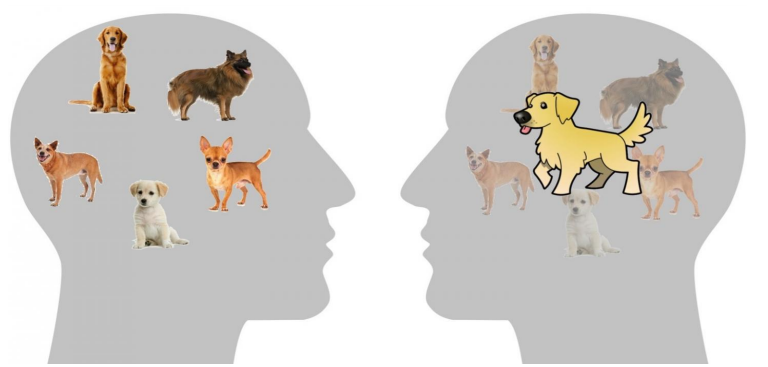


Trevor Bissert, Lea E. Frank, Dasa Zeithamova

## Introduction

The Hippocampus aids in linking and remembering experiences, forming general representations of the world



Research suggests functional specialization between posterior and anterior hippocampus<sup>1</sup>

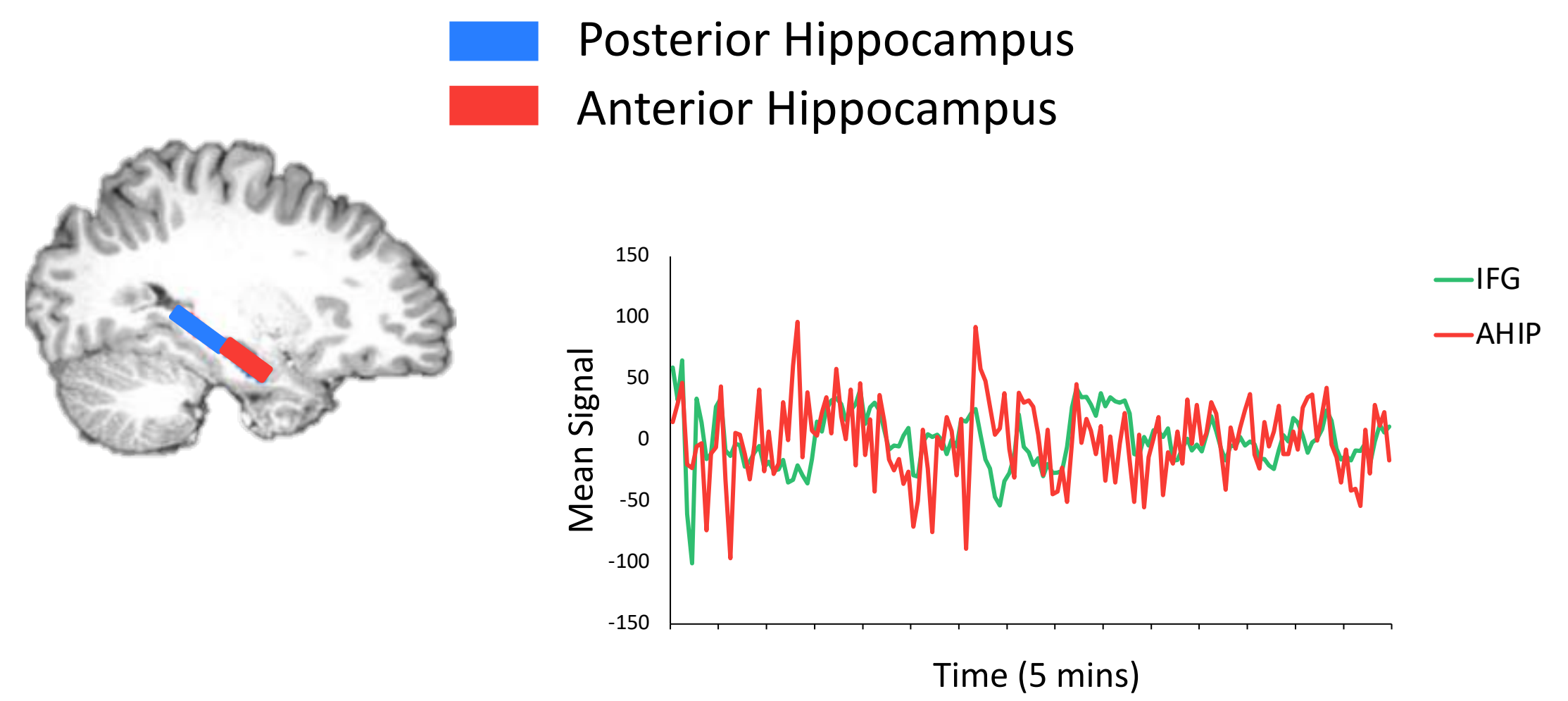
- Posterior → Specific memories
- Anterior → Generalized memories

