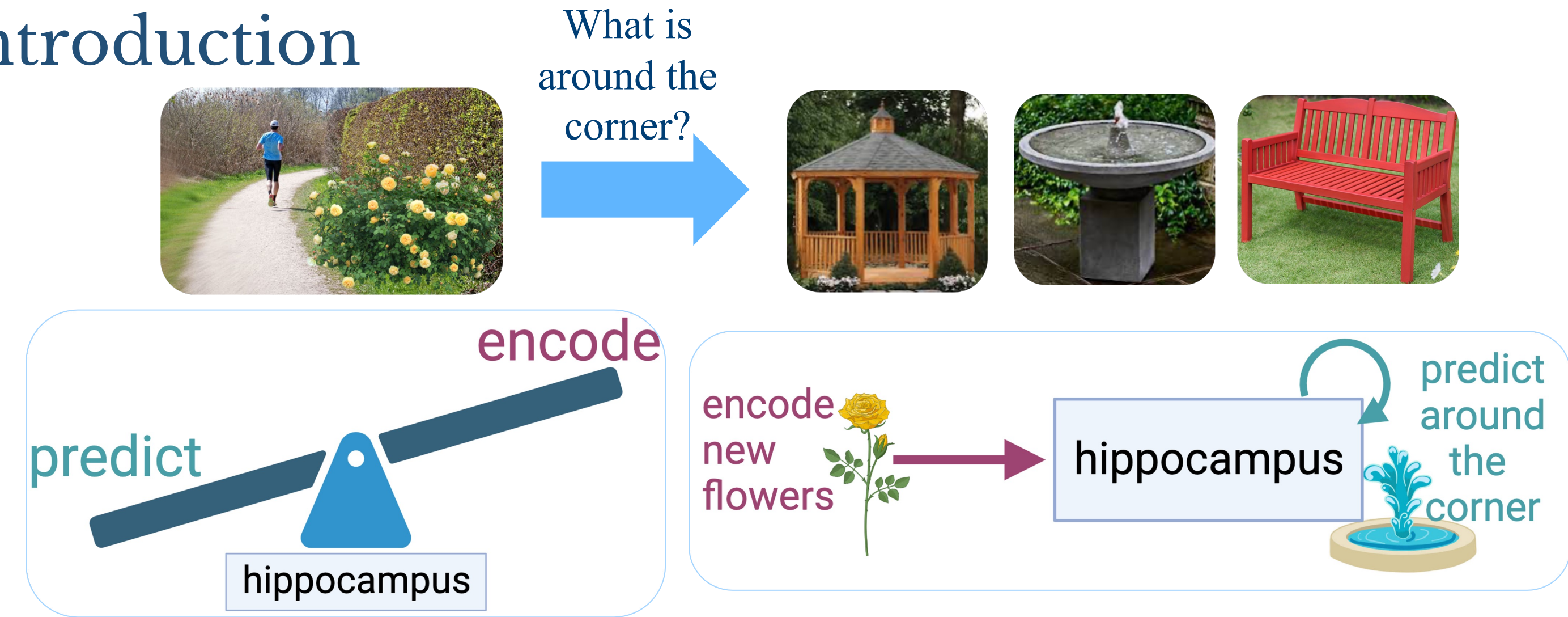


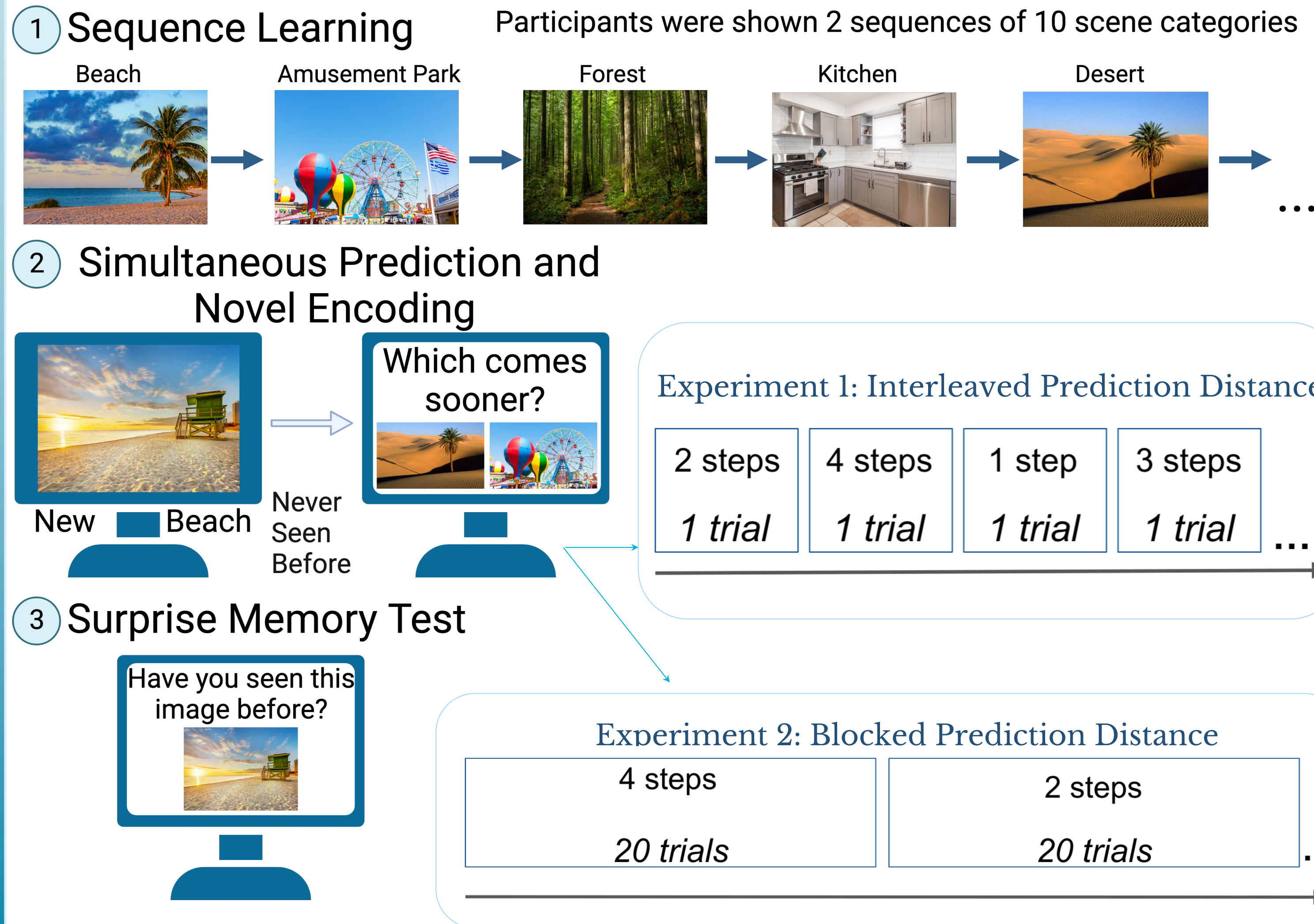
¹Columbia Access to Doctoral REAdiness (CADRE) program, Columbia University, New York, NY ²Department of Psychology, Columbia University, New York, NY ³Rotman Research Institute, Toronto, ON

Introduction



We hypothesize that the discrete encoding and prediction states in the hippocampus can be detected as a behavioral trade-off between forming new memories vs. using existing memories to make predictions.

