

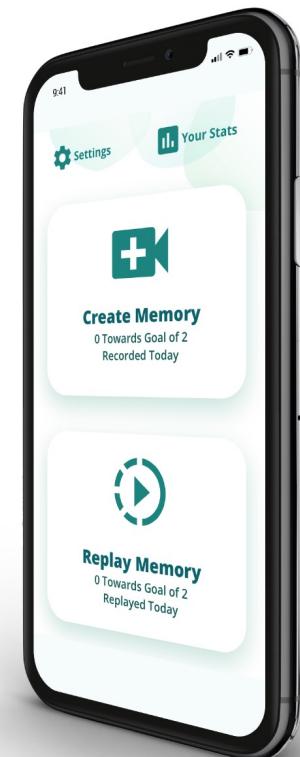
Characterizing the Durability of Experience-Dependent Representational Changes in the Hippocampus



Sophie Allen

Research Mentors: Dr. Chris Martin & Dr. Morgan Barense

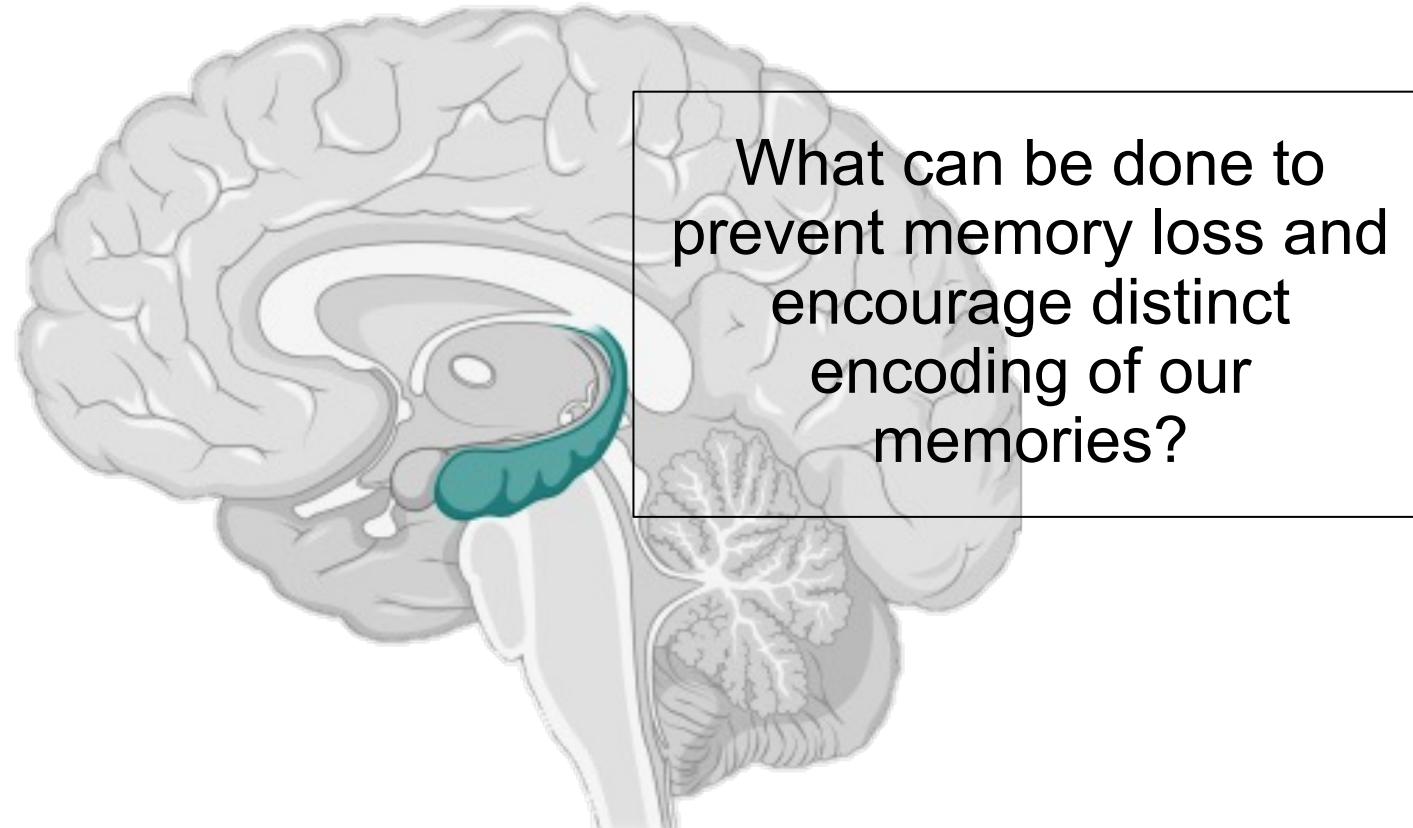
The Tyler Center for Global Studies Research Award,
Gilman International Scholarship



