

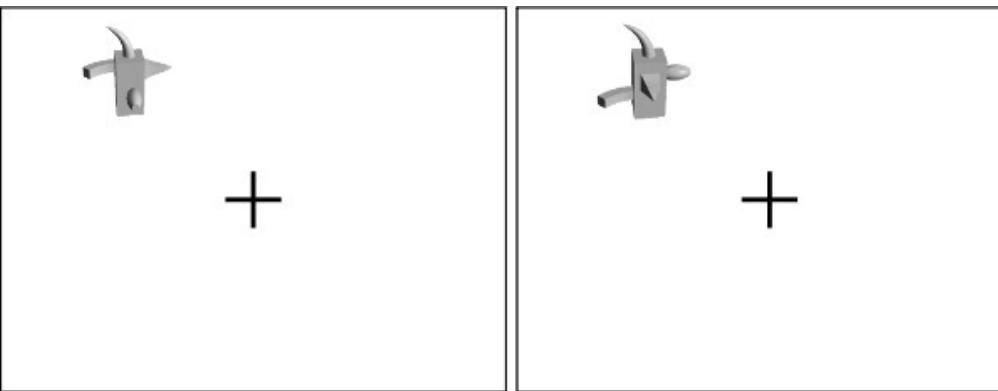
# Spatial Congruency Bias in Contexts: The Influence of Background Scenes on Object-location Binding

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## Background

### Spatial Congruency Bias (SCB)<sup>1</sup>:



"Two objects presented at the SAME LOCATION are more likely to be judged as having the SAME IDENTITY."

- ❖ SCB shows the visual system's tendency to bind object identity with its spatial location (object-location binding).<sup>1,2</sup>
- ❖ While studies on SCB presented objects in isolation, real-world objects always co-occur with background scenes.

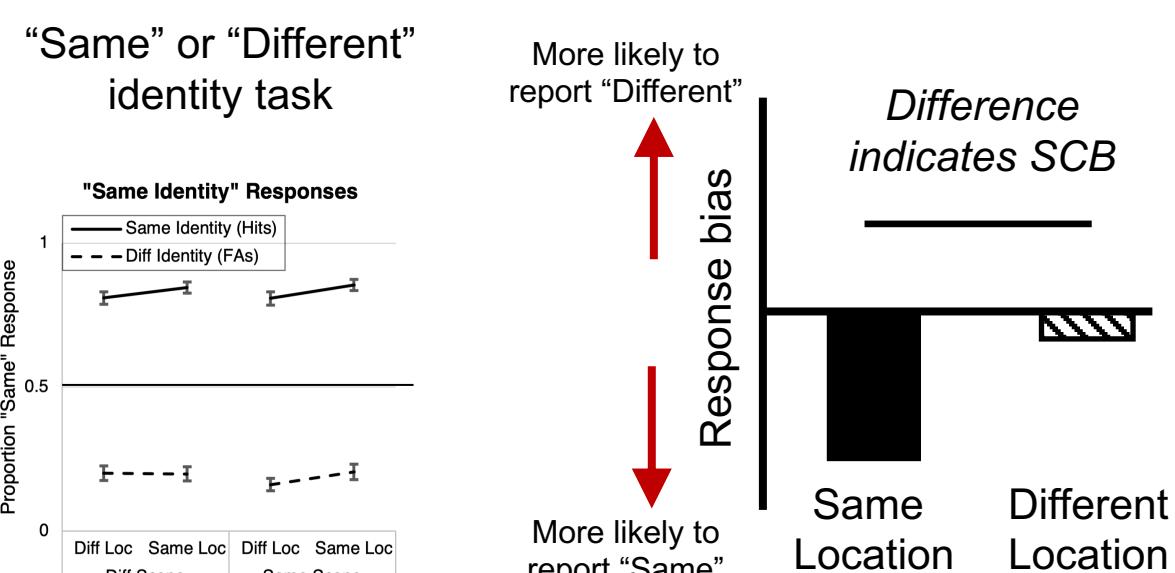


An object's location within a background scene may be more meaningful.

