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The effect of working memory demands on the neural correlates of prospective memory

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Abstract

The role of working memory (WM) in maintaining, monitoring, and executing intended actions in prospective memory (PM) is debated in recent neuropsychological literature. In this study, WM load is manipulated twofold: in an ongoing n-back task (2-back vs. 3-back) and by the stimulus complexity of the cues (high vs. low). Event-related brain potentials (ERPs) in 57 young adults were used to examine the neural correlates of strategic monitoring, maintaining intentions, and detecting PM cues. We observed faster and more accurate responses when the ongoing task is a 2-back and the complexity of the cues is low. The ERP results showed that increased activation during strategic monitoring and maintenance of the intention as the n in the n-back load was increased. In contrast, manipulation of stimulus complexity affected ERPs related to cue detection. In sum, these findings demonstrate, that different types of WM load manipulations affect distinct stages of PM.