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The Center for Education and Research in Information Assurance and Security

## Password Training Using Crowdsourcing Methods: Results from a One-Year Follow-Up

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### Introduction

- Past password research efforts have been centered around training users on how to use mnemonic strategies using crowdsourcing methods (e.g., Yang, Li, Chowdhury, Xiong, & Proctor, 2016).
- Crowdsourcing allows researchers to collect large amounts of data from a relatively diverse pool.
- However, it is common for the same participants to be run in multiple studies.
- Since differences might exist between trained and untrained participants, it is critical to determine if there are any differences between groups.

**Study aim:** Assess impact of password training following a one-year delay.

### Method

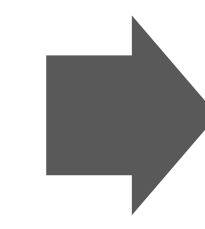
#### Original Sample (c. 2018)

- ~1,600 participants recruited through Amazon Mturk were asked to create a password using a sentence-based mnemonic.

**Instructions:** Think of a memorable sentence or phrase that is meaningful to you and that other people are unlikely to use. The sentence or phrase should contain at least eight words.

- Participants were tested at two time intervals spaced one week apart.

I like to eat apples  
and bananas for  
breakfast



il2ea&b4b

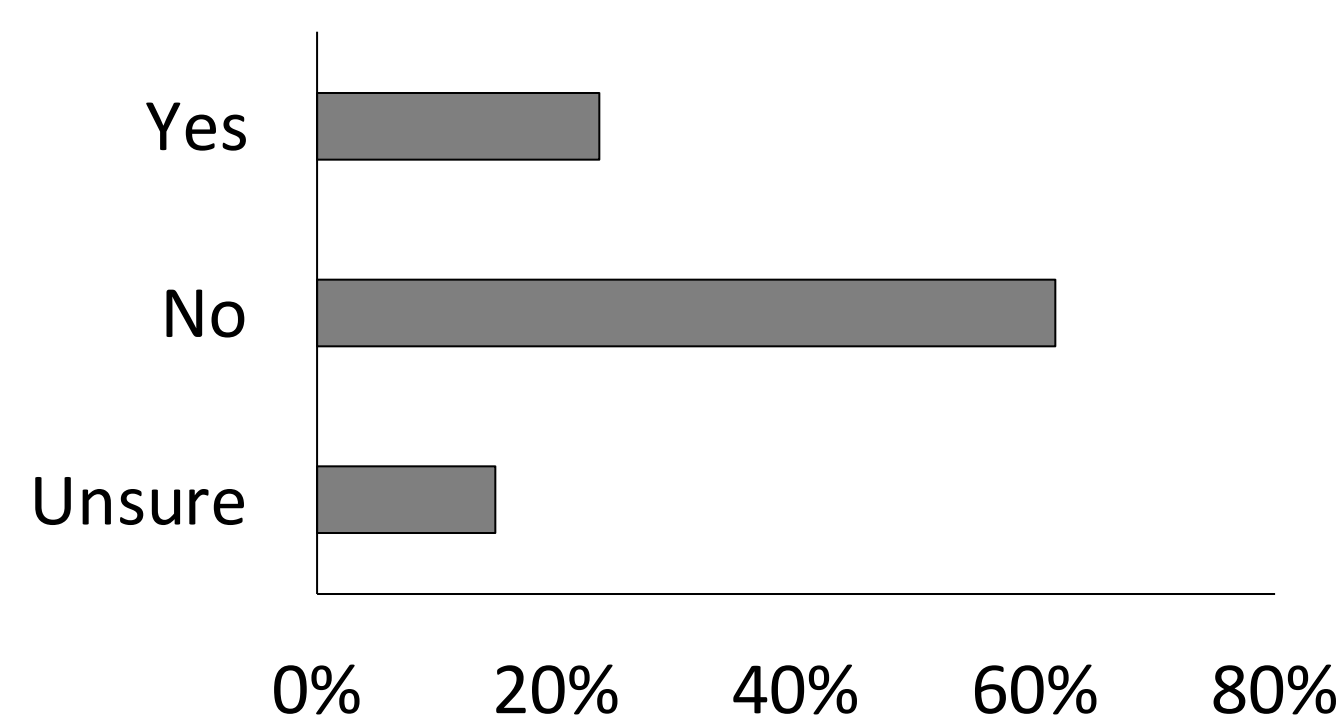
#### Present Sample (c. 2019)

- Participants were recruited from (1) the Original Sample who had received training a year prior to the study and (2) a sample who had not participated in any of our previous training studies.
- **Task:** Created a password for a simulated site and completed questionnaire on password habits and participation in password-related Mturk studies.

