Predictors of Online Privacy Paradox Behavior among Students

Maor Weinberger $^1$, Maayan Zhitomirsky-Geffet $^1$, Dan Bouhnik $^{1,2}$

$^1$Bar-Ilan University, Israel
$^2$Jerusalem College of Technology, Israel

Abstract
In this exploratory study we investigate the attitudes and influential factors of users' tendency to online privacy paradox behavior, i.e. the inconsistency in users' online privacy attitudes and their online privacy behavior. Various factors related to online privacy and anonymity were considered, such as user's concern for the protection of personal information on the Web in general and particularly on social networks, user online privacy literacy and field of study.

To this end, a user study was carried out among 169 students of the Israeli academia, via a quantitative method using closed-ended questionnaires. The multivariate linear regression analysis showed that Computer Science and Information science students had a significantly lower tendency to privacy paradox behavior compared to students who study Accounting and business management. In addition, as the participants' concern for the protection of personal information on the Web increases, their tendency to privacy paradox behavior decreases.

Keywords: online privacy behavior; privacy paradox; privacy concern; online literacy; online privacy self-efficacy


Copyright: Copyright is held by the authors.
Contact: maor89@gmail.com

1 Introduction

Online privacy and personal information security is a widely explored topic in the literature (Debatin, Lovejoy, Horn & Hughes, 2009; Hoffman, Novak & Peralta, 1999; Jensen, Potts & Jensen, 2005; Paine et al., 2007; Sheehan, 2002; Wills & Zeljkovic, 2010). One of the prominent findings reported by previous works is the inconsistency in users' online privacy attitudes and their online privacy behavior, termed the "privacy paradox" (Barnes, 2006). Although users report they are worried about their online privacy (Paine et al., 2007; Wills & Zeljkovic, 2010), they rarely allow their worries to influence their actual online behavior and voluntarily disclose personal information about themselves on the Internet (Acquisti & Gross, 2006; Debatin et al., 2009; Gross & Acquisti, 2005). Several hypotheses were suggested to explain this inconsistency, such as, the knowledge gap hypothesis – a lack of awareness of the risks posed by information disclosure (Barnes, 2006; Debatin et al., 2009) or a lack of knowledge regarding privacy-enhancing tools and techniques (Trepte et al., 2015) and the uses and gratification hypothesis – a lack of willingness to forfeit the benefits of information disclosure, e.g. social benefits (Debatin et al., 2009; Trepte et al., 2015). In addition, a theory of optimistic bias, also known as unrealistic optimism or comparative risk judgments (Weinstein, 1989) was considered as an explanation of the privacy paradox behavior, as Internet users perceive themselves to be less vulnerable to these risks than their peers, even though they do not possess the necessary skills to protect themselves adequately (Baek, Kim & Bae, 2014; Cho, Lee & Chung, 2010; Cho, 2012).

Inspired by the above theories, our primary objective in this study was to examine predictive factors affecting users' tendency to privacy paradox behavior. As opposed to previous research that examined only a few specific predictors for this type of behavior and mostly in the context of social network sites, this research suggests a wide variety of factors, both at the individual level and among predefined groups (based
2 Method

This study was conducted among 169 students in the Israeli academia: 71 (42%) men and 98 (58%) women via a quantitative method using closed-ended questionnaires with over 40 questions. As opposed to previous research, where privacy paradox behavior was indirectly measured by a relationship between two separate variables, privacy concern and self-disclosure on the Web, we created a new scale that directly assesses the privacy paradox behavior. This scale comprises 25 items partially adopted from the existing literature (Aydin & Chouseinoglou, 2013; Chellappa & Sin, 2005; Talib, Clarke & Furnell, 2010). Based on the uses and gratification theory (Trepte et al., 2015), these items implicitly present the risks and benefits of the suggested behavior (e.g. "I tend to download software and services aiming to improve the performance of my computer / Web browser, even from seemingly unprotected websites."). A single variable was computed as a mean of the student’s responses to these items encoded on a 1-5 Likert scale. The internal consistency reliability (Cronbach’s alpha coefficient) of the scale was 0.84.

