

## First Monday, Volume 15, Number 8 - 2 August 2010

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### Abstract

With over 500 million users, the decisions that Facebook makes about its privacy settings have the potential to influence many people. While its changes in this domain have often prompted privacy advocates and news media to critique the company, Facebook has continued to attract more users to its service. This raises a question about whether or not Facebook's changes in privacy approaches matter and, if so, to whom. This paper examines the attitudes and practices of a cohort of 18- and 19-year-olds surveyed in 2009 and again in 2010 about Facebook's privacy settings. Our results challenge widespread assumptions that youth do not care about and are not engaged with navigating privacy. We find that, while not universal, modifications to privacy settings have increased during a year in which Facebook's approach to privacy was hotly contested. We also find that both frequency and type of Facebook use as well as Internet skill are correlated with making modifications to privacy settings. In contrast, we observe few gender differences in how young adults approach their Facebook privacy settings, which is notable given that gender differences exist in so many other domains online. We discuss the possible reasons for our findings and their implications.

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### Introduction

On 8 January 2010, Facebook's founder Mark Zuckerberg made the following statement: "People have really gotten comfortable not only sharing more information and different kinds, but more openly and with more people. That social norm is just something that has evolved over time." (M. Kirkpatrick, 2010). Thus began another wave of concern about Facebook's attitudes toward their users' privacy. The above comment came on the heels of Facebook's move in December 2009 prompting users to reconsider their privacy settings (Zuckerberg, 2009). Users were presented with a message that asked them to alter their

privacy settings. The default option was to make user content publicly accessible to all Facebook users and anyone else who had enough technical savvy to access the data using the tools that Facebook made available to software developers. This change outraged many privacy advocates and regulators (Albanesius, 2010; Electronic Privacy Information Center, 2010; Opsahl, 2010), particularly given that Facebook had just settled a class action lawsuit over privacy issues concerning a feature they had introduced a few years earlier called Beacon (*Lane, et al. v. Facebook, Inc., et al.*, 2009).

In addition to upsetting many digerati and privacy advocates, the above-cited comments by Mark Zuckerberg also triggered journalists to start interrogating Facebook's attitudes toward privacy (*e.g.*, Bilton, 2010; Fletcher, 2010). On 21 April 2010, Facebook announced a series of new features at their f8 conference that prompted journalists to interrogate what Facebook might do with people's data. During May, 2010, hundreds of newspaper articles and TV segments were dedicated to addressing privacy, most notably the 31 May cover story of *Time*: "Facebook ... and how it's redefining privacy" (Fletcher, 2010). Facebook responded to the outcry by simplifying its privacy settings (Zuckerberg, 2010).

As galleys of David Kirkpatrick's (2010) tell-all account of the early days of Facebook — "The Facebook Era" — began circulating, bloggers started scouring the book to understand better the company's ethos. In the chapter entitled "Privacy," Kirkpatrick made the following statement: "The older you are, the more likely you are to find Facebook's exposure of personal information intrusive and excessive." [1] The author used this assessment to explain why Facebook — historically popular with youth — was making decisions that may not seem sensible to adult participants.

Embedded in Kirkpatrick's explanation — and reiterated by both Facebook and the news media — is a widespread belief that today's youth do not care about privacy and will not take steps to protect it. Amidst the turmoil, the Pew Internet & American Life Project released a report on "Reputation Management and Social Media" (Madden and Smith, 2010) whose findings contradict prevalent assumptions about youth apathy regarding privacy matters. Based on data collected in early Fall 2009, Pew found that 71 percent of the 18–29-year-old social network site users they surveyed reported changing their privacy settings while only 62 percent of those 30–49 and 55 percent of those between the ages of 50–64 had. While Pew's practice-oriented data do not measure youth's attitudes towards privacy settings, the findings do suggest that younger users are conscious enough of privacy issues to take measures to manage which parts of their profiles are accessible.

Since social network sites first gained visibility, scholars have been interested in measuring and analyzing users' attitudes towards privacy and their practices (*e.g.*, Gross and Acquisti, 2005; Lewis, *et al.*, 2008). This paper contributes to that line of inquiry by building on previous work and helping contextualize existing findings such as those found in the above-cited Pew report (Madden and Smith, 2010).

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## Background

Facebook launched in 2004 as a service meant for students enrolled at Harvard University. Soon after, it opened its doors to students at other colleges, first to members of prestigious institutions then gradually a more diverse set of schools (boyd and Ellison, 2007). In 2005, Facebook provided limited access to teenagers from specific high schools and members of certain companies. Finally, in 2006, the service became accessible to the public.

