

# 1. Introduction

- Memory reconsolidation is the process by which memories which have been destabilized due to reactivation are re-stabilized and sometimes updated.
- Re-exposure to the experimental environment has been shown to trigger memory reactivation and updating in humans (Hupbach et al., 2008) and rodents (Artinian et al., 2007; Jones et al., 2012).
- Aging is associated with functional changes in the medial temporal and frontal lobes, resulting in episodic and source memory impairments (Glisky et al., 2001). However, no research has addressed the effects of aging on memory reconsolidation.
- The objective of this study is to investigate reactivation-dependent memory updating in aged humans and rats.

# 2. Methods

## Humans

- Subjects: adults over 65 years old
- Task: Day 1 learn 15 objects (List 1) Day 2 - learn 15 objects (List 2) Day 3 - free recall of List 1 **Reminder** group - same context (room) on Day 2 No Reminder group - different context on Day 2

	High FL Function				
	High MTL function		Low MTL function		Hig fu
Variable	Μ	SD	Μ	SD	Μ
Age (yrs)	78.2	5.6	78.3	6.2	75.4
Education (yrs)	17.1	3.3	17.6	1.8	16.3
MMSE	29.4	.52	28.9	1.1	28.9
FL score*	.53	.43	.60	.41	77
MTL score*	.77	.41	52	.28	.68

FL=frontal lobe; MTL=medial temporal lobe, MMSE=Mini-Mental Status Examination; \*z scores

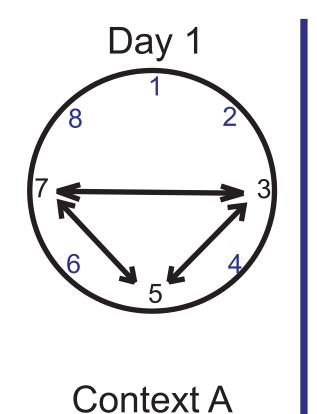
## Rats

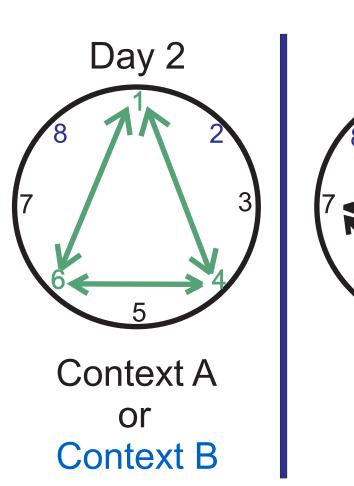
- Animals: young (8-12m) and aged (24-30m) male Fischer 344 rats
- Task: Day 1 learn to visit 3 feeders (List 1) on an open-field arena Day 2 - learn to visit 3 different feeders (List 2) Reminder condition - same context (odor, texture, visual cues) **No Reminder** condition - different context Day 3 - cued recall of List 1 or List 2

