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

Pierre-Yves Jonin, Audrey Noël, Gabriel Besson, Sophie Muratot, Serge Belliard, Christian Barillot, Emmanuel Barbeau

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Retrieval Based On Recognition Memory: Testing the Retrieval Effort Hypothesis

1. Experiment 1: recognition practice vs. restudying

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

2. Results

- 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)

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 (S).
  - 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 +
  - Study +
- Matching for Age, Education, FSIQ, Verbal Memory
- Main outcomes: Performance at short- and long-term final tests

4. Results

- Subjects in the « Study » group spent twice as much time studying AND had up to three more times more opportunities to encode the stimuli
  - Similar minimal reaction times (minRTs) were achieved in both groups, well below 400ms, strongly constraining responses to familiarity-based recognition memory (S)
  - Repeated retrieval was therefore based on automatic & fast processing, rather than slow, effortful, recollection

- 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), thus 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 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

(3) Pye & Brown (2000) Testing the retrieval effort hypothesis: Does greater difficulty correctly recalling information lead to higher levels of memory? Journal of Memory and Language, 42, 437-447