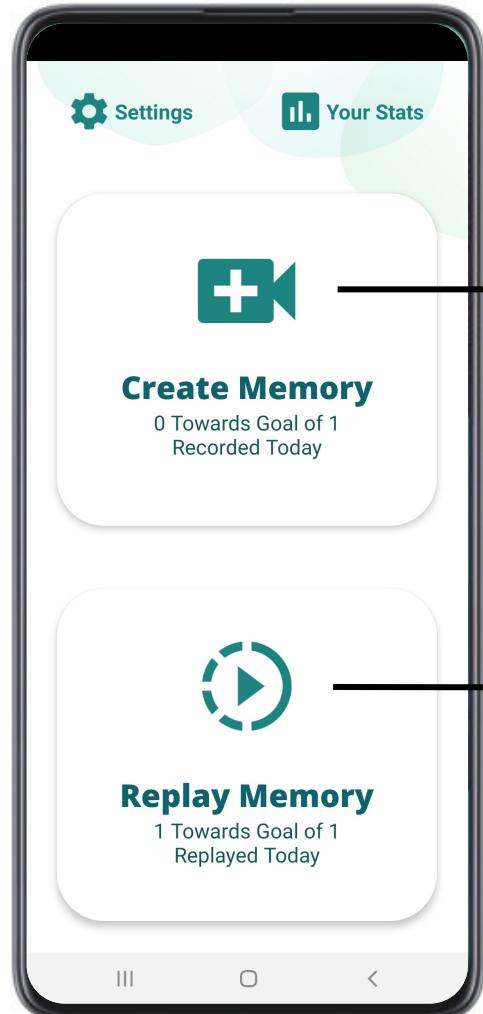




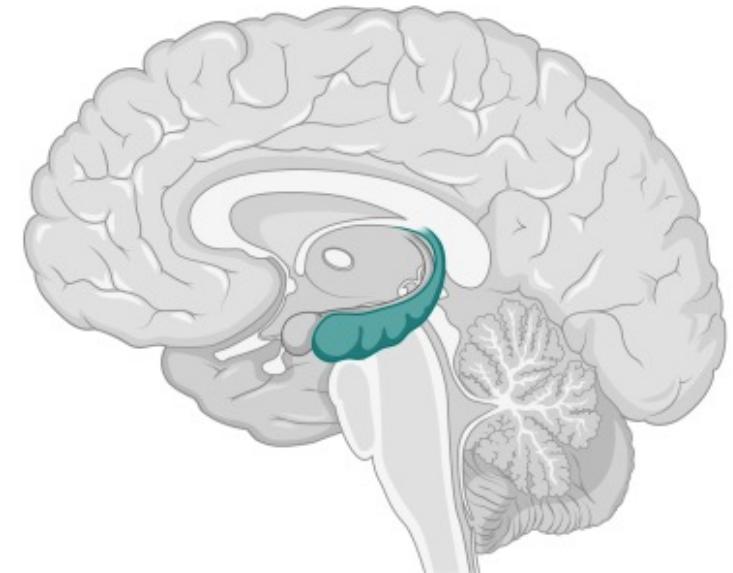
The Hippocampus Supports Autobiographical Memory



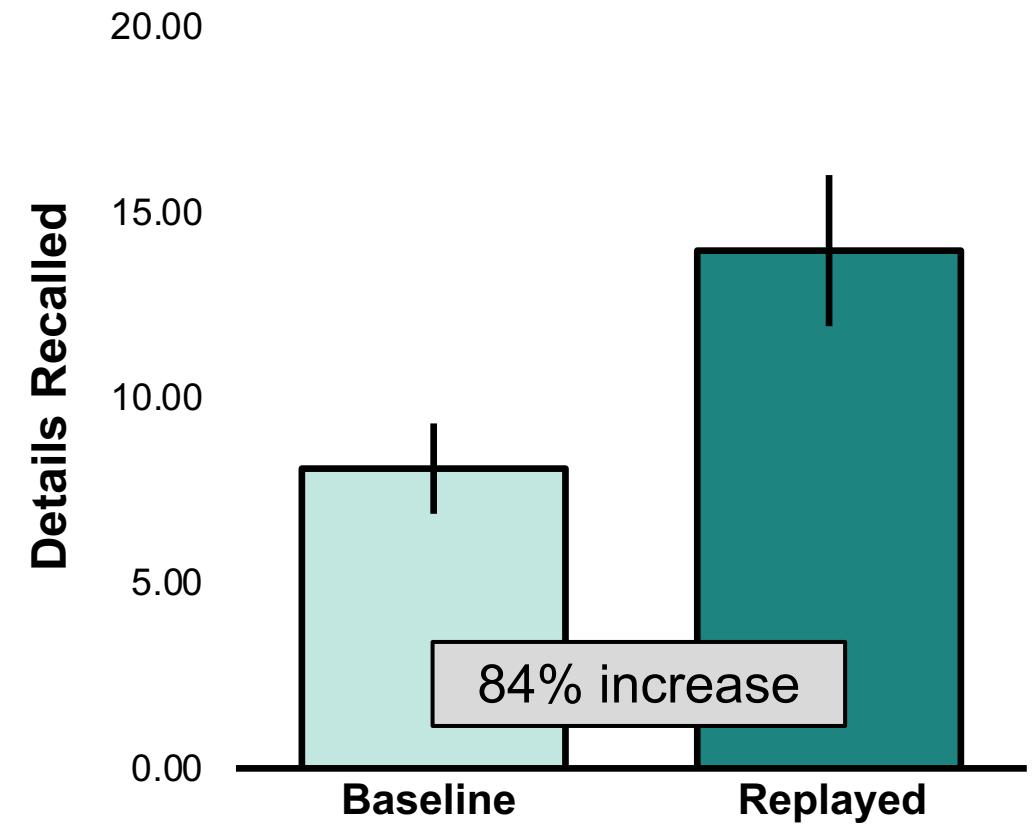
HippoCamera is a Cognitive Intervention that Mimics Hippocampal Function



- Create Memory**
Record a short but rich memory cue
- Replay Memory**
Review previously recorded cues

