

Recall of Survival-Relevant Passwords

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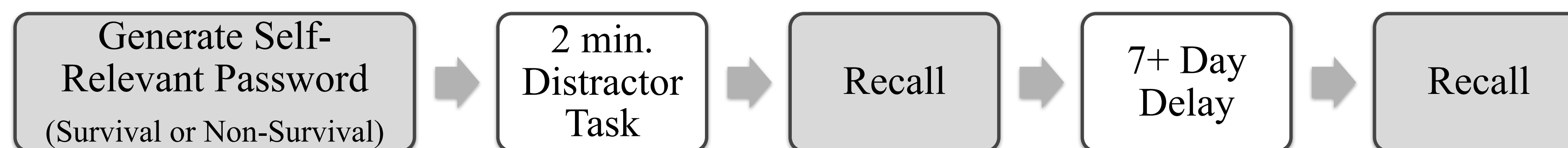
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Introduction

- Passwords must be both usable (i.e., memorable) and secure (i.e., not prone to hacking)
- Sentence-based mnemonic strategies where users create passwords based on the first letter of every word in a sentence have been shown to be an effective method of recalling passwords (Yan et al., 2000)
- Human memory may be tuned to retain survival-related information (e.g., thinking about scavenging for food foreign land; Nairne, Thompson, & Pandeirada, 2007)
- Goal: compare the memorability of a self-relevant mnemonic control strategy against novel survival-related generation strategy

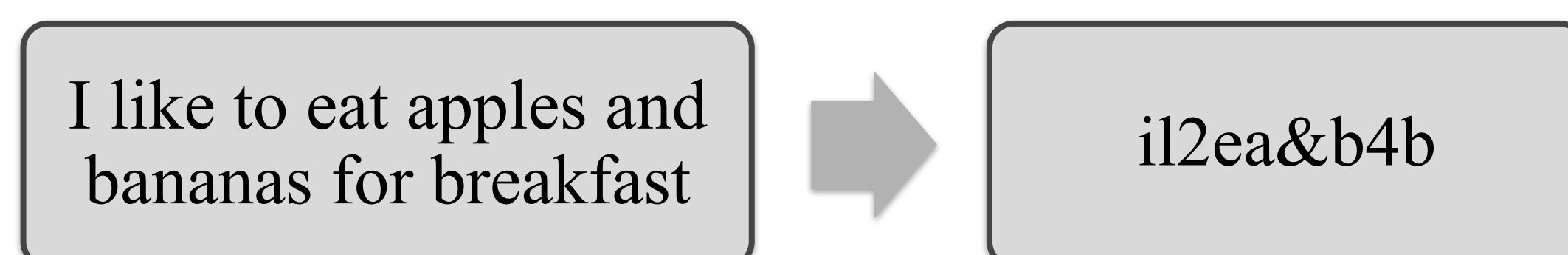
Method

- 1,799 participants recruited through Amazon Mechanical Turk were asked to create a password using a sentence-based mnemonic.

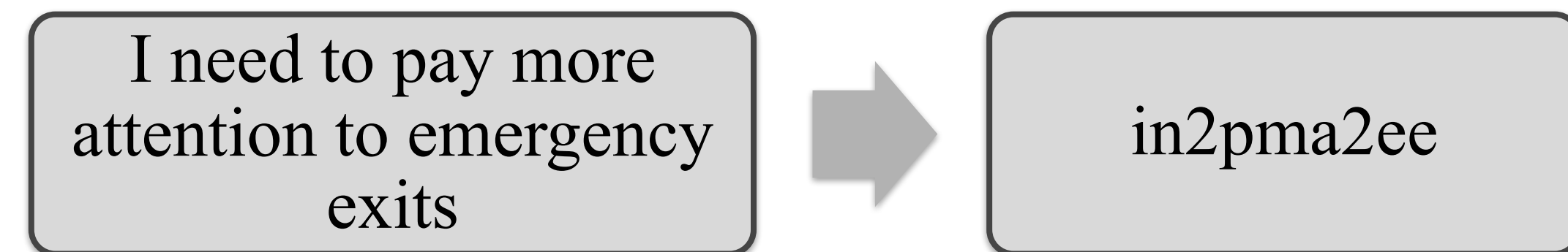


- Instructions: Think of a memorable sentence or phrase that is **meaningful to you / meaningful to your survival** and that other people are unlikely to use. The sentence or phrase should contain at least eight words.
- Participants created a single password for a simulated store
- Participants were unaware that they would recall the password after a one-week delay

Self-Relevant Control Example:

