

Disentangling **top-down** and **bottom-up** influences on blinks in the **visual and auditory** domain

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Key findings

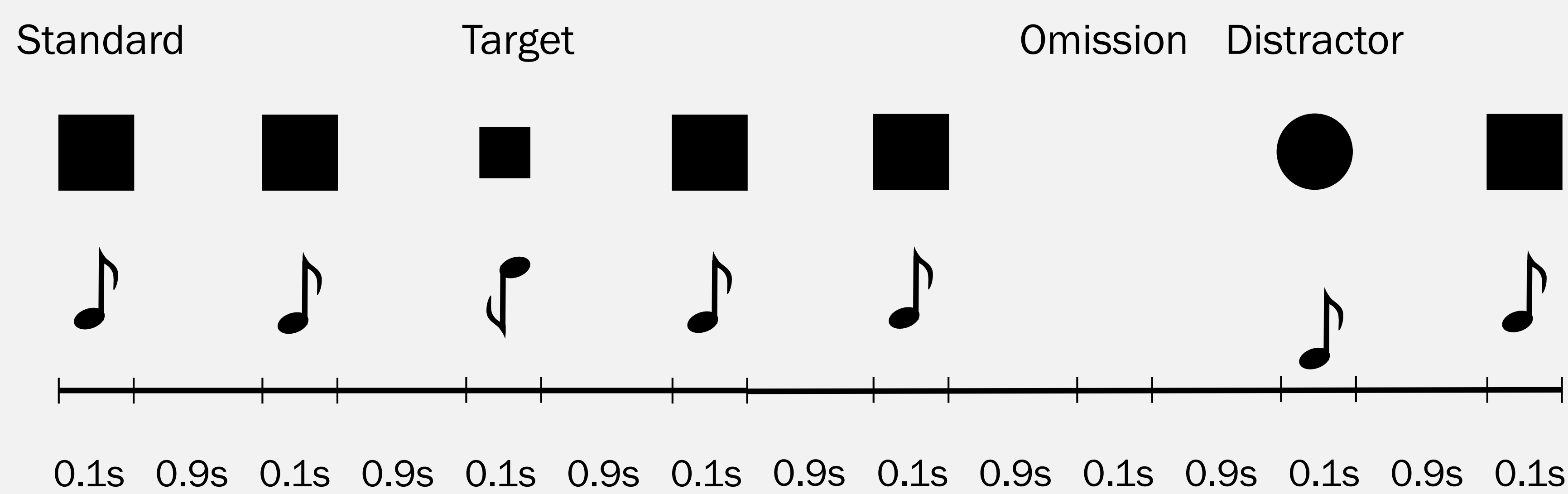
- 1) Blink suppression before stimulus onset is enhanced for **visual input**
- 2) Blink increase after the stimulus onset is strengthened by **attention** and is **modality independent**
- 3) The blink latency might distinguish **top-down** from **bottom-up** influences

Research Questions

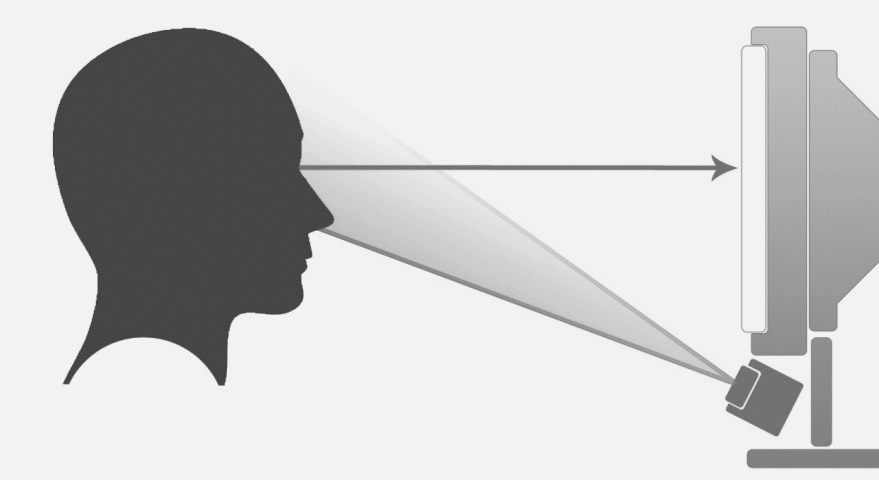
Is blinking similarly influenced by **visual and auditory** input?

