



# Facts, Faces, and Obscure Places: Item Characteristics that Predict Rate of Forgetting

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## INTRODUCTION

- For several decades, psychologists have been interested in the way in which information is forgotten from memory (1, 2, 4).
- We explored whether different types of items are forgotten in the same way, and whether information that is learned more easily is forgotten more quickly, or more slowly.

## METHOD

**Materials:** 3 types of items

- 48 Obscure facts
  - The most common street name in the U. S. is "Second."
  - The character Betty is missing from the Flintstones Chewable vitamins.
- 48 Obscure City-State pairs
  - Worms – Nebraska
  - Panic – Pennsylvania
- 48 Face-Name pairs (24 male and 24 female)



### Procedure:

57 web-based subjects participated in 6 experimental sessions.

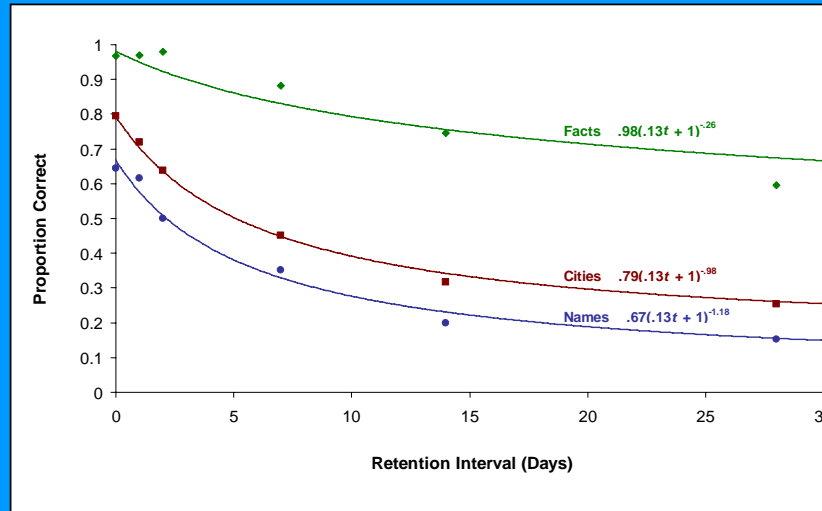
All subjects learned each of the 144 items to a criterion of 1 correct response.

A sub-set of 8 items from each of the three types was tested at each of the following retention intervals:

- 5 min
- 1 day
- 2 days
- 7 days
- 14 days
- 28 days

A power function  $y = a(bt + 1)^{-c}$  was fit to the data to estimate the degree of learning (a) and rate of forgetting (c) associated with the 3 item types.

## OVERALL RESULTS



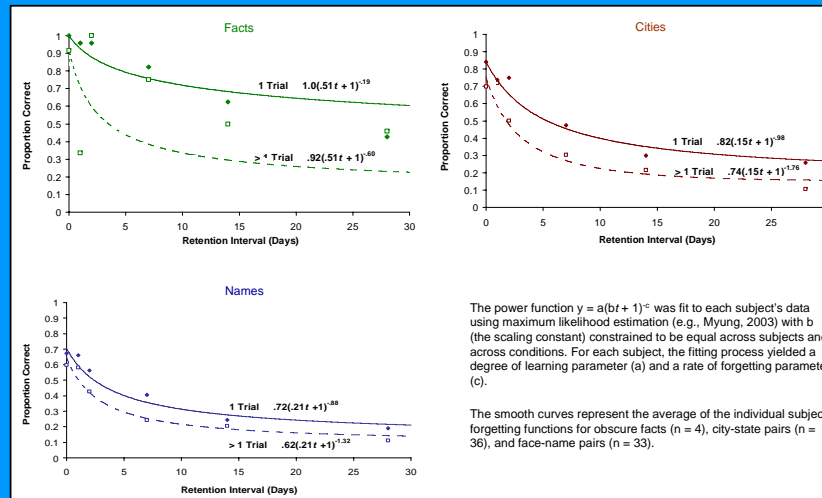
## CONCLUSIONS

- Overall, obscure facts were easiest to learn, followed by city-state pairs, and then face-name pairs,  $F(2, 112) = 56.91, p < .001, MSE = .026$ .
- Overall, obscure facts were slowest to be forgotten, followed by city-state pairs, and then face-name pairs,  $F(2, 106) = 66.86, p < .001, MSE = .19$ .

	degree of learning		rate of forgetting	
	1 Trial	> 1 Trial	1 Trial	> 1 Trial
Facts	1.0 (.00)	.92 (.16)	-.19 (.07)	-.60 (.35)
Cities	.82 (.22)	.74 (.26)	-.98 (.78)	-1.76 (1.5)
Names	.72 (.28)	.62 (.28)	-.88 (.84)	-1.32 (1.11)

- Easy-to-learn items were better learned, and slower to be forgotten, compared to hard-to-learn items.
  - Easy cities were learned better than hard cities,  $t(35) = 2.12, p < .05$ , and easy cities were forgotten more slowly than hard cities,  $t(32) = 3.52, p < .02$ .
  - Easy names were learned better than hard names,  $t(42) = 3.00, p < .01$ , and easy names were forgotten more slowly than hard names,  $t(37) = 2.33, p < .03$ .

## EASY VS. HARD ITEMS



## REFERENCES

- Ebbinghaus, H. (1913). *Memory*. (H. A. Ruger & C. E. Bussenius, Trans.). New York: Teacher's College, Columbia University. (Original work published 1885).
- Loftus, G. R. (1985). Evaluating forgetting curves. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 11, 817-820.
- Myung, I. J. (2003). Tutorial on maximum likelihood estimation. *Journal of Mathematical Psychology*, 47, 90-100.
- Wixted, J. T., & Carpenter, S. K. (2007). The Wickelgren power law and the Ebbinghaus savings function. *Psychological Science*, 18, 133-134.

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