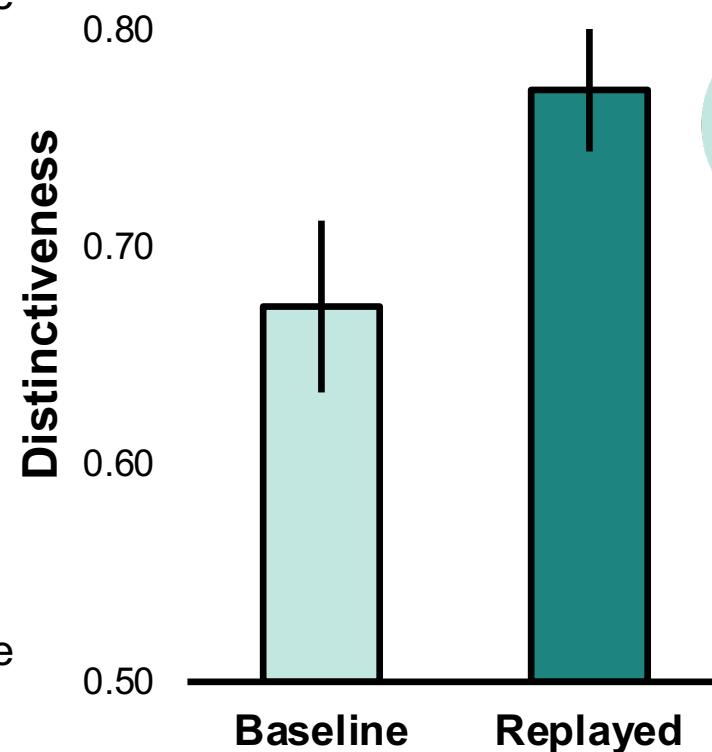


HippoCamera Improves Recall of Everyday Experiences

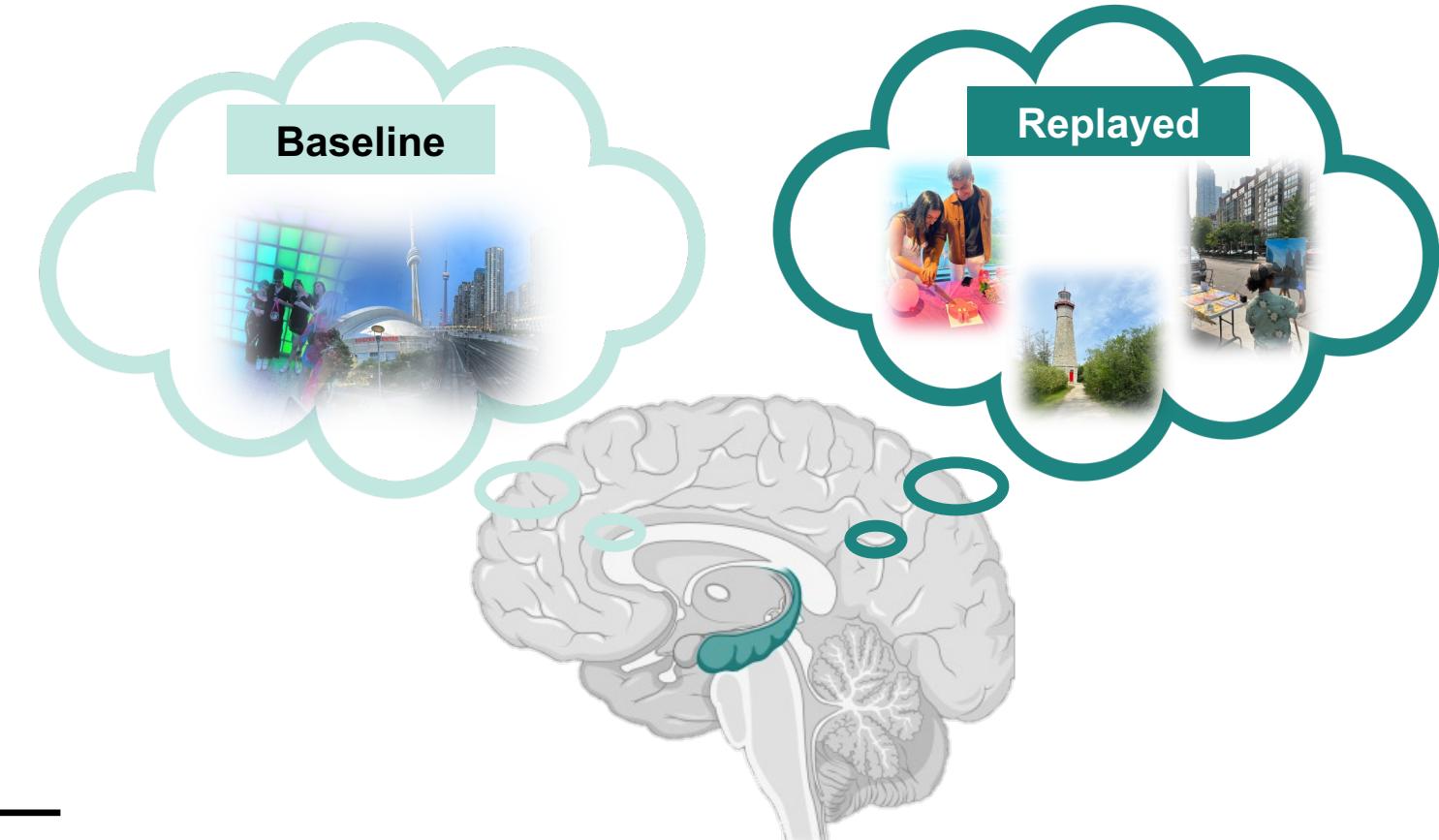


HippoCamera Promotes Distinctive Hippocampal Coding

Memories Are Separated



Memories Are Overlapping

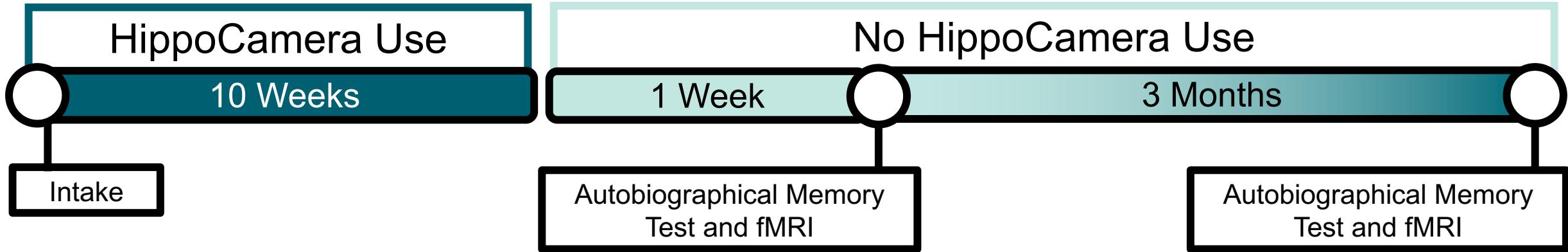




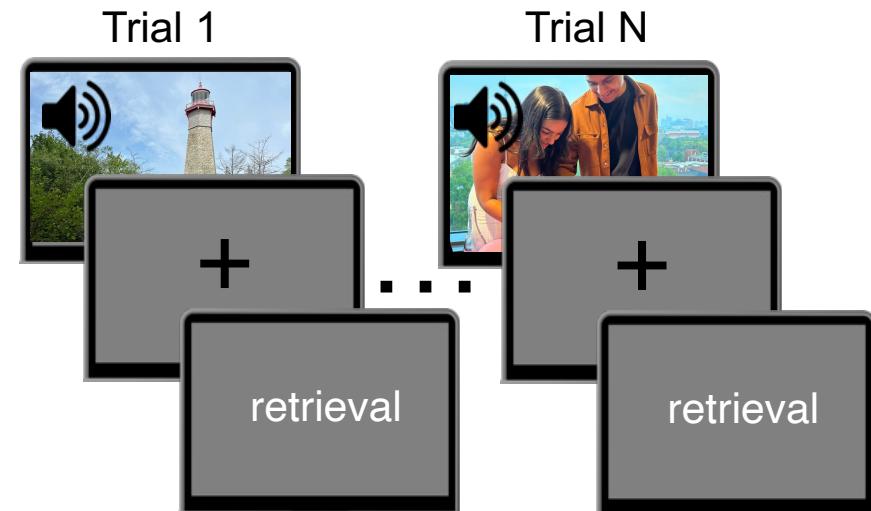
Does the boost in distinctive hippocampal coding persist through time?