**Mission:** to see if anterior and posterior hippocampal connections differentially support memory generalization and memory specificity

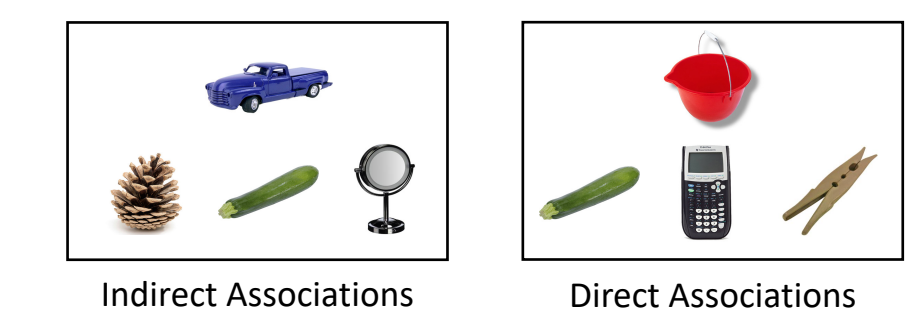
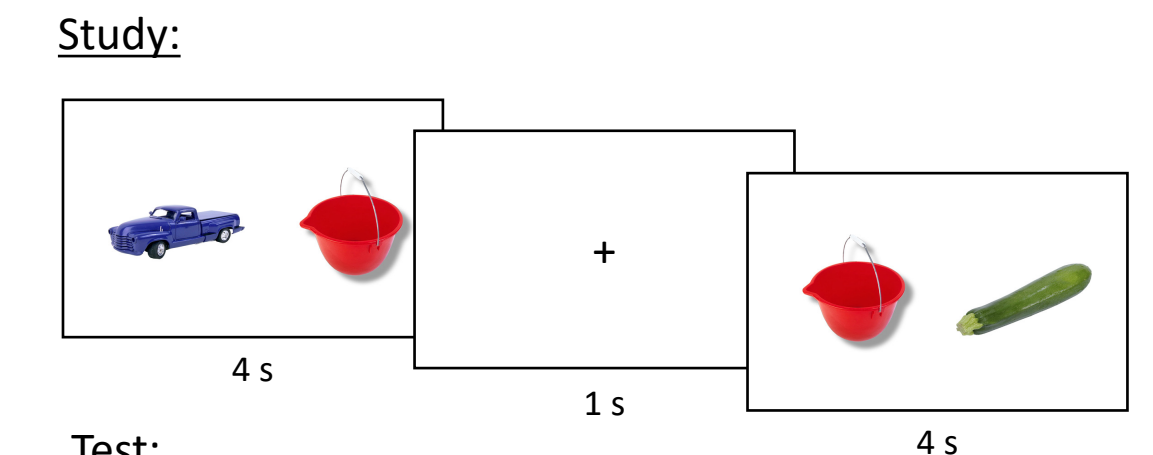
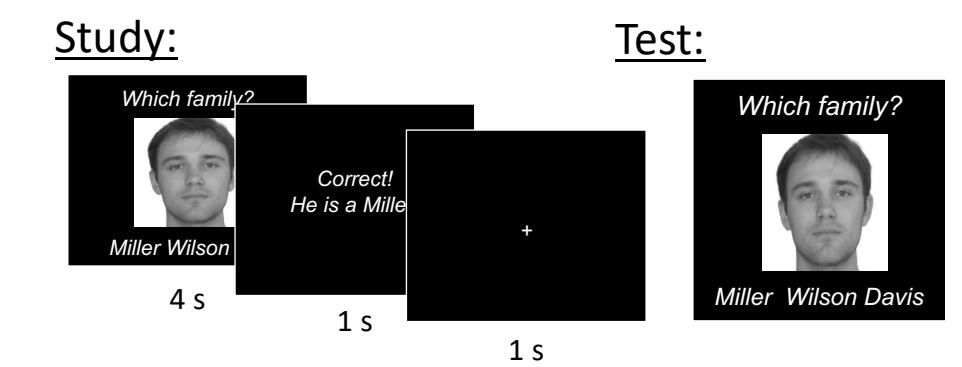
## Methods

