

2013

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### Recommended Citation

Mathiyalakan, Sathasivam; Heilman, George; and White, Sharon (2013) "Gender Differences in Student Attitude toward Privacy in Facebook," *Communications of the IIMA*: Vol. 13: Iss. 4, Article 3.  
Available at: <http://scholarworks.lib.csusb.edu/ciima/vol13/iss4/3>

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## **Gender Differences in Student Attitude toward Privacy in Facebook**

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### **ABSTRACT**

*Facebook is the leading social media. However, a user's failure to configure Facebook's privacy settings properly may lead to unwanted or harmful information disclosure. In effect, a user could be sharing private information, such as name, address, contact information, gender, birthdate, views and affiliations with everyone. In this study, we present the results of an examination of students' use of privacy settings in Facebook as well as their attitudes toward the risks associated with usage of both Facebook and the Internet in general. We also look for the existence of gender differences. Potential weaknesses of this study and suggestions for future research are also discussed.*

Keywords: Attitude, Facebook, privacy, social network, students

### **INTRODUCTION**

Founded in 2004, Facebook (2013) now estimates that it now has over a billion monthly active users. A Pew Internet and American Life Project report (Hampton, Goulet, Rainie, & Purcell, 2011) found that the ethnicity of Facebook users tends to mirror the population of U.S. This report also found that the educational distribution of Facebook users is as follows: less than high school 5 percent, high school 26 percent, trade school or some college 34 percent, bachelor degree 20 percent, and graduate school 15 percent, suggesting that Facebook caters to educated users.

A commonly used term in Facebook is *Friends*, which does not necessarily correspond to friends in real life. A Facebook user can develop a profile, collect *Friends* who may number in the hundreds or thousands, post comments and provide feedback. They can also join groups or form associations for information sharing (Ellison, Steinfield, & Lampe, 2007). Facebook can be used as a platform to quickly spread information to others users, as in the case of the Arab Spring uprisings in Middle East (Huang, 2011).

Recent research findings indicate that a majority of students spend at least 30 minutes per session on Facebook (Akyildiz & Argan, 2011; Pempek, Yermolayeva, & Calbert, 2009). Some researchers suggest that Facebook users tend to spend their time socializing with others based on pre-existing relationships (Pempek et al., 2009).

Research shows that Facebook profile data tends to mirror the user's actual traits rather than an idealized version of the self (Back et al., 2010). Such usage of Facebook can lead to unwanted information disclosure that can be harmful to the user if proper privacy settings are not used. In effect, a user could share private information such as name, address, contact information, gender, birthdate, views and affiliations with everyone without intending to so.

In this pilot study, we present the results of an examination of students' use of privacy settings in Facebook as well as their attitude toward the risks associated with usage of both the Internet as well as Facebook. We also examine if there is a differences in attitudes between genders. Potential weaknesses of this study as well as suggestions for future research are also discussed.

## **BACKGROUND**

Facebook privacy controls allow users to block access of specific information. However, a major criticism of Facebook is that the default privacy option tends to lead to a higher degree of information disclosure (Pinchot & Poullet, 2012). In their examination of the information sharing habits of undergraduate students at a mid-Atlantic university, Pinchot and Poullet (2012) mapped students' Facebook profile data to a series of personal security questions. They found that students shared a large amount of personal data, and that such sharing had the potential consequence of compromised online accounts, especially if a student's Facebook data fell into the wrong hands.

Case & King (2012) examined the social networking behavior of students enrolled at a private northeastern U.S. university who used Facebook and Twitter. They found that approximately 65% of the respondents indicated social networking is either somewhat or very important to them. There appeared to be a gender difference, with a higher percentage of women indicating that social networking is important to them. The percentage of students indicating that social sites are important to them fell as students rose in academic class. The findings also indicated that Twitter is becoming more popular although it is not used as much as Facebook.

By default, Facebook *Likes* are publicly available information. Using a logistic linear regression model with dimensionality reduction preprocessing, Kosinski, Stillwell and Graepel (2013) found that Facebook *Likes* can be used to accurately predict a number of highly sensitive personal attributes such as ethnicity, religious and political views, sexual orientation, intelligence, happiness, use of addictive substances, age, parental separation, and gender. The authors note that such a predictive ability can be used both positively, as in the provision of improved products and services, as well as negatively, because it can be easily applied, and perhaps incorrectly applied, to large numbers of people without their individual knowledge or consent.

Whitcomb and Fiedler (2010) examined the relationship between induced negative emotions and perceived privacy risk in Facebook. YouTube videos reporting on incidents where college students exposed themselves to privacy risks through personal information disclosure was used to induce emotions. Using a sample of 34 students, they found that the respondents exposed themselves to significant privacy risks through their Facebook activities. Interestingly, they found that perceptions of risk by women were greater than that of men.

