

# The Expansion and Further Development of a New Episodic Memory Task

## What is Episodic Memory?

Episodic memory is a vital component of cognition that facilitates our ability to think back to the previous day or a past event and remember its details. This ability informs our future decisions and supports how we differentiate the complexities of our real-world experiences (Tulving, 2002). (See Graphic 1)

### **INTRO:**

*Why does episodic memory matter?*

Unlike other types of memory (e.g., associative, or semantic memory), episodic memory is a conscious process of remembering events that happen to us personally. It is thought to be dependent on the context. Context can be thought of as the who, what, when, where & why of a memory. Without this ability, research has shown that individuals experience various difficulties related to cognitive decline including deficits in social cognition (Park & Donaldson, 2019; Vakili et al., 2019).

*How is it studied?*

At present, our understanding of how episodic memory works is gathered primarily from lab-based tasks that lack most of these crucial contextual pieces mentioned previously (Leal et al., 2019). Part of the issue is these tasks traditionally utilize static images of similar but non-identical objects, scenes, or words (Ly et al., 2013; Renoult et al., 2019; Stark et al., 2013). So, it is difficult to distinguish whether this cumulative research applies to our understanding of how episodic memory works in the real-world.

*What is next?*

A modified mnemonic discrimination task (MDT) was recently developed using a set of video clips of everyday experiences to mimic how we encode memories in the real world (Leal et al., 2019). The MDTs are memory tasks designed to have participants distinguish whether a stimulus was “old” “similar” or “new.” Given this task is the first of its kind, no research has examined how this task can translate to previous findings.

### **CURRENT STUDY:**

It is our hope that this task will be used in a future event-related potential (ERP) study. For this task, an ERP framework would look at the neural correlates associated with memory retrieval by assessing the brain’s response to the specific time-locked stimuli. Traditionally, ERP studies require mass amounts of data per condition (Baudewyn et al., 2017). Therefore, the purpose of this study is to expand the original dataset used by Leal et al. (2019) and verify the additional videos and photos elicit similar results to the original study.

### **HYPOTHESES:**

Given the results from the Leal et al. (2019) study, several hypotheses were formulated for this proposed study.

Firstly, we will test the hypothesis regarding gist and detail tradeoffs:

(1) overall participants will be able to correctly distinguish new items from old items (i.e., target recognition) better than similar items from old items (i.e., lure discrimination).

Secondly, we will test the hypotheses that emotion has a significant impact on what we remember (i.e., emotional videos will elicit better performance on this memory task overall).

(2) for emotional stimuli, target recognition will be higher than lure discrimination when compared to neutral stimuli

(3) Lure discrimination will be highest for negative stimuli when compared to positive and neutral stimuli.

### **METHODS:**

Participants will be recruited from Ball State University (BSU). The results from this study are intended to act as pilot data for a larger future project. Given that intention and that the guidelines for in-person research are rigorous, we expect to utilize volunteers from the Clinical Master’s program as well as from the Psychophysiological Attention, Cognition, & Emotion (PACE) labs.

Prior to data collection, all participants will go through a consent process and will answer simple demographics. Each participant will complete the encoding phase of the MDT where they will be asked to view 180 (10 sec) videos and will be asked to response whether the video takes place indoor or outdoors. During the delay period, they will partake in a U.S. capital quiz for 15 minutes. Then participants will be asked to complete the retrieval phase of this task. During this phase, participants will see a series of images and specify whether these images are old (images from 1<sup>st</sup> phase), similar (images that look like the 1<sup>st</sup> phase) or new (images that are brand new).

*(Reference Figure 1 for an example of this task)*

### **RESULTS:**

Data collection for this study has not begun yet. Anticipated start date: 4/6