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Link to article, DOI:
[10.1167/9.8.156](https://doi.org/10.1167/9.8.156)

Publication date:
2009

[Link back to DTU Orbit](#)

Citation (APA):

Nielsen, S., Petersen, A., & Andersen, T. (2009). *Under which conditions does T1 difficulty affect T2 performance in the attentional blink?* Abstract from Vision Sciences Society 2009, Naples, United States.
<https://doi.org/10.1167/9.8.156>

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Under which conditions does T1 difficulty affect T2 performance in the attentional blink?

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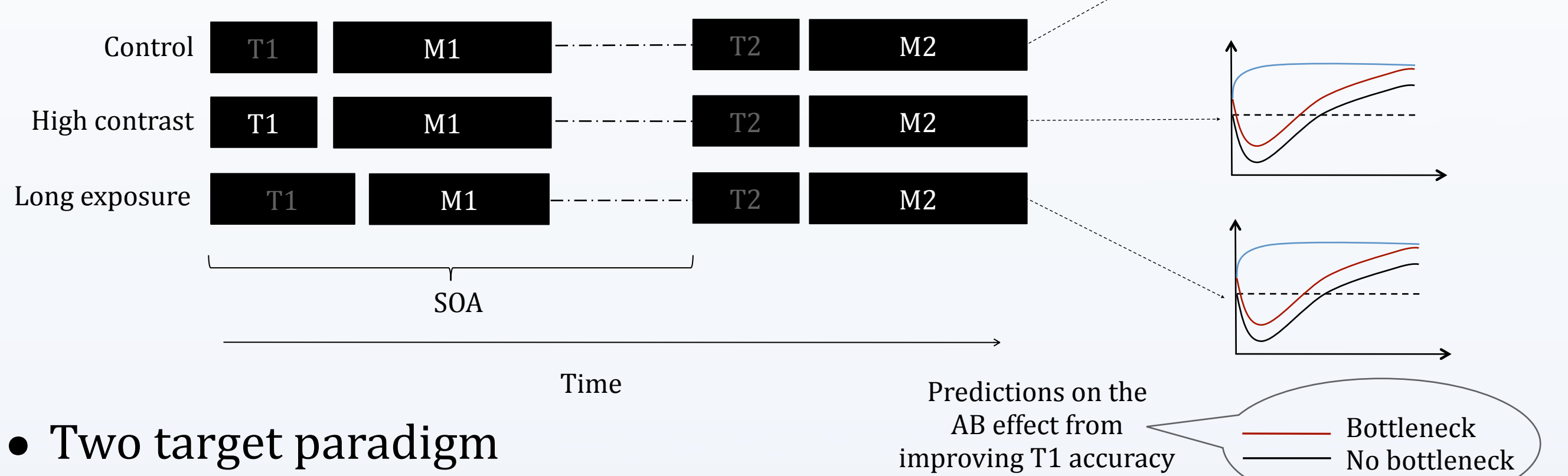
Introduction

- We examine how the perceptual difficulty of T1 affects the attentional blink (AB) by increasing T1 exposure duration and T1 contrast relative to a control level
- Bottleneck theories suggest that a slow pre VSTM stage accounts for the AB and predicts that T1 difficulty is inversely related to the AB magnitude

