Age-Related Differences in Using Memory to Predict the Course of New Events

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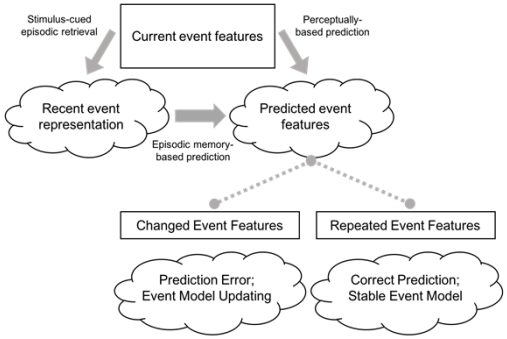
Dynamic Cognition Lab

Introduction and aims of the study

In many situations, memories for past events can be used to make predictions that guide behaviors.

When current events do not match predictions, discrepancies between the past and present events must be registered in memory to maintain adequate behaviors.

Wahlheim and Zacks (in press) [1] recently proposed that detecting changes between past and present events leads to an updating of the event model and the creation of an integrative memory representation:



Impairments in any of these steps in normal aging could account for some of the age differences in event memory.

Questions investigated in the present study

- Does age affect the ability to make predictions that are consistent with memories of past events?
- Does the ability to make memory-based predictions facilitate the creation of integrative memory representations and memory for changed events?
- If memory-based predictions facilitate memory for changed events, is this effect similar for both young and older adults?

[1] Wahlheim, C. N., & Zacks, J. M. (in press). Memory guides the processing of event changes for older and younger adults. *Journal of Experimental Psychology: General.*

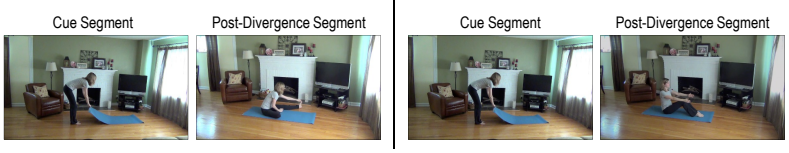
Methods and Procedure

Participants

- 44 young adults (M_{Age} = 20.02 years) and 47 healthy older adults (M_{Age} = 70.77 years).

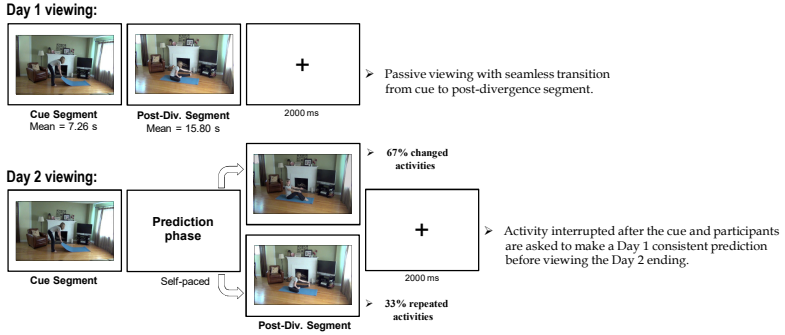
Materials

- Videos of an actor performing daily life activities in two fictive days in her life.
- Two versions of each activity differing on a central feature and each composed of a cue segment identical between the two versions and a post-divergence segment where the change occurred:

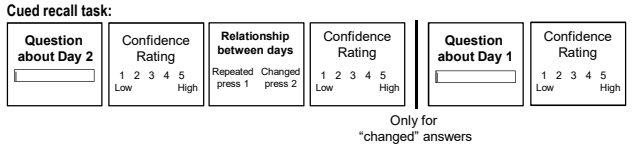


Procedure

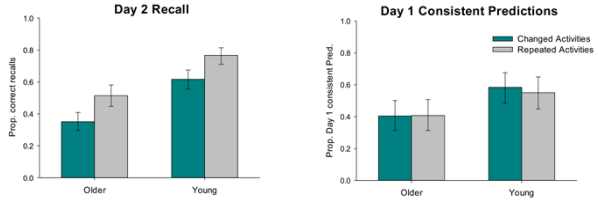
- **Session 1:**



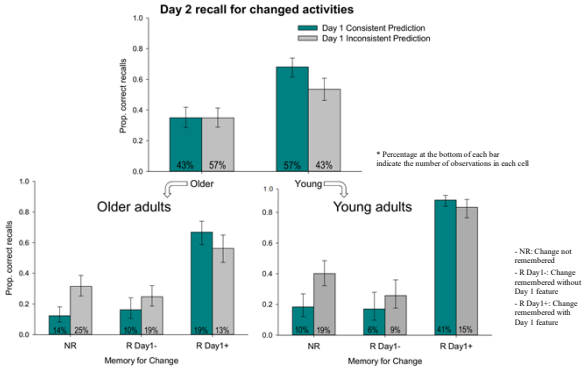
- **Session 2 after one-week delay:**



Results



- More repeated than changed Day 2 activities recalled in both groups.
- Older adults produced fewer Day 1 consistent predictions.



- Day 1 consistent prediction facilitated Day 2 recall in the young but not in the older adults.
- This effect is mainly caused by the stronger association between Day 1 consistent prediction and memory for change and correct Day 1 recall in the young than the older adults.

Note: other research designs did not find an overall benefit of prediction errors on memory encoding for events when examining both changed and repeated activities together (see Poster #5142).

Discussion and conclusions

In both age groups, memory consistent predictions facilitate memory for changed events when they lead to the creation of integrative memory representations but worsen recall when change is not remembered.

The ability to create integrative memory representations is impaired in normal aging, this explains the absence of benefits of memory consistent predictions to the remembrance of changed events in this age group.

Asking older adults to explicitly remember past events when presented with new information might not be viable strategy to facilitate remembering.