the performance impairment decreased and there was an increased use of optimal strategies. These findings demonstrate the paradoxical situation in which learning can be improved under dual-task conditions and have important implications for training, decision making, and understanding interactive memory systems.

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