## Research Question

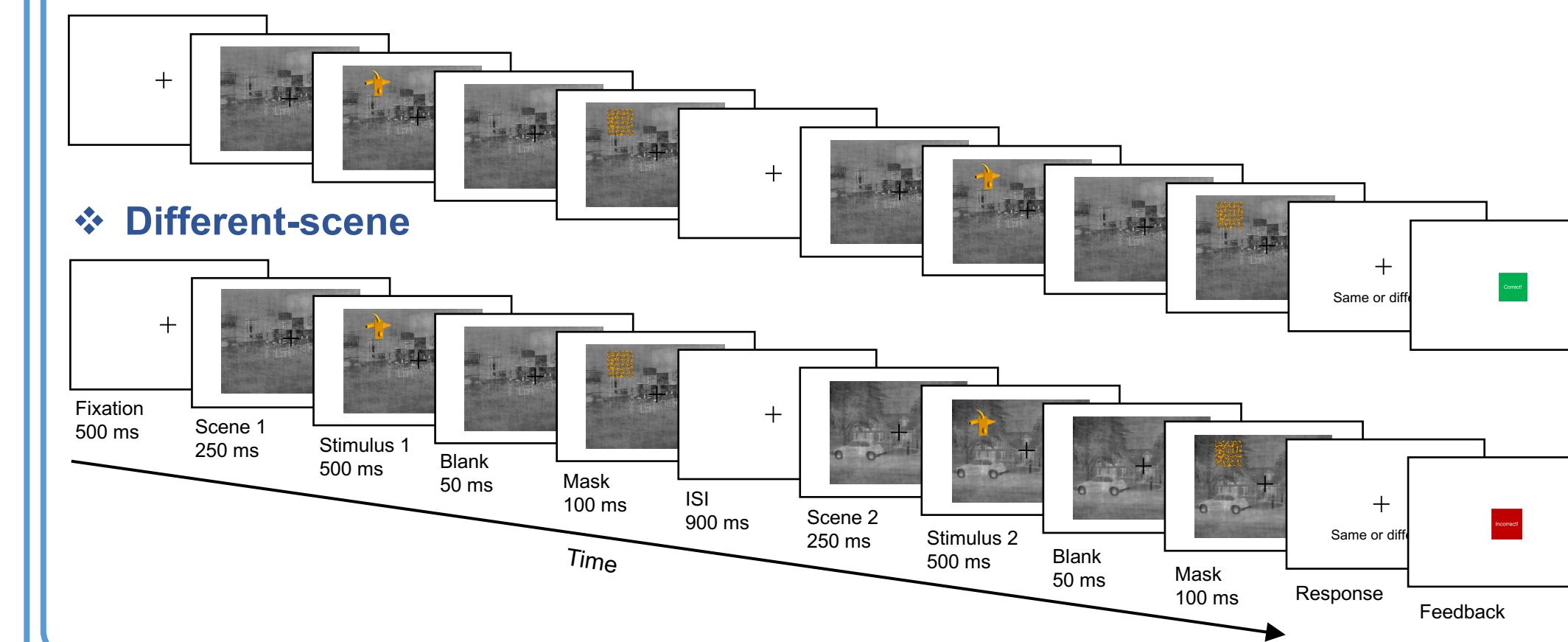
Do background scenes influence the Spatial Congruency Bias?

