Contingent attentional capture influences performance not only by depleting limited target processing resources, but also by changing attentional control settings

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Introduction

- During contingent attentional capture, an irrelevant stimulus that matches an attentional set is enhanced and uses limited target processing resources, reducing target identification accuracy (e.g., Folk et al., 1992, 2002).
- From previous capture studies requiring participants to maintain a single attentional set, it is unclear whether enhancement of an irrelevant stimulus is limited to the item itself, or whether the attentional set is also enhanced.
- We hypothesize that capture also involves enhancing the attentional set corresponding to the distractor.

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<td><strong>Experiment 1:</strong> Can contingent attentional capture be set-specific?</td>
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**Experiment 1:** Identifying Two Colors

- Same target-colored (STC)
- Non-target-colored (NTC)
- Different target-colored (DTC)

**Experiment 3:** Identify All Colors

- Basic contingent capture effect replicates prior studies: NTC > STC, larger at early lags
- Set-specific contingent attentional capture effect is new: STC > DTC, larger at early lags
- Set-specific capture is not simply feature interference because DTC > STC when the target-colored distractor appears after the target (Exp 2)
- Set-specific capture is not simply bottom-up priming because DTC = STC when all colors are part of the same attentional set. (Note: Target Alone accuracy is significantly higher than STC & DTC accuracy at lag 1 in Identify All Colors, indicating attentional capture).

**Experiment 4:** Attentional Blink

- Contingent attentional capture effects are larger when a distractor’s color matches a different attentional set than an upcoming target’s color, a phenomenon that we call set-specific capture.
- Set-specific capture cannot be explained by feature interference (Exp 2) or bottom-up priming (Exp 3).
- Set-specific capture likely represents a temporary change in control settings, involving enhancement of the attentional set corresponding to the critical distractor’s color.
- It appears that an attentional set is enhanced only when it is consciously identified and, therefore, that set-specific capture is a post-perceptual phenomenon (Exp 4).

**Summary & Conclusions**

- Contingent attentional capture effects are larger when a distractor’s color matches a different attentional set than an upcoming target’s color, a phenomenon that we call set-specific capture (Exps 1-3).
- Set-specific capture cannot be explained by feature interference (Exp 2) or bottom-up priming (Exp 3).
- Set-specific capture likely represents a temporary change in control settings, involving enhancement of the attentional set corresponding to the critical distractor’s color.
- It appears that an attentional set is enhanced only when it is consciously identified and, therefore, that set-specific capture is a post-perceptual phenomenon (Exp 4).

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