Adaptive changes in encoding strategy with experience: Evidence from the test expectancy paradigm

Jason R. Finley and Aaron S. Benjamin

University of Illinois at Urbana-Champaign

Question

To what extent can learners adaptively modify their encoding strategies to suit an expected test format?

Encoding Strategy:

The nature of the information processing that is applied to study materials

When expecting different test formats, learners may:

Work Harder
apply the same encoding process to varying extents

vs

Work Smarter
apply qualitatively different encoding processes

Test Expectancy Paradigm

Lead subjects to expect one of two or more test formats.

Analyze final test performance for subjects led to expect a certain format vs subjects led to expect an alternative format.

Method

Materials: 160 word pairs, 32 pairs per study list

sand - thread | bird - flight | planet - lizard | beer - pizza

Test Formats:

Cued Recall

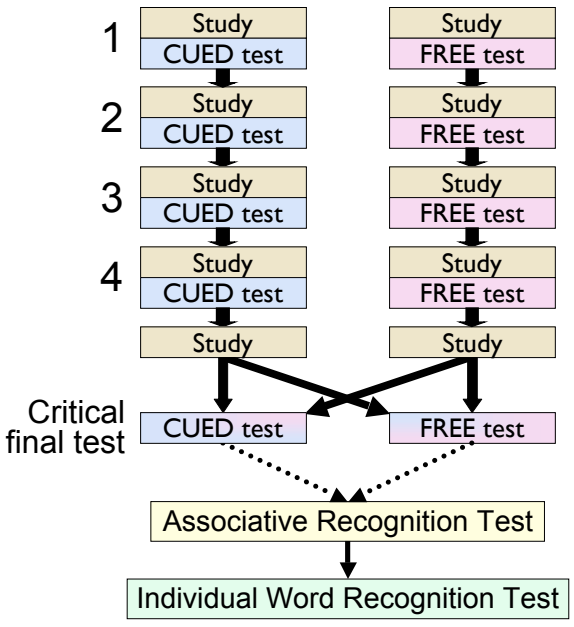
planet - _____
sand - _____
beer - _____
bird - _____

Free Recall

_____
_____
_____
_____

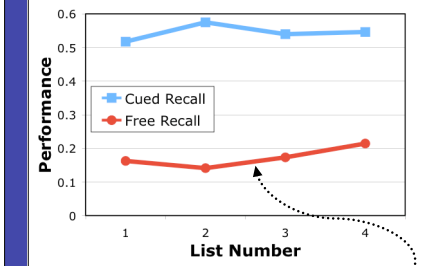
(target words only)

Procedure:



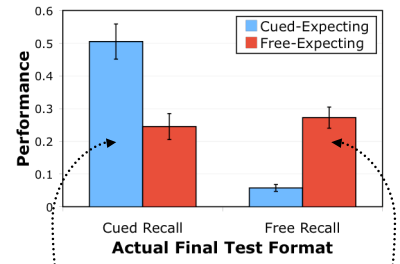
Results

Recall Lists 1-4



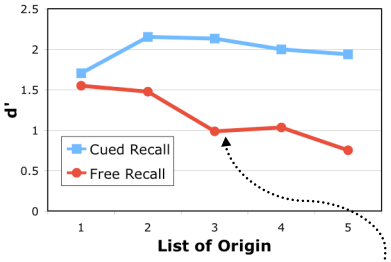
Learning to Learn: Free recall performance increases reliably across practice lists.

Final Recall



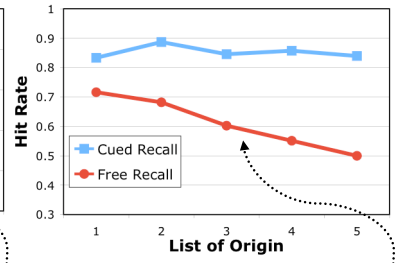
Interaction: For both final test formats, subjects expecting that format outperformed those expecting the other format.

Associative Recognition



Encoding Strategy: Free-expecting subjects made fewer cue-target associations across lists.

Individual Word Recognition: Cues



Encoding Strategy: Free-expecting subjects attended less to cue words across lists.

Conclusion

- Subjects adopted *qualitatively* different encoding strategies that were appropriate to the demands of their expected test format.
- Cued-recall expecting subjects maintained a cue-target associative strategy.
- Free-recall expecting subjects learned to selectively attend to target words.

Adaptive changes in encoding strategy with experience: Evidence from the test expectancy paradigm

Jason R. Finley & Aaron S. Benjamin

jrfinley@uiuc.edu ; asbenjam@cyrus.psych.uiuc.edu

http://www.psych.uiuc.edu/~asbenjam/

Abstract:
Efficient memory use requires that encoding decisions reflect future task demands. This experiment evaluated subjects' abilities to adaptively modify encoding strategies. Across four study-test cycles, subjects were induced to expect either cued or free recall tests by studying lists of word pairs and receiving the same test format for each list. Tests required recall of target words, either in the presence (Cued) or absence (Free) of cue words. A fifth and final cycle included either the expected or the alternate, unexpected test format. On both Cued and Free final tests, subjects who had expected that format outperformed those who had not. Furthermore, cued-expecting subjects showed superior recognition of cue words and superior associative recognition of intact pairs, with such recognition decreasing across lists for free-expecting subjects. These results demonstrate that subjects were not merely modulating study effort based on anticipated test difficulty, but were adopting qualitatively different encoding strategies that were appropriate to the demands of the expected test.

Some References:

Balota, D.A., & Neely, J.H. (1980). Test-expectancy and word-frequency effects in recall and recognition. *Journal of Experimental Psychology: Human Learning and Memory, 6*, 576-587.

Benjamin, A. S. (2007). Memory is more than just remembering: strategic control of encoding, accessing memory, and making decisions. In A. S. Benjamin, & B. H. Ross (Eds.), *The psychology of learning and motivation: Skill and strategy in memory use* (48). London: Academic Press.

Lundeberg, M. A., & Fox, P. W. (1991). Do laboratory findings on test expectancy generalize to classroom outcomes? *Review of Educational Research, 61*(1), 94-106.

Thiede, K. W. (1996). The relative importance of anticipated test format and anticipated test difficulty on performance. *The Quarterly Journal of Experimental Psychology A: Human Experimental Psychology, 49*(4), 901-918.