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Effects of Safety Priming and Security Framing on App Selection

Isis Chong[1], Huangyi Ge[2], Ninghui Li[2], Robert W. Proctor[1]

[1] Department of Psychological Sciences, [2] Department of Computer Science
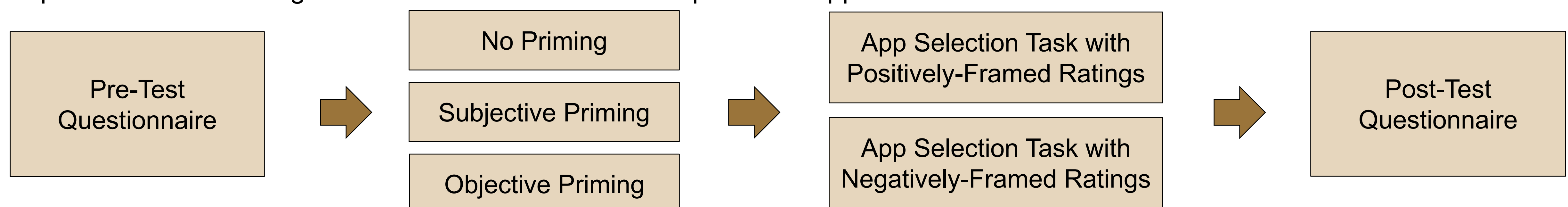
Introduction

- Users have been found to make safer app selections if they are presented with self-relevant safety information *before* the app selection task (a subjective priming effect; Rajivan & Camp, 2016)
- Users also benefit from being presented with risk/safety summaries *during* the installation process
- There is an advantage for presenting positively-framed summaries rather than negatively-framed ones (e.g., Chen, Gates, Proctor, & Li, 2015)

Research Questions:
- **Q1:** Can the subjective priming effect found by Rajivan and Camp (2016) be replicated?
- **Q2:** Can priming with objective warning information have a similar benefit to priming with subjective information?
- **Q3:** Do these priming conditions interact with positively- and negatively-framed risk/safety rankings?

Method

- 756 participants recruited through Amazon Mechanical Turk completed an app selection task

Pre-Test Questionnaire → No Priming / Subjective Priming / Objective Priming → App Selection Task with Positively-Framed Ratings / App Selection Task with Negatively-Framed Ratings → Post-Test Questionnaire

Priming: Read through either 8 subjective or 8 objective priming items

Example Subjective Priming Items
Rajivan and Camp (2016)

1. All things considered, the Internet would cause serious privacy problems.
2. Compared to others, I am more sensitive about the way online companies handle my personal information.

Example Objective Priming Items
Modified from Harbach, Hettig, Weber, & Smith, (2014)

1. Storage – Apps can access and edit your storage, including your photos.
   Example: This app can see and delete your photos.
2. Network Communication – Apps can access information about your networks.
   Example: This app can send information using your network.

App Selection Task: Select 2 out of 6 apps with similar functionality

The App's Icon   The App's Name   The Developer's Name   The App's Category   A brief description for the App

RepliGo PDF Reader
CERIENCE CORPORATION / PRODUCTIVITY
User Rating   ★★★★★   (3,486)
Permission Safety   ●●●○○
SELECT

The best way to view, annotate, print and fill out PDF forms while on the go! RepliGo PDF Reader enables PDF viewing, annotating, printing, and form filing. Review doc…

The Permission Safety takes into account all the permissions that the app requests, and then presents a summary Safety Ranking. The higher the Permission Safety, the safer the app is.

The User Rating shows the average rating given all the reviews that have been submitted for the app.
The number next to the rating is the number of reviews that have been submitted for the App.

