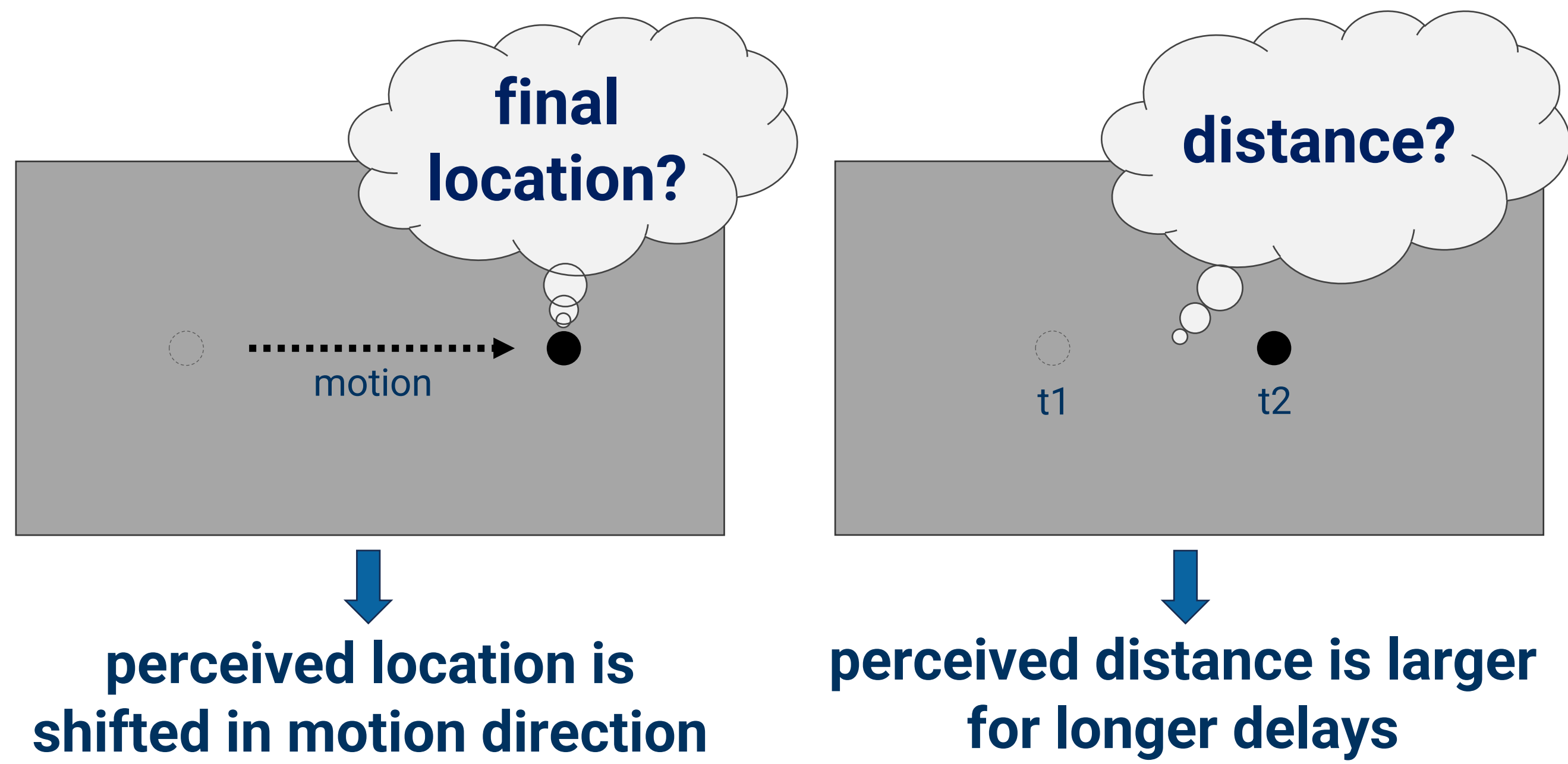


Introduction



The final location of a moving and then disappearing object is misperceived further in motion direction

'representational momentum'

(Freyd & Finke 1984)

The distance between two objects (presented one after another) is misperceived based on the temporal delay between presentations

'tau effect'

(Benussi, 1913; Helson & King, 1931)