Tuunainen, Pitkanen and Hovi (2009) examined attitudes toward privacy among Facebook users in Finland. They found that a majority of their respondents disclose a considerable amount of information. They also discovered a mismatch between users' beliefs about the information they think they are disclosing and the information that they actually disclose; and that Facebook privacy policy and terms of use were either not known by their respondents or were not well understood.

## **METHODOLOGY**

This pilot survey was administered to students enrolled at a Historically Black College and University (HBCU) located in a Mid-Atlantic U.S. state during late fall 2012. Respondents were students enrolled in undergraduate and graduate Management Information System (MIS) and Accounting courses taught. The students were given course credit for completing the survey. There were no financial incentives for survey completion.

Respondents were asked to provide selected demographic and background information, such as gender, age, ethnicity, school classification and major. Respondents were also asked whether they had a Facebook account, their awareness and use of Facebook privacy settings and the type of information they disclosed.

Additionally, the survey included six questions on Internet Privacy and Data Security concerns (see Table 4) and five questions on Facebook Privacy and Data Security concerns (see Table 5) derived from the work of Tuunainen, Pitkanen & Hovi (2009). Each item was measured on a five point Likert-type scale where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree."

## **RESULTS**

Of the 25 students taking the survey, 23 submitted usable responses. Table 1 shows the demographic data for the survey respondents. Since the study intends to focus on African-American Facebook users, three respondents were removed from the analysis because of their ethnicity (1 Asian American, 1 White, and 1 International). The breakdown of respondents in terms of major are as follows: accounting (1), business administration (2), economics/international economics (1), finance (1), marketing (1), MIS (9), double or triple business major (4), graduate (2), and non-business (2). The profile of respondents in terms of their self-reported GPAs is as follows: <2.000 (1), 2.000-2.499 (1), 2.500-2.999 (13), 3.000-3.499 (1), and 3.500 or older (1).

	Characteristics	Frequency
Gender	Men	10
	Women	13
Age	18-22	15
	23-26	3
	27-30	2
	Over 30	3
Ethnicity (top 2)	Black or African American	18
	Two or more races	2
Classification	Freshman	-
	Sophomore	10
	Junior	9
	Senior	3

**Table 1: Demographical Information.**

As shown in Table 2, all the respondents had a Facebook account. 95.65% of the respondents were aware of Facebook settings and 91.30% of the respondents used the Facebook settings.

	Yes			No		
	Total	Men	Women	Total	Men	Women
Facebook account	23	10	13	-	-	-
Privacy setting awareness	22	10	12	1	-	1
Use privacy setting	21	10	11	2	-	2

**Table 2: Facebook Privacy Settings Awareness and Use.**

Facebook users may communicate with others using a variety of tools including posts, comments, and videos. Users may also provide a set of personal information such as gender, name, email address, relationship status, and phone number and other personal information that can affect their privacy. Both the type of information and to whom the information is being disclosed must be examined when assessing privacy. Table 3 presents statistics for visibility options, i.e. the disclosure of informational items that have the potential to affect a user's privacy. The term "Don't Know" refers to cases where the respondents are not aware of the exact setting that they used for the three information disclosure items.

Most of the respondents have restricted the access to their email address and phone number to their friends (8.79 percent of respondents indicated that they do not know their setting for email address and phone number look up). Many respondents are also controlling access to their posts by having a custom setting or making it available to their friends only. While this enforces some privacy, it should be noted that the request for friends is available to a large audience (in line with some users' objectives of accumulating a larger group of friends) and a user could have thousands of friends.

	“Control privacy when you post.”			“Who can look you up using phone number or email address?”			“Who can send you friend requests?”		
	(Row-wise Percentage)			(Row-wise Percentage)			(Row-wise Percentage)		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Public	-	-	-						
Friends	52.17	41.70	58.30						
Custom	39.13	55.60	44.40						
Don’t Know	8.70	-	100.00						
Friends				65.22	60.00	40.00			
Friends of Friends				4.39	-	100.00			
Everyone				8.70	50.00	50.00			
Don’t Know				21.74	-	100.00			
Friends							17.39	75.00	25.00
Friends of Friends							65.22	40.00	60.00
Don’t Know							17.39	25.00	75.00

**Table 3: Information Disclosure and Visibility Options.**

Table 4 shows the results for Internet privacy and data security concerns. We find that men tend to have lower ratings than do women; that is, they tend to disagree with the statements. Women are more familiar with Internet privacy and security than are men, although there were no statistically significant differences between the data reported by men and women on any of the six items.

