Contextual Cueing in a Comparative Visual Search Task.

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Background


Improvements in performance might result from:
-Context guidance: context guides attention to target location.
-Response selection: context aids target recognition and decision.


Can we separate these two processes? YES!

We tried to reproduce Contextual Cueing in a different kind of task (Comparative Visual Search) and analyzed eye movements separating Search and Verification Fixations.

Methods

Comparative Visual Search Task:
-Find object that is different.
-Indicate if difference is in shape or color.

Manipulation:
- Four configurations were repeated 14 times.
- Each epoch: 4 new + 4 old configurations (8 trials per block, 112 in total).
- In repeated configurations target appears at the same location, but differential feature varies.

Measures:
- RT
- Eye Movements (ASL 6000, 60HZ)

N=14

Results

1. RT and Number of Fixations

Trials were divided in two phases: Search and Verification (Pomplun et al, 2001, Cognitive Science, 25, 3-36).

Verification Fixations: a subgroup of consecutive fixations, from the last six fixations of that trial, at a distance of less than 100 pixels from the critical items (maximum 2 intermediate fixations).

Search Fixations: All other fixations.

- Search Fix: only significant effect of Epoch (p=0.008). Average Fixation Duration: 157 ms.
- Verification Fix: significant effects of Repetition (p=0.001) and Epoch (p=0.001). Average Fixation Duration: 229 ms.

Search Fixations did NOT vary between repeated and new configurations.

- Verification Fixations decreased significantly more for repeated configurations.

- This suggests that, in comparative visual search, contextual cueing effects do not facilitate search, but optimize the verification process prior to response.

Conclusions

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