How does searching for multiple faces among similar-looking distractors affect search performance and distractor memory?

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There is much research showing that a multiple-target search–or a greater visual working memory (VWM) load–enhances incidental distractor memory (Hout & Goldinger, 2010; Guevara Pinto et al., 2020)

However, the underlying mechanism for this effect is not clearly understood.

Partial match hypothesis: VWM load increases the amount of overlap in features, which increases the amount of encoding. Prediction: Greater target-distractor similarity should enhance distractor memory.

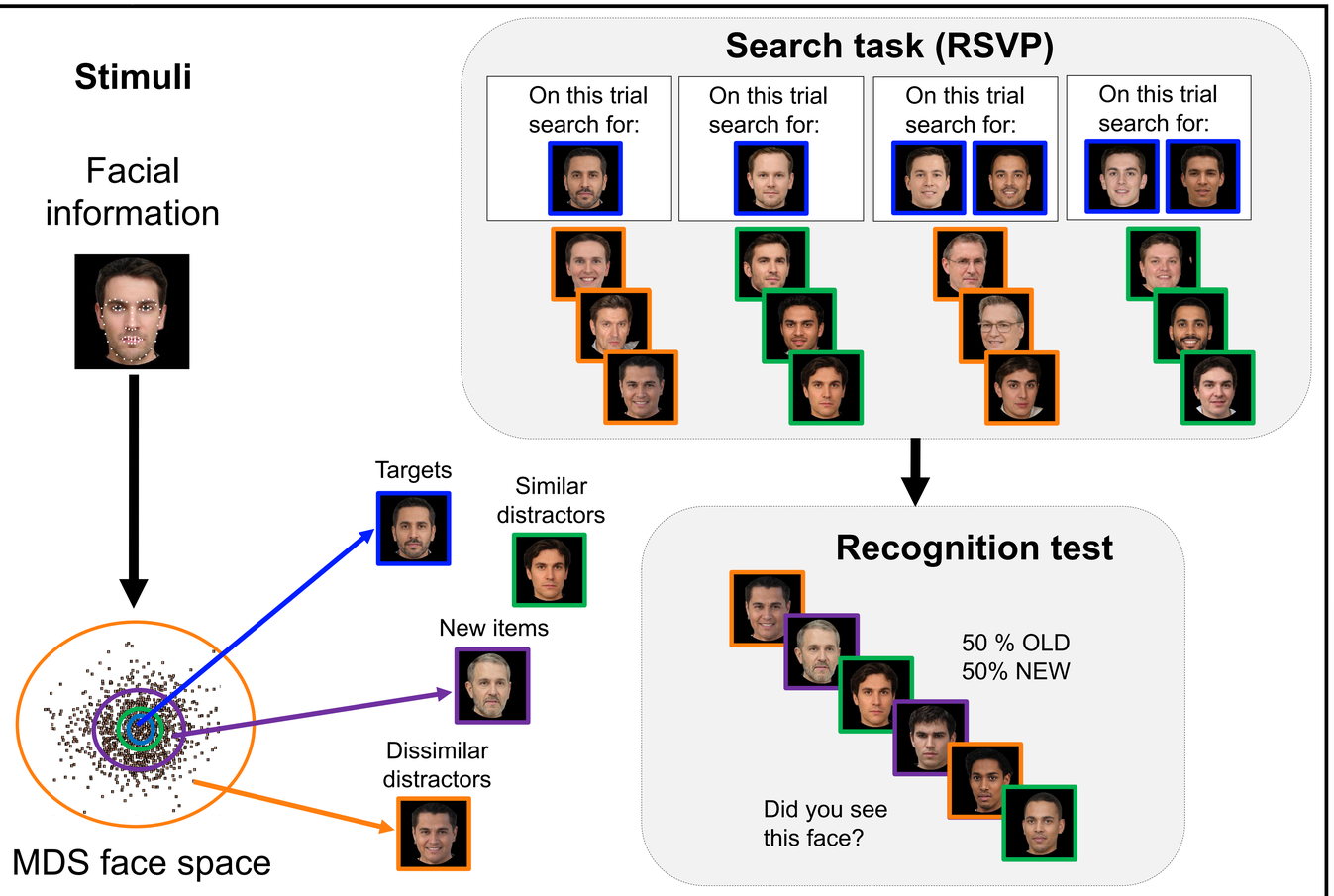
Mental comparison hypothesis: VWM load increases the number of mental comparisons between each distractor and target(s). Prediction: Greater target-distractor similarity should not affect distractor memory.