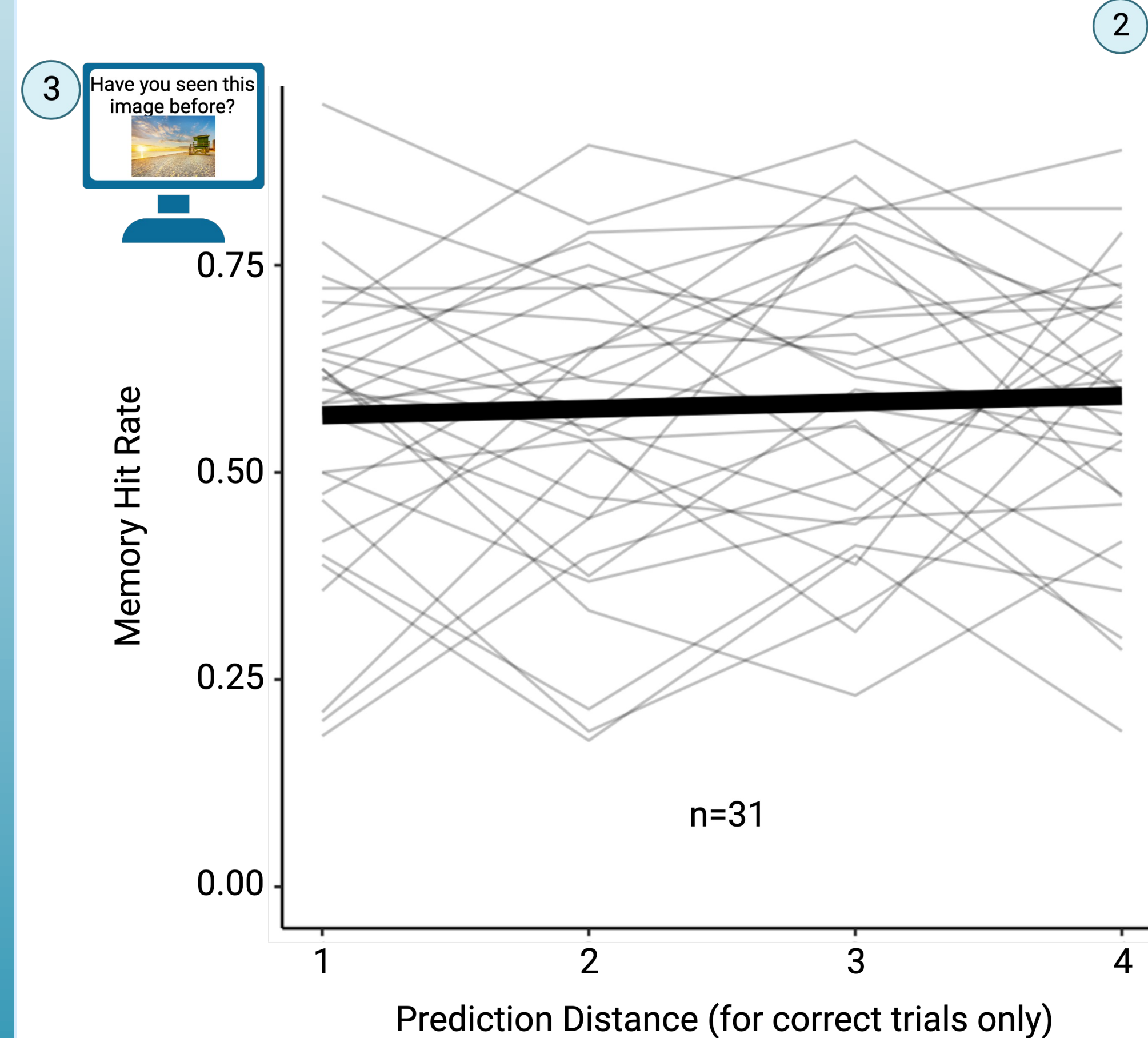
