

# The effect of perceptual interference on prioritization of feature dimensions in visual working memory

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## Footnotes

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## Abstract

In visual working memory (VWM) tasks, participants' performance can be improved by a retro-cue appearing after the memory stimuli disappear (i.e., retro-cue effect). The retro-cue can direct internal attention to prioritize a particular object (object-based retro-cue; Souza & Oberauer, 2016) or feature dimension (dimension-based retro-cue; Ye et al., 2016). Many previous studies have investigated the mechanism underlying the object-based retro-cue effect, but the mechanism underlying the dimension-based retro-cue effect is still unclear. The aim of the present study was to investigate how irrelevant visual interference affects the dimension-based retro-cue effect. We asked participants to memorize the color and orientation features of two colored bars in a change-detection task with a dimension-based retro-cue (cued to either the color or orientation dimension) and a change-detection task with an object-based retro-cue (cued to either the left or right item). In the mask condition, we set a subsequent visual mask as visual interference after the retro-cue disappeared. Our results suggest that the object-based retro-cue protected the cued item against perceptual interference; however, the visual mask did not impair VWM performance in the task with dimension-based retro-cue in either the neutral cue or the valid cue condition. We then used a recall task (a more sensitive paradigm than the change-detection task) with a dimension-based retro-cue to further explore the effect of interference on the dimension-based retro-cue effect. Although the visual mask did not impair VWM performance in the neutral cue condition, the presence of masks diminished the degree of benefit from dimension-based retro-cues. Taken together, our findings provide new evidence indicating a difference in the effects of perceptual interference on the use of object-based retro-cues and dimension-based retro-cues. Importantly, the processes of prioritizing internal attention to a particular feature dimension in a VWM task are susceptible to interference from irrelevant perceptual information.

