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<th><strong>Title</strong></th>
<th>Dissociating goal-directed and stimulus-driven determinants in attentional capture</th>
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<td><strong>Author(s)</strong></td>
<td>Chan, LKH; Hayward, WG</td>
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<td>The 7th Asia-Pacific Conference on Vision [亞太視覺會議] (APCV 2011), Hong Kong, 15-18 July 2011. In i-Perception, 2011, v. 2 n. 4, p. 323</td>
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Dissociating goal-directed and stimulus-driven determinants in attentional capture

Background

We encounter "attentional capture" when a salient event attracts our attentional focus.

In most cases, dimensionality of the distractor matters.

Why is different-dimension singleton weaker?

Two possible explanations:

1. Because the distractor does not match the observer's "attentional set" (e.g., Folk, Remington, & Johnston, 1992)
2. Because the distractor and the target are represented in different feature maps (Chan & Hayward, 2009)

Current study

Create a situation where a different-dimension distractor also matches the attentional set.

 Targets mixed across trials, so observers must search both dimensions.

<table>
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<tr>
<th>Set size: 4, 10, 16</th>
<th>Orientation Target</th>
<th>Color Target</th>
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<tbody>
<tr>
<td>No Distractor</td>
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<tr>
<td>Same-Dimension Distractor</td>
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<tr>
<td>Different-Dimension Distractor</td>
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Results

- **Orientation Target**
  - No distractor: 50 ms capture, p<.001
  - Same-dimension distractor: 109 ms capture, p<.001
  - Different-dimension distractor: 550 ms, 600 ms, 650 ms, 700 ms

- **Color Target**
  - No distractor: 15 ms capture, p=.14
  - Same-dimension distractor: 7 ms capture, p=.57

Conclusions

Suppose color is the more salient dimension...

- Current data suggest relative saliency of the target as compared to the distractor is crucial for producing capture.
- Consistent with Theeuwes' (1991) suggestion that visual saliency determines search order.

Why across-dimension attentional capture has been very weak (<40 ms) in other studies?

- In other studies, different-dimension distractors generally did not match current attentional set.
- Although these distractors may be salient enough to produce capture, capture size was small.
- We reason that when attentional set is matched, it may be more difficult to disengage attention from the distractor, resulting in stronger capture.

In other words, we suggest that while a high distractor saliency enables capture, capture size is influenced by its match to the current attentional set.

This proposal reconciles the stimulus-driven view and the contingent-capture view in the attentional capture literature.

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