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How repetition interferes with access to visual working memory items : An EEG study

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Abstract

In Visual working memory (VWM), the top-down goal selectively maintains and recalls items, while, bottom-up attention induced by perceptually similar items prioritizes recalling these VWM items. In this study, we focussed on whether repeated items have facilitated access in VWM and can also act as task-irrelevant interference hindering recalling task-relevant not-repeated items. In this VWM-based EEG study, human participants ($n = 25$) responded to a probe for an item's presence or absence in a memory array containing repeated and not-repeated items. Significantly slower response times and poor accuracy were observed for probe matching for not-repeated items. Also, Event-related spectral perturbation analysis showed an increase in mid-frontal theta (4-7Hz) and parietal alpha power (8-12 Hz) demonstrating that default prioritized repeated items interfere with recalling items corresponding to the not-repeated probe matching. This study shows how default prioritized repeated items; a relational property of stimuli can interfere with recalling task-relevant VWM items.