General design

Variables manipulated (within-subjects)

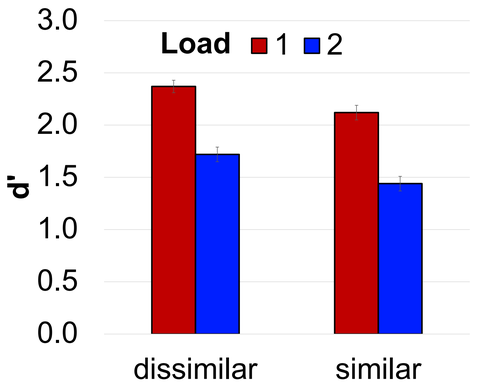
Target presence: Present vs. Absent
Target-distractor similarity: dissimilar vs. similar
VWM load: 1 vs. 2 targets

Experiment 2 was identical to Experiment 1 with the exception that the difference in target-distractor similarity was increased



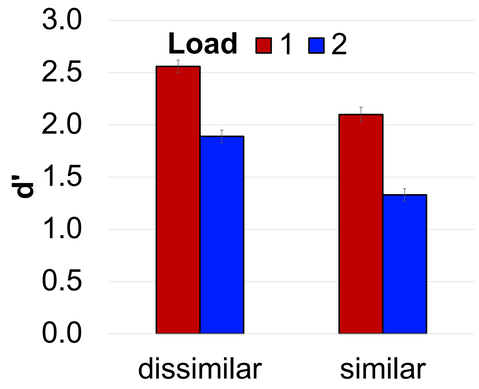
Experiment 1

Search performance



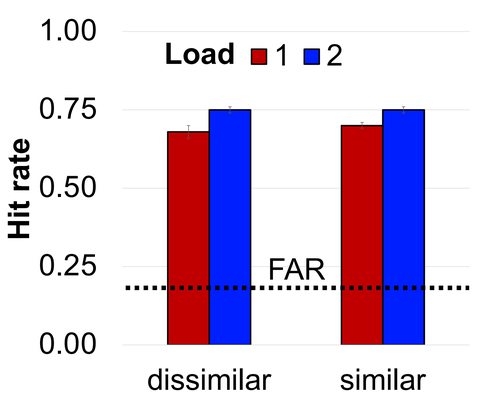
Experiment 2

Search performance

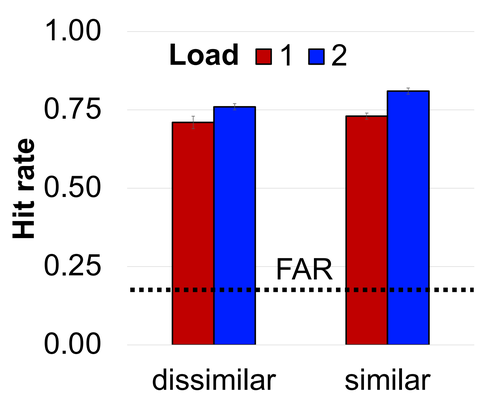


VWM load and distractor similarity hurt search performance

Recognition



Recognition



VWM load helped distractor memory

Similarity enhanced distractor memory, but only when the difference in similarity was increased

References

Hout, M. C., & Goldinger, S. D. (2010). Learning in repeated visual search. *Attention, Perception, & Psychophysics, 72*(5), 1267–1282.

Guerva Pinto, J. D., & Papesh, M. H. (2020). The detail is in the difficulty: Challenging search facilitates rich incidental object encoding. *Memory & Cognition, 48*(7), 1214–1233.

Unique, worry-free model photos. Generated Photos. (2019). Retrieved June 11, 2021, from https://generated.photos/