	Overall Mean (SD)	Men Mean (SD)	Women Mean (SD)
I worry about my privacy and data security while using the Internet (INetPrivacyData).	3.30 (1.33)	3.20 (1.69)	3.38 (1.04)
I worry that if I use my credit card to buy something on the Internet, my credit card number will be obtained /intercepted by someone else (INetCCInfo).	3.00 (1.24)	2.80 (1.55)	3.15 (0.99)
I worry about people online not being who they say they are (INetWhoPeopleAre).	3.17 (1.15)	3.00 (1.33)	3.31 (1.03)
I feel that identity theft could be real privacy risk (INetIDTheft).	3.48 (1.34)	3.40 (1.65)	3.54 (1.13)
I worry that if I use Internet with my mobile phone and someone steals it, he/she can find out some of my personal information or data (INetPerInfoLoss).	3.13 (1.22)	3.00 (1.41)	3.23 (1.09)
I’m familiar with data protection and security while using the Internet in general (INetFamWithSecurity).	3.74 (1.18)	3.40 (1.17)	4.00 (1.16)

**Table 4: Internet Privacy and Data Security Concerns.**

Table 5 shows the results for Facebook Privacy and Data Security concerns. We find that apart from FBWorryPrivacySec, men tend to have lower ratings than do women, i.e., greater disagreement with the statements along with greater variability. There is a statistically significant relationship between ratings by men and women for FBProtectsPrivacySec at the 5 percent level

( $p=0.039$ ). There is also a marginally statistically significant relationship between ratings by men and women for FBNotUseMyInfo at the 10 percent level ( $p=0.055$ ).

	Overall Mean (SD)	Men Mean (SD)	Women Mean (SD)
I worry about my privacy and data security while using Facebook (FBWorryPrivacySec).	2.70 (1.06)	3.00 (1.33)	2.46 (0.78)
I feel that the privacy of my personal information is protected by Facebook (FBProtectsPrivacySec).	2.65 (0.94)	2.20 (0.92)	3.00 (0.82)
I trust that Facebook will not use my personal information for any other purpose (FBNotUseMyInfo).	2.70 (0.88)	2.30 (0.82)	3.00 (0.82)
I feel comfortable writing messages on my friends' walls (FBComfWrtMsgWalls).	3.43 (0.79)	3.30 (0.82)	3.54 (0.78)
I worry that I will be embarrassed by wrong information others post about me on Facebook (FBPostEmbarass).	2.57 (0.79)	2.40 (0.70)	2.69 (0.86)

**Table 5: Facebook Privacy and Data Security Concerns.**

Overall ratings tend to be higher for Facebook privacy than Internet privacy indicating that the respondents are more concerned about privacy and data security on the Internet than on Facebook. This suggests that the respondents in this study tend to be more trusting of Facebook.

We compared the means for INetPrivacyData and FBWorryPrivacySec and found that there is a statistically significant difference ( $t=3.102$ ,  $p=0.002$ ). There also exists a gender difference. While the means for men are not statistically different, the means for women are statistically significant ( $t=3.86$ ,  $p=0.002$ ).

We then created two mean aggregate variables for items in Table 4 (OverallINetPrivacy, aggregate mean=3.30) and Table 5 (OverallFBPrivacy, aggregate mean=2.81) as shown in Table 6. We find that there is a statistically significant difference in the two means for both men and women ( $t=2.413$ ,  $p=0.025$ ) and women ( $t=2.222$ ,  $p=0.046$ ) but not for men ( $t=1.272$ ,  $p>0.050$ ),

	Overall Mean (SD)	Men Mean (SD)	Women Mean (SD)
OverallINetPrivacy (aggregate based on Table 4)	3.30 (0.96)	3.13 (1.25)	3.44 (0.69)
OverallFBPrivacy (aggregate based on Table 5)	2.80 (0.35)	2.64 (0.39)	2.94 (0.26)

**Table 6: Mean Aggregate Variables for OverallInternetPrivacy and OverallFBPrivacy.**

## CONCLUSIONS, STUDY LIMITATIONS, & FUTURE RESEARCH

The purpose of this pilot study is to examine HBCU students' use of privacy settings in Facebook. We also look at HBCU student attitudes toward risk associated with usage of both the Internet as well as Facebook. We then examine whether gender differences exist. We did find that the students are aware of privacy settings in Facebook. They tend to be more trusting of Facebook than of the Internet as a whole. This might imply that the respondents are naïve about privacy issues or it might reflect a cultural bias among HBCU students. More research is needed before firm conclusions can be made. We also find that there are significant differences between men and women regarding attitudes about Facebook's protection of their privacy and information. This may be due to inherent levels of trust exhibited by genders. Again, more research is needed.

### Study Limitations & Future Research

As with other academic studies that use students, there are weaknesses in this study. As this is a pilot study, the sample size is small. Before any generalizations can be made, a larger sample is needed. We used a convenience sample and thus the findings may not be applicable to the larger population. Finally, while we examined the information disclosure and privacy for some items, a user might share other items that can affect privacy.

Despite these shortcomings, we did have some interesting findings. We are currently in the process of expanding the generalizability of our findings by using a larger data set, as well as by using a student population with different demographic characteristics.

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