## Measuring SCB

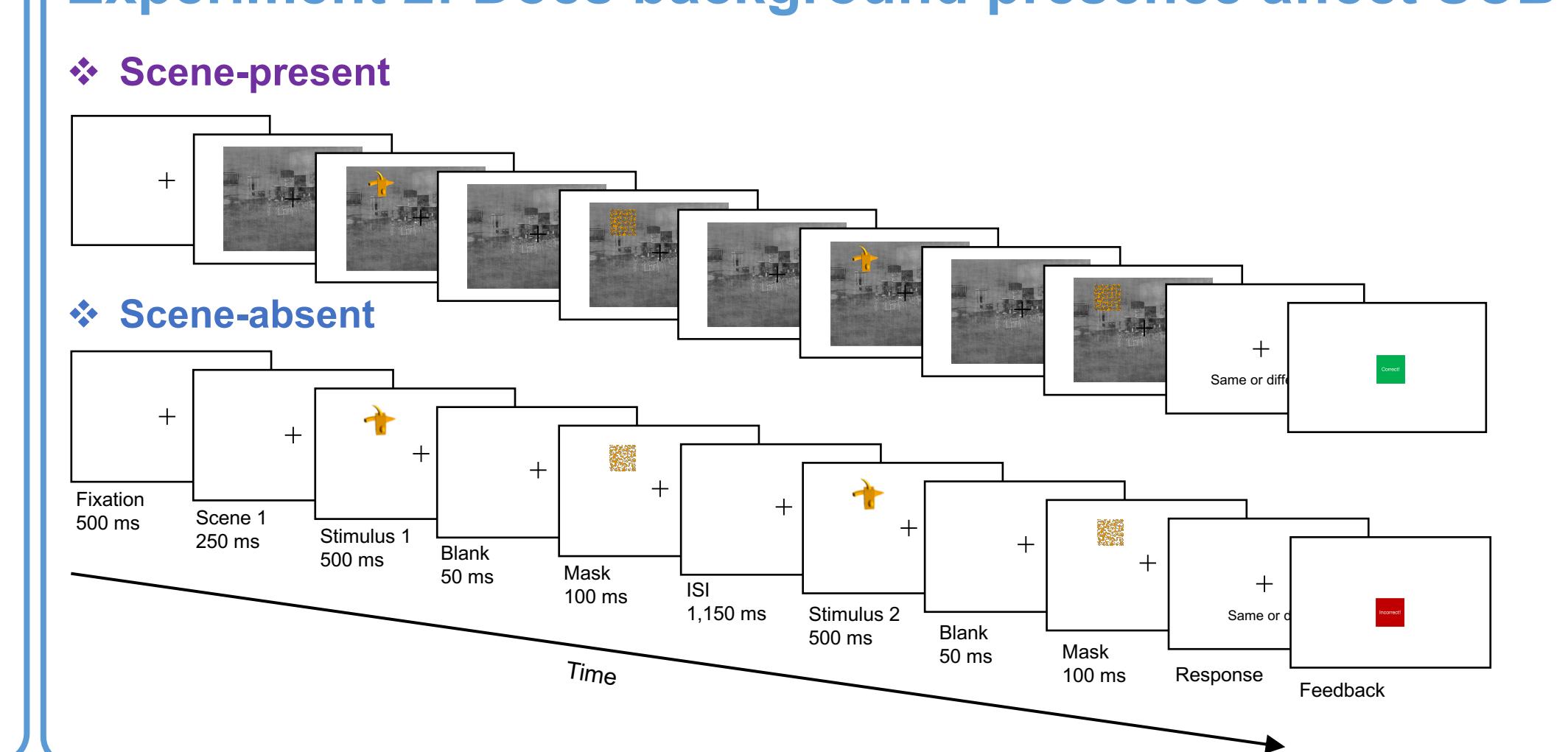


## Experiment 1: Does background congruency affect SCB?

### ❖ Same-scene

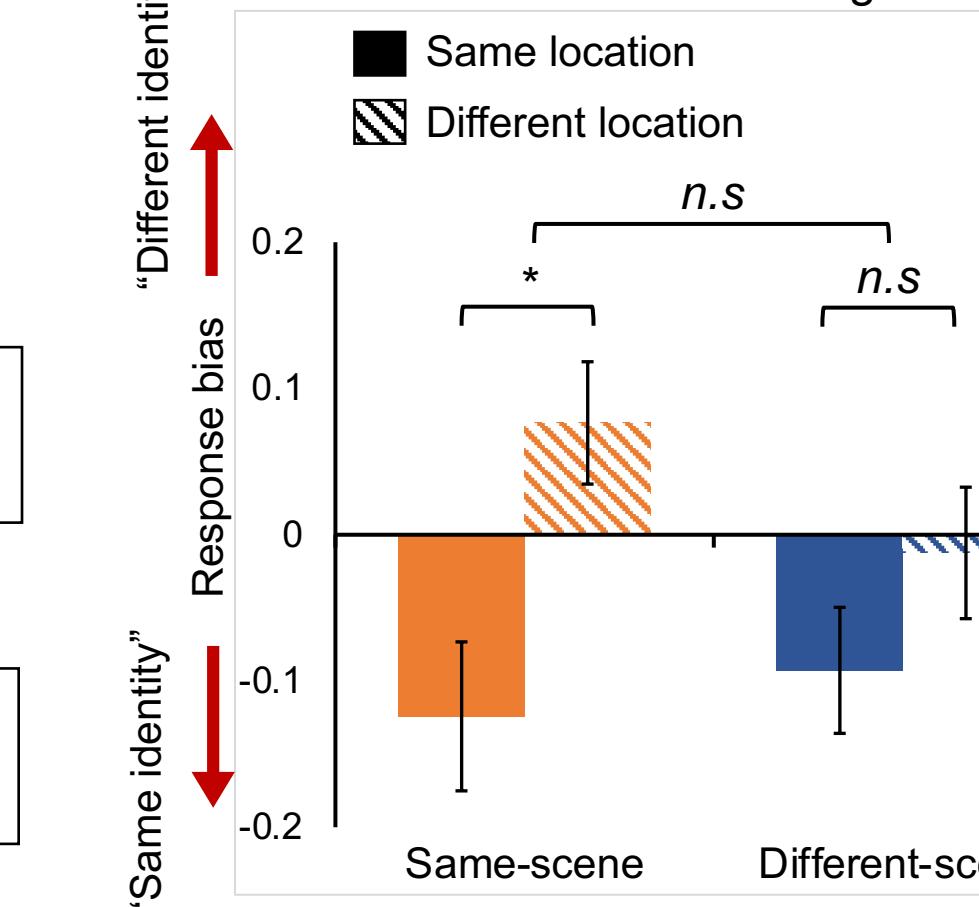


### ❖ Different-scene



## Same-scene vs Different-scene (n = 28)

Intermixed-design

