

I'll Believe It Unless It's Too Absurd: Spontaneous Visual Perspective-Taking as Prior Based Heuristic Inference

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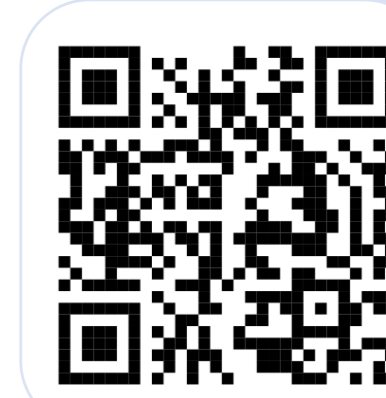


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*An extended version of this paper has been accepted for publication in *Cognition*. See full details



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Core Question

How do we take others' visual perspectives?



reconstruct?

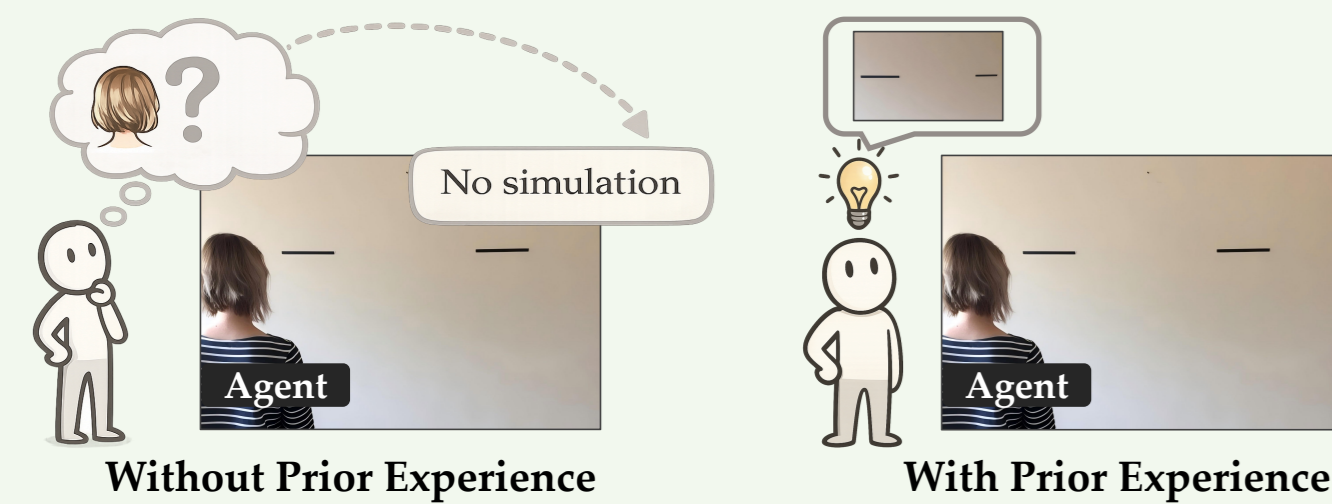
OR

infer?
{Line_L, Line_R, Black, Agent_Left...},
{Near+Longer...}

- Do we **reconstruct** what others actually see (*perceptual simulation*)? Or do we **infer** it using *heuristic rules* about vision?
- **Explicit VPT** favors *heuristic* accounts — but **implicit VPT** remains unresolved.

Key Hypothesis

But why does simulation seem to fail?



• Simulation may not fail because it can't, but the **agent's perspective is unknown**.