- Individuals Completed Several Measures of Memory Specificity and Generalization
  - Example tasks on the right

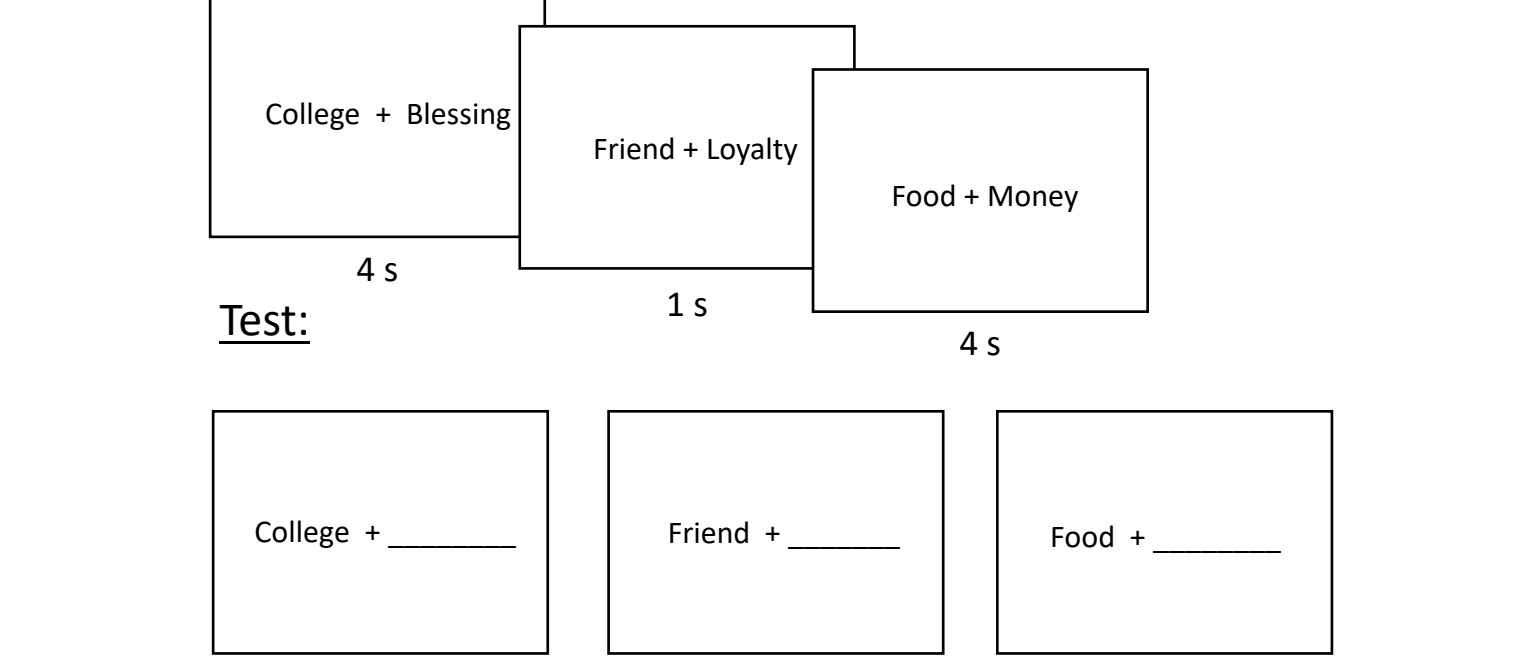
