Effects of stimulus energy on the attentional blink

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Publication date:
2012

Document Version
Early version, also known as pre-print

Citation for published version (APA):
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Background
- The attentional blink effect is commonly attributed to high level visual processes.
- Newer evidence suggests that low level processes contribute to the blink.\(^1,2\)
- How does changes in stimulus energy of all elements in the RSVP affect the AB?

**Question:** Does stimulus energy modulate the blink?

Experiment 1
Task: Standard attentional blink task.
Stimuli: Digit-targets amongst letter-distractors in high contrast RSVP.
Timing: SOA of 100 ms in all trials.

Two conditions
1. No ISI condition: Exposure duration is 100 ms.
2. ISI condition: Exposure duration is 30 ms and ISI is 70 ms.

Experiment 2
Task: Standard attentional blink task.
Stimuli: Digit-targets amongst letter-distractors in RSVP.
Timing: Exposure duration and SOA is 100 ms in all trials.

Two conditions
1. High contrast condition: Black on white ($C_w = 0.99$).
2. Low contrast condition: Dark grey on light grey ($C_w = 0.27$).

Results
- Blink magnitude increases with decreased exposure duration.
- Blink magnitude increases with decreased contrast.

\[ \text{Stimulus energy} = |\text{contrast} \times \text{exposure duration}| \]

Conclusion
1. Blink magnitude increases with decreased exposure duration.
2. Blink magnitude increases with decreased contrast.
3. Blink magnitude increases with decreased stimulus energy.

**Answer:** Stimulus energy modulates the blink.

Analysis
- Blink magnitude ($\text{AB magnitude}$) was calculated by dividing the area above mean $p(T2|T1)$ with the maximum possible blink area.
- Repeated measures ANOVAs of arcsin($p(T2|T1)$) revealed a significant main effect of lag in both experiments ($p < 0.001$).
- Main effects of condition were also significant in both experiments:
  - Experiment 1 (ISI): $p = 0.029$
  - Experiment 2 (Contrast): $p = 0.038$

References