Smartphone Security Awareness of Teenagers

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Introduction

Headlines about cyber-attacks have become increasingly more common over the past decade. Mobile devices are equipped with a myriad of security options to protect that device from security threats that the user can choose to enable. By enabling these features, security on the device is greatly enhanced, but it is up to the user to decide whether or not to enable the security measure. It is also possible that the user does not know that the security measure exists. Although the investigation of vulnerabilities on hardware and operating systems is plentiful, fewer research projects have been conducted on the human-element of device security, let alone on teenagers. Due to adolescent consumption of digital information, it is imperative that the characteristics of teenager technology use be better understood (Katz et al., 2014).

Objectives

Develop a survey to determine which security features teenagers are aware and not aware of on their smartphones.

Use the collected data to answer the following research questions.

1. Do students believe that their smartphones are less secure after responding to a smartphone security survey?
2. Does current or prior coursework in technology indicate a higher level of smartphone security awareness?
3. What is the level of smartphone security awareness among high school students?

Present findings at the STEMposium.

Methods & Materials

- Developed an online survey with questions pertaining to the various options and features of the students smartphones.
- 411 students (100 from each grade, 218 females, 187 males, 26 classes) from all four grade levels were recruited to voluntarily complete the survey during class time.
- Students who did not own an iOS or Android smartphone were excluded from the study.
- Different sets of questions were presented depending on the Operating System of the device (17 questions for Android users and 23 questions for iOS users).
- The survey was administered during class periods to randomize the dataset and students accessed the survey link via their school computer.
- Demographic questions establish the profile of the participant; non-identifiable information.
  - Classes they are enrolled in (general education & placements, and technology electives)
  - Grade level
  - Gender identity
- Perception questions were asked about how secure their device is; before and after the survey to see if the perception/conceived level of security changed after taking the survey.
- Open-ended questions were asked to support their perceptions.
- Data was exported and analyzed using Google Forms and Microsoft Excel.

Timeline

Formulate research interest	August 2015-16
Begin preliminary literature review	Sept. – November 2016
Generate research question and project objectives	Dec. 2016 – Jan. 2017
Design survey questions	February – April 2017
Perform pilot survey	May 2017
Refine survey questions	June – September 2017
Form project review board	Sept. – November 2017
Seek approval to administer survey	Dec. 2017 – Feb. 2018
Administer survey	March – April 2018
Analyze collected data	May 2018
Present findings at STEMposium	May 21, 2018

Results

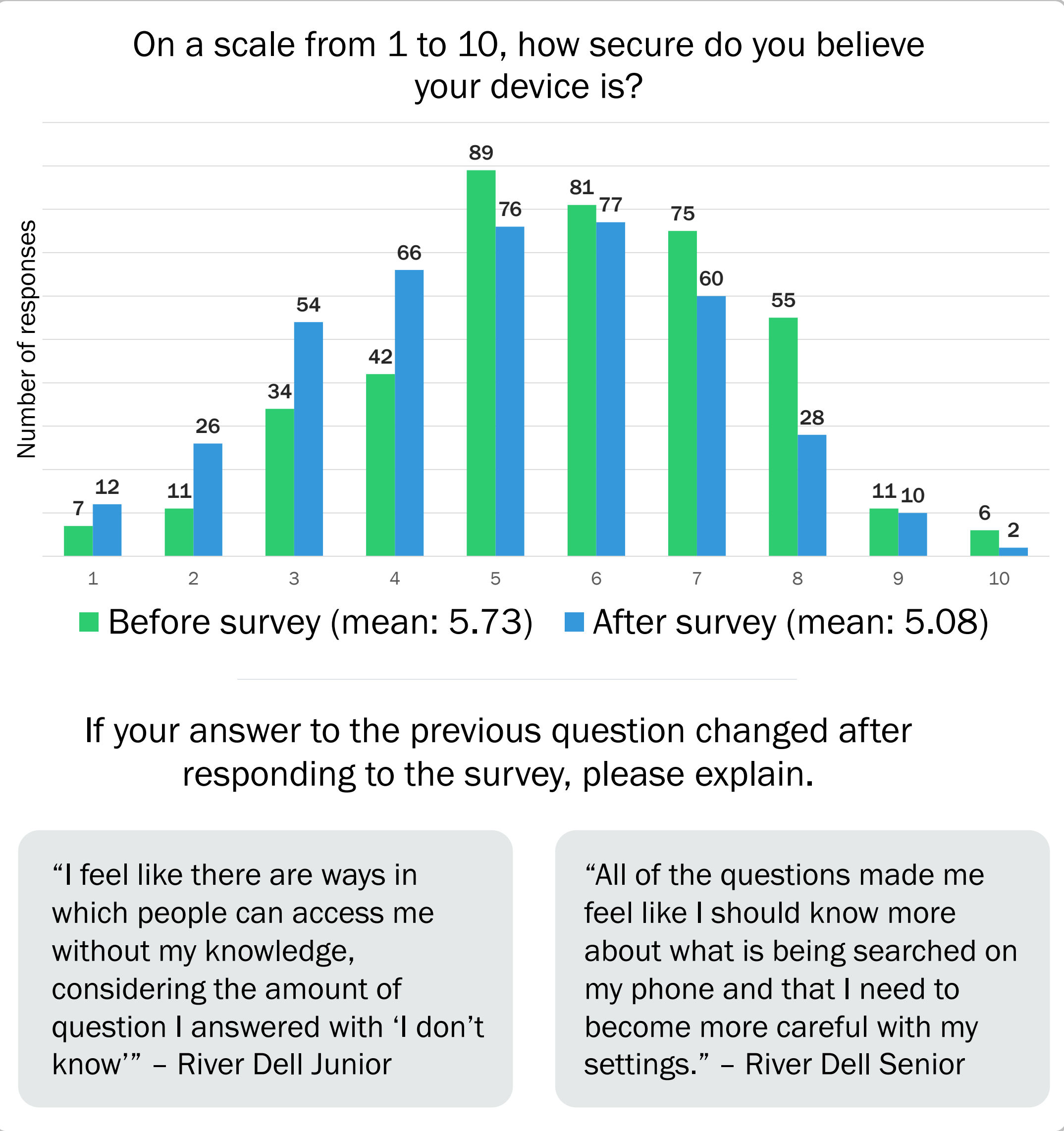Figure 1. Students' perceived level of smartphone security