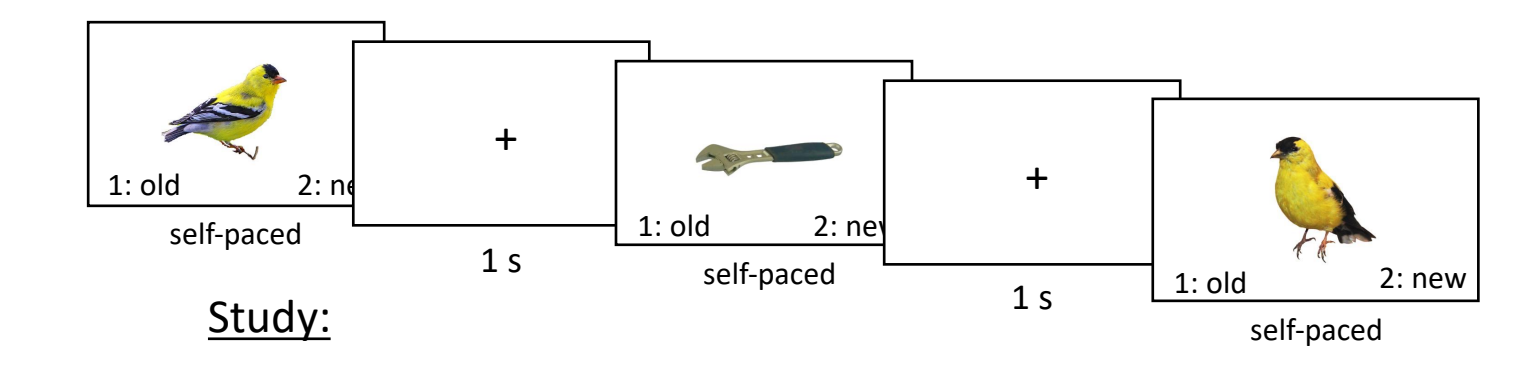
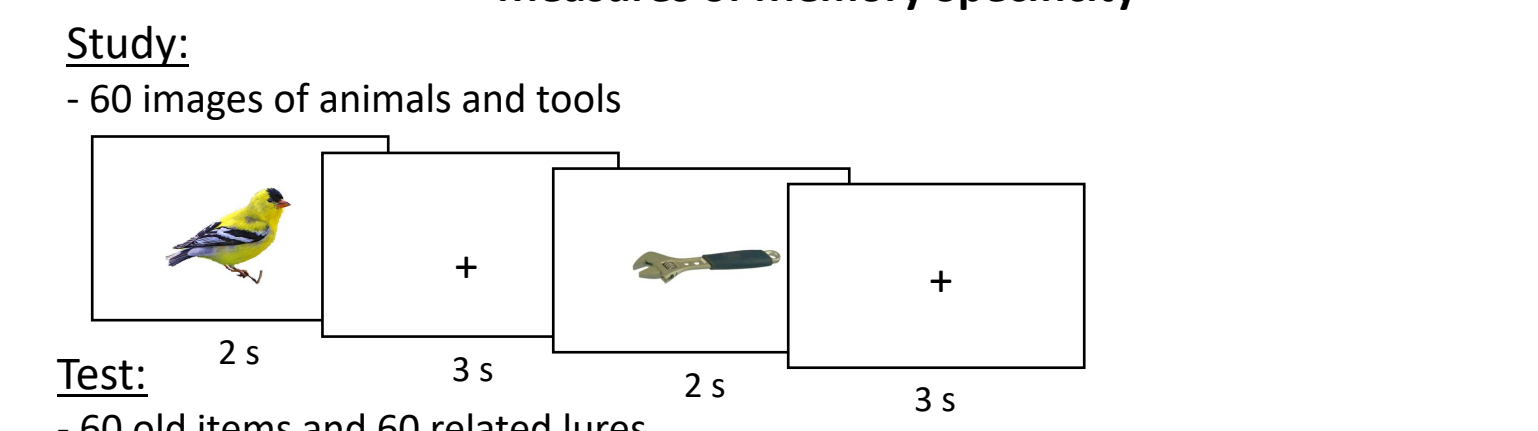
### Measuring Functional Connectivity



