Effects of stimulus energy on the attentional blink

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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.²

Background 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.

Analysis
- Blink magnitude (ABmag) 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

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.

References

Results

Experiment 1: ISI

Experiment 2: Contrast

Stimulus energy = | contrast x exposure duration |

ABmagnitude = 0.17
ABmagnitude = 0.19

n = 11
n = 15

probability correct [p(T2|T1)]

lag (ms)