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Influence of Feedback on Metacognitive Decisions about Spacing Practice Tests: A Framing Effect?

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In self-regulated learning of word pairs, learners distribute practice differently, depending on whether subsequent practice opportunities involve restudying or taking a practice test (LaVan et al, 2011):

- If restudying, they prefer long spacing, especially for hard items (given low JOLs)
- If taking a practice test, they prefer short spacing for hard (low JOL) items.

Curiously, learners exhibit the exact same pattern of choices with practice tests, regardless of whether or not the tests are followed by corrective feedback. When practice tests are **NOT** followed by feedback, learners choose to take the practice tests after a short spacing when items are hard. This strategy is efficacious (Pagano & Toppino, 2013) because it promotes successful retrieval on the practice test which is essential to benefit later memory when no feedback is provided. When feedback **DOES** follow practice tests, this strategy is not efficacious. Feedback reduces the importance of correct retrieval on the practice test, allowing learners to benefit from longer spacing, regardless of practice-test success. Thus, learners' choices should resemble those made when restudying is involved. However, learners seem to ignore feedback in deciding how to distribute practice tests. They choose to space practice tests in exactly the same way, regardless of whether or not feedback will be given.

The Question – Why does the presence of feedback NOT alter the way learners choose to distribute practice tests?

Experiment 1 – Feedback duration & implicit demands?

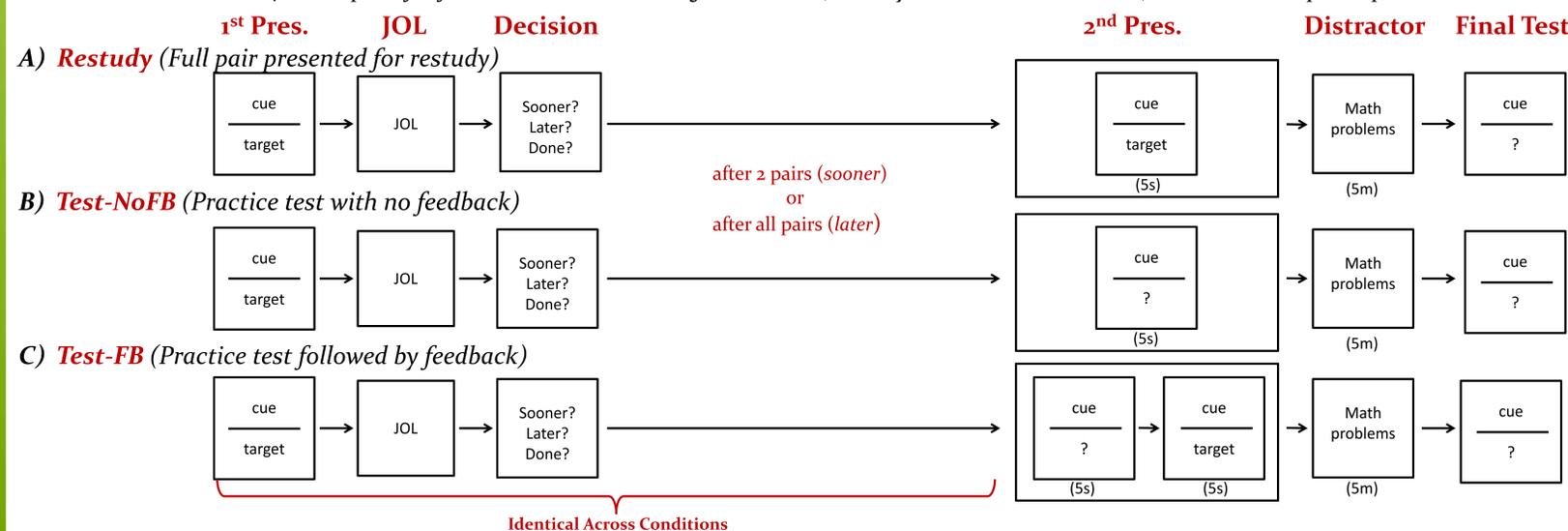
3 Conditions Restudy, Test-NoFB (Practice-test with No-Feedback) & Test-FB (Practice-test with Feedback).

Duration of Feedback When second presentations of an item take the form of a practice test with feedback, re-presentation of the cue and target members of a pair provides a restudy opportunity, but typically it is shorter than when second presentations involve restudying only. Perhaps, the brevity of the restudy opportunity following a practice test leads learners to discount its value. In Experiment 1, the duration of the cue-target presentation was equated for the Restudy and Test-FB conditions.

Implicit Demands Making overt responses on practice tests may entail implicit demands to “look good by performing well” on the practice tests. If spacing choices reflect such demands, post-response feedback would not influence spacing choices. To reduce such demands in Experiment 1, learners were instructed to respond implicitly on practice tests. No overt responses were allowed.