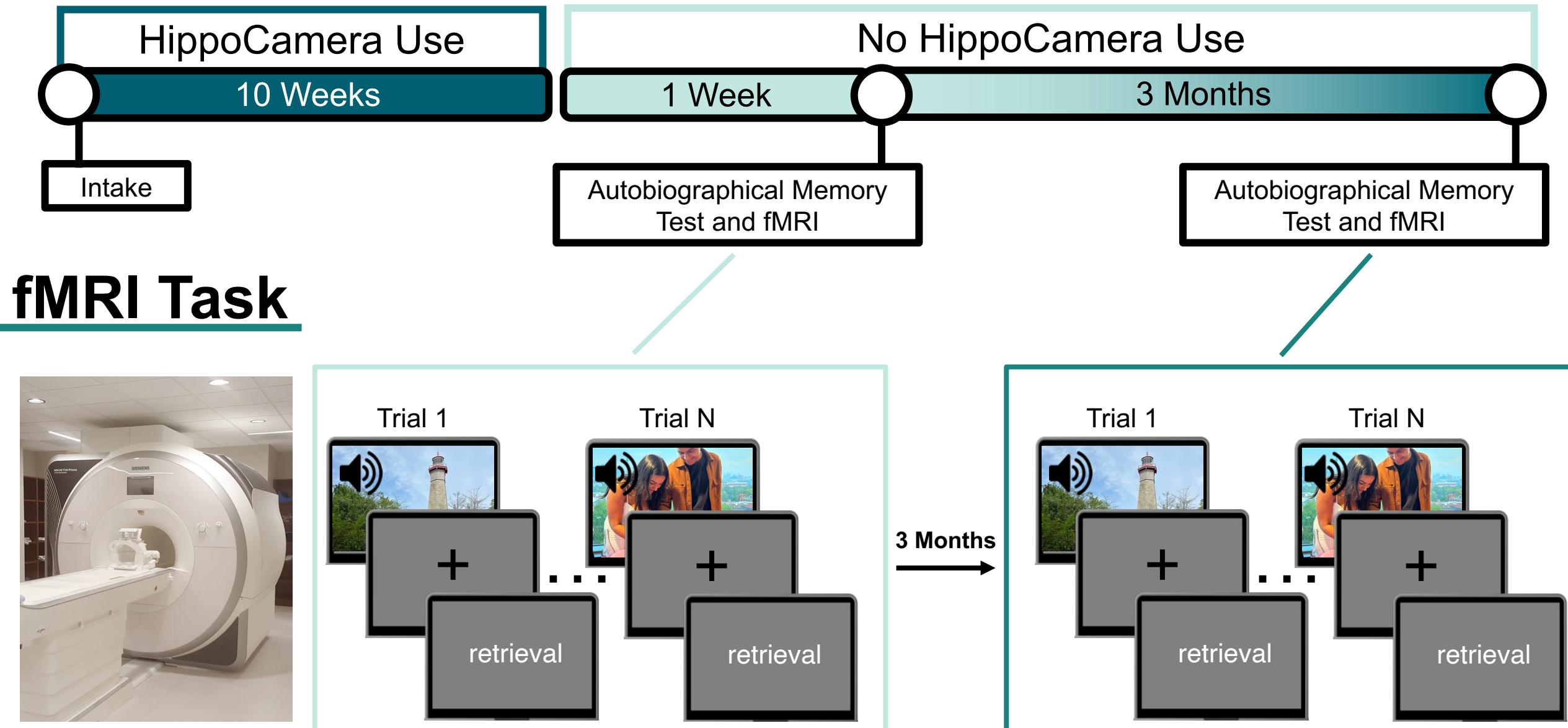
Experimental Design



fMRI Task



Experimental Design



Critical Comparison

Immediate

Baseline Trials



Replayed Trials

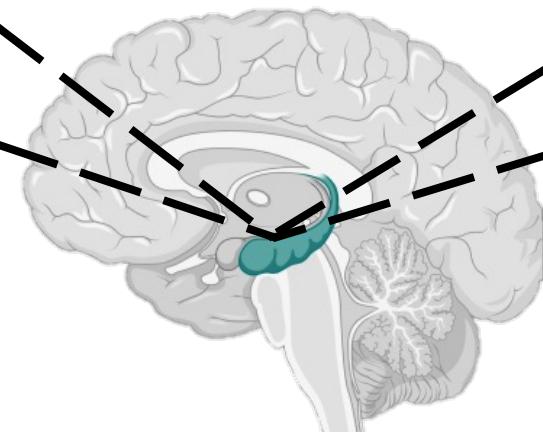


Delayed

Baseline Trials

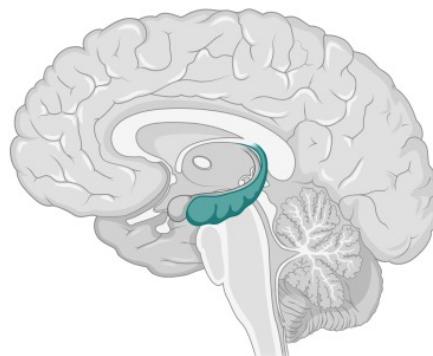


Replayed Trials



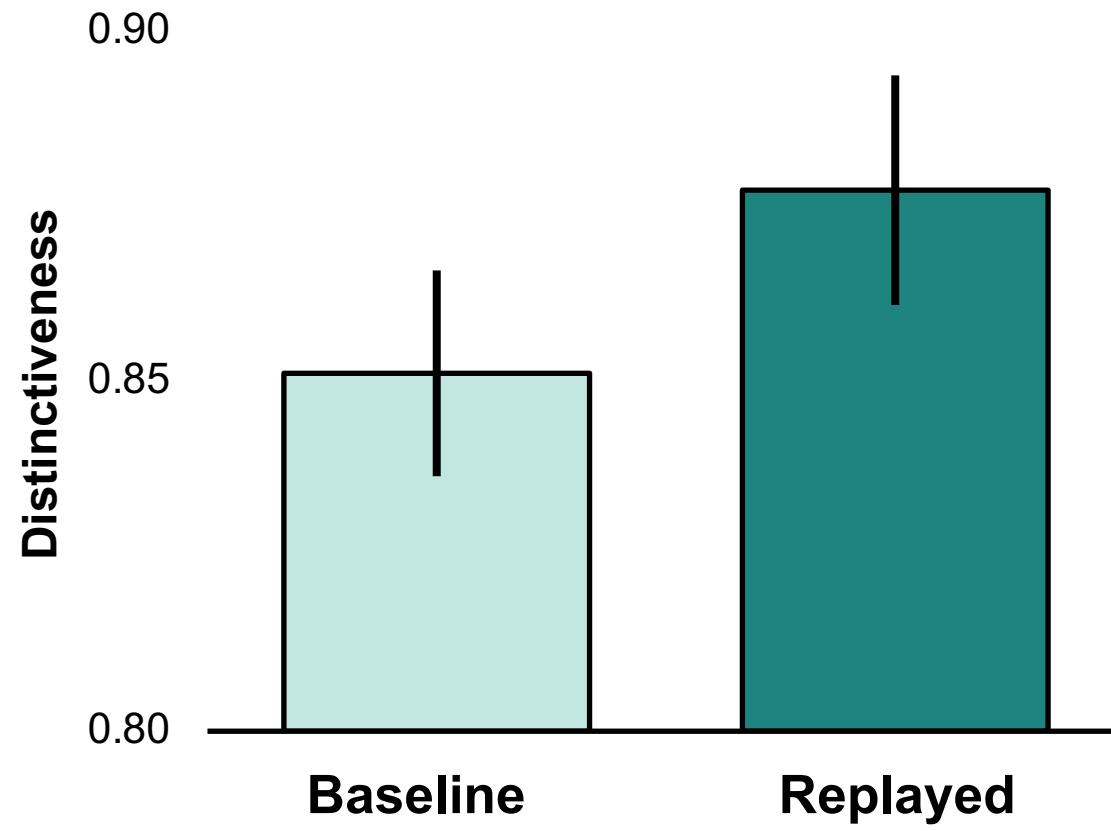
