

# Retrieval Practice and Individual Differences

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## Retrieval Practice

- Retrieval practice has a greater benefit on final testing compared to restudying or rereading material (Roediger et al., 2011). This is known as the **Testing Effect**.
- The Testing Effect is very robust and has been observed in middle-school children, college students, older adults (e.g., Coane, 2013)
- It occurs for paired associates, prose passages, visual materials (maps, Chinese characters), foreign language vocabulary
- Limited work examining individual differences as a function of cognitive ability (Dunlosky et al., 2013)

## Individual differences

- Students with high Test Anxiety (TA) and low Working Memory (WM) receive less benefits of the testing effect compared to students who have low TA and high WM (Tse & Pu, 2013)
- The robustness of the Testing Effect is influenced by memory and intelligence. Participants with lower memory ability and lower fluid intelligence benefit more from retrieval practice (Brewer & Unsworth, 2012).

## Purpose of study

- To examine how different cognitive and personality factors might moderate retrieval practice effectiveness

## METHOD

### Participants

89 students from Colby College and 95 student from the University of Wyoming

### Materials

- 48 Swahili-English word pairs (12 pairs at four different difficulty levels)

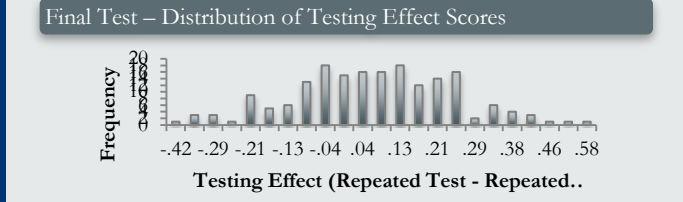
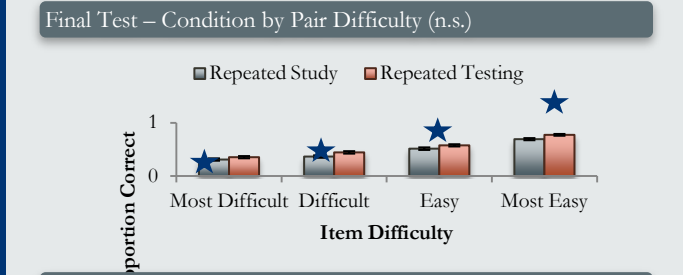
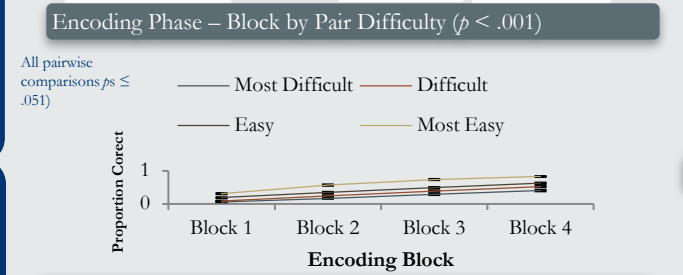
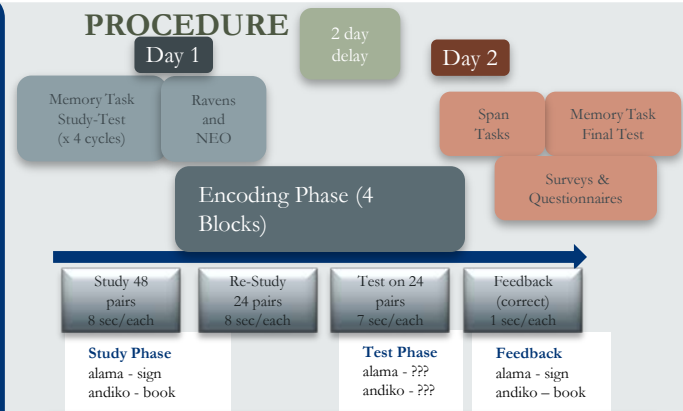
### Individual Difference Measures

#### Cognitive Tasks:

- Fluid Intelligence:** Ravens Progressive Matrices (Raven, 1936)
- Working Memory Capacity:** Operation Span and Symmetry Span (automated versions; Unsworth, Heitz, Schrock, & Engle, 2005)
- Vocabulary:** Shipley (Shipley, 1940)

#### Other Measures:

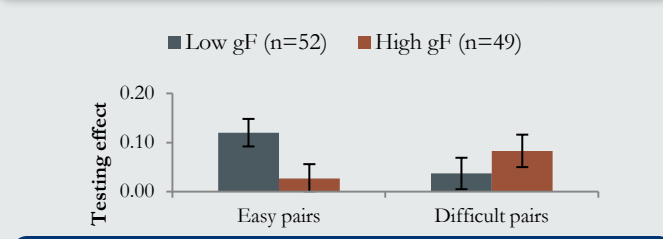
- Personality: NEO (Costa & McRae, 1992)
- ADHD Symptom Checklist (Barkley, 2011)
- Self-perceived stress scale (Cohen, Kamarck, & Mermelstein, 1983)
- Cognitive test anxiety scale (Cassady & Johnson, 2002)
- Academic self-efficacy (Zimmerman & Kitsantas, 2007)
- Need for cognition (Cacioppo, Petty, & Kao, 1984)
- Grit (Duckworth & Quinn, 2009)
- Academic Entitlement Questionnaire (Kopp et al., 2012)
- Study habits questionnaire (Hartwig & Dunlosky, 2012)\*\*analyses in progress



	Pearson Correlation	Sig. (2-tailed)
Ravens (gF)	-.024	.840
Operation Span (WMC)	.013	.911
Symmetry Span (WMC)	.11	.368
Shipley Vocabulary	.16	.346
NEO conscientiousness	.18	.283
NEO extraversion	-.10	.552
NEO agreeableness	.025	.887
NEO neuroticism	.014	.936
NEO openness	-.25	.147
Self-perceived stress	-.051	.507
Cognitive test anxiety	-.030	.691
Academic self-efficacy	-.036	.631
ADHD Symptom Checklist	.048	.526

No individual difference measures were correlated with the size of the testing effect. However, gF, WMC and test anxiety were associated with the total number of items recalled.

Final Test - Condition by Pair Difficulty by Low v. High gF ( $p = .02$ )



## Discussion

- We found no evidence for any effects of individual differences in WMC or personality on the magnitude of the testing effect.
- However, when comparing low v. high gF groups, we found an interaction between group and pair difficulty with low gF individuals showing a greater effect of testing for easier, but not difficult items.

## Future Directions

- Ongoing testing of participants with diagnosed learning differences to examine whether students with different learning profiles show similar testing benefits
- Testing participants recovering from concussion