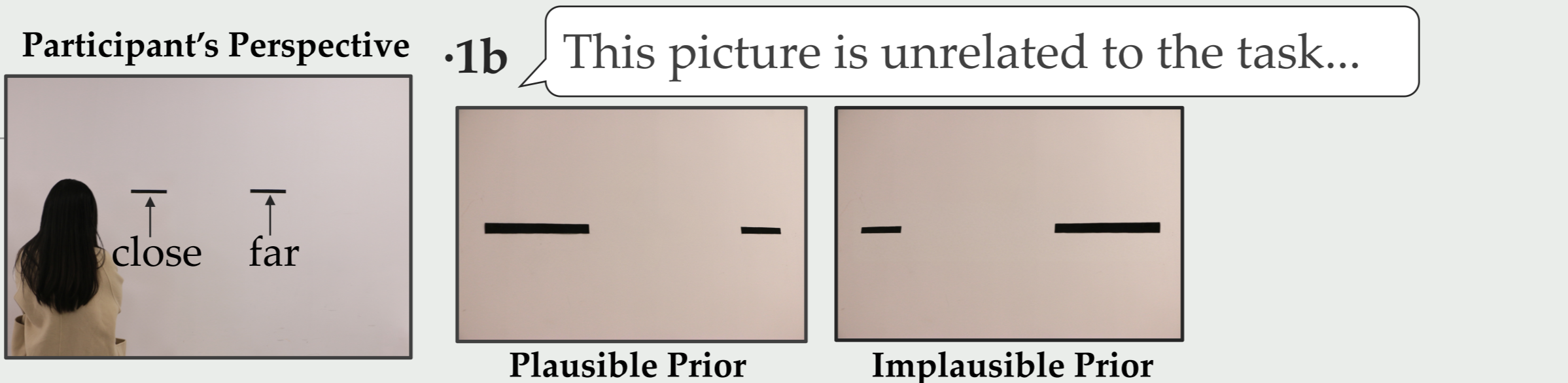
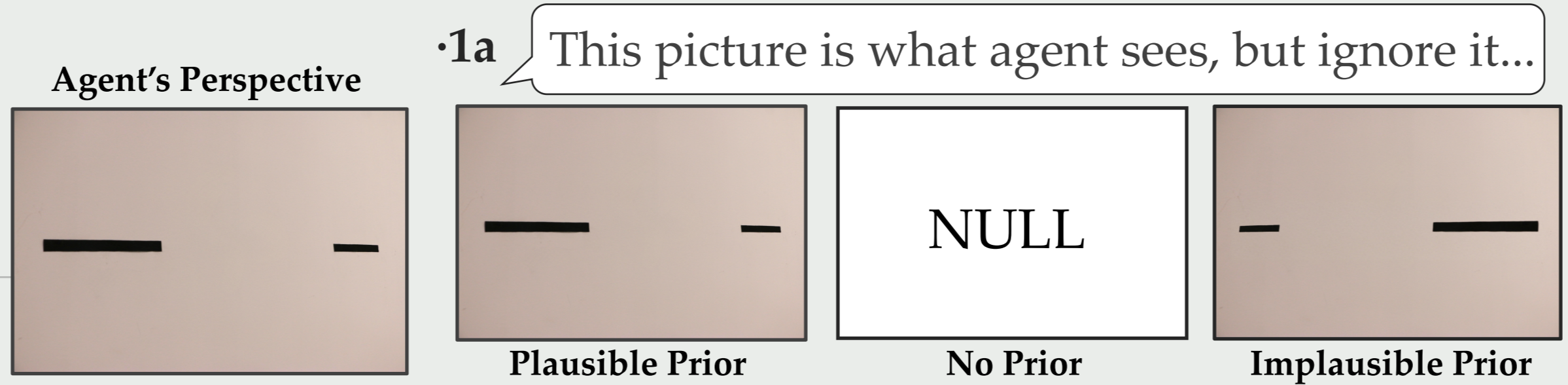
