Effects of stimulus energy on the attentional blink
Lunau, Rasmus; Bundesen, Claus

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Effects of stimulus energy on the attentional blink
Rasmus Lunau & Claus Bundesen
Center for Visual Cognition, University of Copenhagen, Copenhagen, Denmark

Background
- The attentional blink effect is commonly attributed to high level visual processes.
- Newer evidence suggests that low level processes contribute to the blink.
  
Stimulus energy = | contrast x exposure duration |
- 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

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 ($AB_{mag}$) 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

Analysis
- Probability correct $[p(T2|T1)]$
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