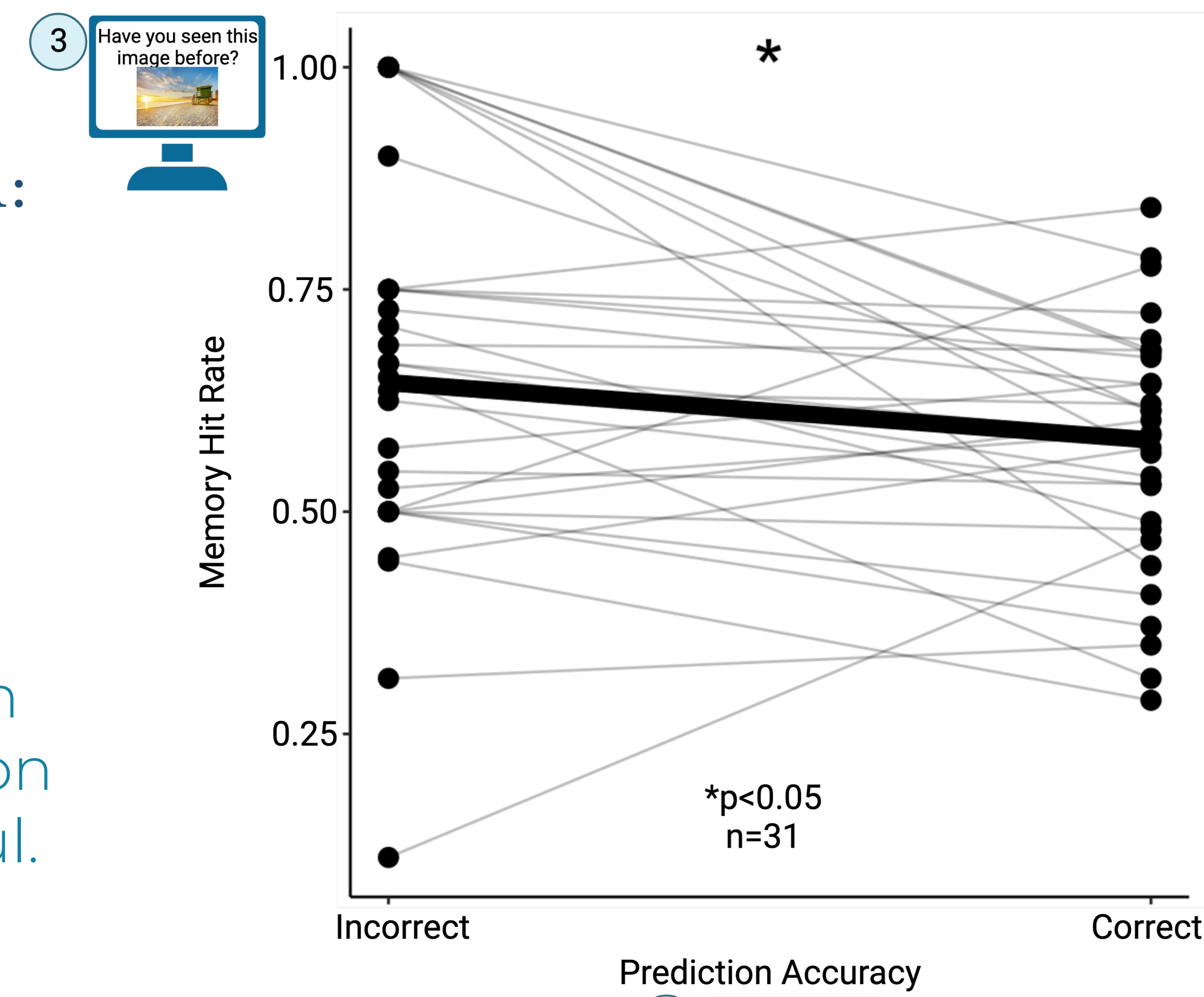
Methodology