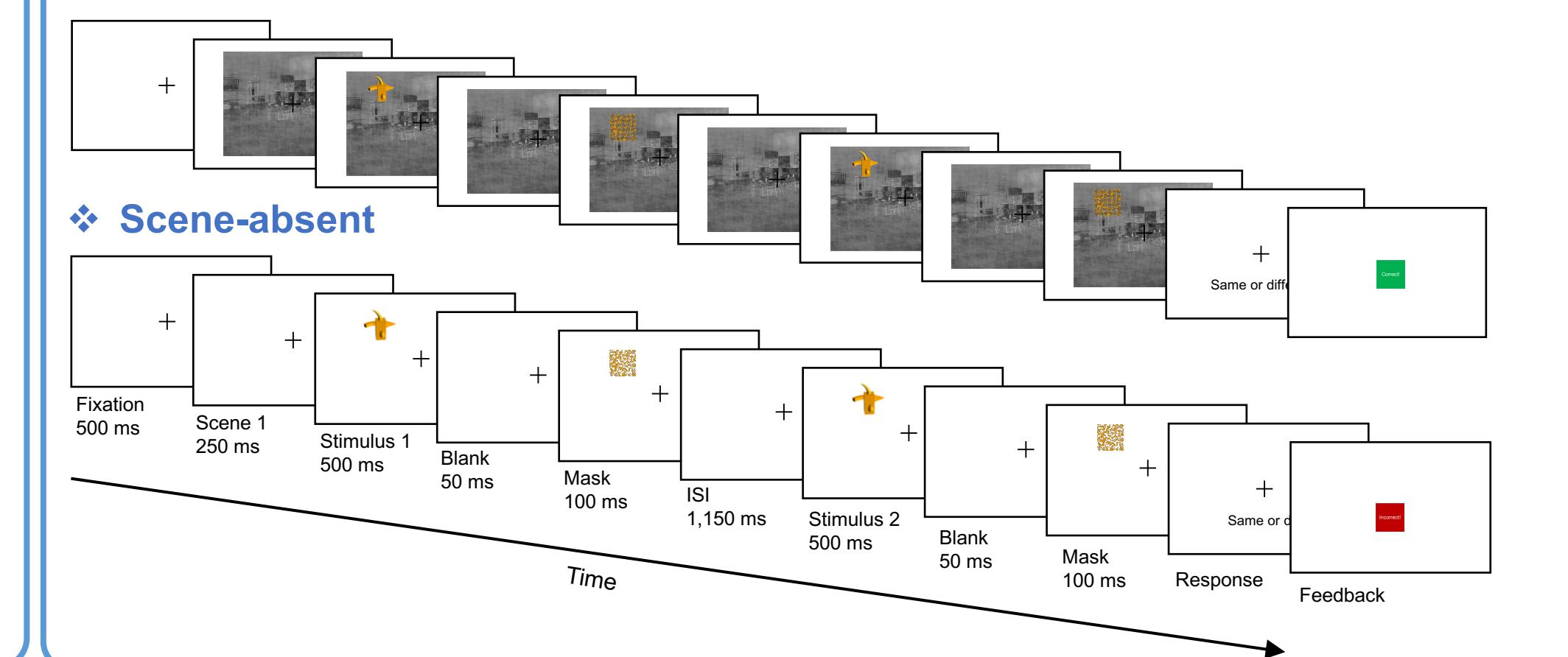


- ❖ Significant spatial congruity bias found for the same-scene condition.
- ❖ Object-location binding may be weakened for objects presented on incongruent (different) background scenes.

❖ How does SCB with scenes compare to with no background scene?

