Spontaneous Retrieval-based Metacognitive Monitoring in Study Decision Making
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Background

Metacognition:
- Cognition and control of one’s own cognitive activities, such as learning (Dunlosky & Metcalfe, 2009)
- Nelson and Narens’ (1990) two-central-dimension framework
- An effective predictor of academic achievements (Ruban, 2000)

Metacognitive monitoring:
- Evaluation of the progress/state of a cognitive activity
- Typical assessments: JOL, JOK, and JOC
- Retrieval-based judgments likely to be more accurate

Retrieval:
- An important metacognitive strategy in making accurate monitoring (Metcalfe & Finn, 2009).
- Improves long-term retention and learning (Pyc & Rawson, 2010; Roediger & Karpichev, 2009).

Methodological weakness:
- Not highly practiced (Staszewski, 1988).

What is missing in the Literature?

Existing Procedure:
Focused mostly on the effect of manipulations on learning (Karpichev, et al., 2009).

Existing Assessments:
Under experimental instruction: JOK, JOL, and JOC.

Not appropriate to explore individuals’ spontaneous behaviors and effect.

Existing measurements:
Methodological weakness:
- Use offline measures.

Research Purposes

We attempted to capture spontaneous metacognitive monitoring with a strictly objective and online measure of studying behaviors (study decision response time).

Research questions

How do learners make study decisions in study?
Do learners base their study decisions on retrieval results?

Experiment 1

Design
- College students (N = 39)
- 70 Swahili-English word pairs

Procedures

Instructions:
- Study the first pair
- Study again
- Study next
- Study decision

Finding 1: Recall accuracy
- Retrieval group had numerically highest test accuracy.
- Recall accuracy was significantly higher for the pairs reported as not remembered in retrieval group, t (16) = -10.87, p<.001.
- Recall accuracy was significantly lower for the pairs not remembered in retrieval group, t (11) = 2.396, p=.036.

Finding 2: Intervention response time
- Retrieval group spent significantly longer time than self-study group.
- t(32) = 4.42, p = .001, CI [747.84, 2024.95]

Experiment 2

Design
- College students (N = 73)
- 50 Swahili-English word pairs

Procedures

Instructions:
- Study the first pair
- Study again
- Study next
- Study decision

Finding 3: Distractor Task RT
- Participants in group 4 chose to restudy the pairs that were unsuccessfully retrieved, and most likely, they chose not to restudy (next) the pairs that were successfully retrieved.

Conclusions

Participants displayed attempts of retrieval in absence of explicit prompt to make study decisions.