

Modulation of task demands suggests that semantic processing interferes with the formation of episodic associations

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Introduction

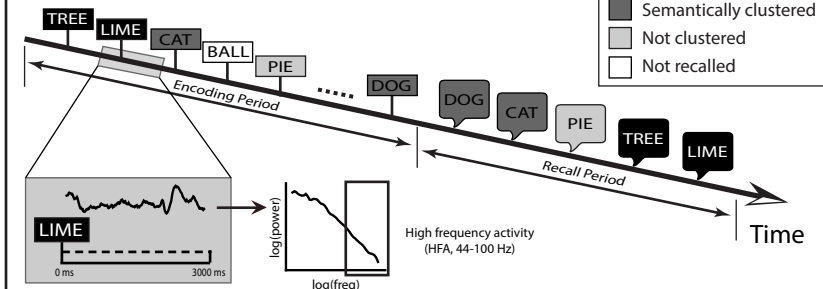
Although we know that individuals rely on episodic and semantic associations during memory tasks, it is unclear how semantic processing impacts the formation of episodic memories

Does processing semantic associations **facilitate** or **interfere** with the formation of episodic associations?

Bousfield, 1953; McKoon & Ratcliff, 1978; Kahana, 1996; Lohnas et al., 2015

Methods

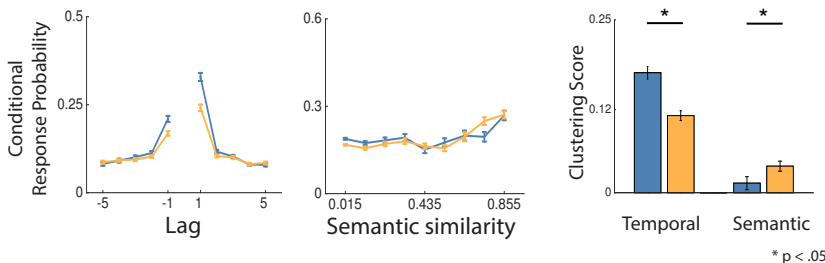
Temporally clustered
 Semantically clustered
 Not clustered
 Not recalled



Immediate free recall | 152 participants | 4 sessions | 16 lists per session | 16 words per list | Scalp EEG

Behavioral results

No task: intentional memory encoding
 Task: semantic elaboration (size, animacy)



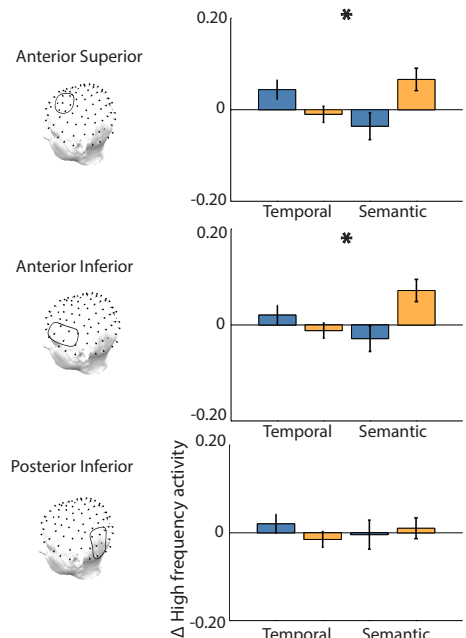
* p < .05

Neural results

Subsequent clustering

Temporal: items recalled preceding or following study neighbors > items not clustered

Semantic: items recalled preceding or following semantic associates > items not clustered

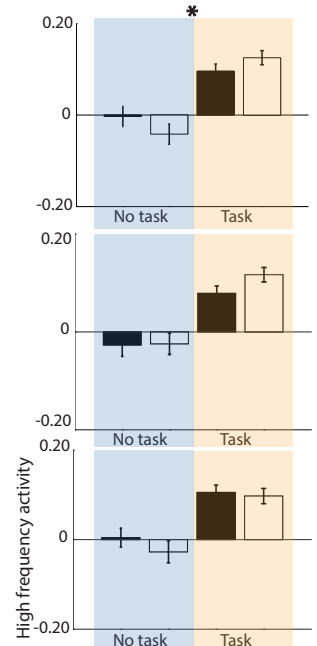


* Reliable list type (task, no task) x subsequent clustering effect type interaction (p < .01)

Subsequent memory

Semantically isolated: items without a strong semantic associate on the study list

Recalled
 Not recalled



* Reliable list type (task, no task) x subsequent memory interaction (p < .05)

Summary

- Processing semantic associations interferes with the formation of episodic associations
- Left prefrontal cortex biases processing towards maintaining previous items or retrieving semantic attributes

References

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 Kahana, MJ (1996). Associative retrieval processes in free recall. *Memory & Cognition*, 24(1), 103-109.
 McKoon, G., & Ratcliff, R. (1979). Priming in episodic and semantic memory. *Journal of Verbal Learning and Verbal Behavior*, 18, 463-480.
 Lohnas, LJ, Polyn, SM, & Kahana, MJ (2015). Expanding the scope of memory search: Intra-list and inter-list effects in free recall. *Psych Rev* 122(2), 337-363.