## Experiment 2: Does background presence affect SCB?

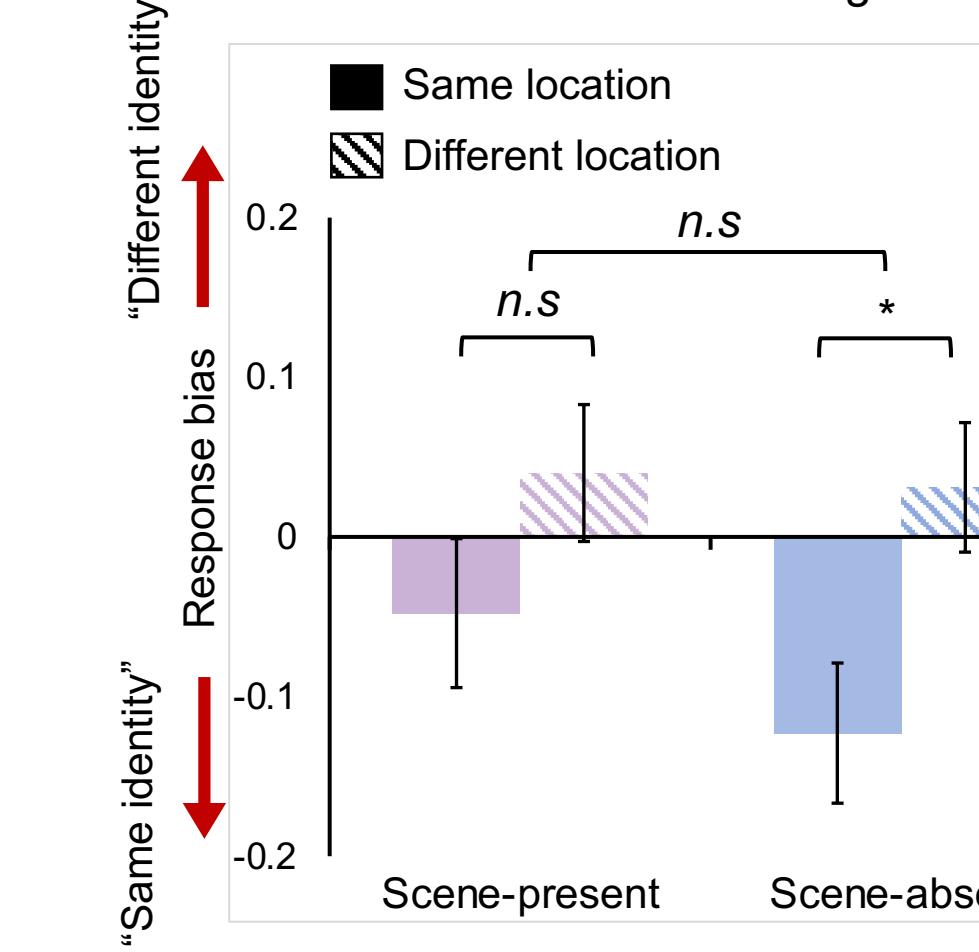
### ❖ Scene-present



### ❖ Scene-absent

## Scene-present vs Scene-absent (n = 26)

Intermixed-design



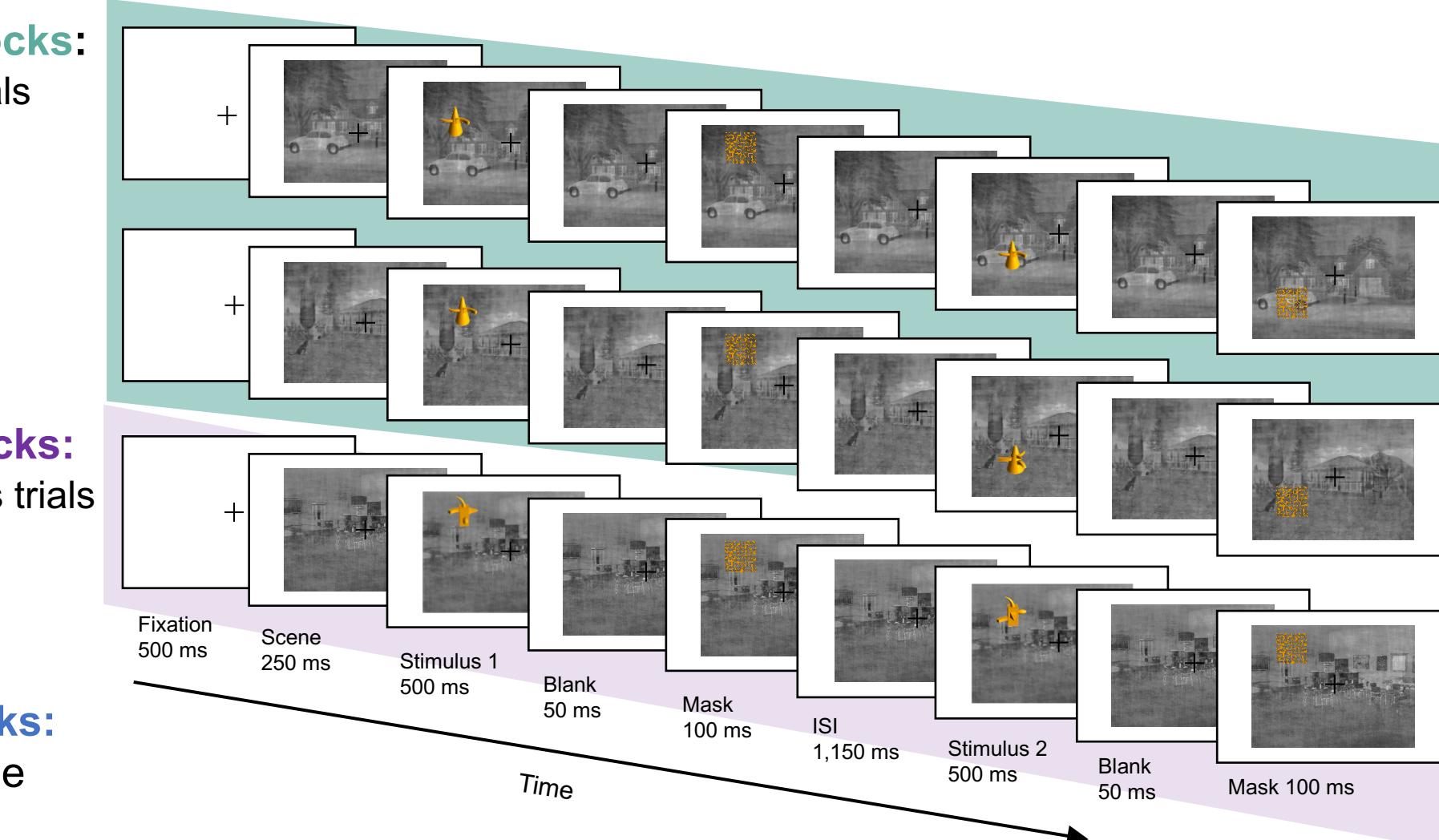
- ❖ SCB was found only for the scene-absent condition.
- ❖ In the scene-present condition, the background scene always changed, whereas the scene-absent condition maintained white background.

❖ Can predictable backgrounds facilitate object-location binding?