Results

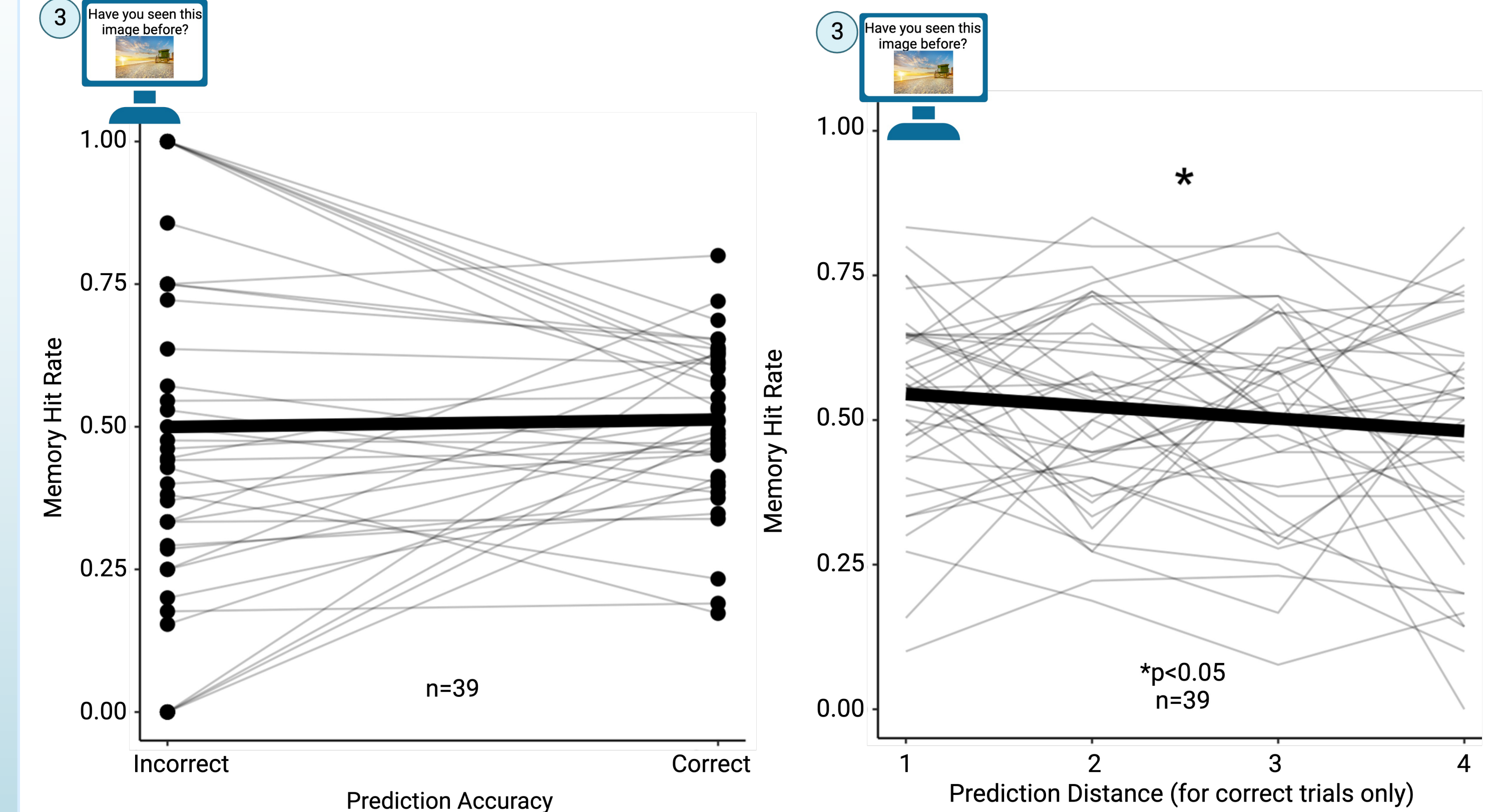
Experiment 1: Interleaved Prediction Distance

Participants' encoding suffered when their prediction was successful.



Encoding success did not vary by prediction distance.

Experiment 2: Blocked Prediction Distance



Participants' encoding did not suffer when their prediction was successful.

Encoding was worse when predictions reached further.

Conclusion

- In Experiment 1, memory encoding was worse when prediction was successful
- In Experiment 2, further reaching predictions led to encoding costs
- Future studies will determine if both of these tradeoffs can exist concurrently

Bibliography & Acknowledgments

Katherine Duncan et al., Memory's Penumbra: Episodic Memory Decisions Induce Lingering Mnemonic Biases. *Science* 337, 485-487 (2012). DOI: 10.1126/science.1221936

Michael E. Hasselmo, Chantal E. Stern, Theta rhythm and the encoding and retrieval of space and time, *NeuroImage*, Volume 85, Part 2, 2014, Pages 656-666, ISSN 1053-8119, <https://doi.org/10.1016/j.neuroimage.2013.06.022>

Brynn E. Sherman, Nicholas B. Turk-Browne, Statistical prediction of the future impairs episodic encoding of the present, *PNAS*, Volume 117, No. 37 (2020). DOI: <https://doi.org/10.1073/pnas.2013291117>

NIH Grant Number R25NS130961