HippoCamera Increased Distinctiveness in the Hippocampus Immediately After the Intervention

Memories Are Separated



Memories Are Overlapping

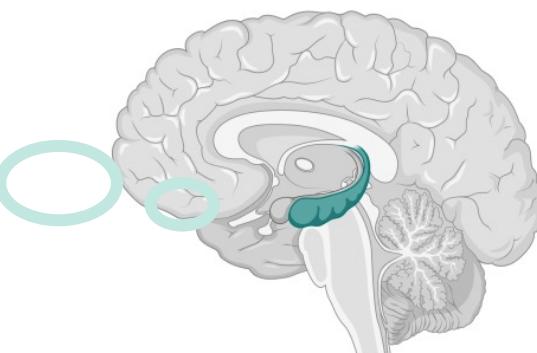
Right Posterior Hippocampus



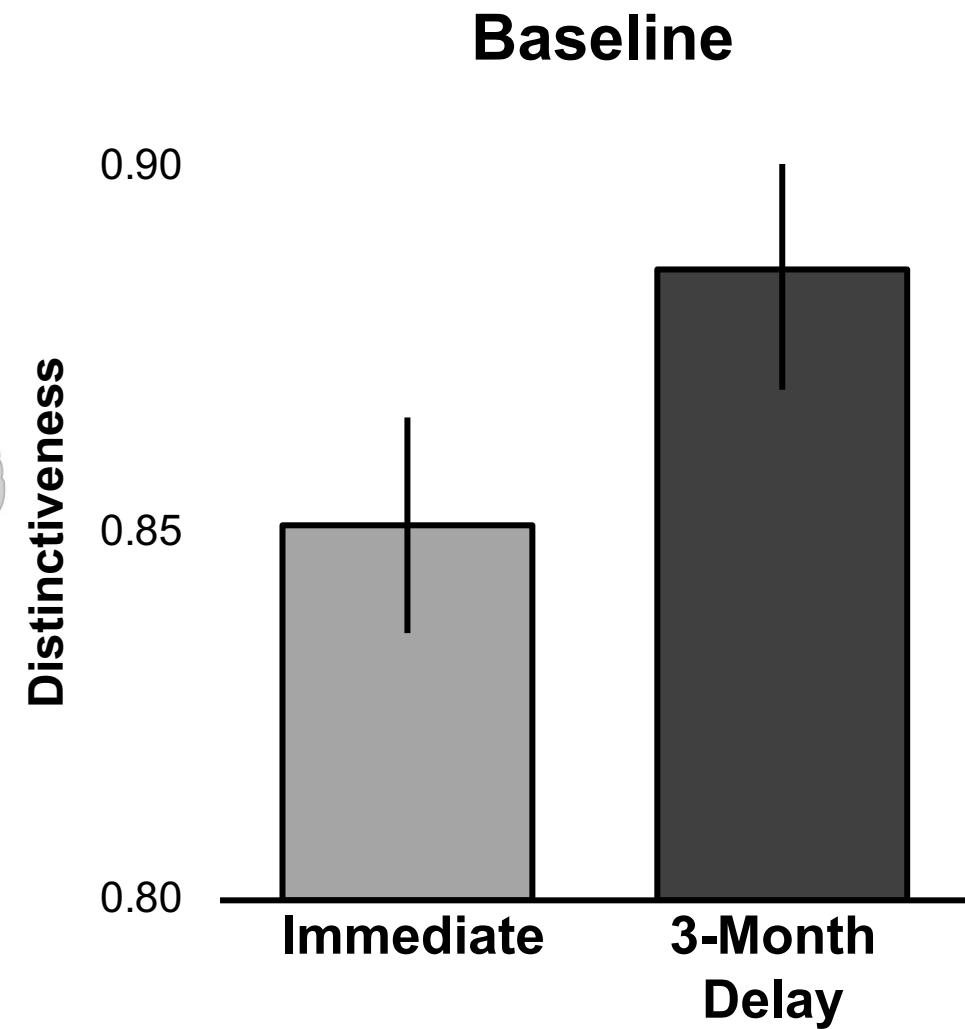
Baseline Memories Showed an Increase in Distinctiveness Over the 3-Month Period