Results

- Selection of an app was an increasing function of user rating and safety ranking
- Selections in the safety condition showed greater sensitivity to the rankings than the risk condition
- The subjective and objective priming conditions were equally effective in reducing risky app selections
- Apps with higher user ratings were influenced by increased safety rankings more so than apps with lower user ratings

App Selection as a Function of Safety Condition and Safety Ranking

App Selection as a Function of Safety Ranking and Priming Condition

App Selection as a Function of User Rating and Safety Ranking
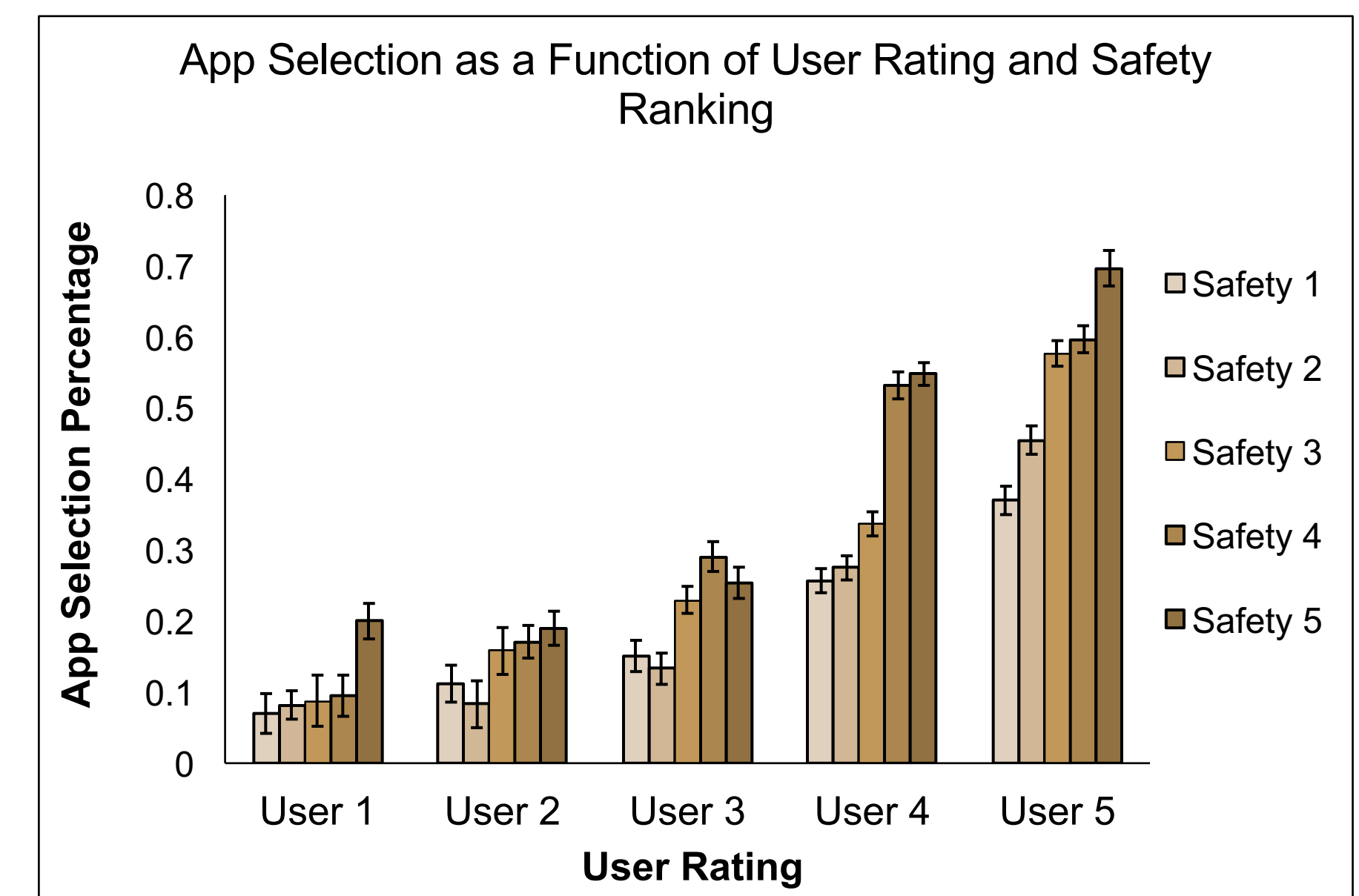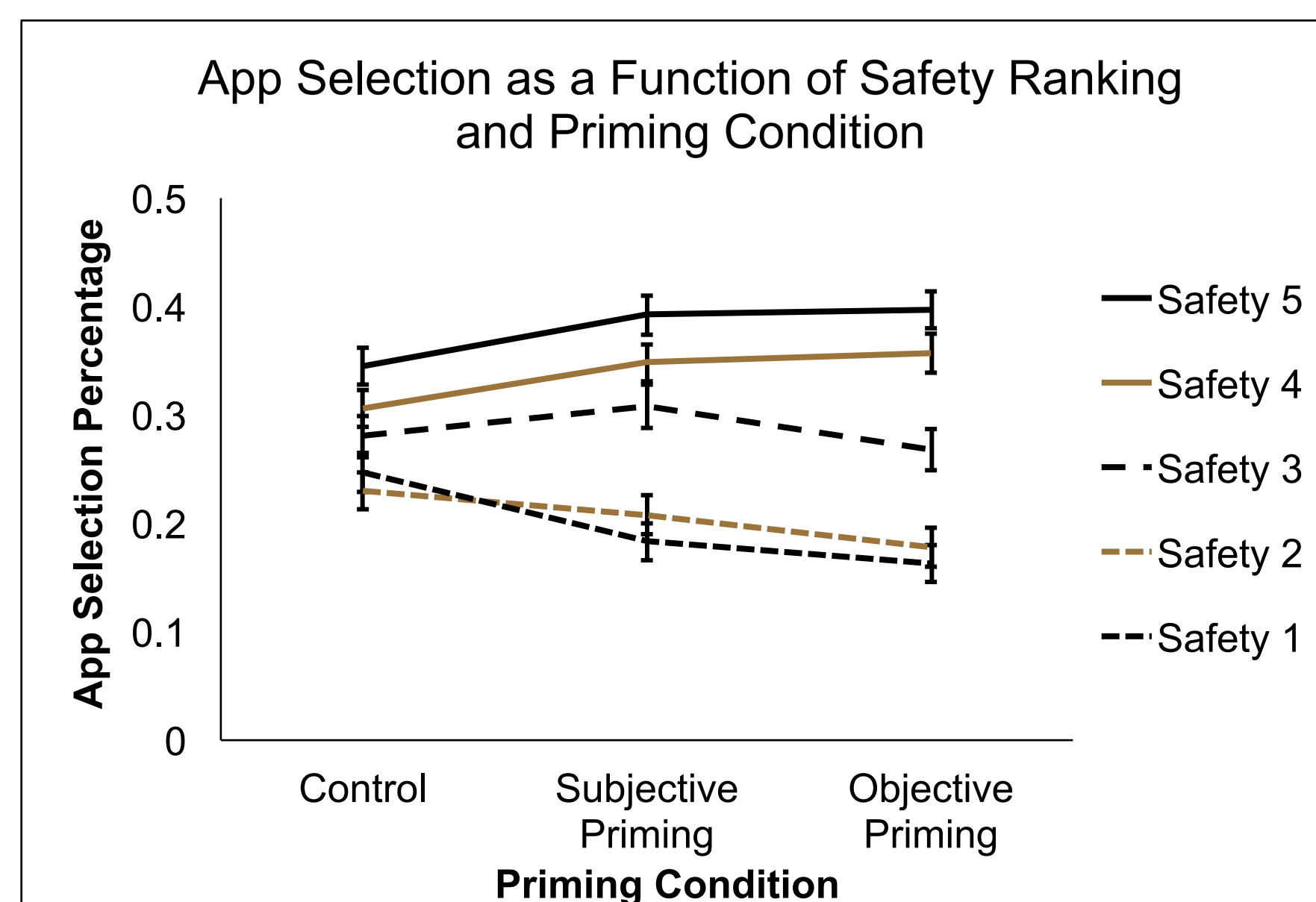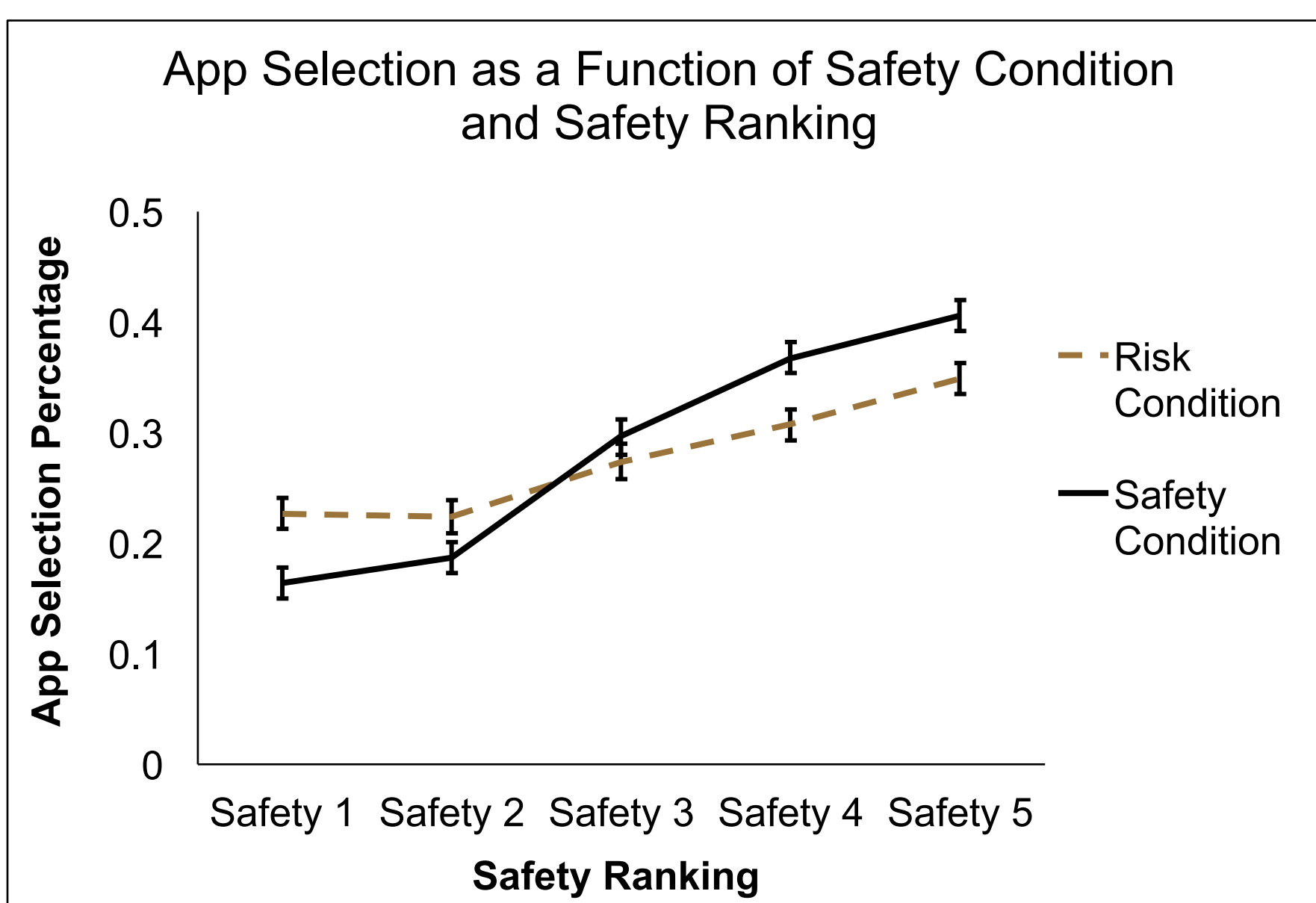
Discussion

- **Q1:** We replicated the finding of Rajivan and Camp (2016) that subjective priming of security enhances users' consideration of safety rankings
- **Q2:** Compared to a control condition, subjective and objective priming conditions were equally likely to increase the selection of safe apps
- **Q3:** Although users' selections were more sensitive to safety ranking in the safety condition, we did not find an interaction between priming and safety framing type

References • Chen, J., Gates, C. S., Li, N., & Proctor, R. W. (2015). Influence of risk/safety information framing on android app-installation decisions. *Journal of Cognitive Engineering and Decision Making*, 9, 149-168. • Rajivan, P., & Camp, J. (2016). Influence of privacy attitude and privacy cue framing on android app choices. In *Twelfth Symposium on Usable Privacy and Security (SOUPS 2016)*. USENIX Association.

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