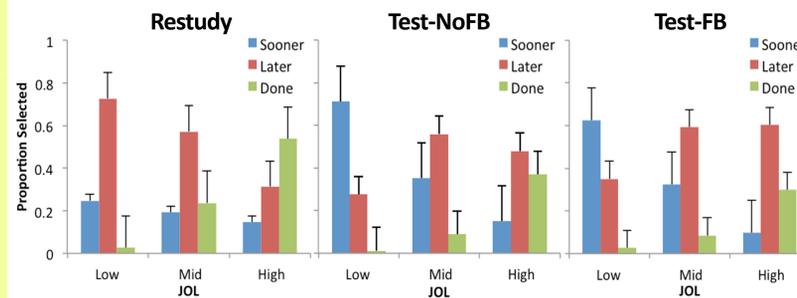
Empirical Question Would spacing choices in the Test-FB condition resemble those in the Restudy condition when feedback timing and implicit demands were controlled?

Procedure - Learn 48 word pairs for final cued recall. Learning Conditions (Restudy, Test-NoFB and Test-FB) varied between participants



Exp. 1 Results

Primary data = Spacing choices: Mean proportion of trials on which the 2nd presentation was chosen to occur sooner, later, or not at all (“done”). Recall data (not reported) is of secondary interest because it is contaminated by learners’ spacing choices.



Significant Condition x JOL x Spacing Choice interaction.

- Restudy condition: Longer spacing (later) strongly preferred for hardest items (low JOL items).
- Both Test conditions: Shorter spacing (sooner) strongly preferred for hardest items.
- No difference in pattern of choices for Test conditions with or without feedback.

Conclusion Neither the duration of feedback nor implicit demands associated with the practice test account for why feedback does not influence learners’ spacing choices.

Experiment 2 – A framing effect?

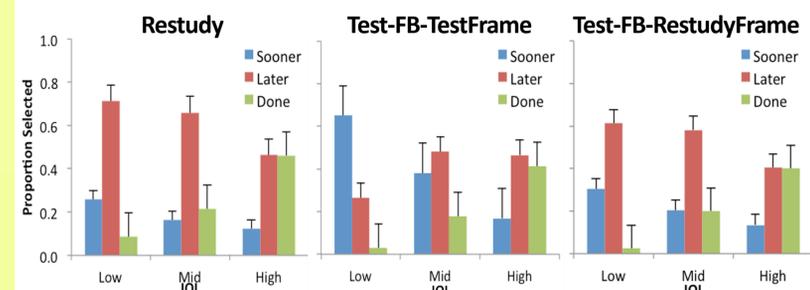
3 Conditions Restudy, Test-FB-TestFrame & Test-FB-RestudyFrame

Rationale To the extent that students spontaneously use practice tests, they usually do so to evaluate their knowledge rather than to learn (e.g. Kornell & Bjork, 2007). Perhaps, instructions referring to “practice tests” in previous experiments encouraged learners to think of the test feedback as evaluative information rather than as a restudy opportunity (e.g., Bjork, Dunlosky, & Kornell, 2013). In Experiment 2, the two Test-FB conditions were procedurally identical. Following previous studies, instructions in the Test-FB-TestFrame condition referred to practice tests with feedback. However, to emphasize the restudy potential of feedback in the Test-FB-RestudyFrame condition, practice tests were framed as “restudy opportunities preceded by practice tests.” Except for instructions (i.e., framing), the two Test-FB conditions were identical (see panel C of Procedures).

Empirical Question Would framing practice tests as restudy opportunities result in learners making spacing choices that resemble those in the Restudy condition and differ from those in the other practice test condition?

Exp. 2 Results

Primary data = Spacing choices



Significant Condition x JOL x Spacing Choice interaction.

- Restudy condition replicated Exp. 1 --- Longer spacing (later) preferred for hardest (low JOL) items.
- Test-FB-TestFrame condition also replicated Exp. 1 --- Shorter spacing (sooner) preferred for harder items.
- Test-FB-RestudyFrame condition yielded a pattern of choices that mirrored the Restudy condition, not the other Test-FB condition (i.e., longer spacing—or “later”—was preferred for the hardest items).

Conclusion When practice tests are referred to as “practice tests,” learners apparently do not perceive post-test feedback to be a restudy opportunity.

Summary & Conclusions

- When practice tests are described or framed in a way that emphasizes feedback’s potential role as a restudy opportunity, learners distribute practice tests with feedback similarly to the way they distribute restudy opportunities and differently from the way they distribute practice tests without feedback.
- If the restudy potential of feedback is not explicitly emphasized, learners do not spontaneously interpret feedback to be a relearning opportunity. They ignore feedback and choose to distribute practice tests identically regardless of whether feedback is expected.
- The tendency to ignore feedback may be a manifestation of a bias to view practice tests primarily as opportunities to evaluate the state of one’s knowledge. Performance on the practice test would be the primary evaluative indicator. Feedback may be viewed as playing a secondary role, limited to providing confirmatory information. Thus, there would be no reason to consider the presence or absence of post-test feedback in deciding how to space practice tests.
- Roediger and Karpicke (2006) distinguished between direct effects of testing (i.e., learning from tests per se) and indirect or mediated effects of testing. It is well established that learners do not fully appreciate the direct benefit of learning from tests (e.g., Bjork et al., 2013; Kornell & Son, 2009). Our results indicate that their metacognitive understanding also is limited with respect to the indirect effects of testing (e.g., learning from feedback).

References

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