When users sign up, they are required to provide basic demographic information. In creating their profiles, users are also encouraged to provide their address, telephone number, occupation, photograph, interests, and other details. They are also encouraged to make connections with other members of the site by marking others as "Friends" (boyd and Ellison, 2007). When logged in, users can post updates or share media and comment on others' status updates, photos, and posts. Through these activities, users divulge varying degrees of information about themselves that the site initially only made available to those with whom the user had connected or those in their networks [2].

Facebook was not the first social network site to become popular with youth, but its positioning as a campus-oriented service made it popular with college students from its inception. This did not mean that all college students used Facebook or that they did not use other social network sites. In 2007, for example, a survey of first-years on one campus found that 78.8 percent of the students used Facebook and 54.6 percent used MySpace with

nearly all students being aware of both. Despite being known and available, 12 percent of the student body opted out of such sites' uses (Hargittai, 2007).

Although Facebook started out with a college-centric approach, it has become the most popular social network site in the United States (and in many other countries) for people of all ages (Doughtery, 2010). One of the features that has differentiated Facebook from other social network sites is the way in which it manages privacy (boyd and Ellison, 2007). Early on, MySpace allowed users to control whether their profiles were public — and thereby accessible to anyone with or without a MySpace account — or private — and thereby only accessible to a person's articulated list of Friends. Facebook, on the other hand, did not initially allow users to make any of their content broadly accessible. When Facebook expanded beyond Harvard, it introduced the concept of "networks" and required all users to be in a network. Initially, networks were college-oriented and anyone with a harvard.edu e-mail address could join the Harvard network but no one else could. As the service expanded, Facebook introduced high school networks, corporate networks, and regional networks. Unfortunately, this network structure did not scale well and the notion of being in a network comprised of everyone in India or France did not make sense. Facebook stopped requiring users to join networks and slowly minimized the importance of networks, even going so far as to remove the regional networks entirely by 2009 (Zuckerberg, 2009).

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## Facebook's history with privacy

Facebook's approach to privacy was initially network-centric. By default, students' content was visible to all other students on the same campus, but no one else. Through a series of redesigns, Facebook provided users with controls for determining what could be shared with whom, initially allowing them to share with "No One", "Friends", "Friends-of-Friends", or a specific "Network". When Facebook became a platform upon which other companies could create applications, users' content could then be shared with third-party developers who used Facebook data as part of the "Apps" that they provided. The company introduced privacy settings to allow users to determine which third parties could access what content when; users encountered a message whenever they chose to add an application. Over time, Facebook introduced the ability to share content with "Everyone" (inside Facebook or not). Increasingly, the controls got more complex and media reports suggest that users found themselves uncertain about what they meant (Bilton, 2010). Recognizing the validity of this point, Facebook eventually simplified its privacy settings page (Zuckerberg, 2010).


At each point when Facebook introduced new options for sharing content, the default was to share broadly. For example, when the site introduced a setting that allowed users to choose whether or not their basic profile content would be shared with search engines, the default was yes, meaning that people's profile content would come up whenever someone searched for their name on Google, regardless of whether or not the person searching was logged into Facebook. As with many other changes made by Facebook, when Facebook chose to make the content available to search engines, it simply introduced a new setting: "public search" and enabled sharing to search engines by default. Default settings matter, because research has shown that most people rarely change them (Mackay, 1991).

Privacy controversies have accompanied the various changes Facebook has made to the site over the years. In 2006, Facebook unveiled a feature called the "News Feed" that provided users with a stream of data about the actions taken by their Friends on Facebook (boyd, 2008a). When users uploaded photos, changed their relationship status, accepted Friend requests or engaged in a myriad of other actions on the site, these were broadcast to their contacts through the News Feed. While none of the information that was shared on the News Feed had previously been hidden, the automatic aggregation and publicization of it sparked outrage. Many users believed that there was a significant difference between knowing that someone changed their relationship status by regularly visiting the person's profile and seeing it listed as an action in the News Feed (boyd, 2008a). Collectively, users pronounced their dissent, most notably when over 700,000 of them joined a group called "Students Against Facebook News Feed" (Meredith, 2006). Their protests prompted Facebook to provide privacy settings to control what would and would not be shared on people's News Feed.