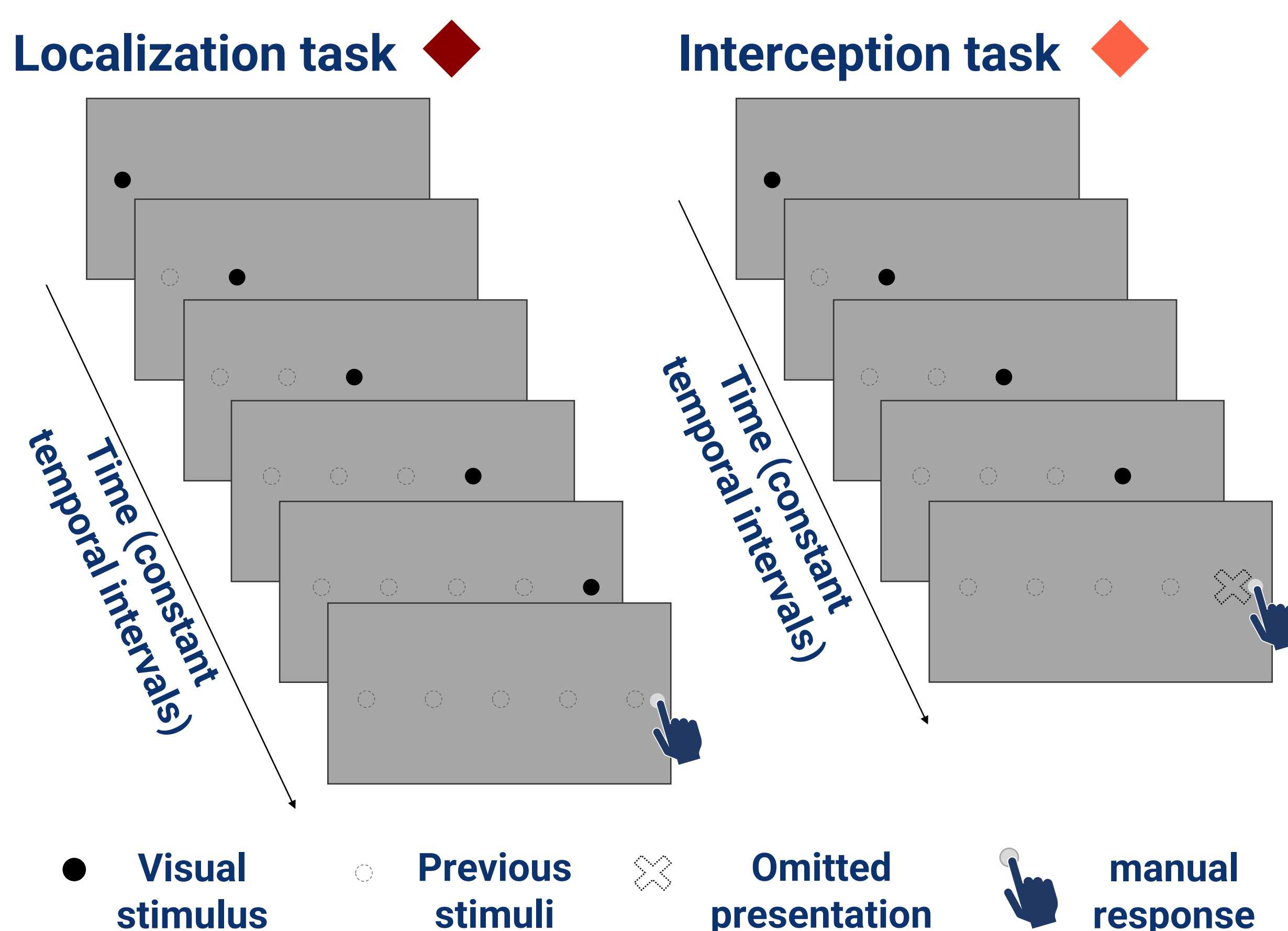
Similar underlying processes?

(for review see, Merz et al., 2022)

- tau effect has recently been found in an interception task (Schroeger et al., 2022)
→ resembles the representational momentum but in motion prediction
- representational momentum is related to other biases: underestimation bias in time-to-contact task (Gray & Thornton, 2001)

Are the two spatial biases related to each other?