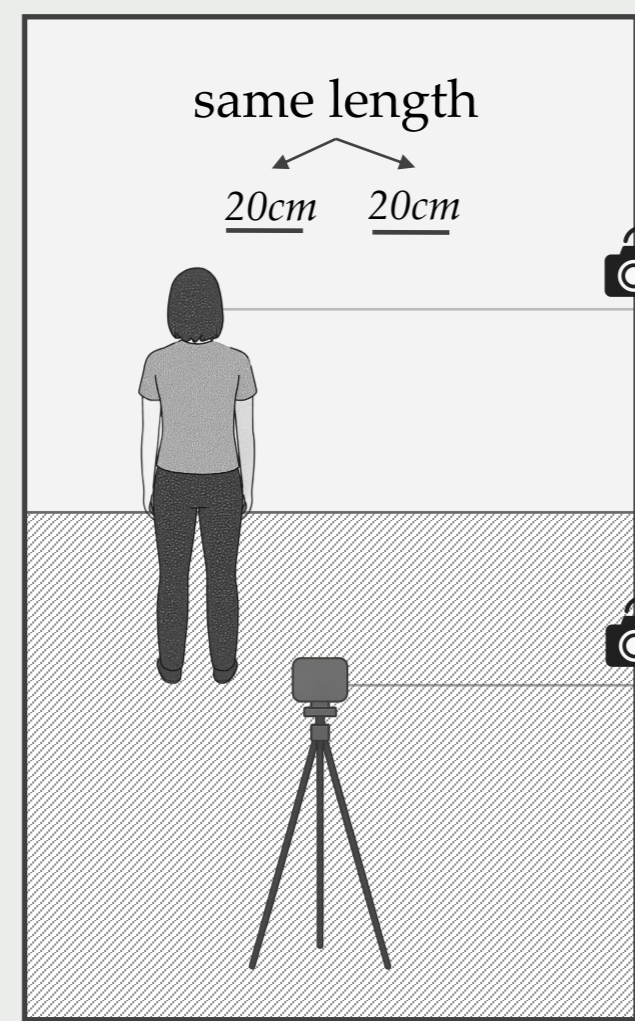
• **Test different priors in implicit VPT:**