### Measures of Memory Generalization



### Measures of Memory Specificity



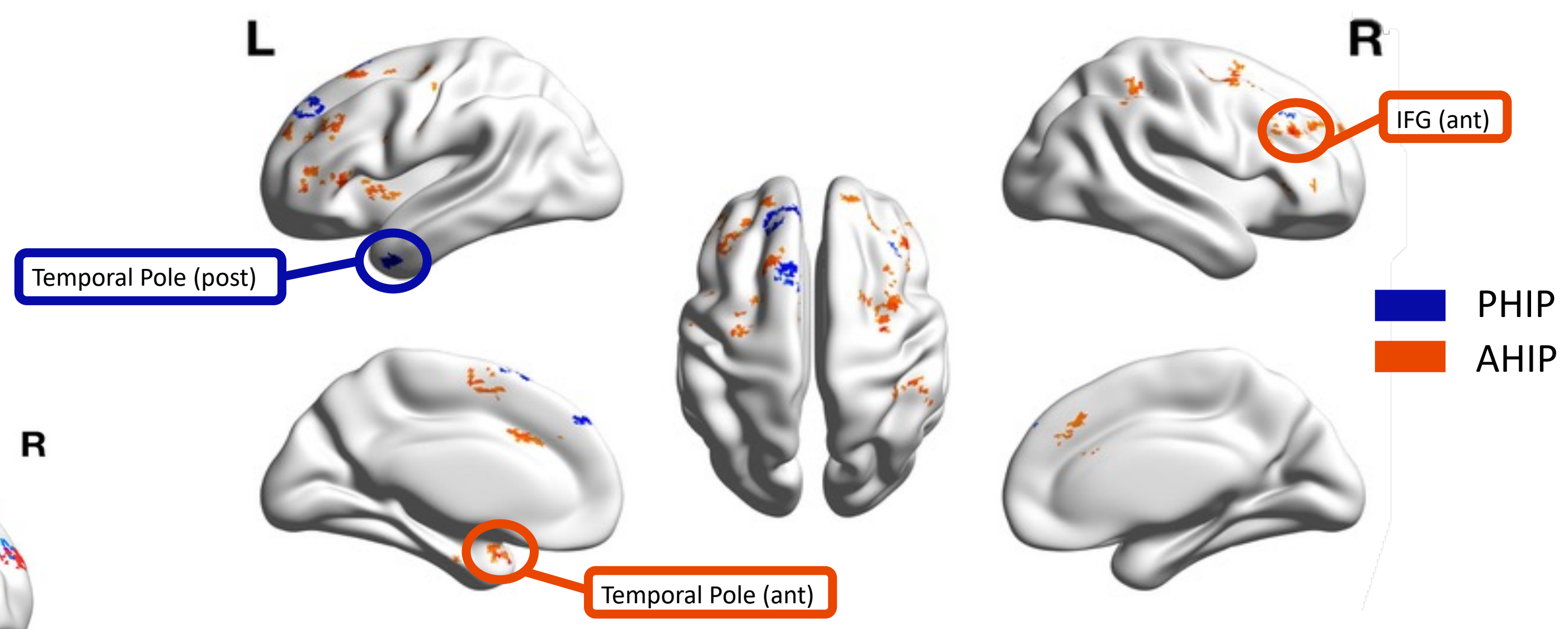
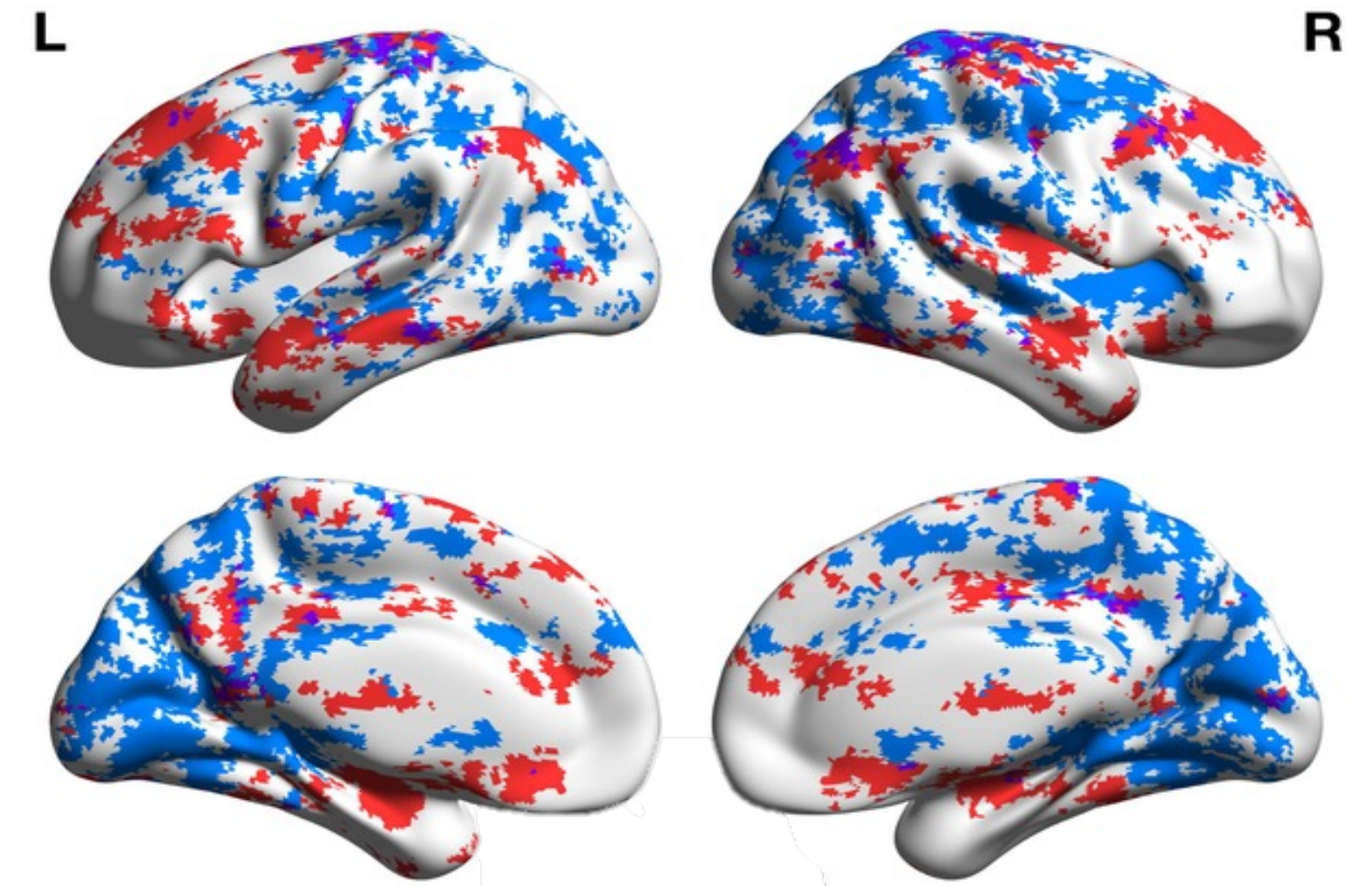
## Preliminary Results (N=28)

