

How does context reinstatement facilitate memory in ageing?

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Background

- Reinstating encoding context facilitates memory for targets (a word studied on a particular background is more likely to be remembered later if it is presented on the same rather than a different background, Horner & Burgess, 2013).
- Older adults exhibit such a context effect even though they are worse than younger adults at reinstating target-context associations (e.g., Craik & Schoerscheidt, 2011)

Research aims and predictions

- We investigated the mechanisms of the context effect, asking whether the target context associations built in memory are implicit. This would explain previous findings, but has never been directly tested.
- **Prediction 1:** Words presented in original context relative to different or new context conditions will yield greater recognition in both age groups
- **Prediction 2:** If the context effect is driven by implicit processes in older adults, young adults will show an advantage for correctly recognising target-context associations

Experiment 1

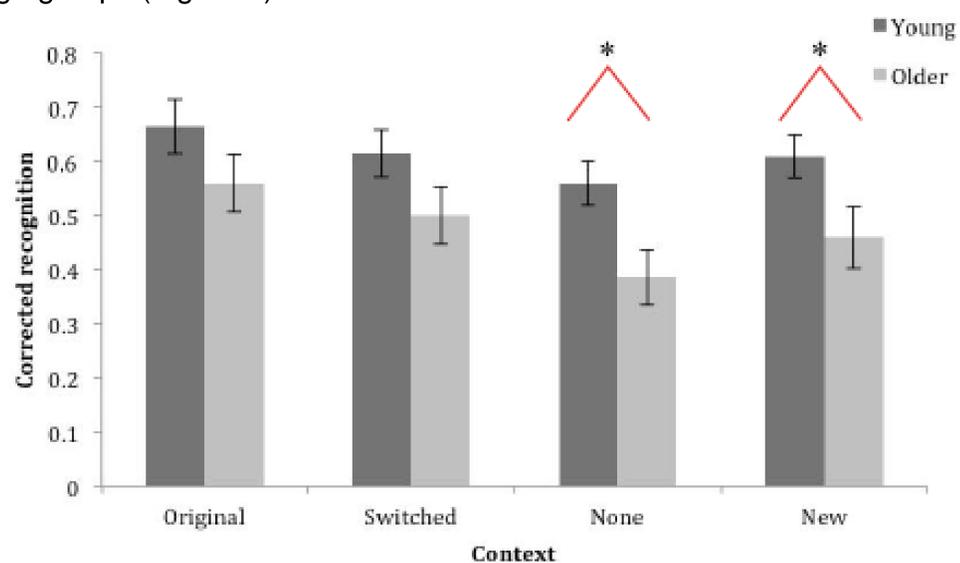
- 20 young (18-35 years) and 20 older adults (65+ years) studied 40 words on background scenes*
- At test they were shown 80 words (half previously studied) on either the original background, a switched background, a new background, or no backgrounds and were asked (1) whether the word was previously studied irrespective of the current background, (2) whether the current word-background pairing was the same as in the study phase.
- The design allowed us to examine whether, for correctly recognised words on original backgrounds, individuals can explicitly remember the associations, elucidating the nature of the target-context associations in memory

* Example stimulus, Experiment 1



Results

A corrected recognition score (hits minus false alarms) was computed for each context condition in the two age groups (Figure 1)

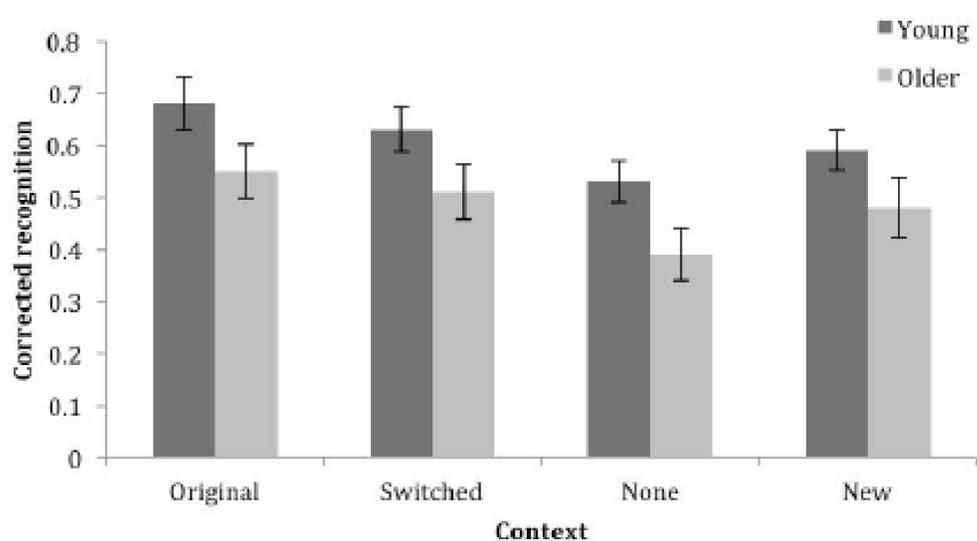


Analysis revealed a main effect of context, $F(3, 114) = 5.21, p = .002$, a main effect of age group, $F(1, 38) = 6.66, p = .014$, but no interaction, $F(3, 114) < 1, p = .751$.

- Young adults remembered significantly more item-context pairings than older adults, $t(38) = 2.33, p = .025, d = 0.74$.

Results

Figure 2 depicts corrected recognition scores in the four context conditions



** Example stimulus, Experiment 2

FLOWER - JUMPER

Experiment 2

- This experiment overcame possible problems with the use of repeated scenes.
- 20 young (18-35 years) and 21 older adults (65+ years) studied 40 unrelated word pairs**
- At test they were shown 80 word-pairs and were asked (1) whether the word on the left had been previously studied irrespective of the current pairing, (2) whether the current pairing was the same or different as that in the study phase.

- Consistent with Experiment 1, there was a main effect of context, $F(3, 117) = 2.99, p = .034$, a main effect of age group, $F(1, 39) = 4.42, p = .042$, but no significant interaction, $F(3, 117) < 1, p = .994$.
- Memory for original pairings approached significance in older adults only, $t(38) = 1.81, p = .077$.

Discussion

- Older adults benefit more / just as much as young adults from context reinstatement
- However, older adults are poorer at explicitly remembering target-context pairings
- As such, the context effect could be driven by implicit processes
- Alternatively, the effect could be driven by preserved familiarity processes in older adults, and further work is currently looking at this in more detail.

References

- Craik, F.I., & Schoerscheidt, A.M. (2011). Age-related differences in recognition memory: Effects of materials and context change. *Psychology and Aging, 26*(3), 671.
- Horner, A.J., & Burgess, N. (2013). The associative structure of memory for multi-element events. *Journal of Experimental Psychology, General, 142*(4), 1370.