To predict the users' tendency to privacy paradox behavior, we performed a multiple linear regression analysis, using the following types of independent variables: 1) based on the theory of optimistic bias we measured the sense of anonymity while visiting a website, the sense of exposure to other users, online privacy self-efficacy (users' belief in their ability to browse anonymously), the level of concern for the protection of personal information on the Web, the level of concern for the protection of personal information on social networks; 2) according to knowledge gap hypothesis we considered the level of acquaintance with the number of details that can be monitored while visiting a website (e.g. IP address or current location), the level of acquaintance with the number of details that can be monitored by other users, the level of knowledge on privacy-enhancing tools and techniques, online literacy level (measured by a scale based on the participants’ prior academic and occupational background and self-reported online literacy); and 3) demographic factors such as gender and students' field of study (Computer science and engineering vs. Information science vs. Accounting and business management).

3 Results

Surprisingly, we found that the students tend to slightly prefer the protection of privacy and anonymity, even at the expense of online utilization and interactivity (M = 2.71, SD = 0.43). In addition, we found no significant differences in users' tendency, in terms of gender (using a t-test for independent samples, with gender as an independent variable) and online literacy level (using an F-test, with online literacy as an independent variable). However, we found significant differences (with F = 3.52, at p = 0.03) in users’ tendency to privacy paradox between Computer science and engineering students (M = 2.78, SD = 0.44), Information science students (M = 2.74, SD = 0.43) and Accounting and business management students (M = 2.56, SD = 0.35). The regression for predicting the tendency to privacy paradox behavior was found to be significant, F(13, 147)=3.10 at p<0.001, with the predictive variables accounting for 21.5% of the explained variance. Table 1 below presents the regression coefficients for predicting the users' tendency to privacy paradox behavior.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Dependent variable: tendency to privacy paradox behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>The level of concern for the protection of personal</td>
<td>β  SE  B  T</td>
</tr>
<tr>
<td></td>
<td>-0.35  0.04  -0.19  -4.72*</td>
</tr>
</tbody>
</table>

614
information on the Web

Field of study - Accounting and business vs. Information science and Computer science and engineering

|  | -0.21 | 0.08 | -0.21 | -2.82* |

* p<0.05

Table 1. The regression coefficients for predicting the users’ tendency to privacy paradox behavior

Table 1 indicates that as the participants’ concern for the protection of personal information on the Web increases, their tendency to privacy paradox behavior decreases. In addition, we can see significant differences between students with different fields of study, as described above.

4 Conclusions

In this study we examined various affecting factors of users’ tendency to the privacy paradox behavior, based on a number of theories from the literature. While previous studies (Acquisti & Gross, 2006; Debatin et al., 2009; Gross & Acquisti, 2005) found that users rarely allow their privacy concerns to influence their actual online behavior, our results revealed the opposite, as the students with a higher level of concern for online privacy tended to favor privacy and anonymity protection, even at the expense of utilizing the malleability of the cyberspace. In addition, we revealed no significant gender differences and found that both men and women in our experiment preferred to protect their online privacy and anonymity as opposed to previous studies (Milne, Rohm & Bahl, 2004; Sheehan, 1999; Yao and Linz, 2008). One possible explanation for these differences is that the previous studies dealt with privacy concern and behavior on social networks that strongly encourage information disclosure, while our findings are related to general-purpose websites as well. Another reason might be the fact that we used a single variable based on a new direct scale to measure the privacy paradox behavior, while past research was based on the indirect evaluation of the relationship between the user’s attitudes and their self-disclosure behavior as two separate variables.

The social implication of this study is that it shows that by increasing the concern for the protection of personal information on the Web, it is possible to mitigate the online privacy paradox behavior. This may be done by raising Internet users’ awareness of the online privacy threats and their knowledge of the tools designated to protect online privacy and personal information on the Web. Since our results were based on students’ self-reports on their attitudes and behavior which might be biased, future work will apply qualitative analysis to explore additional types and predictors of online privacy behavior.

5 References