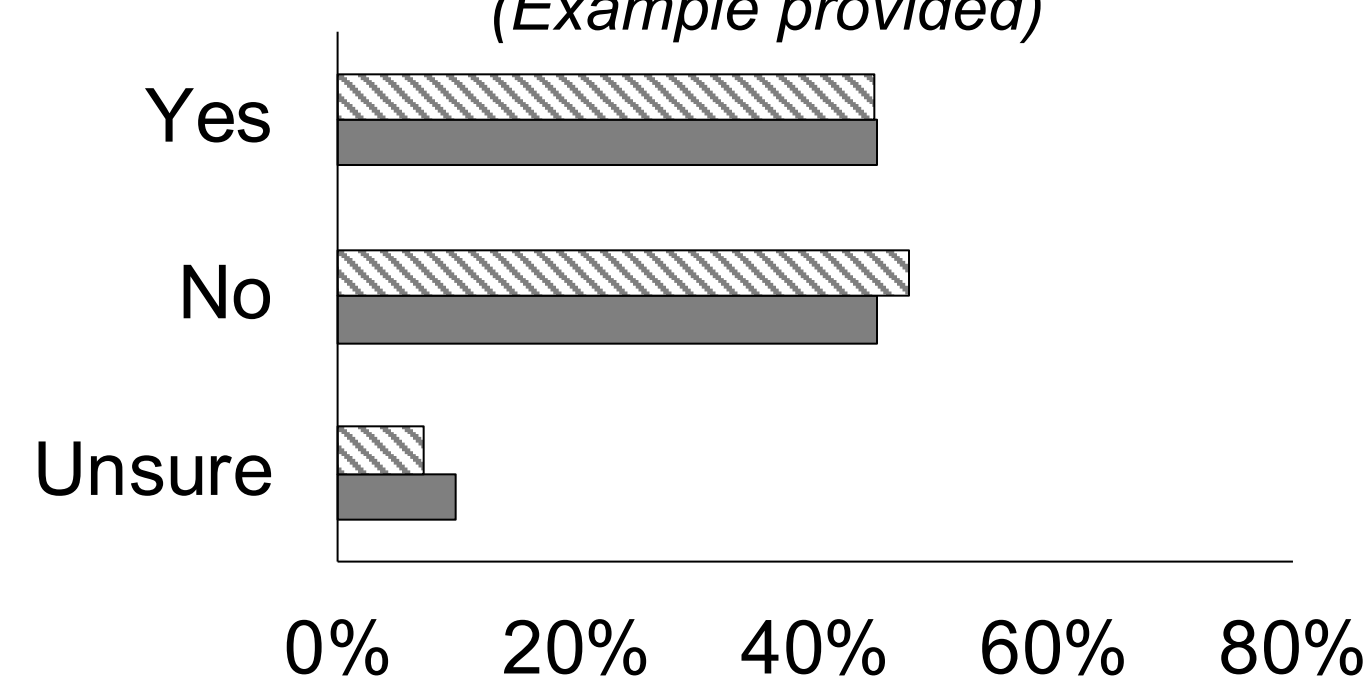
### Results

- 1,045 participants were recruited from the Original Sample ( $n = 487$ ) and a new, naïve sample ( $n = 558$ ).