In 2007, Facebook introduced an advertising platform called Beacon that shared users' actions on external partner Web sites via the News Feed (Facebook, 2007). Because there were only a few partner sites, many users never encountered this feature. Completely unaware of how it worked, some users who did encounter it were startled to see information

about their purchases on other sites being broadcast to their Friends on Facebook. In one highly publicized account, a man purchased a diamond ring from Overstock.com only to learn that this information was shared via Facebook, along with a link to the site that highlighted that the ring had been purchased on sale. His wife learned of her surprise gift via Facebook (Kravets, 2010). This incident was one of many highlighted in the class action lawsuit against Facebook, which was settled in December 2009. Facebook discontinued the Beacon program in September 2009.

Following a series of redesigns in December 2009, Facebook added a prompt when users logged on asking them to reconsider their privacy settings for various types of content on the site, including "Posts I Create: Status Updates, Likes, Photos, Videos, and Notes" (see [Figure 1](#)). For each item, users were given two options: "Everyone" or "Old Settings." The toggle buttons defaulted to "Everyone." This message appeared when users logged into their account and it was impossible to go to the rest of the site without addressing the prompt. Faced with this obligatory prompt, many users may well have just clicked through, accepting the defaults that Facebook had chosen. In doing so, these users made much of their content more accessible than was previously the case. As part of these changes, everyone's basic profile and Friends list became available to the public, regardless of whether or not they had previously chosen to restrict access; this was later redacted. When Facebook was challenged by the Federal Trade Commission to defend its decision about this approach, the company representative noted that 35 percent of users who had never before edited their settings did so when prompted. Facebook used these data to highlight that more people engaged with Facebook privacy settings than the industry average of 5–10 percent (E. Boyd, 2010). While 35 percent may be significantly more than the industry average, and Facebook did not specify what percentage of users had never adjusted their settings, there is still likely a sizeable majority that accepted the site's defaults each time changes had been implemented.

 **Please update your privacy settings**

Facebook's new, simplified privacy settings give you more control over the information you share. We've recommended settings below, but you can choose to apply your old settings to any of the fields.

|   | Everyone                         | Old Settings          |
|---|----------------------------------|-----------------------|
| <b>About me</b> [?]   | <input checked="" type="radio"/> | <input type="radio"/> |
| <b>Family and Relationships</b> [?]                                       | <input checked="" type="radio"/> | <input type="radio"/> |
| <b>Work and Education</b>   | <input checked="" type="radio"/> | <input type="radio"/> |
| <b>Posts I Create</b><br>Status Updates, Links, Photos, Videos, and Notes | <input checked="" type="radio"/> | <input type="radio"/> |
|   | <b>Friends of Friends</b>        | <b>Old Settings</b>   |
| <b>Photos and Videos of Me</b> [?]  | <input checked="" type="radio"/> | <input type="radio"/> |
| <b>Birthday</b> [?]   | <input checked="" type="radio"/> | <input type="radio"/> |
| <b>Religious and Political Views</b>                                      | <input checked="" type="radio"/> | <input type="radio"/> |
|   | <b>Friends</b>                   | <b>Old Settings</b>   |
| <b>Email Addresses and IM</b>   | <input checked="" type="radio"/> | <input type="radio"/> |
| <b>Phone Numbers</b>  | <input checked="" type="radio"/> | <input type="radio"/> |
| <b>Address</b>  | <input checked="" type="radio"/> | <input type="radio"/> |

**Figure 1:** The message Facebook users saw in December 2009.

As privacy advocates and regulators investigated what these changes meant, Facebook moved toward another series of modifications that depended on users' willingness to share information. In April 2010, at their f8 conference, Facebook announced Instant Personalizer

and Social Plugins, two services that allowed partners to leverage the social graph — the information about one’s relationships on the site that the user makes available to the system — and provide a channel for sharing information between Facebook and third parties. For example, Web sites could implement a Like button on their own pages that enables users to share content from that site with the user’s connections on Facebook. Sites could also implement an Activity Feed that publicizes what a person’s Friends do on that site. These tools were built for developers and likely few users, journalists, or regulators had any sense of what data from their accounts and actions on Facebook were being shared with whom under what circumstances.

