Retrieval practice based on recognition memory: testing the retrieval effort hypothesis
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Experiment 1: recognition memory vs. restudying

- Between-subjects design, N = 76
- Recognition memory task: typical Old/New task
- Matching for Age, Education, FSIQ, Verbal Memory
- Manipulation of the intervening tasks: 2 successive study trial groups
- 2 successive test trial group
- Final test group
- Main outcome: Performance at final test (25 min. delay)

Results 1

- Before final test, study duration was on average 11 minutes in the «Study-Test» group, 7.4 minutes in the «Study» group and only 6.3 minutes in the «Test» group.
- Still, «Study-Test» & «Test» conditions yielded better long-term memory (A,B), without increase in False Alarms (C), and «Test» condition led to better 25 minutes retention (D).

1. Experiment 1: recognition memory vs. restudying

2. Results 1

3. 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 a direct estimate of familiarity-based recognition memory (5).
- Use of the SAB procedure for all test phases
- Between-subjects design, N = 30
- Manipulation of the learning schedules: 1, 2 or 3 repetitions of study trials
- Study group
- Matching for Age, Education, FSIQ, Verbal Memory
- Main outcomes: Performance at short- and long-term final tests

4. Results 2

- Subjects in the «Study» group spent twice as much time studying AND had up to three times more opportunities to encode the stimuli
- Still, repeated testing proved as beneficial as restudying for short-(A) and long-term(B) retention.
- This did not come with an extra false alarms cost (C&D)

Time spent studying 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.

Discussion

- Experiment 1 shows that the retrieval practice effect can be observed when retrieval is 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), then being mostly familiarity-based, the generation of elaborative retrieval cues and/or effortful (controlled) processing are quite unlikely. Even then, extensive restudying does not outreach retrieval practice.
- Repeated automatic retrieval yields similar learning levels than extensive restudying, up to a 6 months delay.
- Familiarity-based recognition memory can support a retrieval practice effect, and resists to a 6 months delay similarly to restudying, thus challenging a core prediction of the «Retrieval Effort Hypothesis».

References