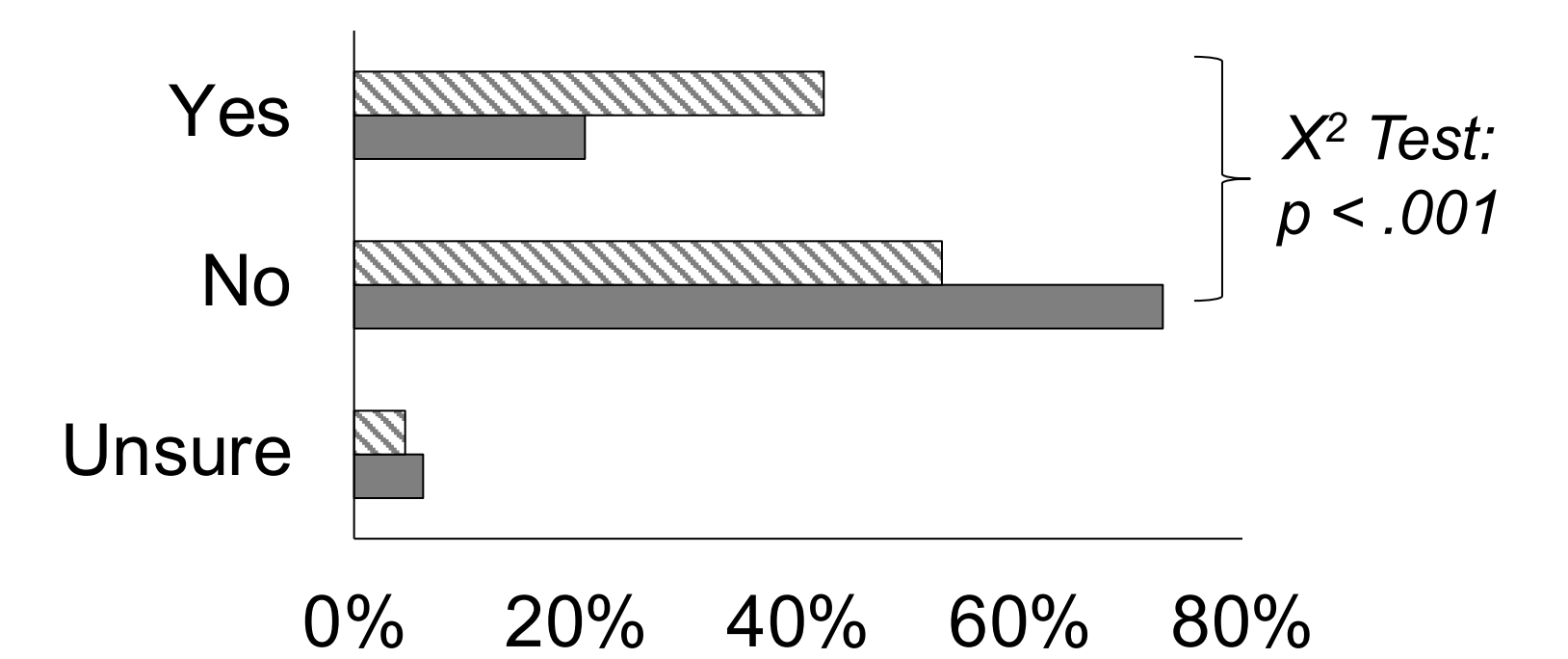
Have you ever participated in a Mturk password study?



Are you familiar with the sentence-based mnemonic?  
(Example provided)



Have you ever looked into how to make a more secure password?



■ Experienced (trained in 2018)    ▨ Naïve (not trained in 2018)

### Discussion

- A majority of prior participants (60%) did not recall having been in a password-related study on Mturk.
- Only about half (45%) reported being familiar with the mnemonic strategy they were trained on previously.
- Experienced participants were also significantly less likely to report investigating secure password techniques.
- Future work might be aimed at investigating how recall of a particular training event might change over different time intervals (e.g., 6 months).
- Additionally, efforts should be directed toward understanding what factors lead individuals to report not seeking out information on password security.

**References** Yang, W., Li, N., Chowdhury, O., Xiong, A., & Proctor, R. W. (2016, October). An empirical study of mnemonic sentence-based password generation strategies. In *Proceedings of the 2016 ACM SIGSAC Conference on Computer and Communications Security* (pp. 1216-1229). New York: ACM.