- *Perceptual Simulation Account* predicts bias only with plausible priors.
- *Heuristic inference* predicts bias even with implausible priors.

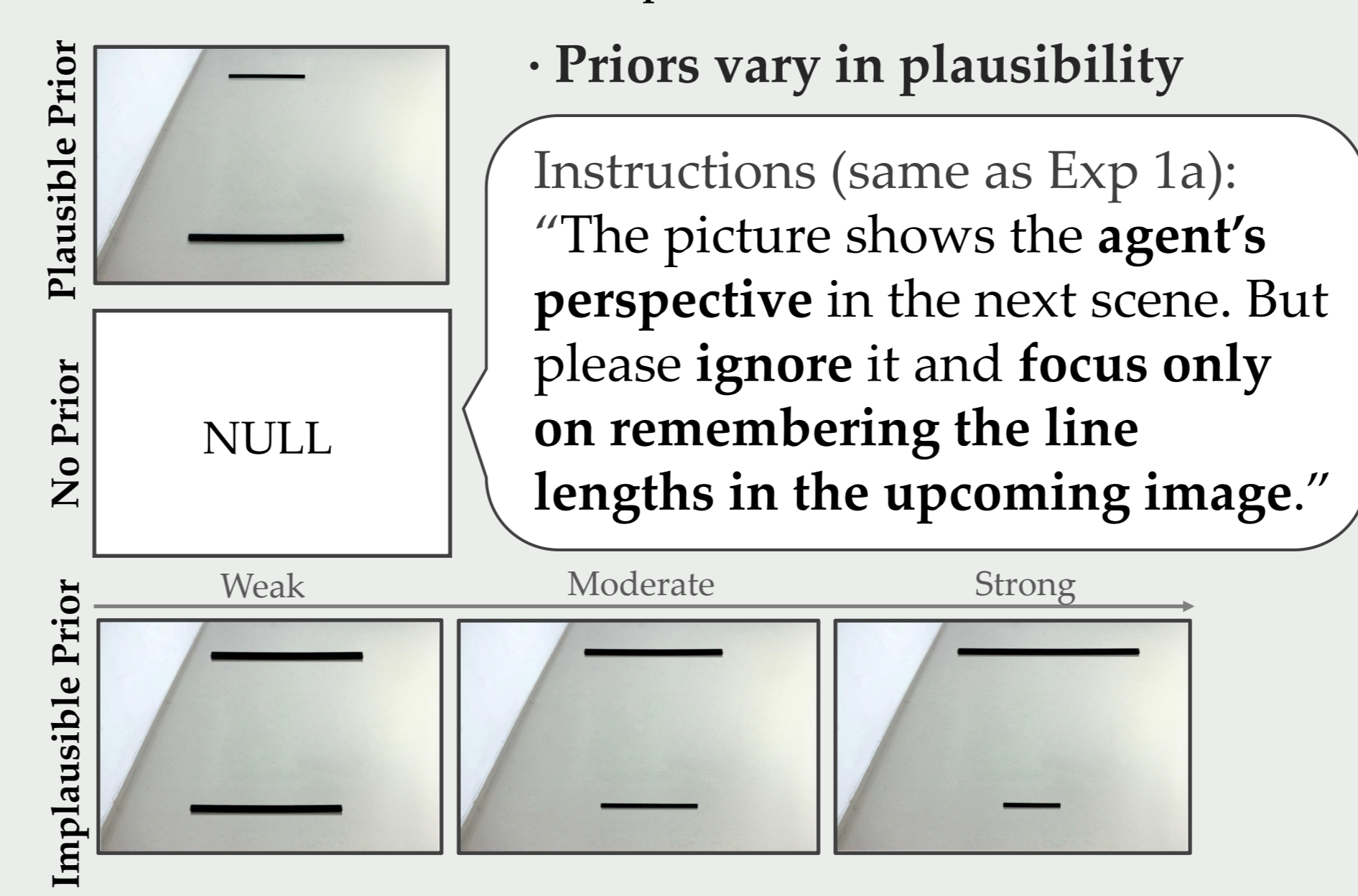
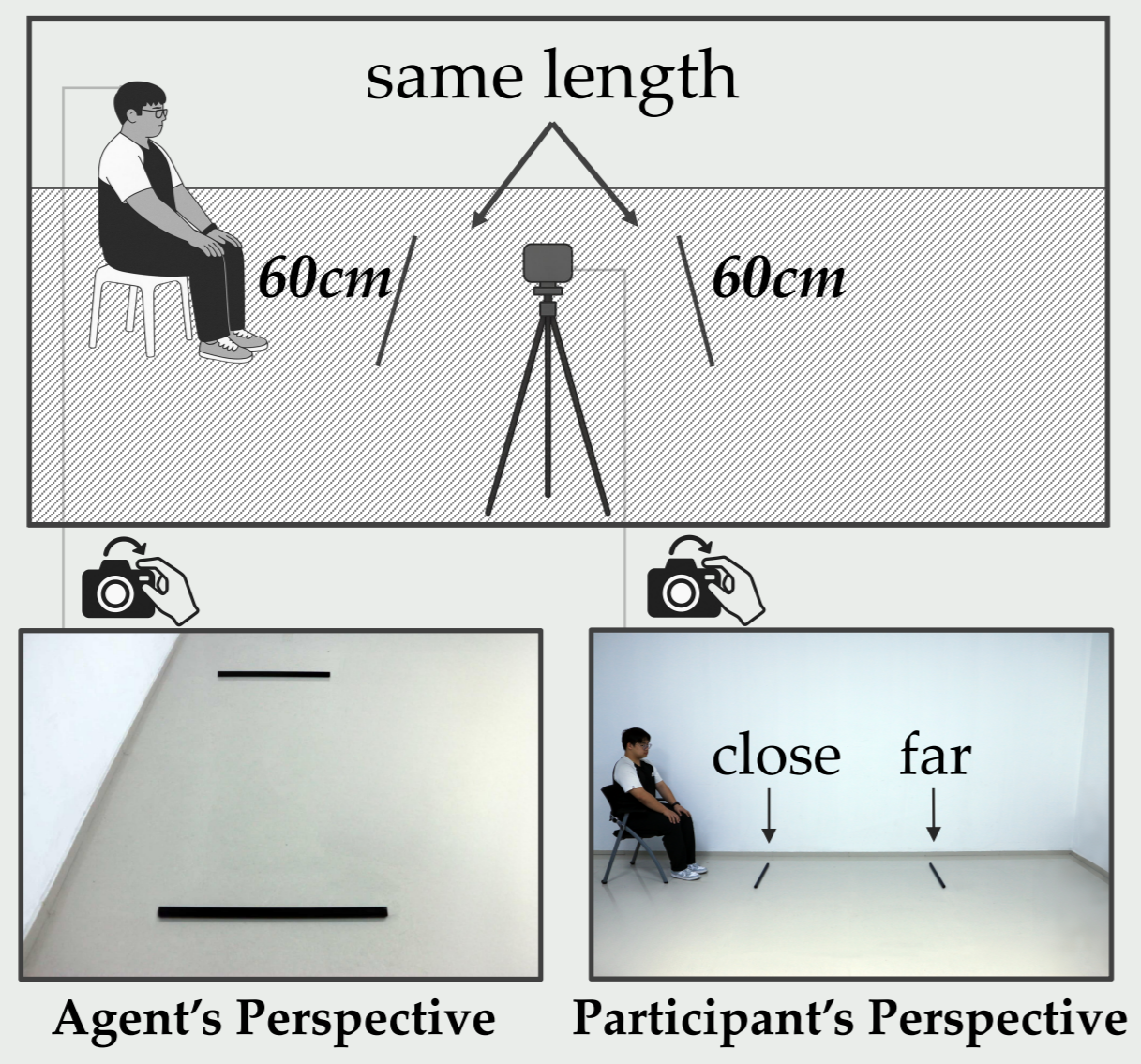
Design