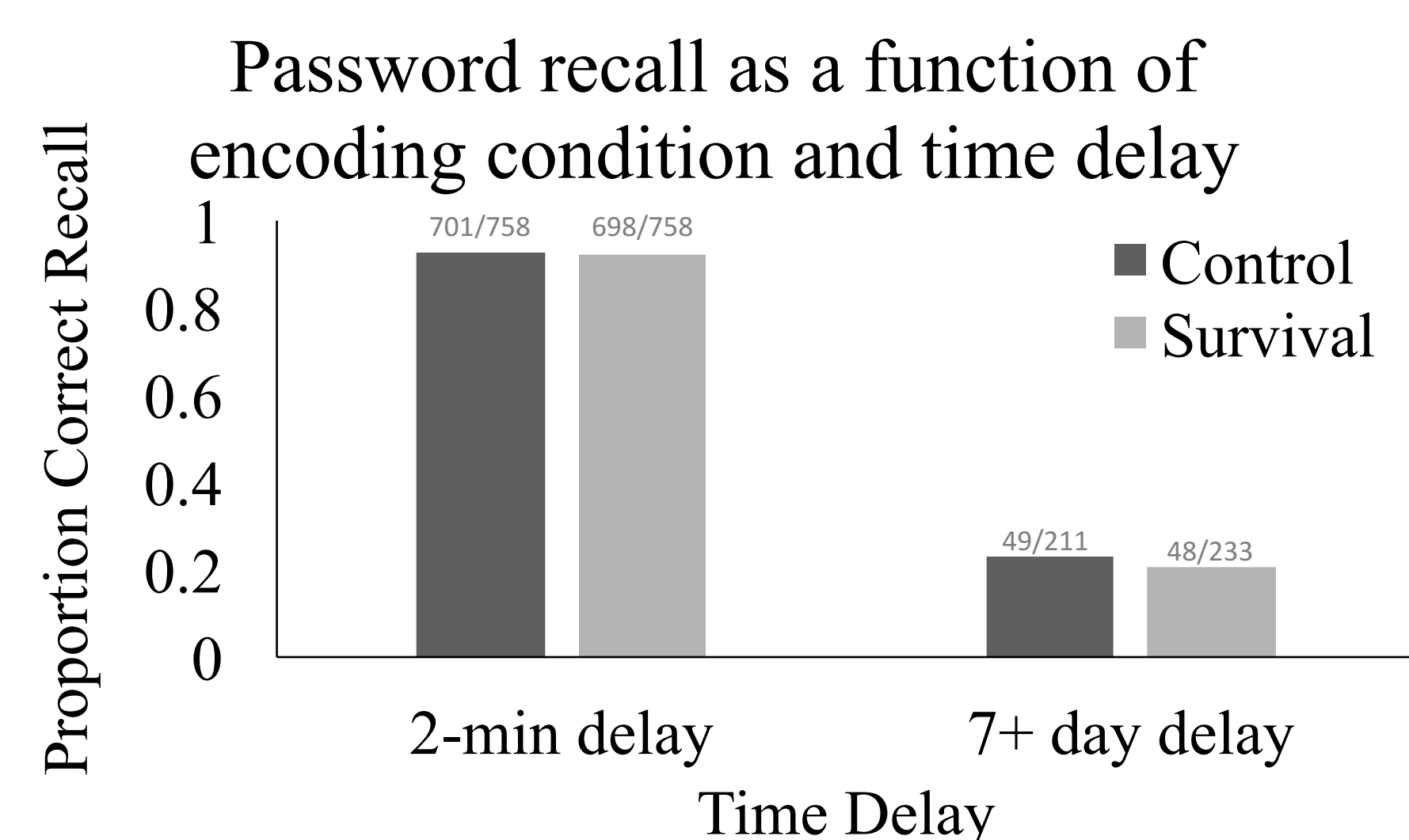


Survival-Related Example:



Results

- 1,516 participants were included in our analyses based on task completion and adherence to instructions
- Recall for both conditions after a two-minute delay was high (~92%), but much lower (~22%) after a one-week delay
- Return rates after a one-week delay were approximately 29% across conditions
- Binary logistic regression analyses were run to determine whether password recall can be predicted from encoding condition
- No association was found between encoding condition and recall after a two-minute delay $\chi^2(1) = .08, p = .77$ or after a week or more delay $\chi^2(1) = .44, p = .51$



Discussion

- Our findings suggest that although a robust survival processing effect has been found in laboratory studies, applications in real-world settings may be limited
- We posit that the absence of an effect may be due to the strength of the instructions used
- Future work may be aimed at investigating whether survival-related priming *before* the password generation task may be an effective alternative to survival-related encoding *during* the task

References ▶ Yan, J., Blackwell, A., Anderson, R., & Grant, A. (2000). *The memorability and security of passwords—some empirical results* (No. UCAM-CL-TR-500). University of Cambridge, Computer Laboratory. ▶ Nairne, J. S., Thompson, S. R., & Pandeirada, J. N. (2007). Adaptive memory: Survival processing enhances retention. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33, 263-273.