Can we distinguish **bottom-up** from **top-down** influences on blinks?

The Oddball Experiment



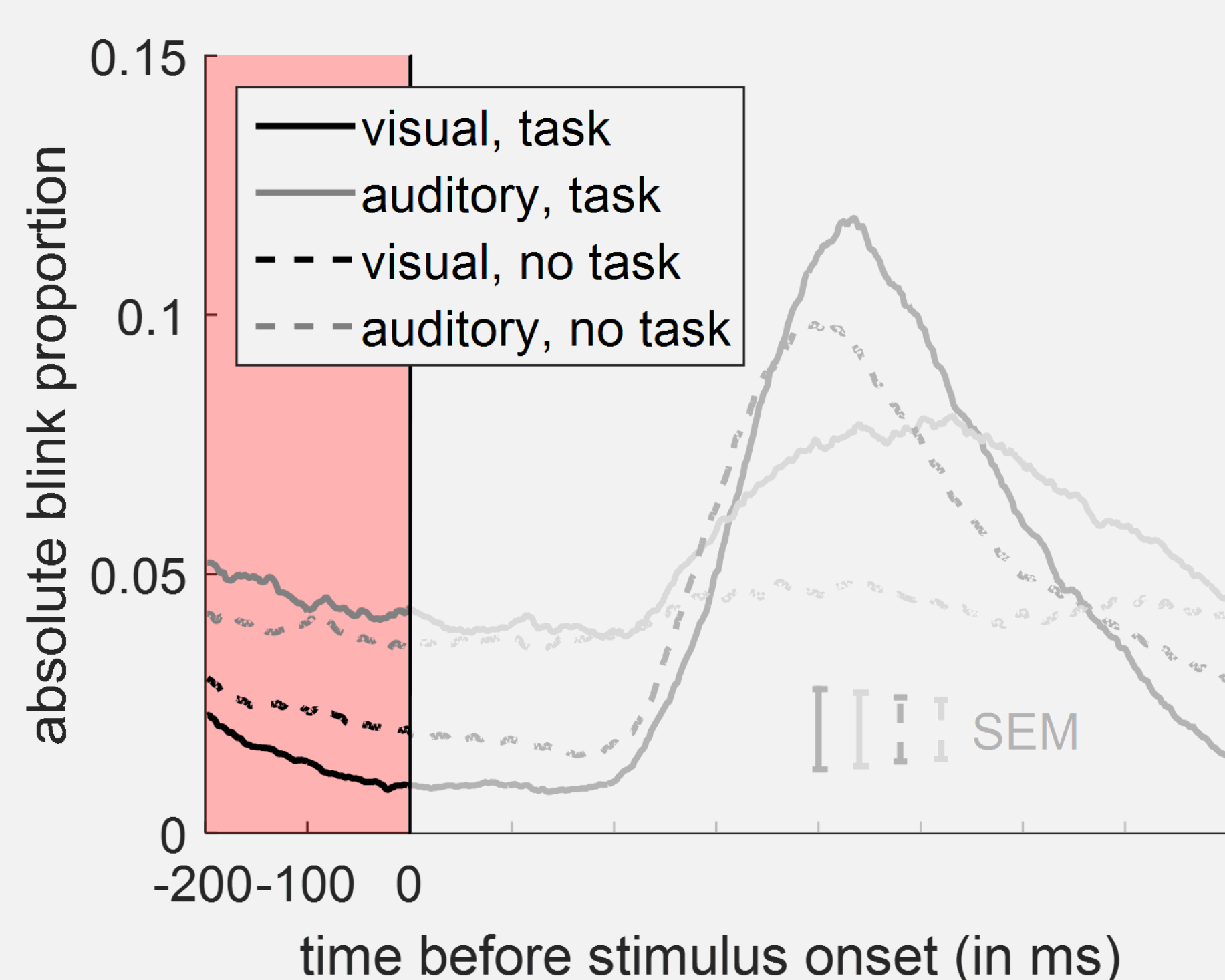
- Pre- and Post-stimulus blink modulation
- Task vs. no task (comparison of standards)
- Visual vs. Auditory (comparison of standards)
- Blink latency
Standard vs. Distractor/Omission vs. Target



