Proactive Interference and Judgments of Learning Among Older and Younger Adults

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Rationale
Models of self-regulation (cf., Carver & Scheier, 2000; Dunlosky & Hertzog, 1998) suggest that individuals engage in a series of memory monitoring activities (e.g., judgments of learning, JOLs) and allocate their study time accordingly to maximize memory performance. Although research has investigated various factors that affect the allocation of study time (e.g., Dunlosky & Thiede, 1998), little research has specifically examined phenomena that impede the effective functioning of these processes, such as proactive interference. In light of research demonstrating that age differences in inhibitory mechanisms may be responsible for poorer memory performance among older adults (Hasher & Zacks, 1988) we examined the effect of proactive interference on both younger and older adults’ allocation of study time, judgments of learning, and recall performance.

Methods
Participants
Participants (N = 60) included 30 younger adults (age 18-35 years) and 30 older adults (age 65-85 years). All participants were recruited from the local community and were paid for their participation.

Sample Word List

<table>
<thead>
<tr>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Trial 4 (No Shift)</th>
<th>Trial 4 (Shift)</th>
</tr>
</thead>
<tbody>
<tr>
<td>orange</td>
<td>grapefruit</td>
<td>lime</td>
<td>prunes</td>
<td>iron</td>
</tr>
<tr>
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<td>pineapple</td>
<td>apple</td>
<td>plum</td>
<td>brass</td>
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Procedure
A modified PI paradigm (Wickens et al., 1976) incorporating memory monitoring (JOLs; Dunlosky & Connors, 1997) was used. Individuals studied 18-word lists drawn from Battig and Montague (1969) category norms, presented across 4 trials of 3 words each. After study, participants made JOLs (0, 1, 2, or 3), and then recalled the words. Distractor tasks were inserted after study and after the JOLs were made. Study time for each trial was measured.

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Note. Means are provided with standard deviations in parentheses. * p < .05
1 WAI-R (Waschler, 1987)
2 Extended Range Vocabulary Test (KRF; Eilstrom, et al. 1976)
3 Loaded Reading Span (Stihr & Hindman, 1994)
4 Interference - Control (Earles et al. 1997)

Recall performance (Figure 1)
- As expected, participants exhibited both a build-up and release from PI, F(3, 171) = 46.83, p < .001, η² = .45, for the Shift x Trial interaction.
- The interaction of Age and Trials, F(3, 171) = 2.59, p = .055, η² = .04, showed that older adults were more susceptible to PI.
- Younger and older adults did not differ substantially on their recall for Trial 1 or Trial 4, both t ≤ 1.
- Younger adults recalled more than did the older adults on Trial 2, t(57) = 4.10, p < .05, and on Trial 3, t(57) = 9.02, p < .01.

Allocation of Study Time on Subsequent Trials (Figure 2)
Models of discrepancy reduction (Dunlosky & Hertzog, 1998) suggest a negative relationship between learning and study on subsequent trials.
- JOLs and Study Time Allocation (left panel): The significant interaction, F(1, 44) = 4.30, p < .05, suggests that older adults’ ability to self-regulate was differentially impaired by PI.
- Recall and Study Time Allocation (right panel): The magnitude of the gammas was greater for younger adults than for older adults, F(1, 49) = 4.70, p < .05, η² = .28. However, the interaction of Age and Trial was not reliable, F(1, 49) < 1.

Conclusions
Proactive interference may differentially impede older adults’ ability to self-regulate, creating age differences in the ability to effectively allocate study time.

References