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Retrieval Based On Recognition Memory: Testing the Retrieval Effort Hypothesis

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The finding that taking memory tests improves long-term memory and overcomes repeated studying is called retrieval practice effect or a testing effect (1,2). While it has been much replicated within recall paradigms, a mechanistic account is still lacking. One way to move forward is to test predictions derived from current accounts

The « Retrieval Effort Hypothesis » states that controlled (effortful) retrieval (e.g. recall) supports more elaborate and integrative processing than passive restudying, thus increasing the available retrieval cues (3,4)

Since recognition memory involves much less controlled retrieval than recall, repeated recognition should not yield a retrieval practice effect, especially if familiarity alone supports recognition

Aim

Can recognition memory support a retrieval practice effect?

1. Experiment 1: recognition memory 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 test trials
  - 1 « Test » group
  - 2 successive test trials
- « 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)

Discussion

Experiment 1 shows that the retrieval practice effect can be observed when repeated 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 outreach retrieval practice. Repeated automatic retrieval yields similar learning levels than extensive restudying, up to 6 months delay

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

References

(3) Py & Besson (2000) Testing the retrieval effort hypothesis: Does greater difficulty correctly recalling information lead to higher levels of memory? Journal of Memory and Language, 43, 437–447