The Effect of Narratives On Recognition Memory

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Introduction

- Retrieval-induced forgetting (RIFO): retrieval practice strengthens memory for practiced items but weakens memory for unpracticed items[1]
  - RIFO reflects repeated inhibition of unpracticed items, a consequence of competition in memory at retrieval [1]
- Retrieval-induced facilitation (RIFA): retrieval practice strengthens memory for practiced items AND unpracticed items[2]
  - Items that are similar to one another become integrated at encoding, a process that reduces competition and the need for inhibition during retrieval practice[3,4]

Research Questions

1. Can we find evidence for either RIFO or RIFA when using complex, naturalistic stimuli as memoranda?
2. Is narrative a critical factor that determines whether we obtain RIFO or RIFA in controlled experimental contexts?

- **Prediction 1:** Coherent narratives will result in retrieval induced facilitation due to integration at encoding
- **Prediction 2:** Incoherent narratives will result in retrieval induced forgetting due to competition at retrieval practice

Methods

Participants

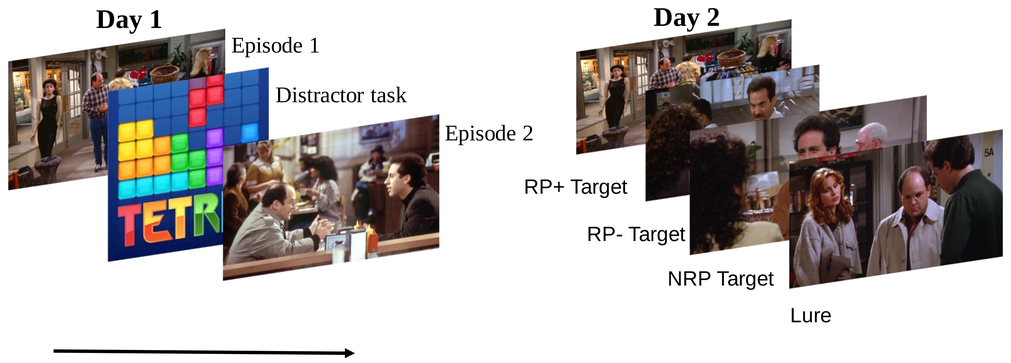
- 46 of a targeted 72 undergraduate students (aged 18-22) were recruited using SONA (27 women, 4 men, 1 non-binary)

Stimuli

- Coherent narrative: Unaltered episodes of "Seinfeld"
- Incoherent narrative: Altered episodes of "Seinfeld" created by splicing multiple scenes from multiple episodes
  - We asked participants how familiar they were with Seinfeld
  - We asked participants how for judgments of learning ("how likely are you to recall this episode one week from now?")
  - Retrieval cues
    - Six scene specific retrieval cues, practiced twice on Day 1
      - Ex: "Kramer breaks up with Olive."

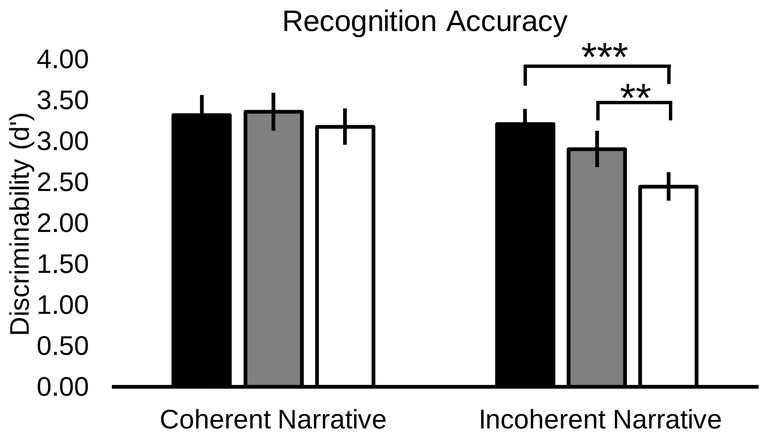
Trial Type	Cue Duration	Quantity	Description
RP+	3 sec	6	Previously practiced scenes
RP-	3 sec	6	Unpracticed scenes from practiced episode
NRP	3 sec	6	Unpracticed scenes from unpracticed episode
Lure	3 sec	12	Novel scenes

Procedure

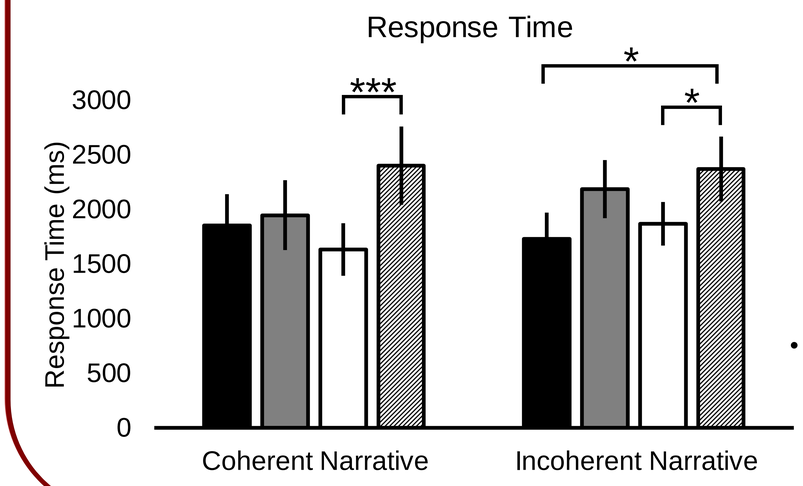


Results

Retrieval Induced Facilitation in the Incoherent Narrative Condition



- Main effect of Trial Type ($p < .01$)
- Trend toward a Trial Type x Condition interaction ($p = .08$)



- Main effect of Trial Type ($p < .01$)

Discussion

Findings

- Our results build on existing evidence by revealing the presence of retrieval induced facilitation for complex, naturalistic stimuli
- Counter to our predictions, we did not find evidence for retrieval-induced facilitation in the coherent narrative condition
- We did, however, reveal a significant effect of retrieval-induced facilitation in the incoherent condition
- This pattern of results diverges form those obtained in our previous research using cued recall rather than recognition to probe memory
- Overall, our findings suggest that narrative and retrieval demands are critical factors that determine the mnemonic effect of retrieval practice on unpracticed items

Limitations

- Moving forward, we can improve this study by collecting a larger and more diverse sample

Future directions

- In future studies, we will utilize functional magnetic resonance imaging (fMRI) to better understand the neural correlates underlying both RIFO and RIFA when viewing naturalistic information

References

[1]Anderson, M. C., Bjork, R. A., & Bjork, E. L. (1994). Remembering can cause forgetting: Retrieval dynamics in long-term memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *20*(5), 1063–1087.

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[3]Cohn-Sheehy, B. I., Delarazan, A. I., Reagh, Z. M., Crivelli-Decker, J. E., Kim, K., Barnett, A. J., Zacks, J. M., & Ranganath, C. (2021). The hippocampus constructs narrative memories across distant events. Current biology: CB, 31(22), 4935–4945.e7.

[4]Jonker, T. R., Dimsdale-Zucker, H., Ritchey, M., Clarke, A., & Ranganath, C. (2018). Neural reactivation in parietal cortex enhances memory for episodically linked information. *Proceedings of the National Academy of Sciences*, *115*(43), 11084–11089.