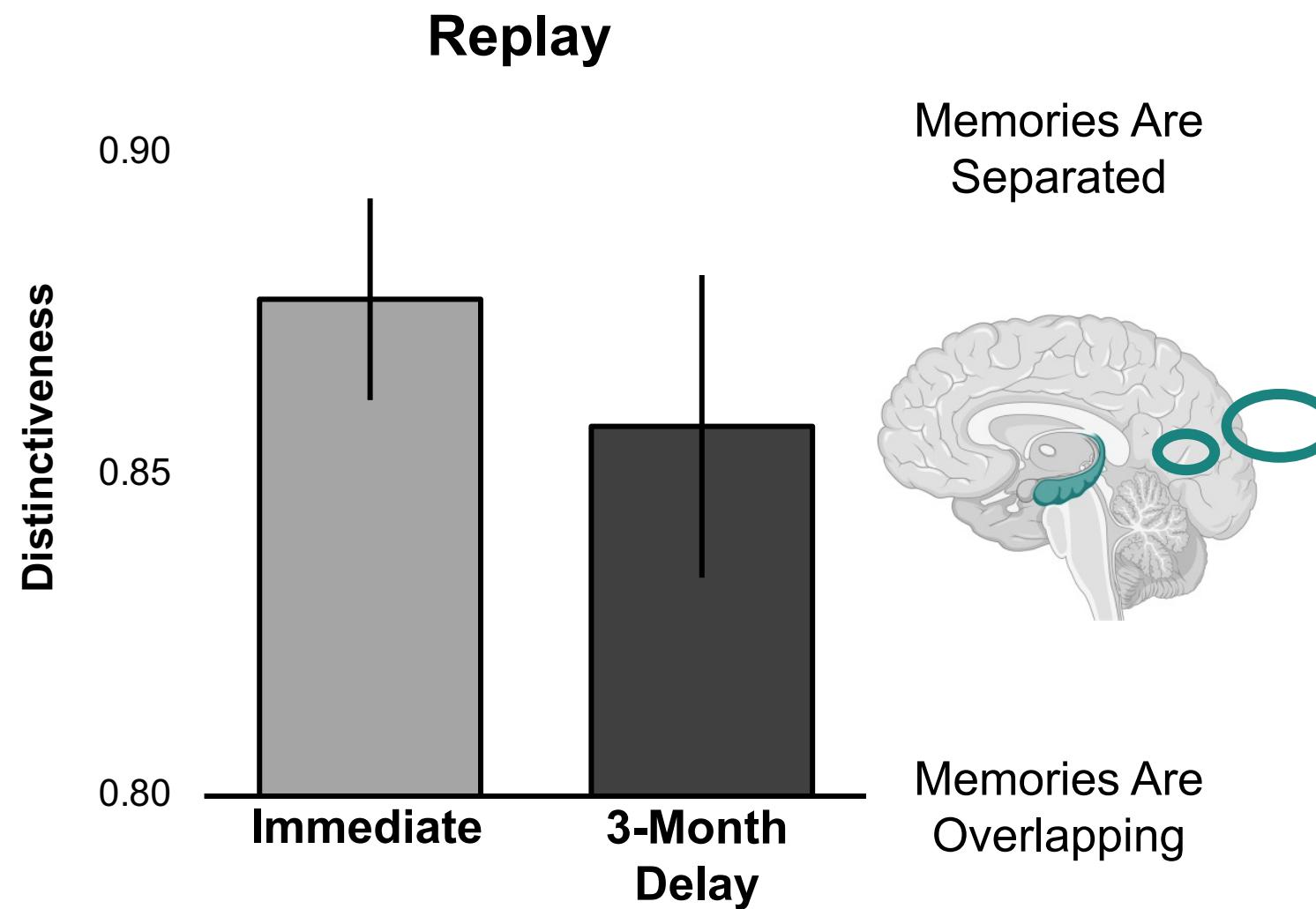
Memories Are Separated



Memories Are Overlapping

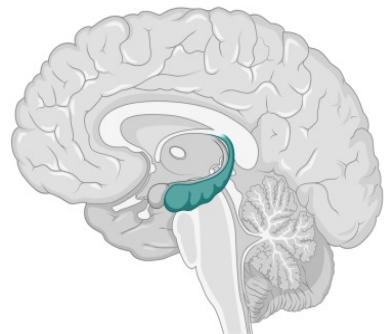


Replayed Memories Showed a Decrease in Distinctiveness Over the 3-Month Period



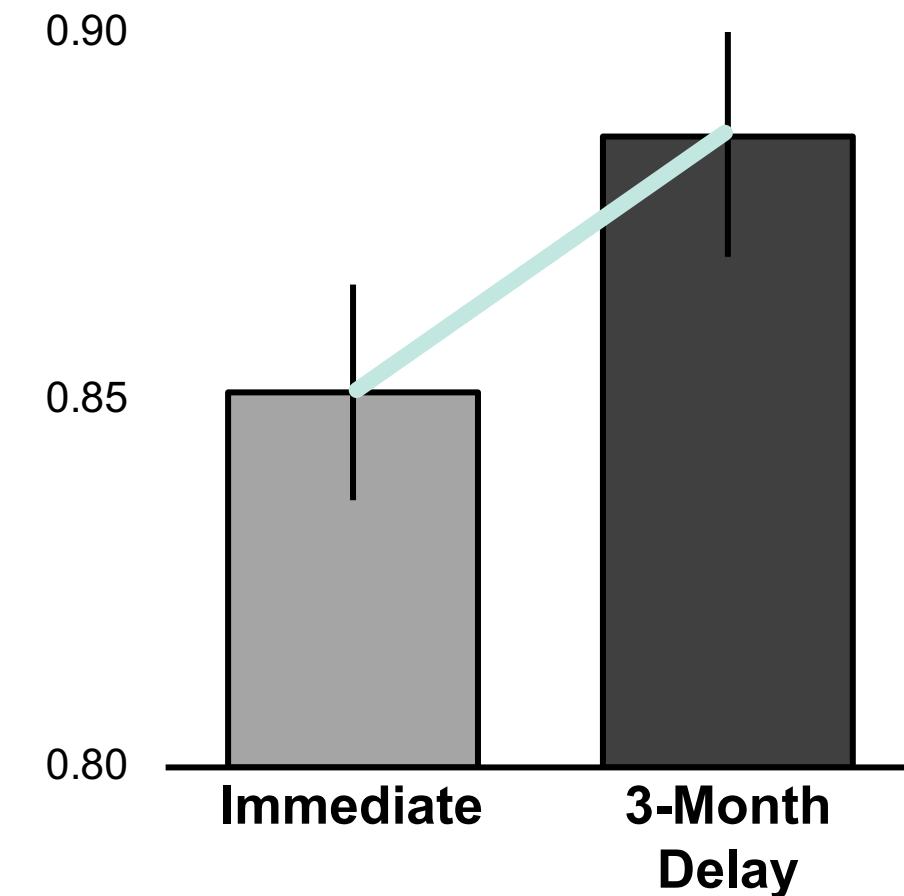
Distinctiveness of Baseline and Replay Memories Over Time

