

# Exploring Threat Understanding and Cyber Hygiene Behaviors using Card Sorting

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## Introduction

- Cyber hygiene refers to behaviors an internet user can engage in to maintain system health and online security (Brooks et al., 2018).
- The purpose of this research is to investigate the relationship between one's mental model of cyber threats and self-reported cyber hygiene behaviors.

## Method

- Security Behavior Intentions Scale (SeBIS; Egelman & Peer, 2015) measured end-user cyber hygiene behaviors.
- To elicit participants' mental model, participants sorted cards with cyber threats into five categories (transmission hygiene, authentication hygiene, storage & device hygiene, Facebook & social media hygiene, and email & messaging hygiene).
- Participants were undergraduate students ( $N = 123$ ). Due missing data/incomplete sorts, final sample size was  $N = 87$ .

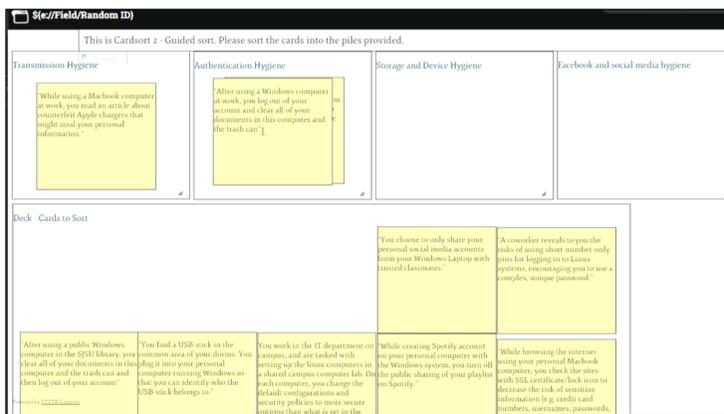


Figure 1. Example of Guided Card Sorting Task



## EMPIRICAL

# Our initial analysis of the relationship between threat understanding and cyber hygiene was not significant.

## Results

- Higher SeBIS scores indicate better cyber hygiene behaviors. Participants' mean SeBIS ( $M = 104.23$ ,  $SD = 12.38$ ) was slightly higher than the scale midpoint of 90.
- Bivariate correlation between participant's guided sort and experimental-derived ideal sort was conducted to determine the pattern of agreement between participant's guided sort and the experimenter-derived ideal sort ( $M = .41$ ,  $SD = 0.17$ ).
- To test the relationship between mental model and cyber hygiene, card sort measures were correlated with SeBIS scores, but the relationship was not significant  $r(86) = -0.11$ ,  $p = .914$ .

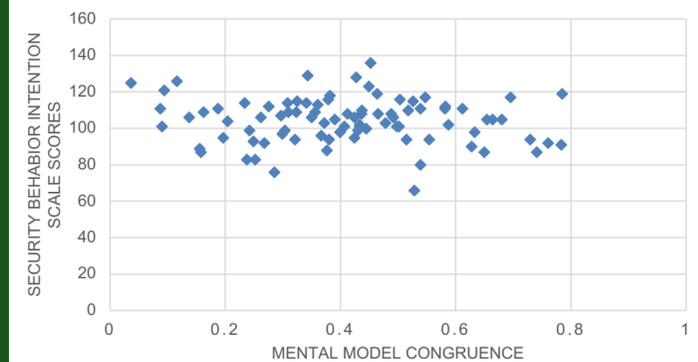


Figure 2. Scatterplot of SeBIS and card sort agreement

## Discussion

- We did not find evidence of a relationship between between participants' mental model of cyber threats and SeBIS scores.
- Cybersecurity-related majors were underrepresented in our sample. We will next look for this effect in a more diverse sample. Further, we will be able to see if there is an interaction between major and mental models of threats on cyber hygiene behavior.
- Measurement of cybersecurity knowledge may also help clarify any relationship between mental models of threats and cyber hygiene behavior.

## References

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Poster layout adapted from Morrison (2019).



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