

# Electrophysiological and Behavioral Measures of Switching Between Memory Tasks Kristine A. Wilckens<sup>123</sup>, Eric D. Signoff<sup>2</sup>, Ashley J. Abraham<sup>1</sup>, David A. Wolk<sup>5</sup>, Mark E. Wheeler<sup>1234</sup>

<sup>1</sup>Department of Psychology, <sup>2</sup>Learning Research and Development Center, <sup>3</sup>Center for the Neural Basis of Cognition <sup>4</sup>Center for Neuroscience, University of Pittsburgh, Pittsburgh PA 15260, <sup>5</sup>Department of Neurology, University of Pennsylvania, Philadelphia, PA 19104



### INTRODUCTION

#### Question:

 How does task preparation affect episodic retrieval? And does preparation to retrieve affect ERP correlates of episodic memory?

#### **Background:**

- Retrieval mode is a tonic state that is maintained while episodic retrieval is required. (Rugg & Wilding, 2000). Entry into this ensures that stimuli will be treated as episodic retrieval cues.
- Retrieval orientation is a state that is maintained within a mode. Stimuli are treated as cues for particular kinds of episodic information.
- Data suggest that it takes at least one retrieval attempt for this state to develop.
- We use a cueing paradigm to randomly intermix semantic and episodic tasks (Morcom & Rugg, 2001).



#### Predictions:

- A decrease in response time when the same task was performed on the previous trial (stay) will reveal the effect of entry into retrieval mode on performance.
- We predict greater differences in cue phase differences between episodic and semantic cues on the stay versus switch trials.
- A more robust old/new effect for stay than switch trials should reflect entry into the appropriate retrieval mode.

## RESULTS



#### **Retrieval Mode Enhances Task Preparation Differences**



#### **Old-New Effects Modulated by Task Switching**



#### **Correct Rejections Reveal Orientation Differences**

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## CONCLUSIONS

• Right frontal cue phase differences suggest retrieval mode changes (Herron & Wilding, 2004).

• The differences between switch and stay trials in old/ new effects suggest that switching retrieval sets impacts retrieval mode and in turn impacts memory performance.

• Posterior positivity differences in CRs suggest that processing of stimuli is different between switch and stay trials. This suggests differences in orientation and may reflect a bias toward recollection on stay trials.

• The tendency for early frontal old-new effects for switch and late parietal for stay may suggest differences in whether the judgment is based on familiarity or recollection. Subjects may process the cue differently in the stay condition anticipating a stronger memory.



SwitchStayStay + 1• Older subjects (n=4) have a disproportionate deficiton switch trials. These preliminary results suggestthat successful entry into retrieval mode is necessaryfor optimal memory performance in older adults.

## REFERENCES

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