Eyelink 1000 (500Hz)
Matlab R2015b

Results

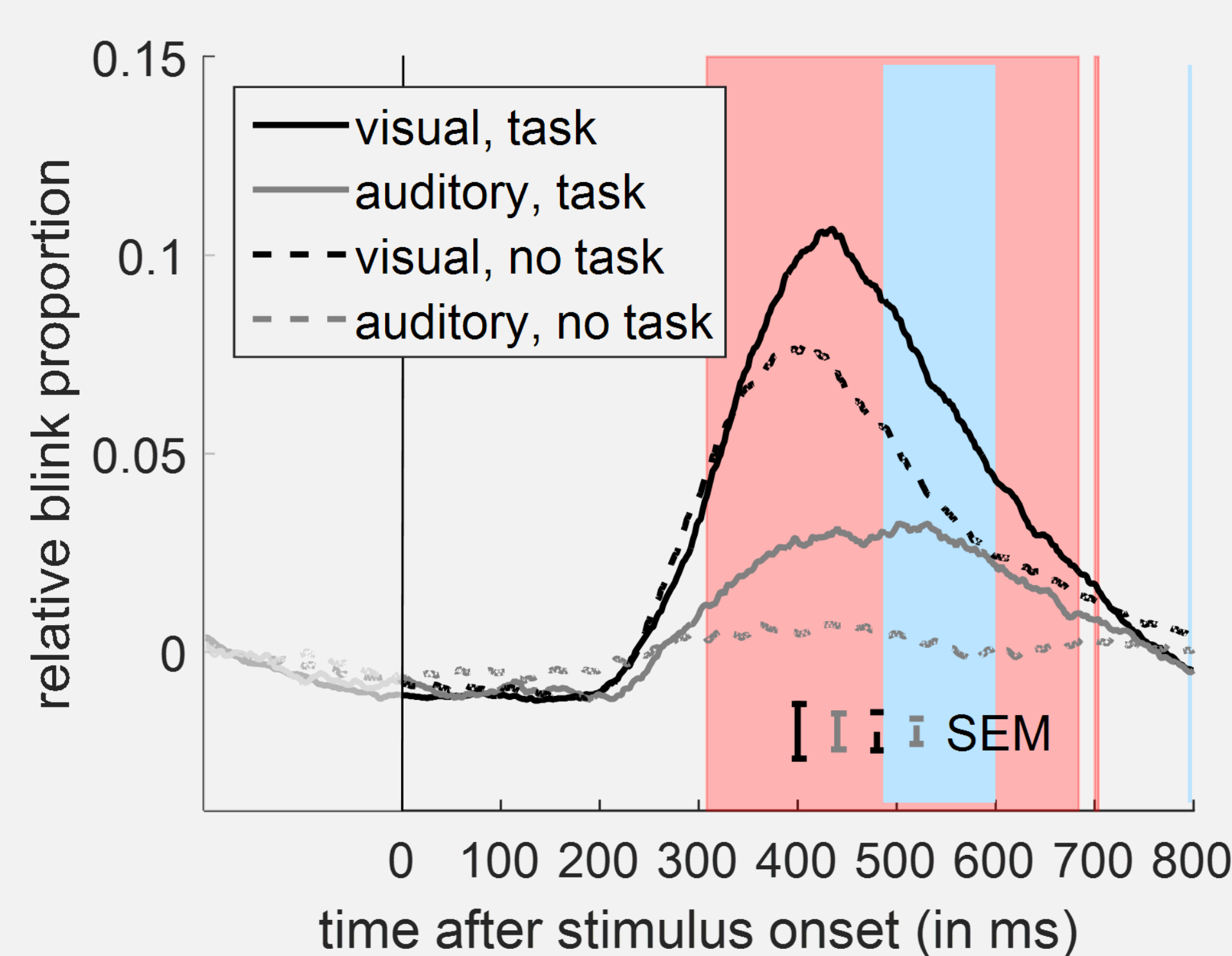
Pre-stimulus modulation of **absolute** blink proportion