Quickly, concerns mounted (Bilton, 2010; Fletcher, 2010). Journalists struggled to explain what Facebook’s changes in privacy implied for users. News coverage was varied, but the underlying message was consistent: do not trust Facebook. U.S. Senator Charles E. Schumer of New York publicly criticized Facebook and asked the Federal Trade Commission to investigate Facebook’s practices (Albanesius, 2010). Privacy advocacy groups like the Electronic Privacy Information Center (2010) filed a complaint with the U.S. Federal Trade Commission (FTC). The Electronic Frontier Foundation took a different tactic and called for a Bill of Privacy Rights (Opsahl, 2010). Vocal critics declared 31 May “Quit Facebook Day” and while many may have joined the initial efforts, few users actually quit (Diana, 2010). When a group of students from New York University asked for US\$10,000 to spend the summer building Diaspora (<http://www.joindiaspora.com/>), a decentralized social network site that media coverage framed as an alternative to Facebook, frustrated Facebook users responded by helping them raise over US\$200,000 (Siegler, 2010). A Web site called Openbook (<http://youopenbook.org/>) offered a search interface to all of the status updates that were made publicly accessible, defaulting the query to statements like “I hate my job.” The tagline for the Web site was “Facebook helps you connect and share with the people in your life. Whether you want to or not.” followed by a button “Learn why this is bad!” More controversially, the top of the page read, “They ‘trust me’. Dumb fucks.” This quote was taken from instant messages that Mark Zuckerberg had purportedly sent while still at Harvard referring to his site’s users (Orlowski, 2010).

As the discussions became more voracious, Facebook was increasingly pressured to respond. On 26 May 2010, Zuckerberg announced that Facebook heard the concerns and believed that the major issue on the table was Facebook’s confusing privacy settings page (Zuckerberg, 2010). Facebook unveiled a new privacy settings page that, while simpler, also removed many of the controls that allowed users to limit what content could be restricted (see [Figure 2](#)). This quelled much of the news coverage, but it is unlikely that it would lead to the end of controversy as in July 2010, a Canadian law firm filed a class action suit against Facebook over privacy issues (McCarthy, 2010).

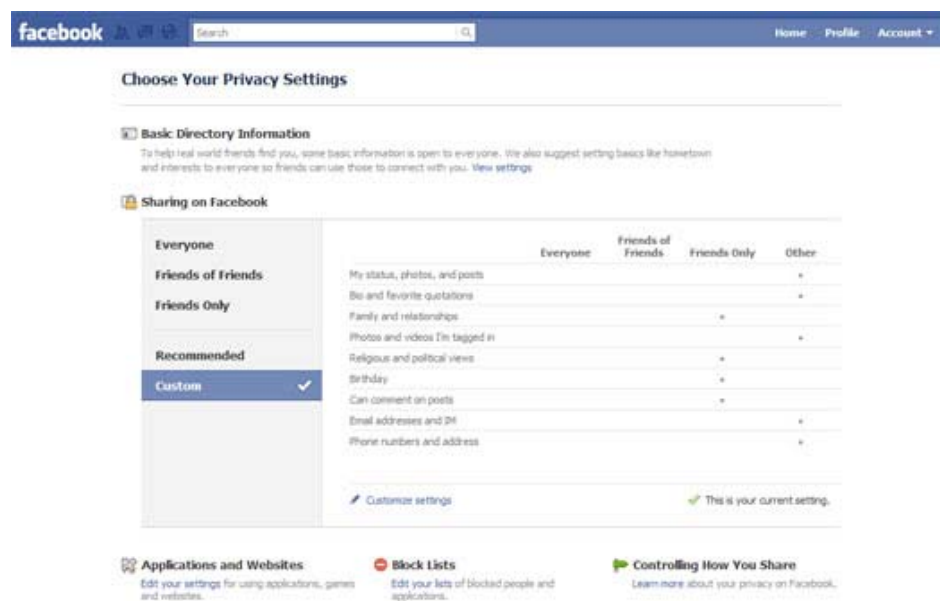


Figure 2: Facebook’s “simplified” privacy settings, July 2010.

## User practices and Facebook's privacy options

Recurring changes in Facebook's privacy settings have not only been popular in the press, but have also intrigued scholars. As researchers started interrogating social network sites as a domain of interest, they began asking serious questions about privacy. The earliest work in this domain was written by Gross and Acquisti (2005) who analyzed data about what Facebook users shared, and considered the potential privacy threats that they might face, including embarrassment, stalking, re-identification, and identity theft. Along these lines, scholars have addressed topics central to the security and legal communities, such as privacy leakage (Krishnamurthy and Wills, 2008), reputational damage (Solove, 2007), and trust (Fogel and Nehmad, 2008; Dwyer, *et al.*, 2007), suggesting technical and legal interventions (Grimmelmann, 2009). Much of this research has focused specifically on college students and youth more generally (Marwick, *et al.*, 2010).