Memories Are Separated

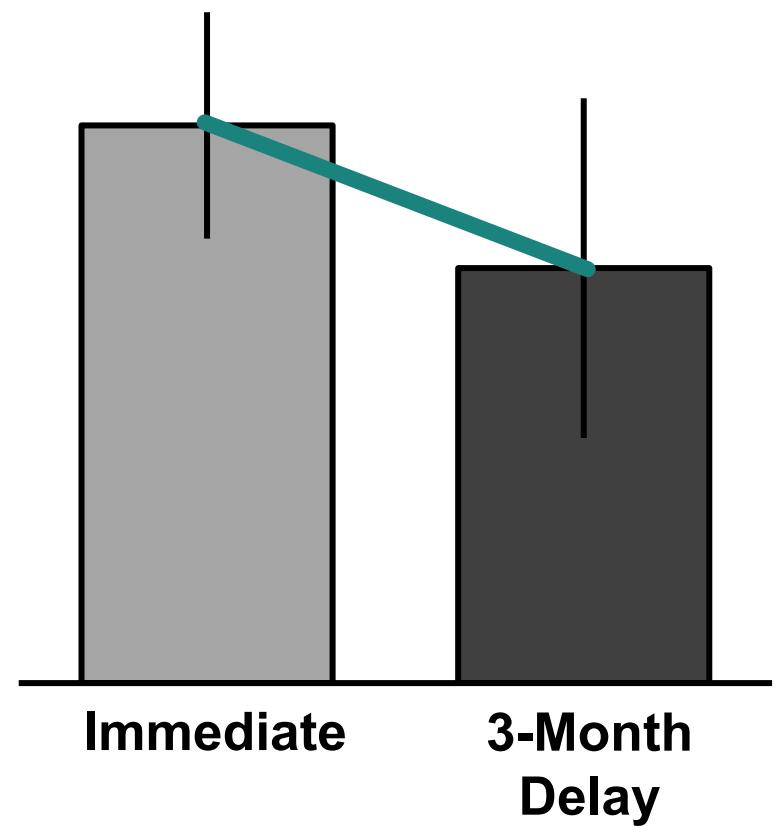


Memories Are Overlapping

Baseline

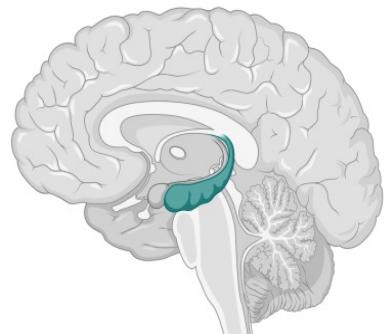


Replay



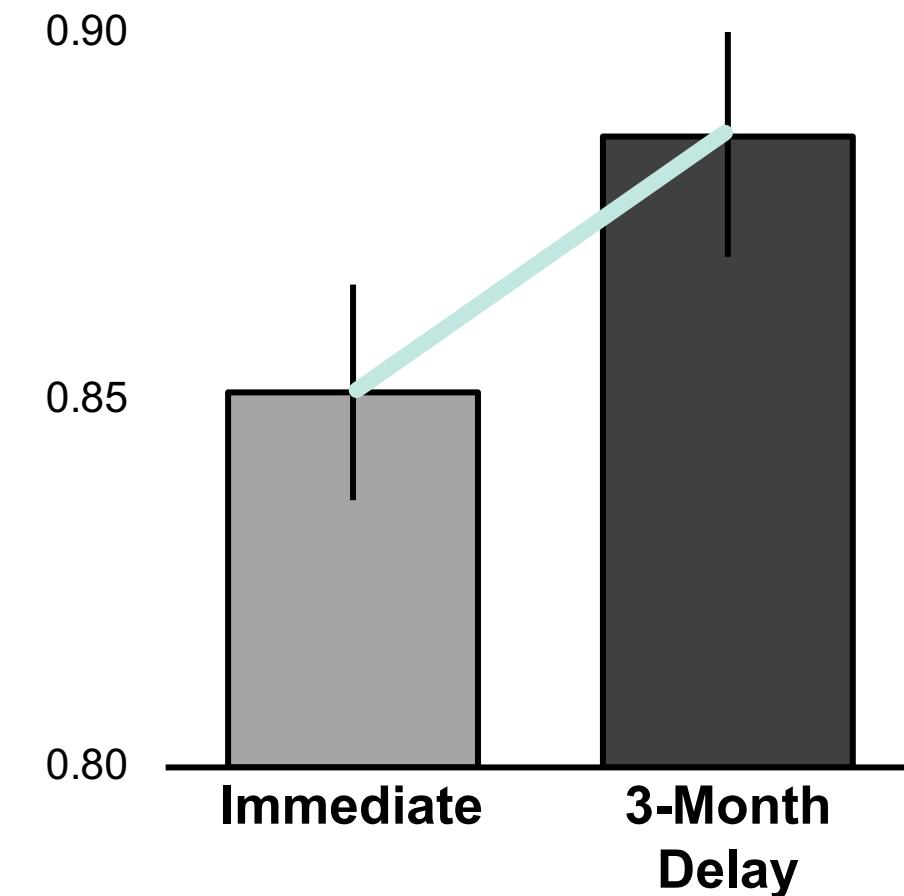
Distinctiveness of Baseline and Replay Memories Over Time