### Predictions

- Anterior and posterior hippocampus will be connected to distinct brain regions
- Anterior hippocampal connections will be associated with memory generalization
- Posterior hippocampal connections will be associated with memory specificity

### Whole Brain Connectivity Analysis

- PHIP
- AHIP
- OVERLAP



### Connections That Predict Generalization Success

- Many connections of both anterior and posterior hippocampus predicted generalization \*key connections included
  - Posterior – Temporal Pole\*, Superior Frontal Gyrus, Middle Frontal Gyrus
  - Anterior – Temporal Pole\*, Inferior Frontal Gyrus\*, Paracingulate Gyrus, Juxtapositional Lobule cortex, Supramarginal Gyrus
- No connections reliably predicted memory specificity

## Conclusions

- Posterior and anterior hippocampal regions form distinct functional connections with very little overlap
- Predictions not confirmed as both anterior and posterior hippocampal connections predicted generalization
- No connections predicted memory specificity

### References & Acknowledgements

<sup>1</sup> Frank, L. E., Bowman, C. R., & Zeithamova, D. (2019). Differential Functional Connectivity along the Long Axis of the Hippocampus Aligns with Differential Role in Memory Specificity and Generalization. *Journal of cognitive neuroscience*, 31(12), 1958–1975. [https://doi.org/10.1162/jocn\\_a\\_01457](https://doi.org/10.1162/jocn_a_01457)

Poppenk, J., Evensmoen, H. R., Moscovitch, M., & Nadel, L. (2013). Long-axis specialization of the human hippocampus. *Trends in Cognitive Sciences*, 17(5), 230-240. doi:10.1016/j.tics.2013.03.005