Introduction

- Examination of older adults' (60+) episodic memory using free recall reveals a subtle pattern, including both impaired and spared aspects of performance
- Impaired: Recall probability; temporal contiguity; intrusions
- Spared: initiation of recall
- Can prominent aging theories capture these aspects of performance when implemented in a model of episodic memory?

The context maintenance and retrieval model: Continuous-memory version (CMR2)

Features (F)
- Item Presentation
- Item activates its features
- New F-C and C-F associations formed
- Context is updated via F-C associations

Context (C)
- Item Retrieval
- Current context is used as a cue
- Activated items compete for retrieval
- Retrieved item updates context

Data and Model Fit

- Free recall data from Kahana et al. 2002
- Allowing all parameters to vary, CMR2 can capture all aspects of impaired and spared memory performance

- Assessing fit: model vs. data t-tests

Testing Aging Theories

- Rather than allowing all parameters to vary, we vary only theoretically motivated subsets of parameters
- Translate prominent theories into model terms – map cognitive processes implicated by the theory onto model parameters
- If the theory is adequate, we should be able to simulate older adult free recall data by varying only those parameters

Conclusions

- When implemented in CMR2, no theory captured the full pattern of impaired and spared performance
- Without an explicit model, it is difficult to tell if a theory's predictions match the data
- The challenge lies in simultaneously capturing the direction and magnitude of multiple effects

Reference:
- Data from Kahana, et al. (2002) JNPGC, 28, 569-583
- Processing-Speed Theory, Salthouse, T.A. (1996) JNPGC, 32, 97-130

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