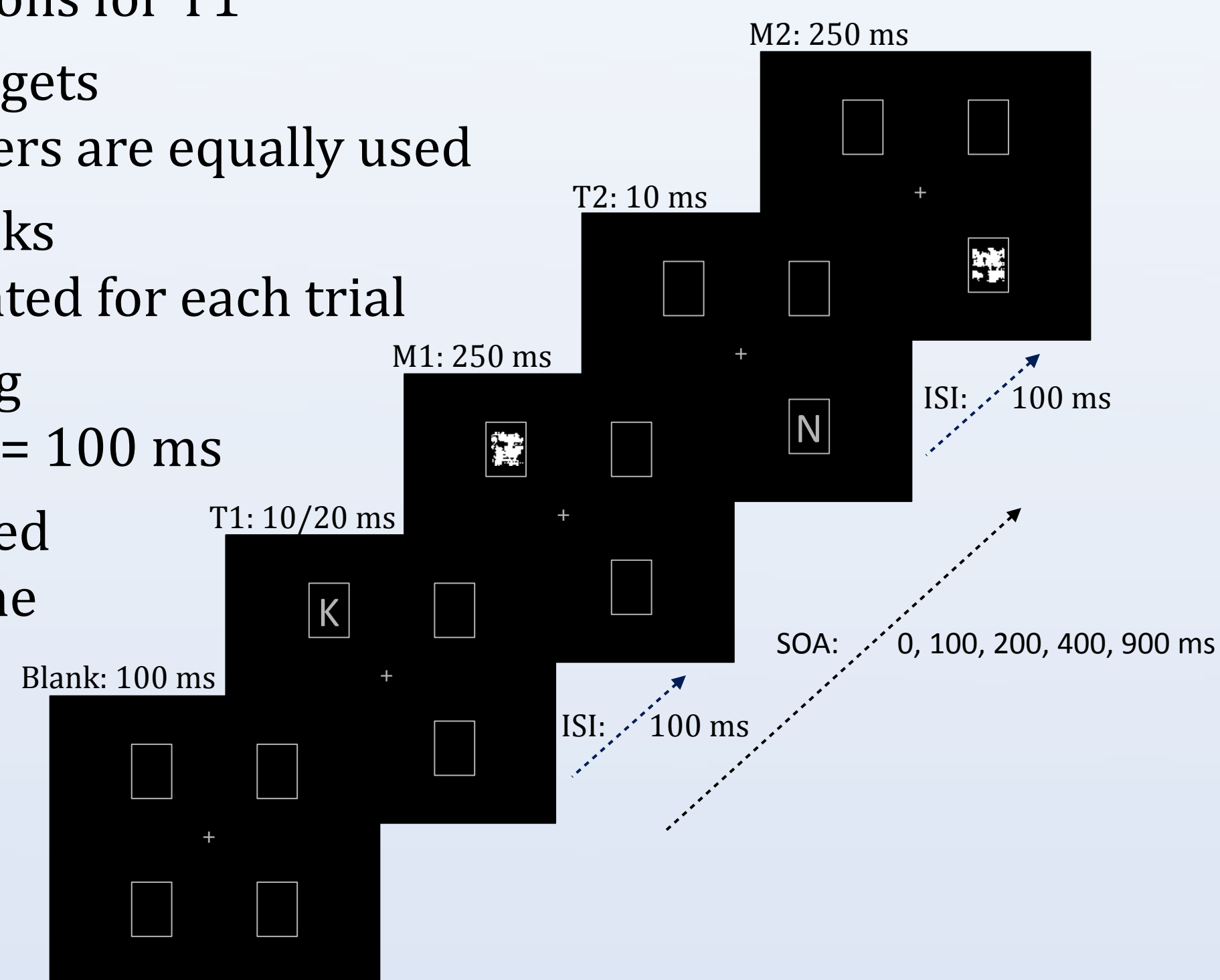
Method

- Three T1 difficulty conditions
 - T1 accuracy adjusted individually for observers

Condition	T1 accuracy	Contrast	Duration
Control	50%	Low	Short
High contrast	85%	High	Short
Long exposure	85%	Low	Long

