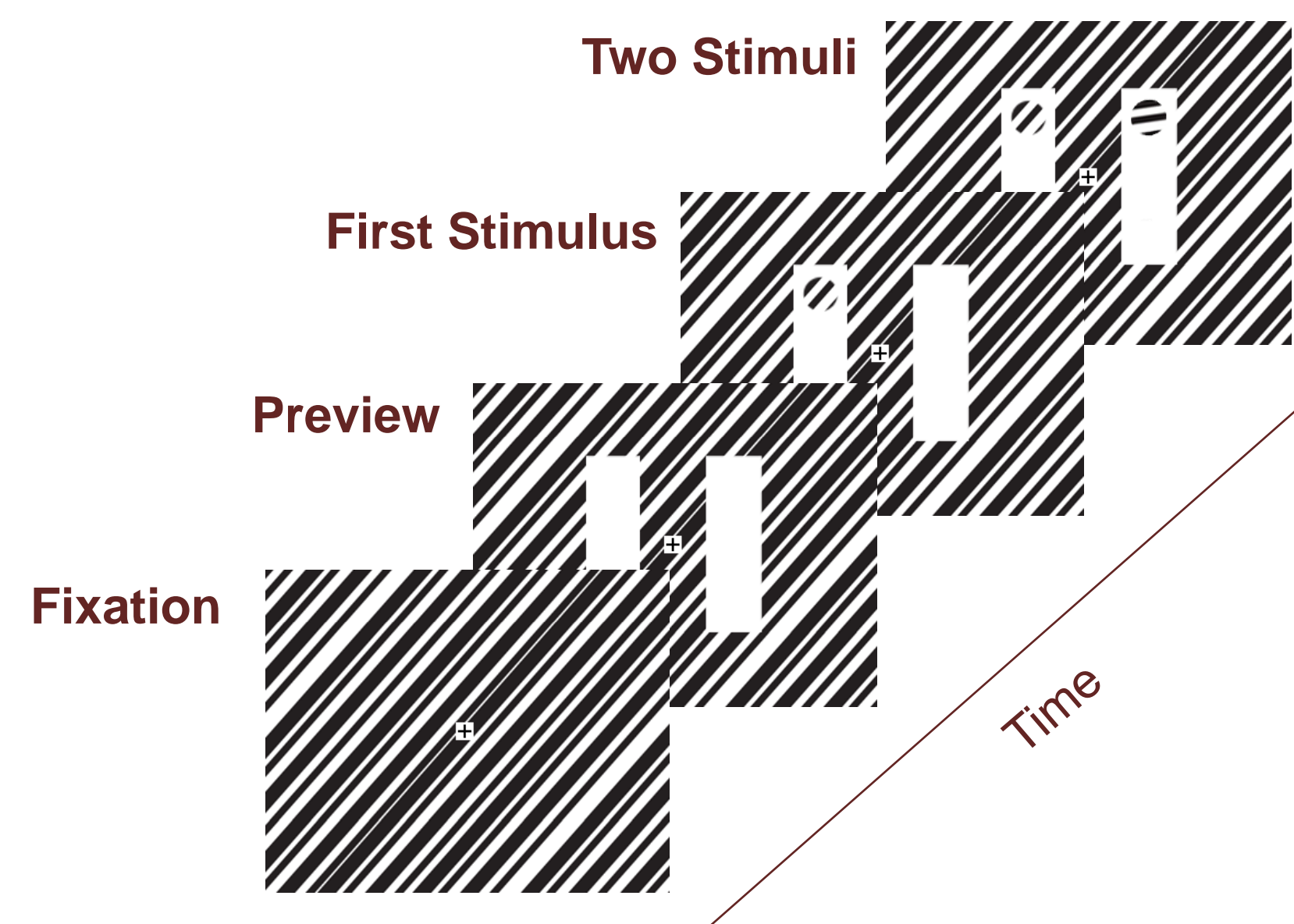


Introduction

- Recent studies suggest that object-based attentional guidance is a result of attentional prioritization^{1,2}.
- It is proposed that in the absence of an alternative strategy items appearing on the same object are prioritized over items appearing on a different object^{1,2}.
- Most studies providing evidence for the attentional prioritization hypothesis have relied on spatial cuing paradigms.
- Here, we reveal that prioritization emerges in the absence of spatial cuing with the use of a recently developed cueless temporal order judgment (TOJ) paradigm^{3,4}.

General Paradigm

Procedure



- Participants are asked to report which of the 2 circles appears first
- The time between the appearance of the first circle and the second circle varied: 0, 12, 24, 36, 48, or 60 msec

"Hole" Stimulus



- Stimulus resembles a circular cut out of the white shape
- Lines match up with pattern behind it

"Hill" Stimulus



- Stimulus draws from same section of background as "Hole"
- Rotated to so that the lines do not match the pattern

To investigate object-based attention and attentional prioritization using a paradigm that does not rely on spatial cuing.

