

The Spatial Borders of Search Resumption

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Abstract

The attentional system allows individuals to bias and enhance the processing of a pre-defined target in the visual field. This capability can be demonstrated using visual search, where a single target is identified within a varying number of distractors, which can share features with targets. When the process of visual search is interrupted by temporarily eliminating all stimuli, participants can resume search when the visual array reappears. This rapid resumption of search is manifested in a shorter reaction time for a recurring search array. This phenomenon has been observed under many conditions, and traditionally explained in terms of visual prediction: with insufficient evidence for a target discrimination, the cognitive system relies on its limited information to direct attention towards where it hypothesizes the target will reappear. In the present study, we assessed how resumption is influenced by spatial shifts in attention. Participants were requested to identify a target in a search array which appeared for 100ms and disappeared for 900ms, repeatedly until response. Between the reappearances we shifted the locations of the whole array. We demonstrate how resumption persists when the array expands over a larger space before shrinking back (Exp-1), and when the array shifts up and down in 5° visual angles (Exp-2). Finally, we manipulated the spatial shift systematically (10°/20°/30° visual angles) and found that resumption is eliminated only at the largest shifting distance (Exp-3). We discuss a theoretical account of the tradeoff between spatial shifts of attention and the maintenance of memory representations.

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