Resource Allocation and Confidence in Visual Working Memory

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Presentation Abstract Summary Existing computational models of visual working memory (WM) do not account for 1) strategies that distribute WM resources across items according to their behavioral relevance or 2) memory confidence. Participants performed a four-item memory-guided saccade task, in which items had different priorities (probe probabilities). In Exp. 2, participants additionally indicated their memory confidence by adjusting the size of a disc centered on their saccade landing. In both experiments, error and response time decreased with increasing priority. In Exp. 2, disc size decreased with priority and was positively correlated to WM error. We investigated variable precision (VP) models in which participants allocate resources across items proportionally to priority, optimally, or neither. We find that the third model fits the data qualitatively well and quantitatively better than the other models; participants under-allocated to high and over-allocated resources to low priority targets relative to proportional or optimal. These results suggest that humans are able to flexibly allocate attentional and memory resources, although not optimally, across items according to task demands.

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