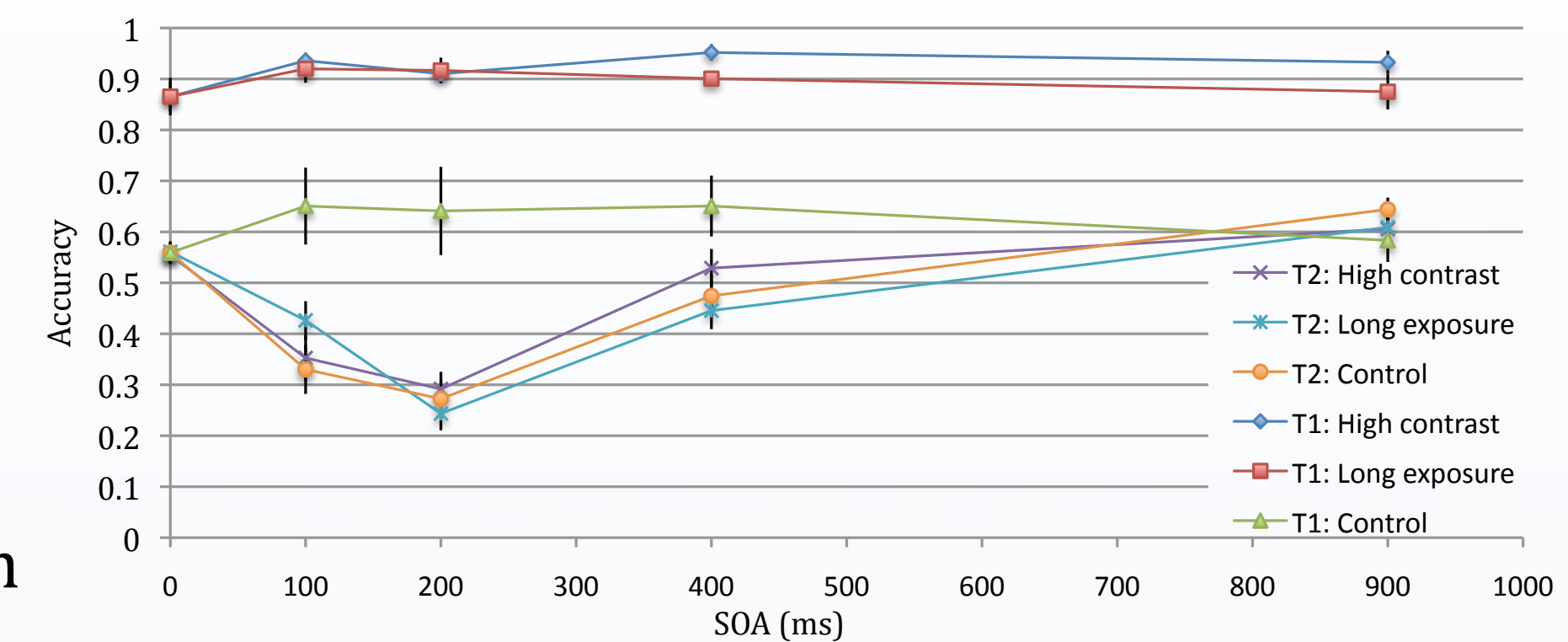


- Two target paradigm
 - 5 SOA conditions
 - 3 difficulty conditions for T1
- Report two letter targets
 - Each of the 26 letters are equally used
- Random feature masks
 - New masks generated for each trial
- Interruption masking
 - Target to mask ISI = 100 ms
- 6 observers conducted 52 trials in each of the 15 conditions



Findings

- T2 main effect of SOA in all conditions indicating an AB
- No T2 main effect of T1 difficulty in the contrast or the exposure condition
- T2 interaction effect ($p = 0.04$) both in the contrast and the exposure condition



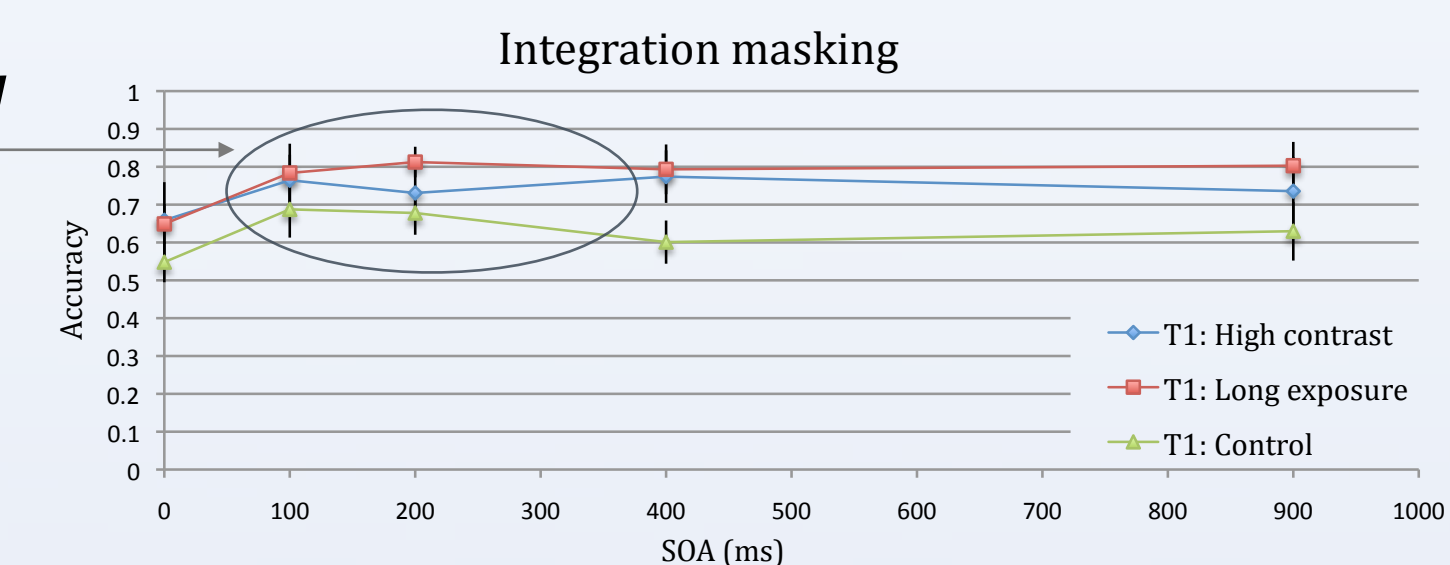
Conclusion

- Varying perceptual difficulty of T1 is not sufficient to modulate the AB magnitude
- Interaction effect may indicate temporal displacement of the AB
- These findings lend little support to the bottleneck theories

Discussion on visual masking

Integration masking causes large variation in data:
- Observers cannot sustain adjusted T1 accuracy level

- RSVP studies use interruption masking due to masking study by Brehaut et al. (1999)
- Two-target studies does not? (Duncan et al., 1994; Moore et al., 1996; Ward et al., 1996,1997; McLaughlin et al., 2001)
- Consistent with Brehaut and colleagues' study we find that Interruption masking facilitates
 - Less variation in data
 - Larger AB magnitude (35% increase)



Masking may confound interference from T1 difficulty

- Target processing is interrupted by attentional capture towards the mask
- This may prevent us from observing any effect on T2 performance from improving T1 accuracy