Purpose

Experiment 1

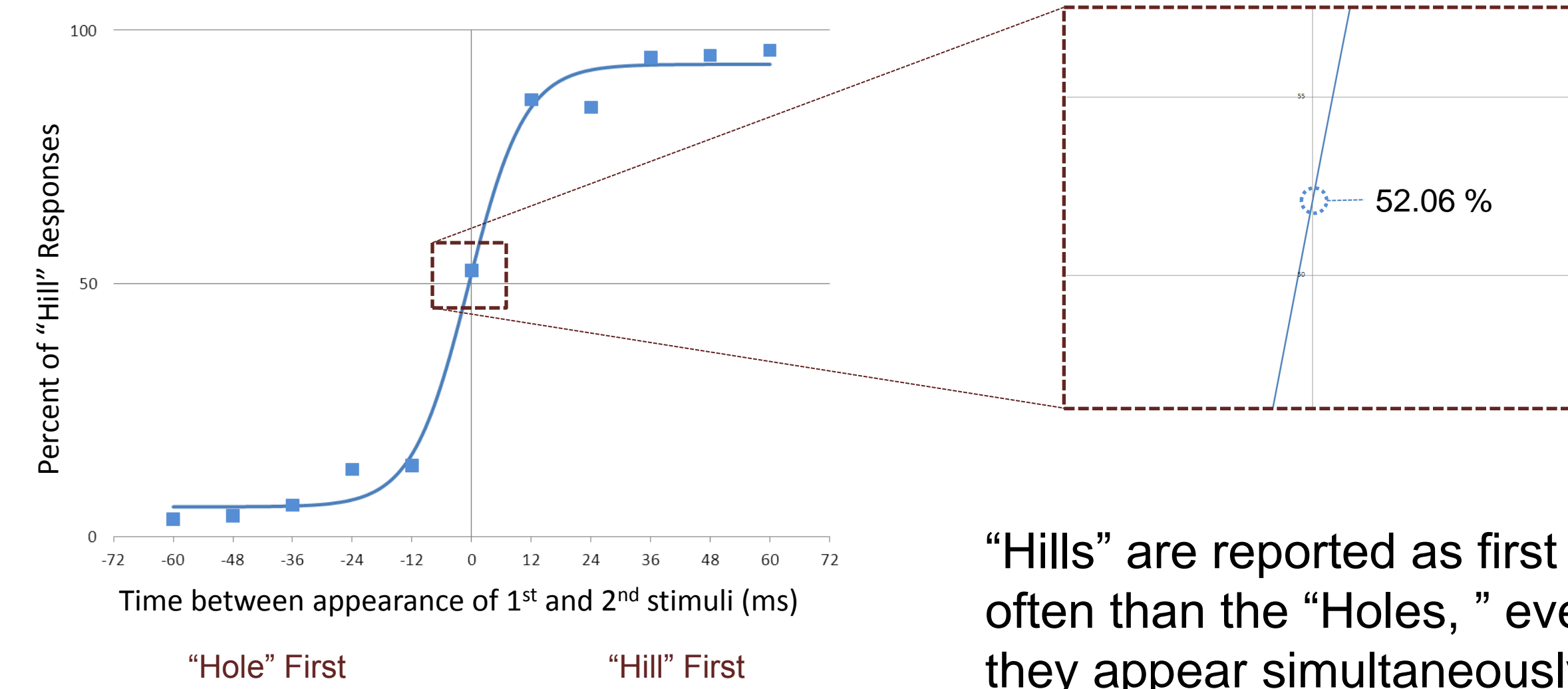
QUESTION: Are "Hills" and "Holes" equally salient (i.e., prioritized)?

Design:



Circles appeared in any 2 adjacent squares

Results:



"Hills" are reported as first more often than the "Holes," even when they appear simultaneously

ANSWER: No! The "Hill" captures attention better than "Hole."

CONCLUSION: When the stimuli appear each in a separate box, "Hills" are prioritized over "Holes."

Experiment 2

QUESTION: Does the appearance of the stimuli within the same object versus a different object affect prioritization?

