Title

Exploring the generalizability of visual search strategy

Authors

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Abstract

When searching our visual environment, we often have multiple strategies available (e.g., when looking for apples on a supermarket shelf, you can look for red things, round things, or you can just search serially search through all items). How do we choose a strategy? Recent research on this question has revealed substantial variation across individuals in attentional control strategies. Moreover, while attentional strategies have been found to be reliable within subjects, they have failed to generalize across different paradigms that assess various components of strategy use (Clarke et al., 2018). Thus, evidence for whether strategies generalize beyond a single paradigm remains scarce. While previous tests of generalizability used paradigms that vary in many ways, here, we focused on a single strategy component that could be preserved across tasks, while making several other changes. In two experiments, we assessed the correlation between individuals' strategies in the standard adaptive choice visual search (ACVS; Irons & Leber, 2018) and a modified novel visual search task, Spatial ACVS. In the Standard ACVS, participants seeking to perform optimally have to enumerate subsets of different colored squares and identify the smaller subset to choose a target from. Similarly, in the Spatial ACVS, participants seeking optimal performance have to enumerate spatially separate subsets of squares (one on the left and one on the right side of the display), choosing the target in the smaller subset. Participants finished both tasks in the same order in one experimental session. Results showed a positive correlation in optimal target choices between the two tasks, indicating similar strategy usage. Future studies can focus on what strategy components tend more to be generalized across tasks and whether an individual's strategy can generalize to tasks with a combination of several strategy components.

Reference

Clarke, A. D. F., Irons, J., James, W., Leber, A. B., & Hunt, A. R. (2018). Stable individual differences in strategies within, but not between, visual search tasks. https://doi.org/10.31234/osf.io/bqa5v

Irons, J. L., & Leber, A. B. (2018). Characterizing individual variation in the strategic use of attentional control. *Journal of Experimental Psychology: Human Perception and Performance*, 44(10), 1637.

Supplemental Materials

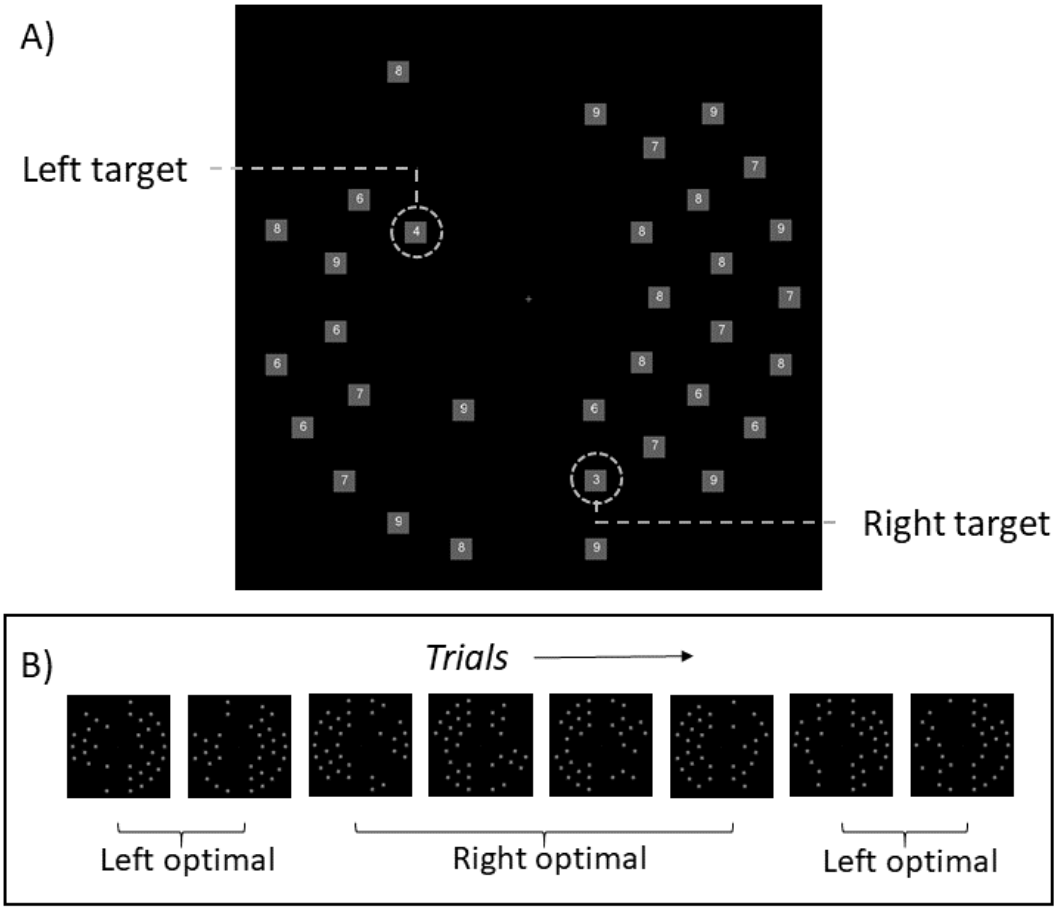

Figure 1. A) Example search display from the Spatial ACVS task. Each display contains a left and a right target, with a digit (2, 3, 4, or 5) on them. There is always an "optimal" target which is located on the side with fewer squares. B) Example sequence of trials. All sequences in the task contained runs of 1-6 trials with fewer squares on the left and fewer squares on the right.