## Experiment 3: Does background predictability affect SCB?

### ❖ Scene-repeated blocks:

same scene across trials within a single block



### ❖ Scene-random blocks:

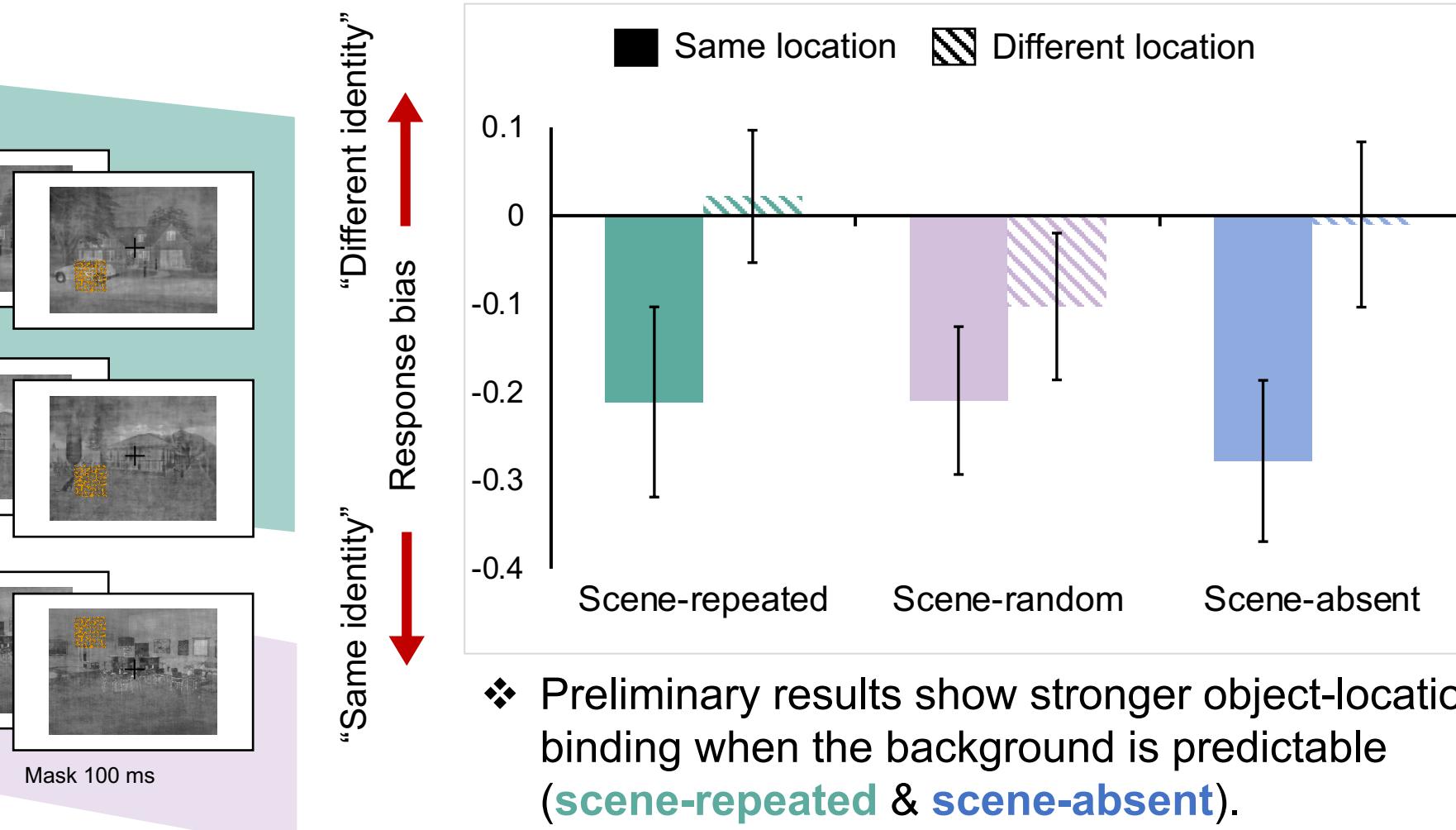
random scenes across trials within a single block

### ❖ Scene-absent blocks:

no background scene

## Scene-Repeated vs Random vs Absent (n = 12; in progress)

Block-design



- ❖ Preliminary results show stronger object-location binding when the background is predictable (scene-repeated & scene-absent).

## Conclusion

- ❖ We replicated the robust spatial congruity bias using objects in isolation.
- ❖ When the objects are presented on background scenes, the SCB may be stronger when background scenes are consistent/predictable.
- ❖ These results further show the role of contexts on object processing<sup>3, 4</sup>

## Take-home Message

Predictable backgrounds may help the visual system to bind object identity with its spatial location.

## References

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