Design:

Same Object (SO)

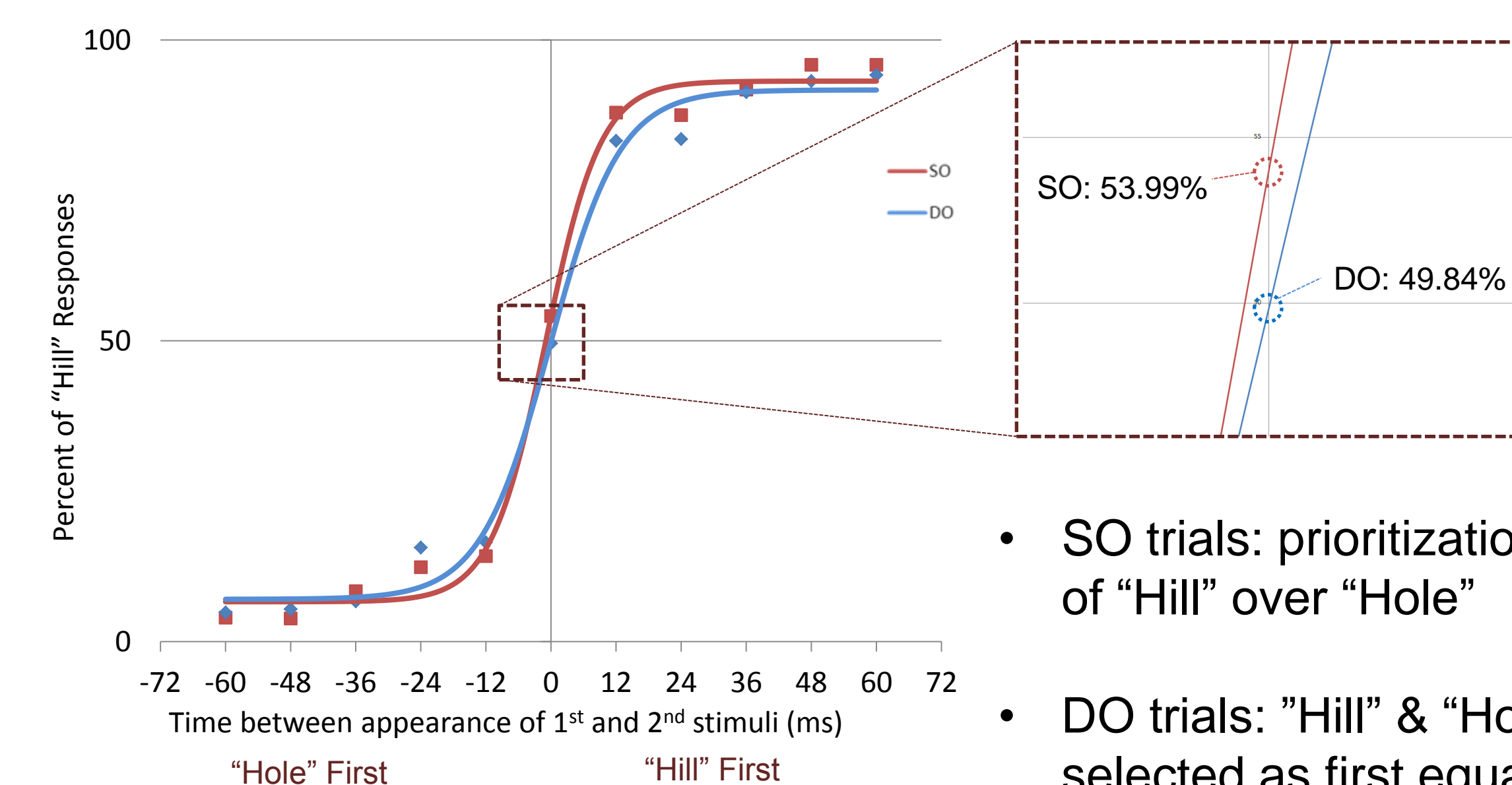


Different Object (DO)



- The locations of the circles is identical to Exp.1, except the circles either appear both in the same object (SO) or each in a different object (DO)
- SO and DO arrangement is equally likely – 1:1 ratio

Results:



- SO trials: prioritization of "Hill" over "Hole"
- DO trials: "Hill" & "Hole" selected as first equally often

ANSWER: Yes! The SO displays elicit prioritization of the "Hill", while DO displays do not.

CONCLUSION: With a 1:1 ratio of SO and DO trials, the "Hill" is prioritized on the same object only.