"I feel like there are ways in which people can access me without my knowledge, considering the amount of question I answered with 'I don't know'" – River Dell Junior

"All of the questions made me feel like I should know more about what is being searched on my phone and that I need to become more careful with my settings." – River Dell Senior

Table 1. Level of smartphone security awareness

	Technology Class Enrollment	No Technology Classes Enrollment
Number of students	86	325
Average number of "I don't know" responses per student	1.84	3.17
Frequency of "I don't know" responses overall	11.5%	19.8%

Sample Survey Questions
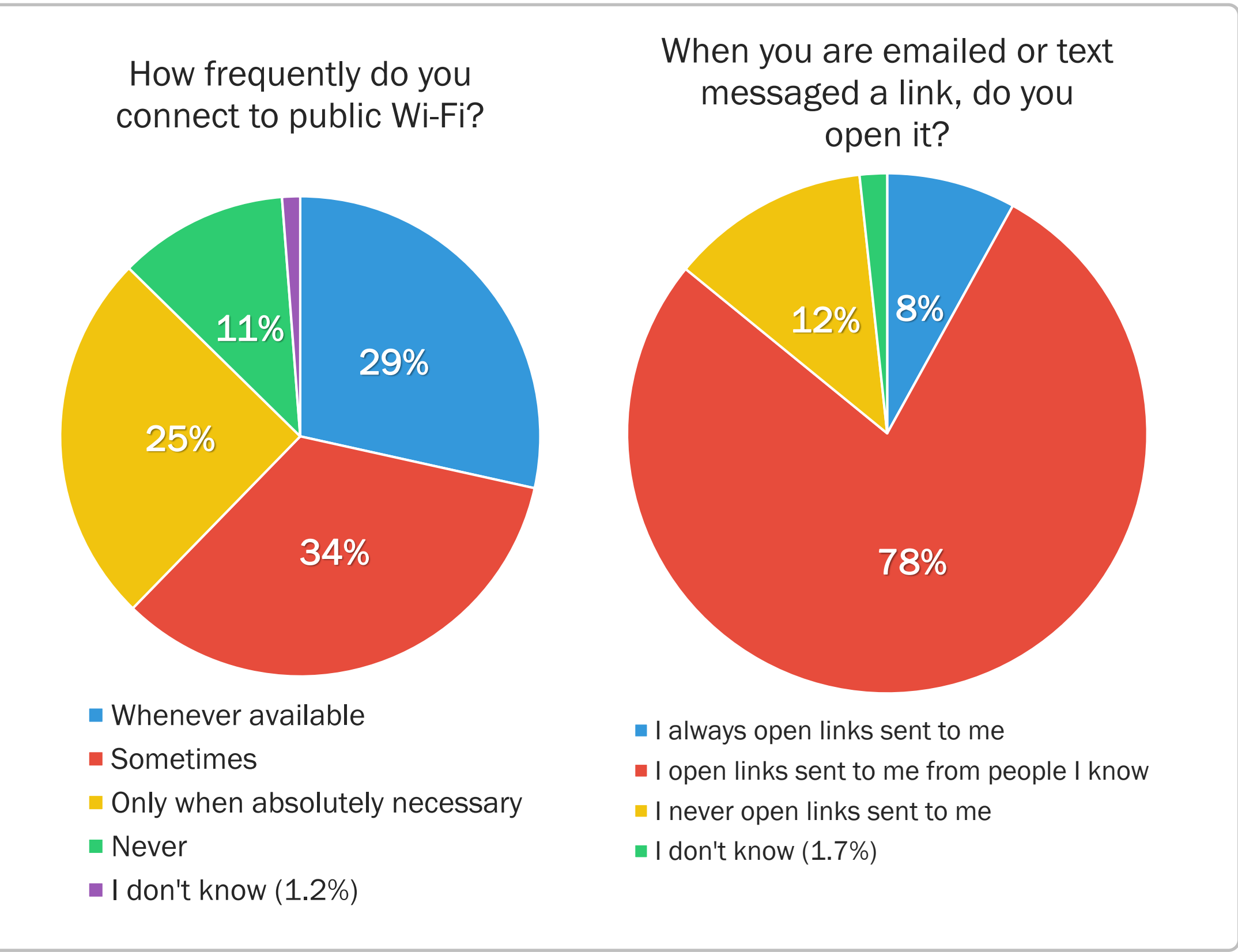
Conclusions & Future Work

This large survey of high school students' smartphone security awareness and perception answered our research questions as follows.

1. The survey results indicate that after completing a smartphone security survey students believe that their phones are less secure (Figure 1).
2. The survey results indicate that students who have current or prior coursework in technology have a greater level of awareness of smartphone security (Table 1).
3. Data was gathered regarding "What is the level of smartphone security awareness among high school students?" However development of a security scoring mechanism requires further research and development.

Based on the findings of this study, high school students' benefit from technology education, as technology class enrollment and exposure to device security questions contributes to greater awareness of device security.

References

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Katz, R. L., Felix, M., & Gubernick, M. (2014). Technology and adolescents: Perspectives on the things to come. Education and Information Technologies, 19(4), 863-886.

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