

**UC Davis**  
**Neurology**

**Title**

Narrative Memory: a story told by the hippocampus

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The data associated with this publication are not available for this reason: N/A



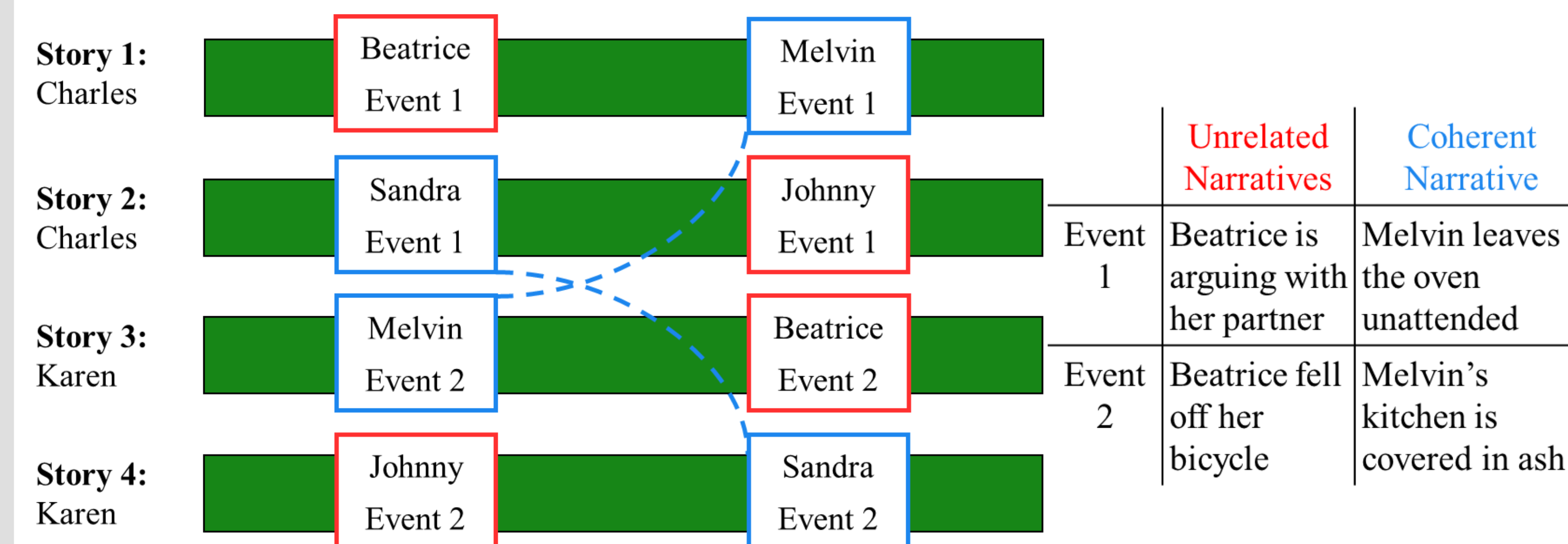
## Introduction

- We often remember past experiences in the form of a story. We can even form narratives from events which occur at disparate times.
- Yet, the neuroscience of memory has historically tried to understand how we remember specific periods of time, or “events.”
- The hippocampus is necessary for remembering specific events. One possibility is that the hippocampus organizes our memories in time.<sup>1</sup>
- However, we previously found that narratives can bridge the gap between events in our memory, making events easier to remember.<sup>2</sup>
- Hypothesis:** the hippocampus might link two events together in memory when they can form a single, **coherent narrative**.