Methods

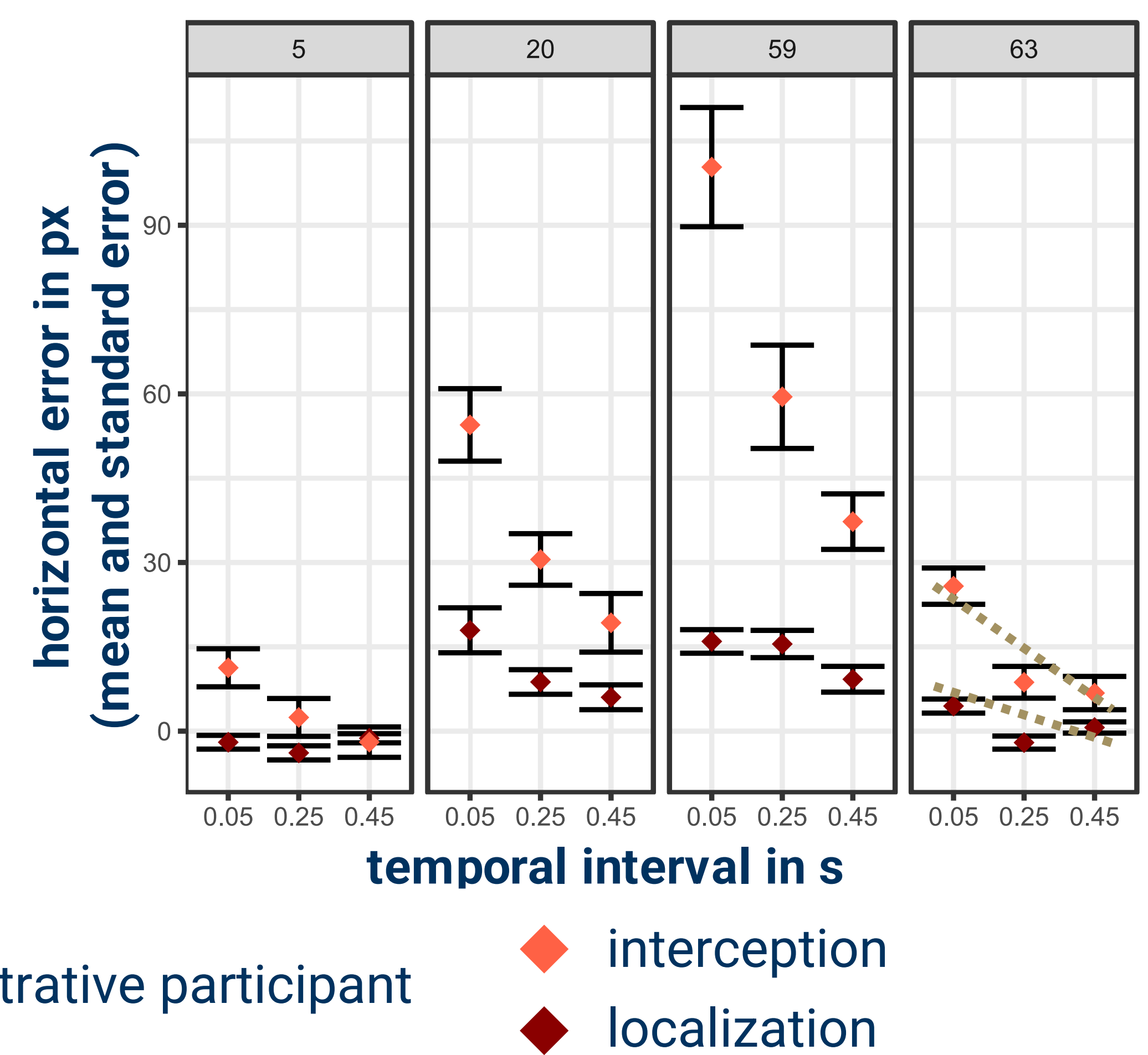


In the localization task the target is presented 5 times, and participants have to indicate the remembered 5th position. In the interception task the target is only presented 4 times and participants have to predict the 5th position and time.

