Effects of stimulus energy on the attentional blink

Lunau, Rasmus; Bundesen, Claus

Publication date:
2012

Document version
Early version, also known as pre-print

Citation for published version (APA):
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.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.

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

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 (Cw = 0.99).
2. Low contrast condition: Dark grey on light grey (Cw = 0.27).

Results
1. Blink magnitude increases with decreased exposure duration.
2. Blink magnitude increases with decreased contrast.
∴ Blink magnitude increases with decreased stimulus energy.

Analysis
• Stimulus energy = | contrast x exposure duration |

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

Answer: Stimulus energy modulates the blink.

References