## Functional MRI (fMRI) approach

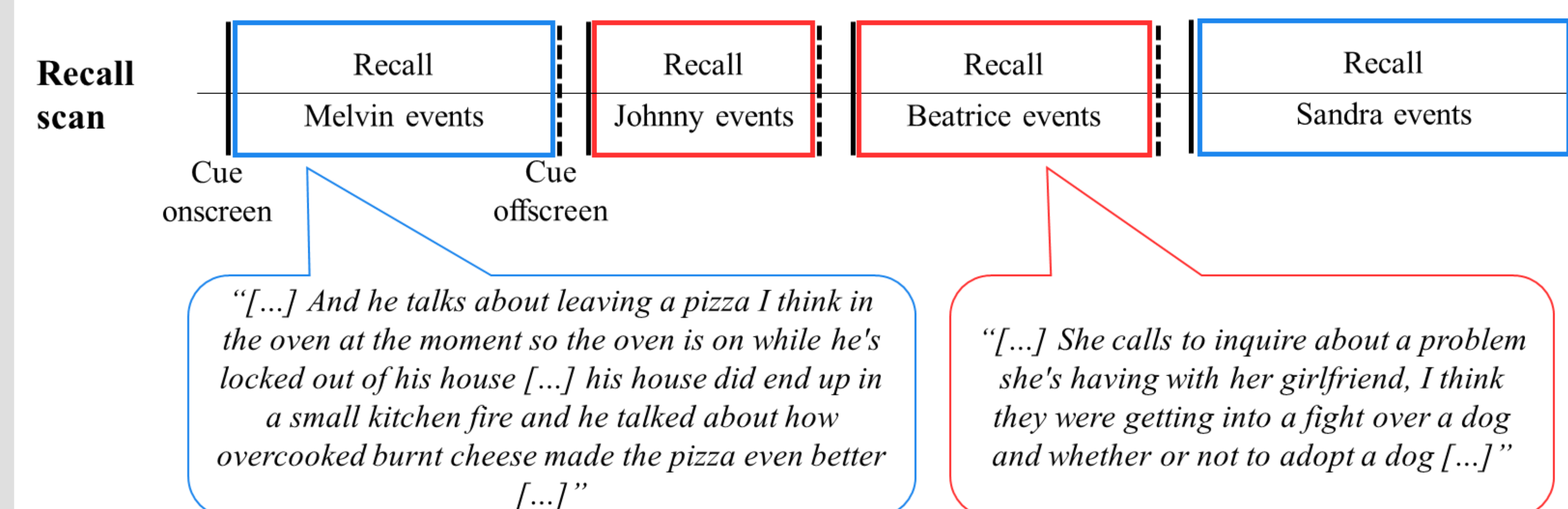
### Day 1: Memorize fictional stories during fMRI

- Participants memorized stories, in which characters appeared in separated events
- These “sideplot” events could form a **Coherent Narrative**, or not (**Unrelated Narratives**)

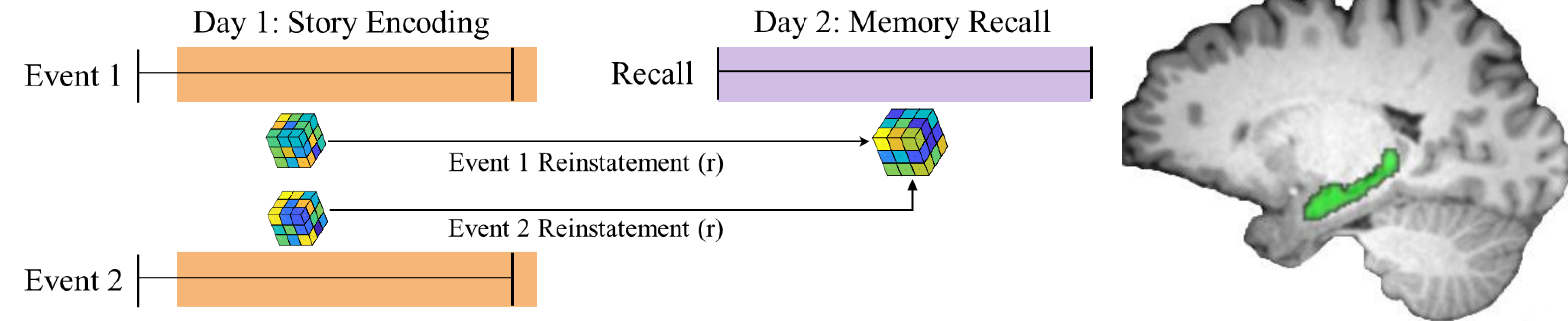


### Day 2: Recall events during fMRI

- Participants were asked to recall all events involving each character, using a microphone in the MRI scanner
- Recall was transcribed and then scored in a blinded fashion

