AGE DIFFERENCES IN THE EFFECTS OF DISCOURSE CONTEXT ON SELF-REGULATED READING

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RATIONALE

The self-regulation of input when reading can play a role in comprehension and memory performance. Some research suggests that more elaborative discourse that provides contextual support for the encoding of individual ideas may differentially benefit older adults' memory for text (Johnson, 2003). With such contextual support, older adults may be able to use situation model processing to "bootstrap" encoding of the textbase (Miller & Stine-Morrow, 1998; Stine-Morrow et al., 2004), and thereby improve recall. Using a "judgment of learning" (JOL) paradigm, we examined age differences in the processes and outcomes of self-regulated reading as a function of text elaboration.

METHODS

Participants

	Young	Old
N	45	46
Age † *	20.22 (1.70)	65.78 (7.12)
Working Memory †*1	5.34 (.14)	4.55 (.20)
Vocabulary †2	46.36 (.98)	48.70 (1.16)
Education † *	13.60 (.15)	16.00 (.36)

† Means reported with S.E. or S.D. in parentheses
* Significant group difference
1 Average listening and reading span
2 Wechsler Adult Intelligence Scale-Revised

Materials

Stimulus materials consisted of 45 factual sentences about Connecticut (CT) and 45 about Rhode Island (RI), covering a diversity of topics on nature, history, and tourism. The sentences varied in the number of propositions or "idea units" they contained (Kintsch & van Dijk, 1978). Thus, sentences varied in difficulty level not simply as a matter of length (number of words), but also the amount of elaborative material about the topic. Sentence characteristics (e.g., syllables, new concepts, propositions) were matched within elaboration levels and across state.

Elaboration Level	*Sample Sentence*
Connecticut	
No elaboration/ "Factoid"	The cotton gin was invented in Connecticut.
Low Elaboration	The Mountain Laurel is a popular flower because it swathes the hills in pink and white, mostly in the spring.
High Elaboration	The low, eroded hills of western Connecticut begin in the far north as rugged bedrock with dramatic, glacier-cut ravines where streams rush through the clefts.
Rhode Island	
No elaboration/ "Factoid"	The Hasbro Toy Company was founded in Rhode Island.
Low Elaboration	Although there are older carousels in America, none are as stunning as the Crescent Park Carousel in East Providence, which features 62 hand-carved figures.
High Elaboration	In Bristol, Rhode Island, the state's largest aquarium, which is sponsored in part by the Audubon Society, features a life-size model of a right whale.

Design & Procedure

Sentences about each state (CT or RI) were blocked for presentation. Participants read each set under instructions to learn as much about each state as possible. The order of the sets was counterbalanced across subjects.

Younger and older adults read each sentence twice, in a self-paced fashion on a computer, with sentence reading times recorded. After each sentence was read, participants made a judgment of learning (JOL) in which they estimated their learning of the material on a continuous scale from "Not at All" to "Complete Mastery" (*Figure 1*). Participants repeated this process twice for all 45 sentences for a state, and after a brief distractor task, were asked to recall of all the information they could remember about that state.

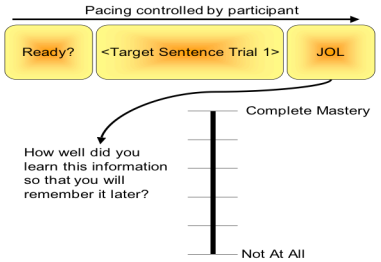

Figure 1. Illustration of stages in the JOL paradigm, along with an illustration of the continuous JOL used. This sequence was performed twice for each sentence.

RESULTS

Residual Reading Times

There were no effects of Age Group on residual reading times (controlling for length of sentences in syllables), suggesting that young and old allocated effort similarly across the various levels of discourse complexity, $F(1,90) = 1.97$, $p = .16$. Overall, participants allocated less time to reading factoids relative to elaborated discourse, $F(1,90) = 83.43$, $p < .001$ (see *Figure 2*).

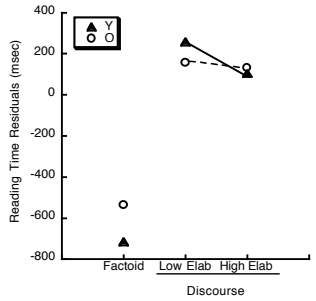

Figure 2. Residual reading times for young and old as a function of text elaboration.

Recall

The Elaboration x Age interaction was reliable, $F(2,90) = 24.35$, $p < .001$, indicating older adults benefited from the highly elaborated passages, while the younger adults showed best memory for simple facts, which contained no elaboration at all (see *Figure 3*).

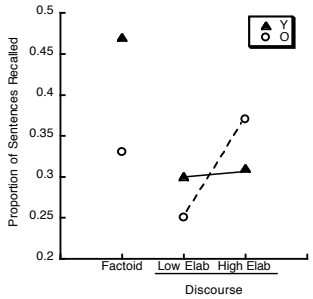

Figure 3. Recall performance for young and old as a function of text elaboration.

Memory Monitoring

Goodman-Kruskal Gamma correlations were calculated between JOLs on Trial 2 and recall of corresponding text. This index of "relative accuracy" provides an indication of each participant's ability to accurately monitor the contents of their memory, and may be related to the processes and outcomes of reading (Hertzog & Dunlosky, 2004).

Both younger and older adults demonstrated significant memory monitoring, as shown by Gamma correlations all greater than zero (all $p < .001$). However, a main effect of Age, $F(1,88) = 7.46$, $p < .01$, showed that younger adults were more accurately monitoring the contents of their memory, though this effect did not interact with text elaboration (see Figure 4).

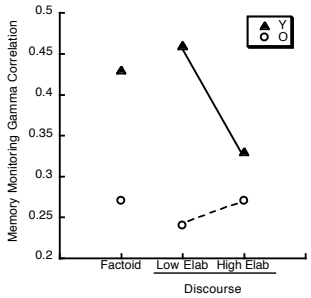

Figure 4. Mean Gamma correlations (JOL2-Recall) for young and old as a function of text elaboration.

Memory Monitoring & Recall

For younger adults, monitoring accuracy for factoids was predictive of recall performance across all levels of Elaboration (No-Elaboration, $r = .46$, $p < .01$; Low-Elaboration, $r = .24$, $p = .11$; High-Elaboration, $r = .30$, $p < .05$), suggesting that among the young, metacognitive monitoring of factoid learning facilitated learning from discourse. However, this was not true for older adults (No-Elaboration, $r = .14$, Low-Elaboration, $r = .03$, High-Elaboration, $r = .19$; all $p > .20$).

CONCLUSIONS

Relative to the young, older readerers may take relatively better advantage of discourse context to efficiently encode textbase content.

Younger adults appear to be relatively better at memory monitoring (cf. Miles & Stine-Morrow, 2004). For them, monitoring of factoid learning appears to be related to overall recall, including for larger discourse.

In contrast to younger readers, older readers' monitoring does not appear to play a role in effective learning of simple facts or larger discourse.

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