Retrieval practice based on recognition memory: testing the retrieval effort hypothesis

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Since minutes in the « Match » group (4) supported the retrieval practice effect based on recognition memory (5), the first evidence for a retrieval practice effect based on recognition memory was thus available (6).

However, a contribution of controlled recollective processes cannot be ruled out, which is addressed in experiment 2.

**Background**

- Subjects in the « Study » group spent twice as much time studying AND had up to three times more opportunities to encode the stimuli than subjects in the « control » group, thereby led to proofing familiarity-based recognition memory.
- The « Main effect of processing » and the « Interaction of processing and target familiarity » conditions were significant in both groups, well below 400ms, strongly constraining the responses to familiarity-based recognition memory (5).

**Results**

- Similar minimal reaction times (minRTs) were achieved in both groups, well below 400ms, strongly constraining the responses to familiarity-based recognition memory (5).
- Repeated retrieval was therefore based on automatic & fast processing, rather than slow, effortful, recollection.

**Discussion**

- Experiment 1 shows that the retrieval practice effect can be observed when retrieved based on recognition memory rather than recall. Thus, learning does occur during recognition testing.
- Importantly, both experiments show that the benefits of memory retrieval based on recognition memory are immune to negative side effects like extra false alarms.
- When retrieval is constrained to fast and automatic processes (around 320 ms), these being mostly familiarity-based, the generation of elaborative retrieval cues and/or effortful (controlled) processing are quite unlikely. Even then, extensive restudying does not outweigh retrieval practice. Repeated automatic retrieval yields similar learning levels than extensive restudying, up to a 6-month delay.

**Familiarity-based recognition memory can support a retrieval practice effect, and to a 6-month delay similarly to restudying, thus challenging a core prediction of the « Retrieval Effort Hypothesis »**

**References**

3. Pyc, M. F., & Rawson, K. A. (2009). Testing the recollective evidence that learning occurs through repeated familiarity-based retrieval, i.e., even when retrieval is automatic.
4. Time spent reading does not drive learning efficiency. Instead, Experiment 2 provides unique evidence that learning occurs through repeated familiarity-based retrieval, i.e., even when retrieval is automatic.
5. Experiment 1 shows that the retrieval practice effect can be observed when retrieved based on recognition memory rather than recall. Thus, learning does occur during recognition testing.
6. Importantly, both experiments show that the benefits of memory retrieval based on recognition memory are immune to negative side effects like extra false alarms.
7. When retrieval is constrained to fast and automatic processes (around 320 ms), these being mostly familiarity-based, the generation of elaborative retrieval cues and/or effortful (controlled) processing are quite unlikely. Even then, extensive restudying does not outweigh retrieval practice. Repeated automatic retrieval yields similar learning levels than extensive restudying, up to a 6-month delay.
8. Familiarity-based recognition memory can support a retrieval practice effect, and to a 6-month delay similarly to restudying, thus challenging a core prediction of the « Retrieval Effort Hypothesis »

**Experiment 2: familiarity practice vs. restudying**

- Probing familiarity-based recognition memory: The « Speed and Accuracy Boosting procedure » (SAB) is a speeded Old/New memory test providing detailed information about the familiarity-based memory recognition (5).
- Use of the SAB procedure for all the test phases.

- Experiment 1 provides the first evidence for a retrieval practice effect based on recognition memory. However, a contribution of controlled recollective processes cannot be ruled out, which is addressed in experiment 2.