References

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- ³West, G., Anderson, A., & Pratt, J. Motivationally Significant Stimuli Show Visual Prior Entry: Evidence for Attentional Capture. *Journal of Experimental Psychology*, 35 (4), 1032-1042.
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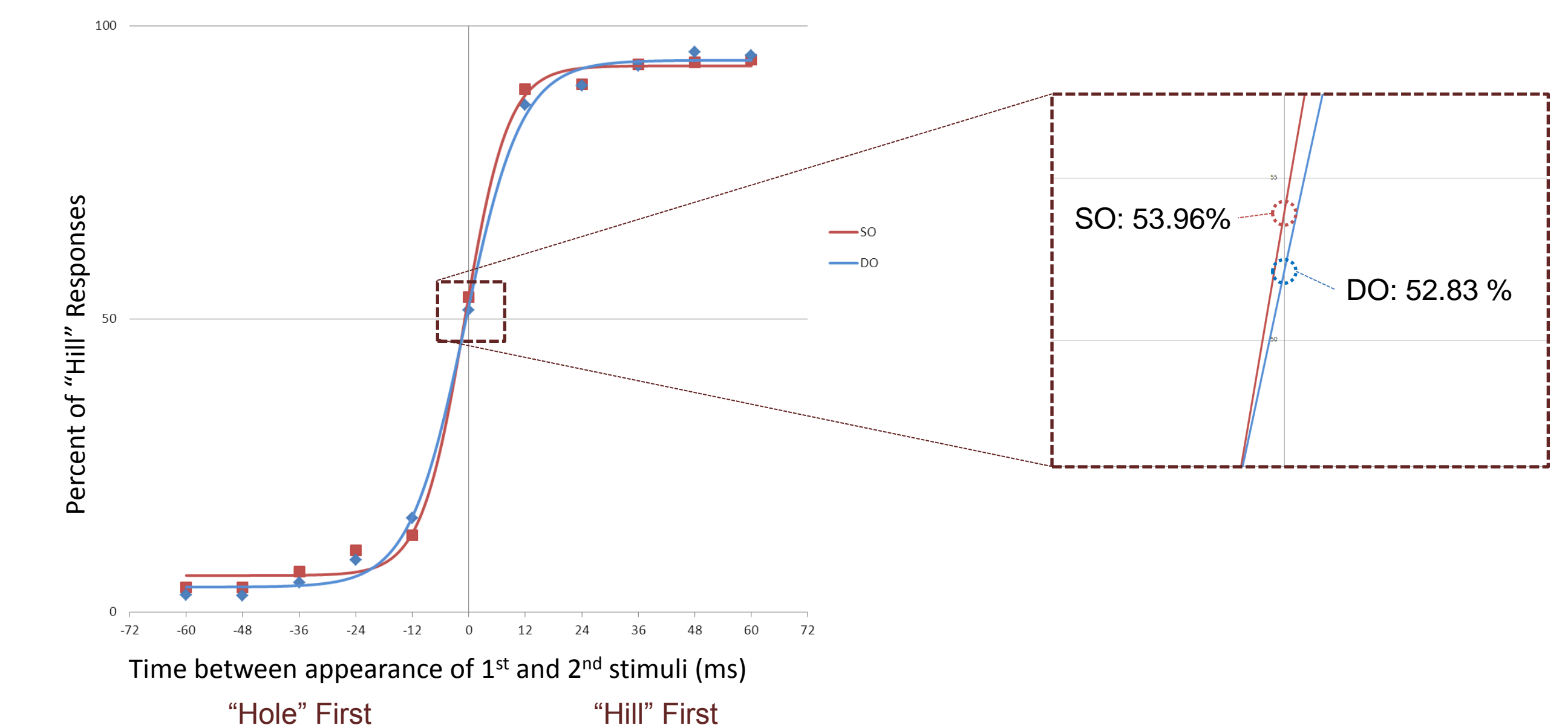
Experiment 3

QUESTION: Does the introduction of an alternate strategy modulate the influence of objects on attentional prioritization?

Design:

- Shapes and arrangement are identical to Exp. 2
- DO displays are twice as likely to appear as SO trials
- Participants informed of the 2:1 ratio for DO:SO trials

Results:



- Participants selected "Hill" more often during both SO and DO trials
- No statistical difference between SO and DO trials when "Hill" and "Hole" appear simultaneously
- "Hill" and "Hole" are prioritized to the same extent regardless of the object

ANSWER: Yes! When DO trials are twice as frequent, the pattern of prioritization is observed in SO and DO trials.

CONCLUSION: With a 2:1 ratio of SO and DO trials, objects no longer affect prioritization of the stimuli.

Conclusions

- Attentional prioritization emerges from the temporal order judgment (TOJ) paradigm, in the absence of spatial cuing.
- All else being equal, the appearance of stimuli within the same object elicits prioritization, while this effect is eliminated when the stimuli appear in different objects.
- When DO trials appear more often, the difference between DO and SO trials is eliminated, suggesting that in the presence of an alternate strategy objects no longer influence attentional prioritization.
- These findings provide strong evidence in support of the hypothesis that object-based attention is automatic but not mandatory.