- N = 67 (based on power analysis)
- order of tasks counterbalanced
- 3 temporal intervals x 3 spatial intervals x 2 directions

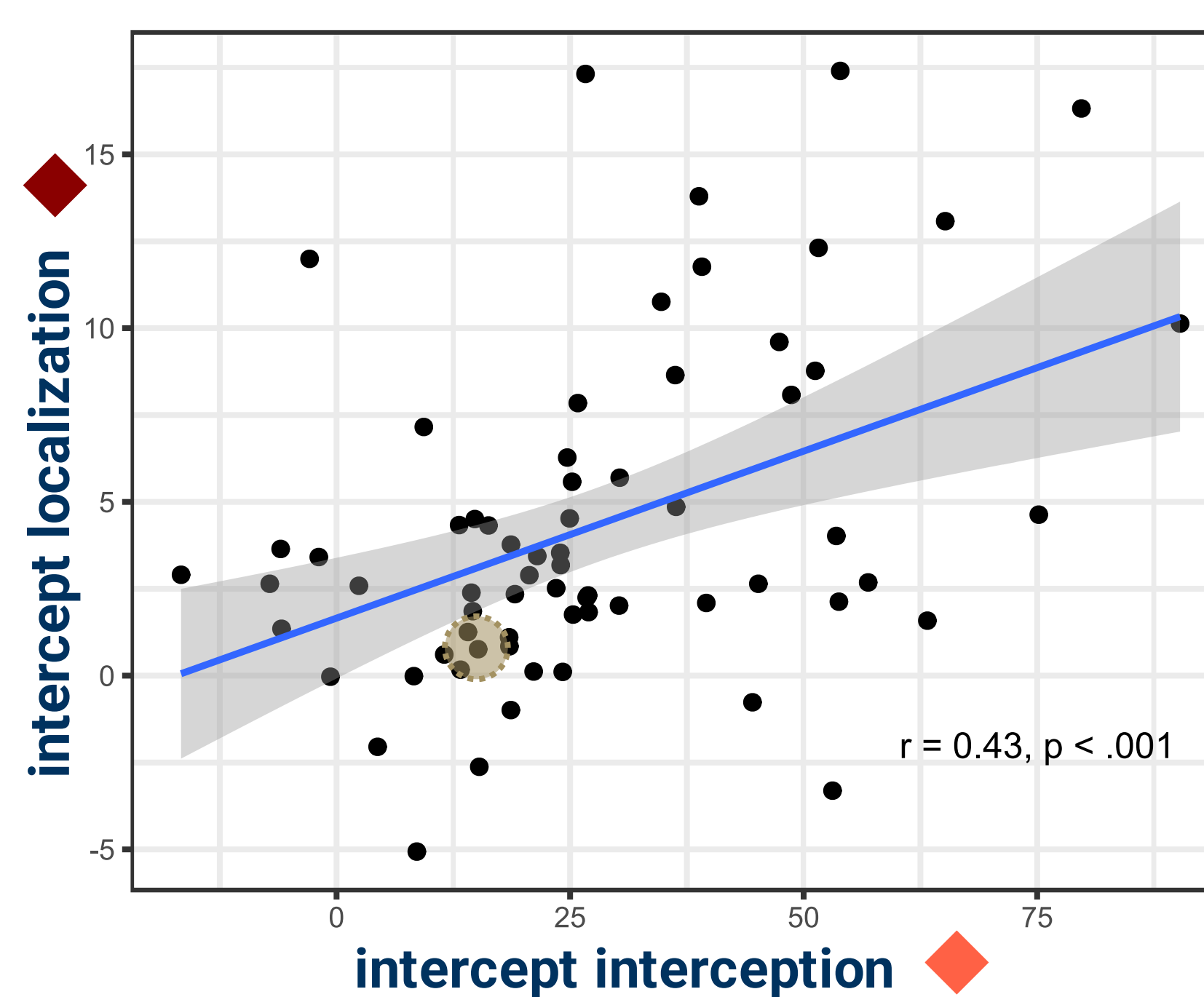
Results

Spatial biases in four participants

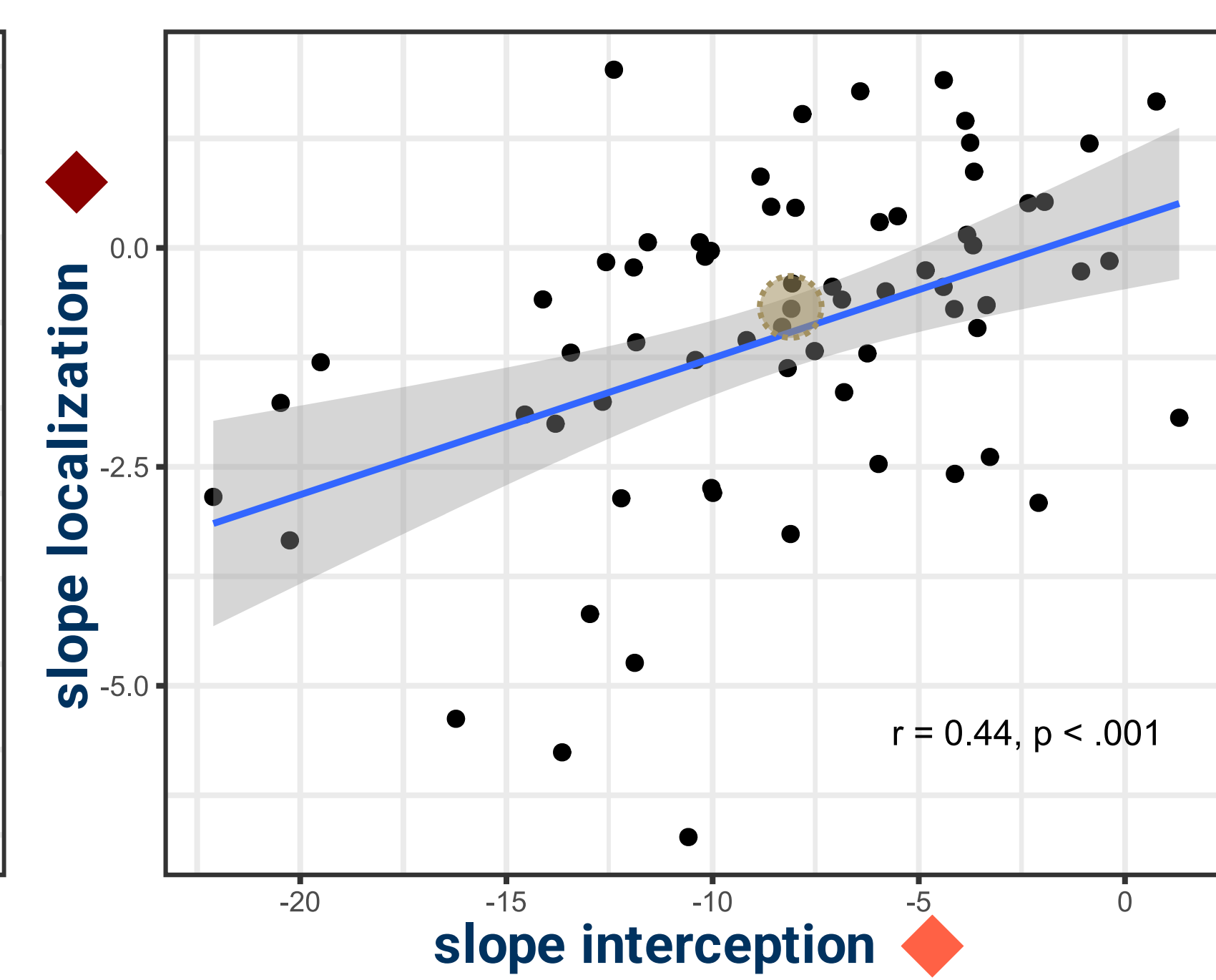


Linear mixed models for localization task (representational momentum) and interception task (tau): extract coefficients per participant and correlate them across tasks

Is more overshooting in one task related to more overshooting in the other task?



Do temporal manipulations affect both biases similarly?



Main message

Spatial biases in localization (representational momentum) and interception (tau) were moderately correlated, showing that the two biases i) are related across participants and ii) are similarly impacted by temporal manipulations.

These results might indicate a shared mechanism driving both effects.

Discussion/Summary

Localization and Interception biases are related

- In both tasks (localization and interception), most participants overshoot the correct location
- This overshooting bias seems to be related across tasks:
 - Participants with larger overshooting in one task, also show larger overshooting in the other task
 - Participants with larger effects of the temporal manipulation effects in one task, are also more affected in the other task

→ This might indicate **similar underlying processes** (e.g., speed prior, see Goldreich, 2007; Goldreich & Tong, 2013)



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