•Exp1

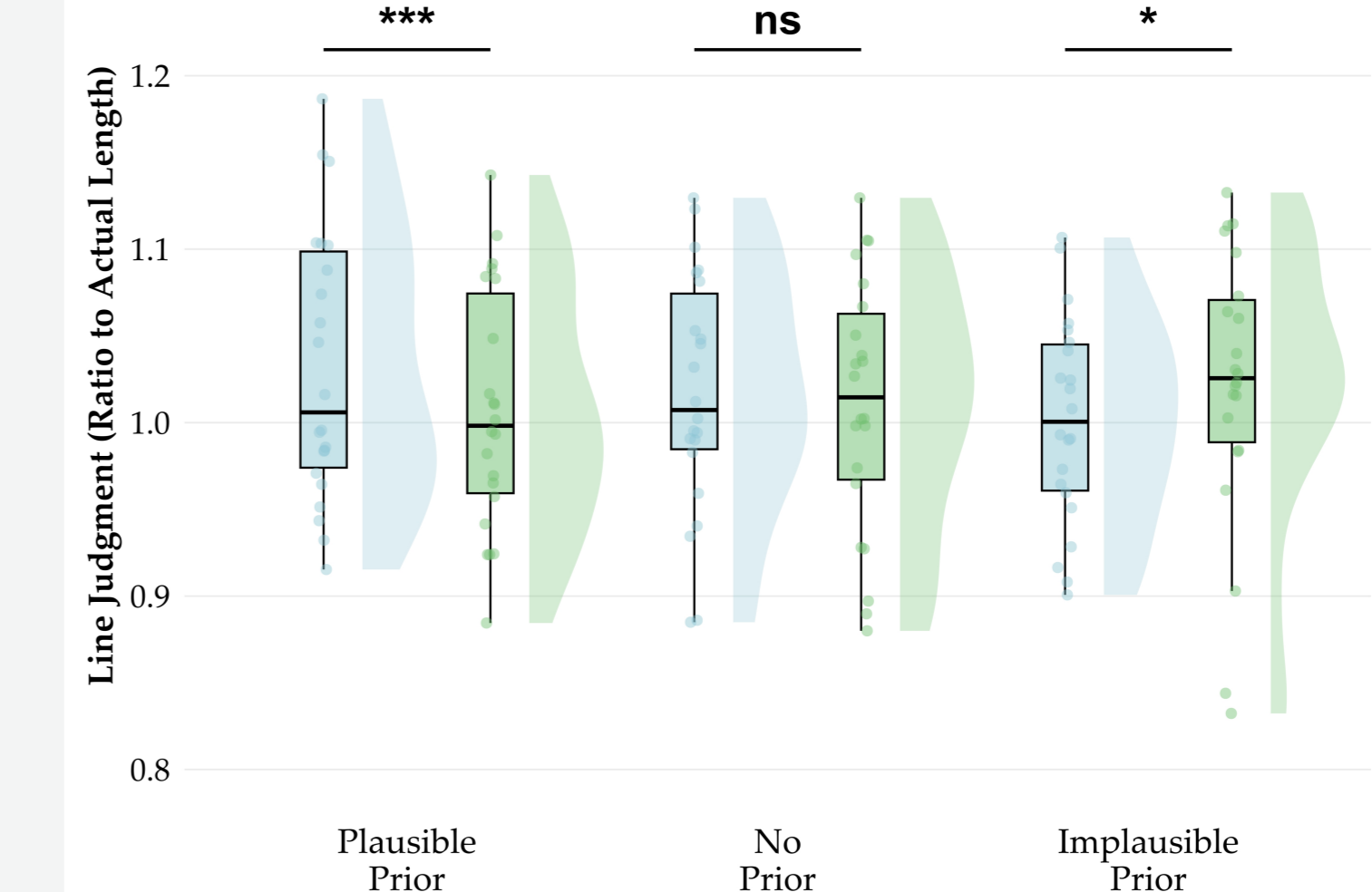


•Exp2

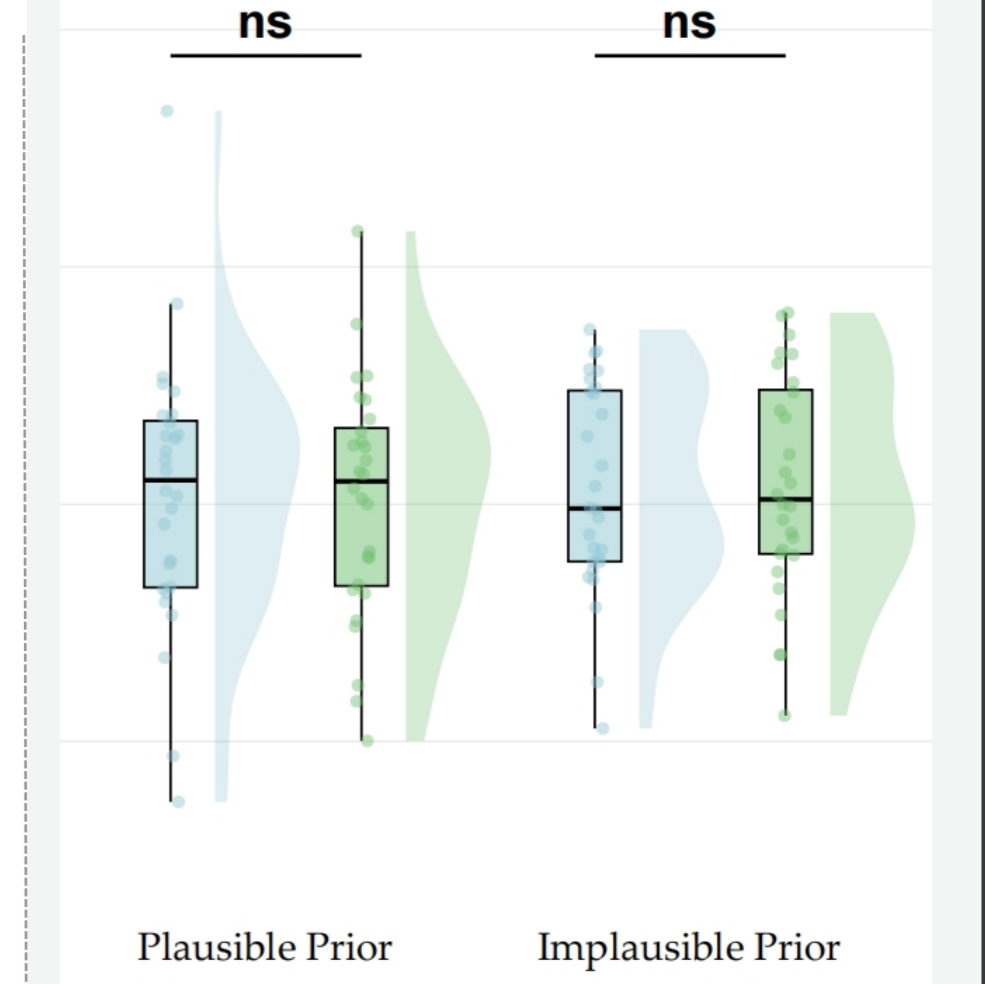


Results

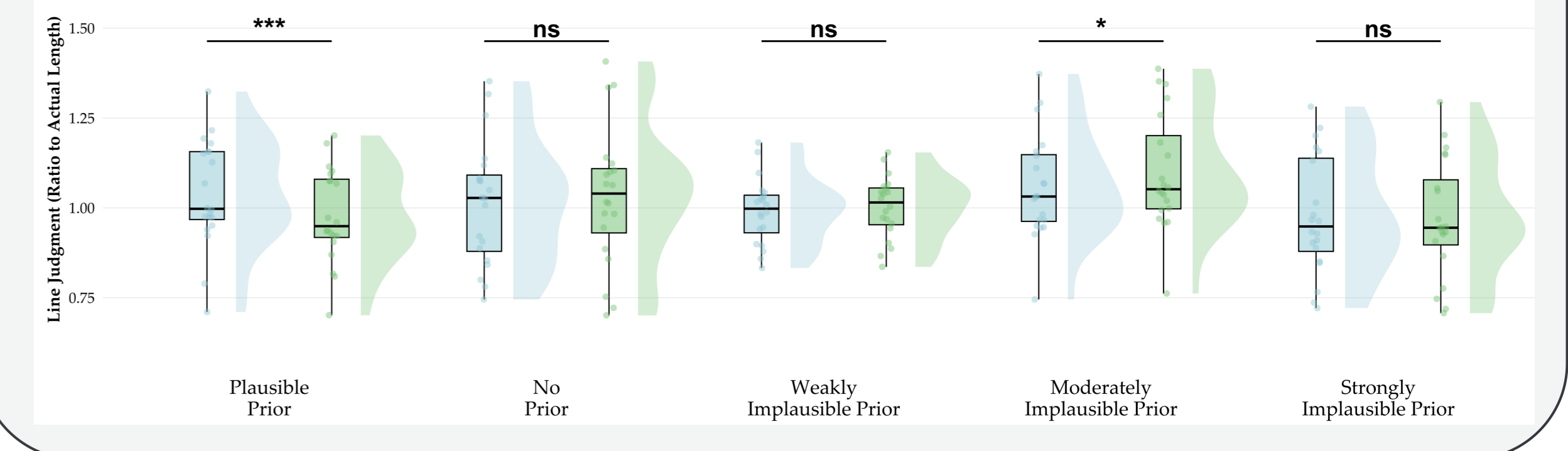
•Exp1a



•Exp1b



•Exp2



Conclusion

- **Implicit VPT** remains best explained by *heuristic inference* rather than *perceptual simulation*.
- Judgments are biased by both plausible and implausible priors (Exp. 1a), and this bias is not driven by priming (Exp. 1b), ruling out simulation-based reconstruction.
- Heuristic inference is plausibility-weighted, integrating prior information with self-viewed input, while extreme priors are discounted (Exp. 2).