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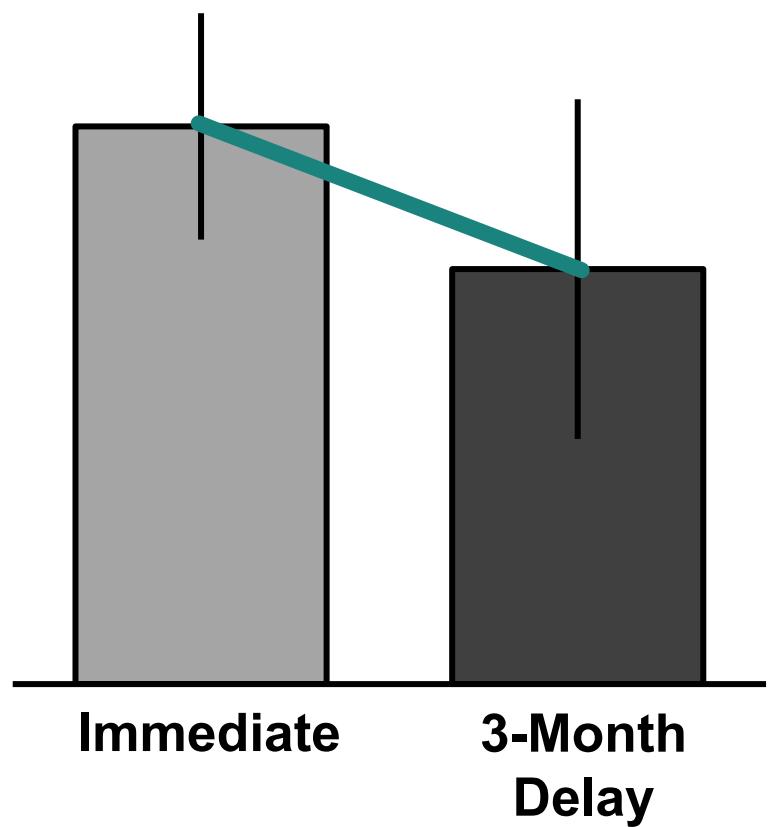


Memories Are Overlapping

Baseline

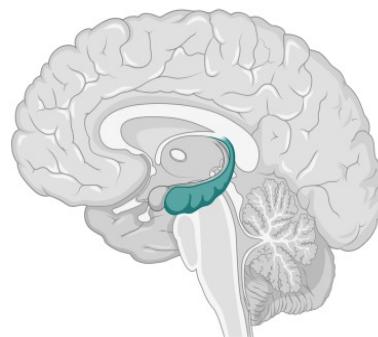


Replay



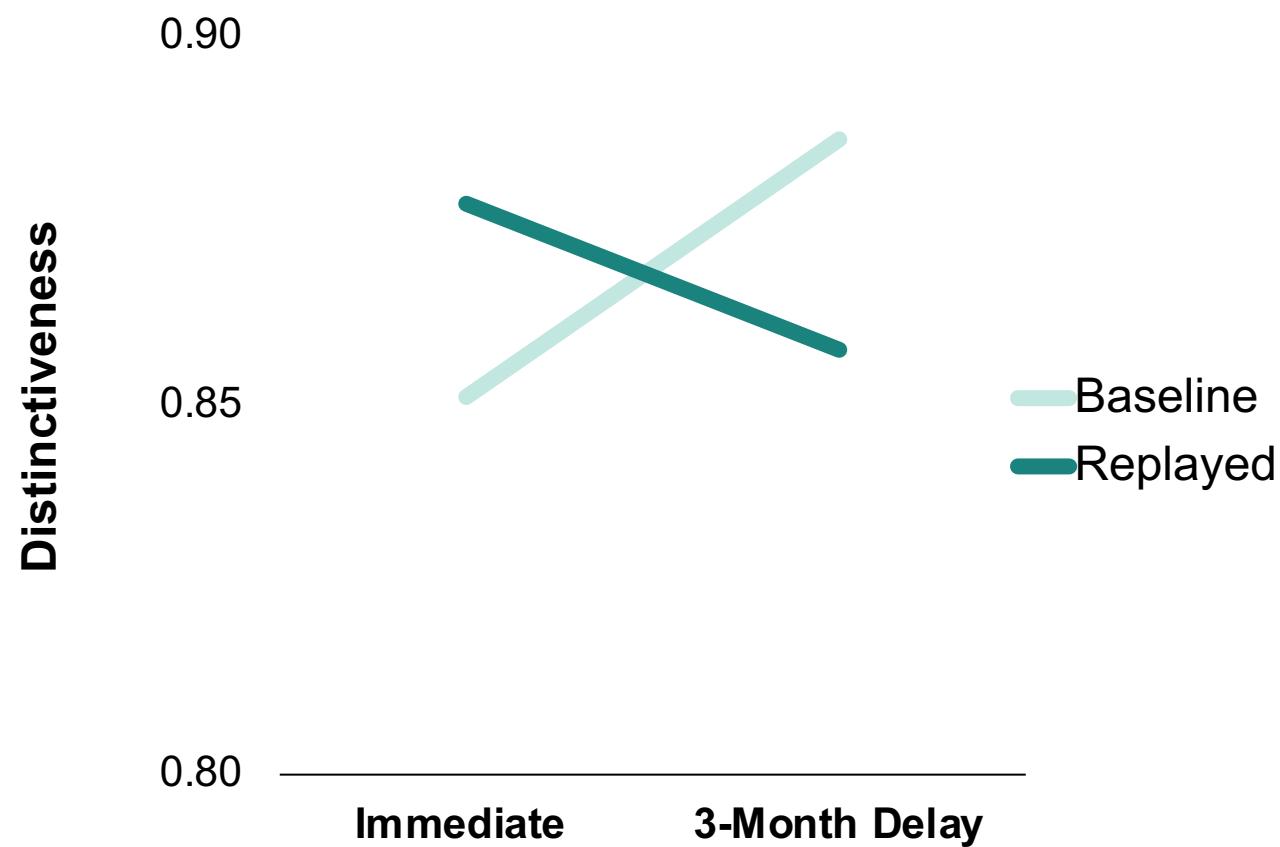
Distinctiveness of Baseline and Replay Memories Over Time

Memories Are Separated



Memories Are Overlapping

time X condition interaction $p = 0.059$





Does the boost in distinctive hippocampal coding persist through time?



Thank You



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