$Blink_{Visual} < Blink_{Auditory}$

$Blink_{Task} = Blink_{NoTask}$

Post-stimulus modulation of **relative** blink proportion

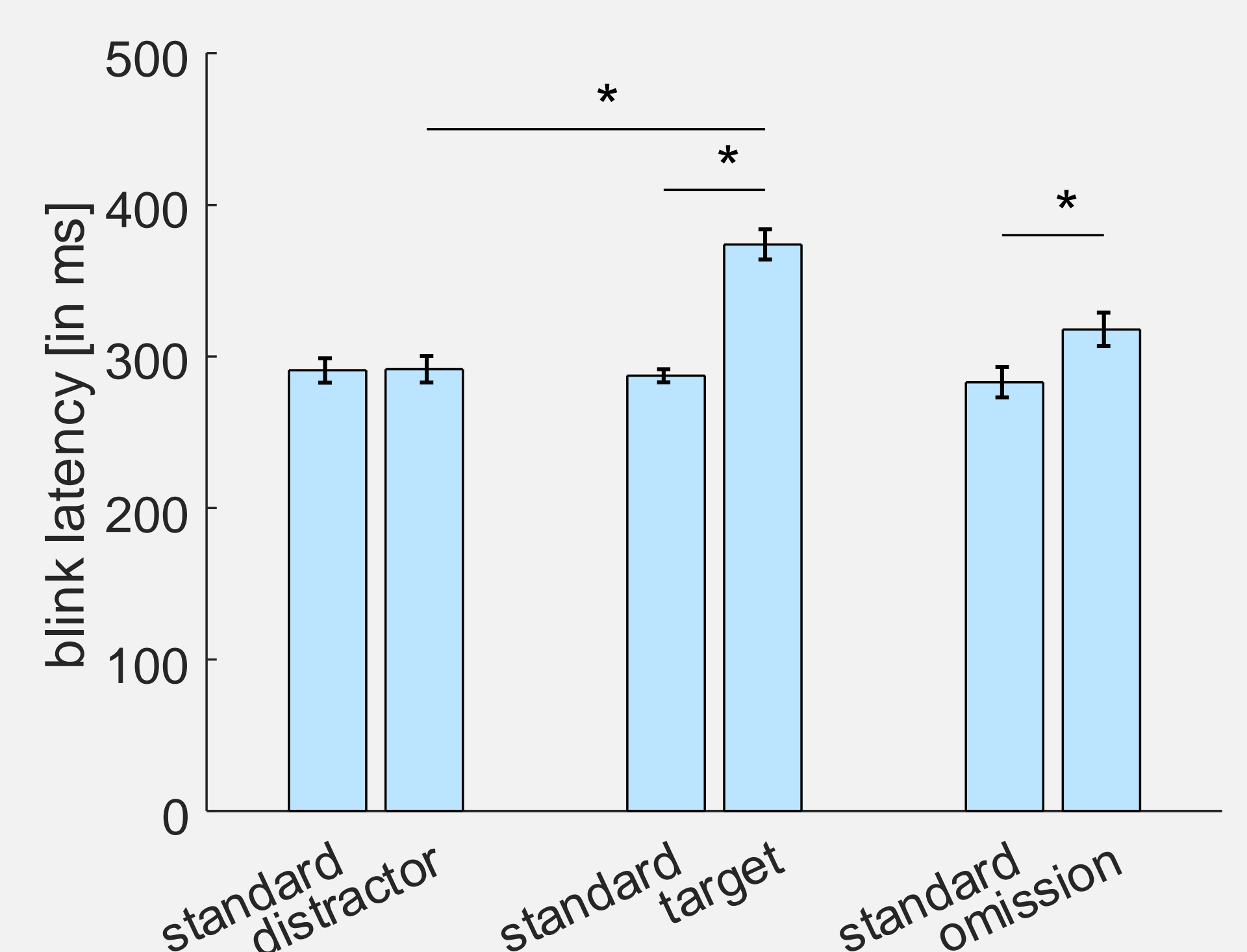


$Blink_{Visual} > Blink_{Auditory}$

$Blink_{Task} > Blink_{NoTask}$

(Bottom-up & general top-down effect)

Blink latency after each stimulus type



Distractor \approx Standard $<$ Target \approx Omission

(Bottom-up & specific top-down effect)