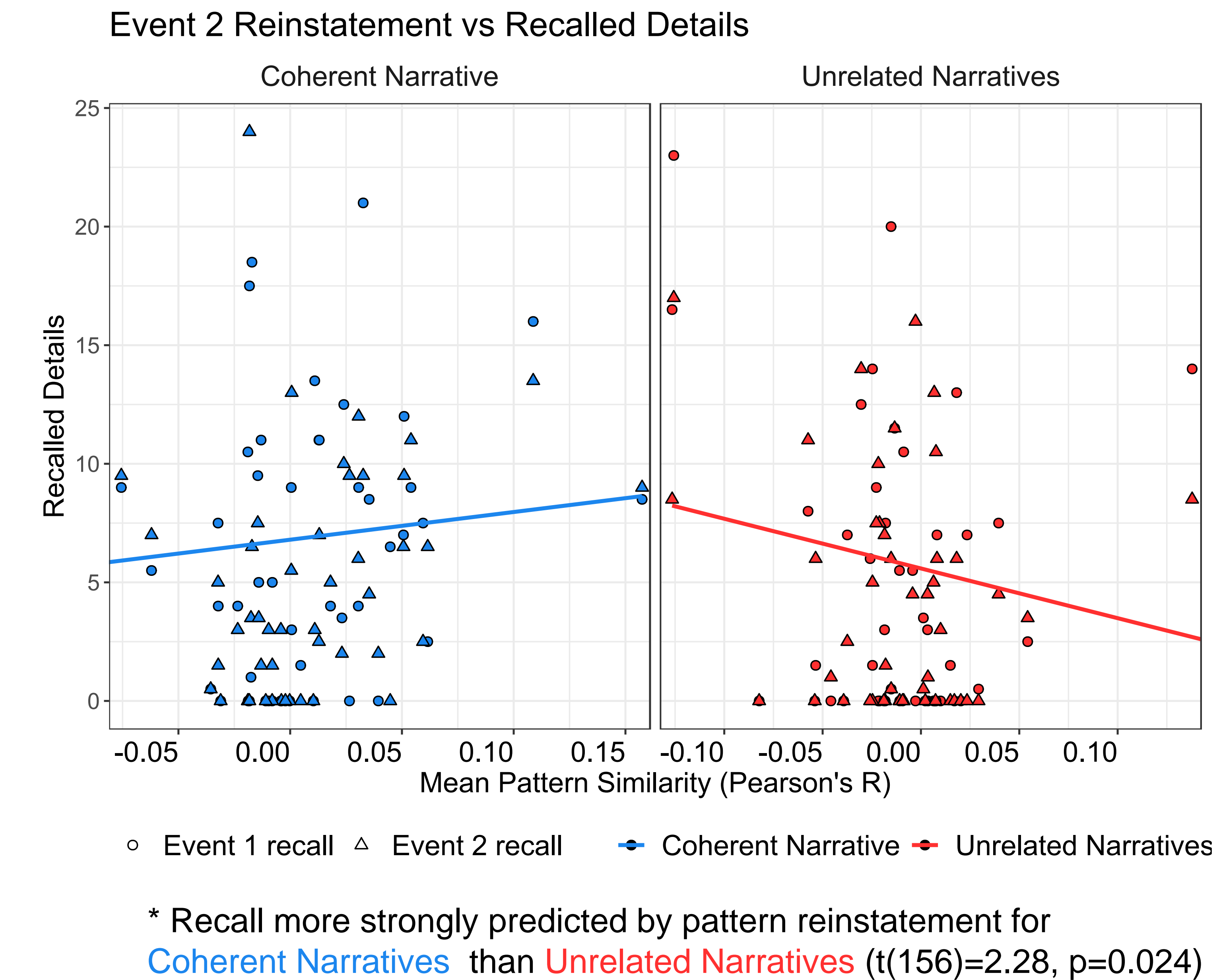
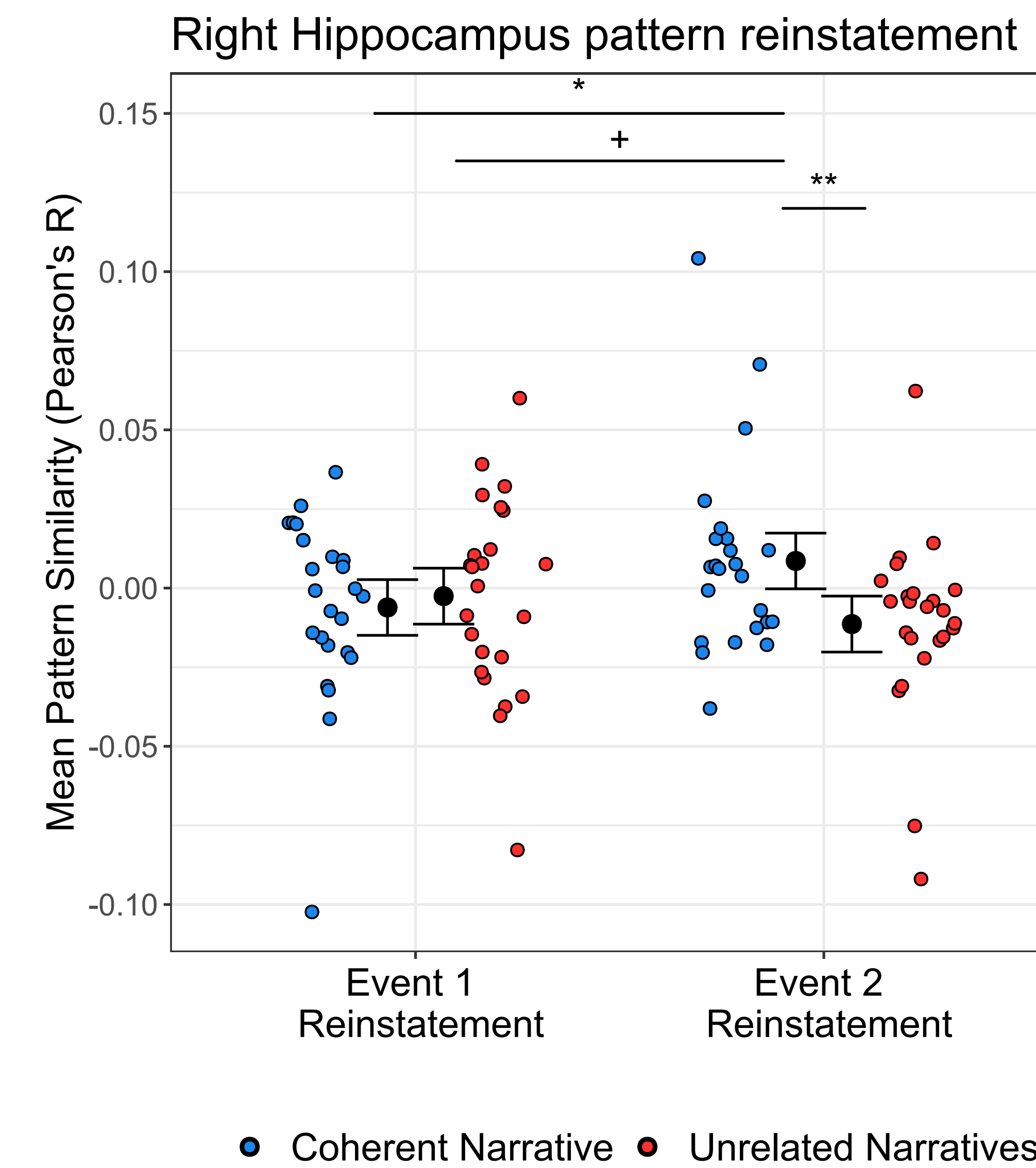


## fMRI pattern similarity analysis approach



## Result: Hippocampus preferentially reinstates memories for Coherent Narrative events

- When a new event reminds you of an old event (i.e. Event 2), you have the chance to create a narrative that bridges those two events
- Meaning, your memory for Event 2 might contain information about Event 1 – i.e., a linked “narrative memory”
- LEFT: the pattern of activity from Event 2 was preferentially reinstated during recall of **Coherent Narrative** events
- RIGHT: Event 2 pattern reinstatement predicted the number of details recalled for **both Coherent Narrative** events \*
- This suggests that, during Event 2, the hippocampus interwove Events 1 and 2 to form a single **narrative memory**



## Summary

- The hippocampus organizes our experiences into larger **narratives** in memory<sup>3</sup>: (1) by incorporating memories for old events into memories for new events; (2) by preferentially supporting our recall of events that form **coherent narratives**.
- These findings may pave the way for applications in early-stage cognitive decline, education, and literary theory<sup>4,5</sup>.

## References

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