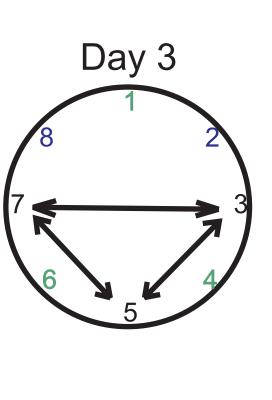
## Experimental Design

## **Experiment 1**:

**Does reactivating the List 1 memory prior to** new learning lead to long-term changes in the List 1 memory?

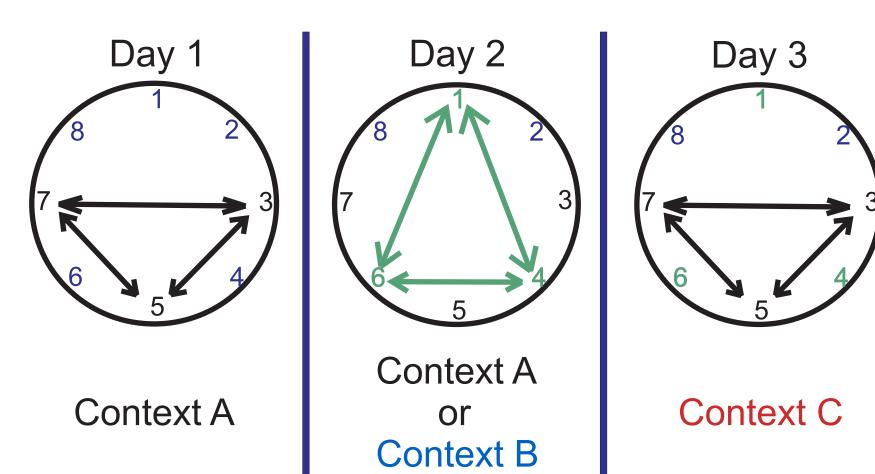




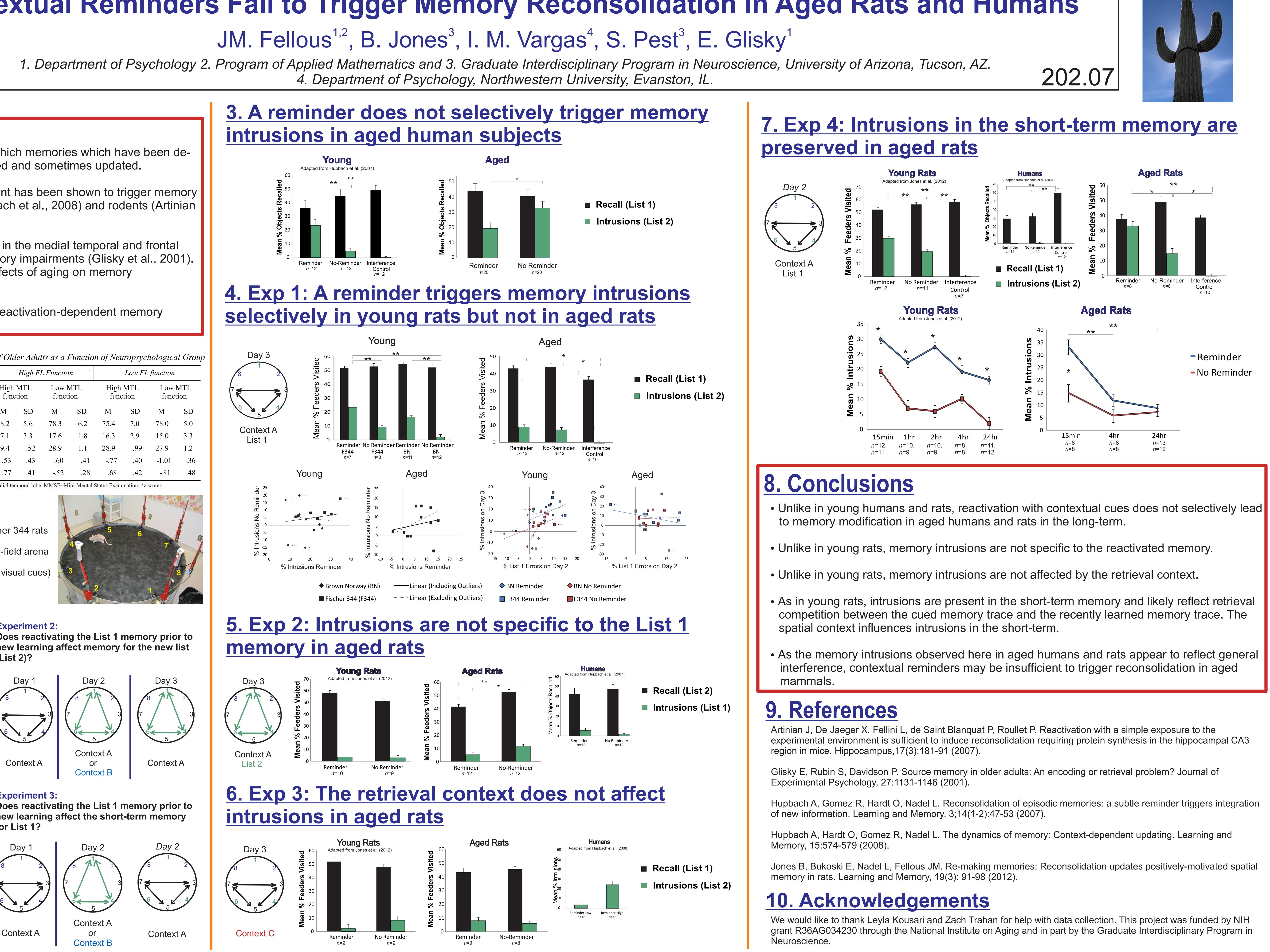


Context A

## **Experiment 3**: Are reactivation-dependent changes to the List 1 memory expressed in a neutral retrieval context?



**Experiment 2**: (List 2)?



# **Experiment 3**: for List 1?

