Age Differences in the Effects of Pre-Exposure on Reading Text
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METHODS

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**Reading Time**
Individual regressions were used to decompose sentence reading times into the resources allocated to word, textbase, and discourse-level features.


**Participants**
Younger (M=21.19, n=31) and older (M=66.87, n=31) adults were randomly assigned to one of three conditions varying in the type of pre-exposure:
- Consistent Pre-exposure (CP): Pre-exposure materials were in the same organization as the target text.
- Inconsistent Pre-exposure (IP): Pre-exposure materials were in a different organization from the target text.
- No Pre-exposure (NP): During the pre-exposure period, participants performed unrelated tasks.

**Within age group, random assignment produced groups that did not significantly differ in ability.**
Education level was higher for older (M=16.03) than younger adults (M=14.23).
Working memory capacity was higher for younger (M=5.24) than older adults (M=4.44) (Shin & Hindman, 1994).
Younger and older adults did not differ in verbal ability (Wechsler, 1987).

**Rationale**
Learning from a text involves the use of prior knowledge to understand and use the new information (Kintsch, 1998). Some research suggests that older readers differentially rely on knowledge-based processes in language understanding (e.g., Miller et al., 2004). Our study investigated this issue by randomly assigning subjects to prior knowledge conditions varying in the degree of structural overlap with the target text, a manipulation designed to evoke effort toward learning (i.e., “desired difficulty”; Schmidt & Bjork, 1992).

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**References**

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**Results**

**Recall**
**NAME RECALL**
An Age x Pre-exposure x Stringency (Full: Leafy Sea dragon; Core: Sea dragon; Identifiable: Leafy something) ANOVA showed:
- Older adults recalled fewer names than did younger adults, *F*(1, 53)= 4.87, *p* < .05.
- Pre-exposure (both CP and IP) groups disproportionately increased performance for less-learned named, *F*(2, 53)=7.95, *p* < .01.

**Textbase Recall and Elaborative Inferences**
The Age x Type of Production interaction, *F*(1, 51) = 12.76, *p* < .01, suggested:
- Younger adults recalled more textbase content than did older adults, *F*(1, 51)= 4.24, *p* < .05.
- Older readers produced more knowledge-based elaborations than did younger readers, *F*(1, 51)=10.61, *p* < .01.

**Comprehension**
While younger and older readers did not significantly differ in answering questions probing global ideas and textbase content, older readers performed more poorly on questions regarding inferences, *F*(2, 108)=3.45, *p* < .05, for the Age x Question Type interaction.

**Conclusions**
Older adults were generally more highly responsive to discourse-level features, showing a large effect of serial position and allocating more time to process discourse entities through the text but this was not particularly enhanced by our “desired difficulty” manipulation.
Pre-exposure enabled enhanced retrieval of key concepts among young and older adults; the semantic representation of these concepts was strengthened more than that of the surface form.
Older adults generated more knowledge-based elaborative inferences in recall than did younger adults, but performed more poorly when inference was constrained so as to require textbase retrieval.