In 2006, Acquisti and Gross (2006) set the stage for analyzing the tensions between attitudes and practices. Surveying a cohort of college students about privacy, they examined the interplay between students' privacy attitudes, their beliefs about what data they were sharing as compared to what data they were actually sharing, and general awareness of Facebook's privacy mechanisms. At that time, Acquisti and Gross found that three quarters of users knew exactly what they were sharing and the majority of participants understood the wide visibility of their content, but a significant minority was "vastly underestimating the reach and openness of their own profile." [3] It is worth noting, however, that the authors administered this study when Facebook's privacy settings were much less complex than they have become since with gradual changes introduced by the company over time described in the previous section above. If a notable portion of users were already confused about these settings back then, there is a good chance that some users would be at least as — if not more — confused now given a much more complex configuration.

Before Facebook began providing complex privacy levers, creating a "Friends-only" or "private" profile was relatively simple, but different studies have shown wide variation in how frequently users turned to altering these settings (Ellison, *et al.*, 2007; Stutzman and Kramer-Duffield, 2010; Lewis, *et al.*, 2008). The differences in findings across these studies could be explained by variation in study populations, methods used to measure practices concerning privacy settings or might suggest differences in behavior over time. Using profile data of an entire college cohort, Lewis and colleagues (2008) found four predictors of changing privacy-settings:

"A student is significantly more likely to have a private profile if (1) the student's friends, and especially roommates, have private profiles; (2) the student is more active on Facebook; (3) the student is female; and (4) the student generally prefers music that is relatively popular (high mean) and only music that is relatively popular (low SD)." [4]

In a complementary study with a different student population, Stutzman and Kramer-Duffield (2010) found that "gender, friend network size, weak-tie expectancy violations, and conversant privacy practices" [5] were correlated with private profiles.

The literature suggests that the reasons behind why some users take measures to restrict access to their profiles while others do not vary. Raynes-Goldie (2010) argues that social privacy is typically of greater concern to people than institutional privacy; in other words, users are more concerned about being exposed to people that they know than having their data accessed by governments and corporations. The teenagers that boyd (2008b) interviewed reported similar priorities, notably that they were more concerned about people who held immediate power over them — parents, teachers, college admissions officers — than abstract authorities. Debatin and colleagues (2009) argue that while users report understanding the settings and using them, they typically have a skewed sense of the implications of doing so. Analyzing survey and interview data with a group of college students, these researchers found that unless users experienced personal consequences, they believed that the benefits of public participation outweighed the potential consequences. Likewise, Livingstone (2008) found that youth regularly balance opportunities and risks when addressing privacy in social network sites. The extent to which users are then able to change their settings so that they reflect their preferences will arguably also depend on their level of skill in understanding and modifying the relevant settings (see, for example, Hargittai [2010] for a more general discussion of how Internet skills matter in what people



do online). Consequently, one of the factors we examine is how skill relates to practice with Facebook's privacy settings.

In accounting for why gender differences may exist in approaches to privacy, Lewis and colleagues (2008) suggest an additional motivating variable: safety. Many young people in their sample of a college cohort were likely aware of the online safety controversies that have, on occasion, surrounded MySpace and social network sites more generally. Many U.S. teens turned to Facebook because it was perceived to be a safe alternative to MySpace (boyd, in press). Starting in 2004, MySpace was extremely popular among youth, but in 2005, the news media fueled popular fears about the possibilities of meeting strangers online, which likely contributed to many users leaving the site; this prompted a moral panic or, more precisely, a "technopanic" (Marwick, 2008). The cultural anxieties that unfolded emphasized that young girls were especially at risk on MySpace where online predators were perceived to be pervasive (Cassell and Cramer, 2007). The logic was that visibility alone would put girls at risk of being targeted by predatory men. Given these fears, Lewis and colleagues (2008) hypothesized that safety concerns might explain why women are more likely to restrict access to their profiles than men. Accordingly, it is worth examining data on Facebook privacy practices by gender to see whether differences along these lines exist.

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## Research questions

This paper seeks to build on existing literature by examining how privacy practices have changed over time, focusing on a cohort of college first-years who were surveyed in Spring 2009 and then again in Spring 2010, a period during which Facebook made several changes to its privacy settings, company actions that were widely and often critically covered in the media. In addition, this paper considers how gender and skill relate to variation in user practices regarding privacy settings on the site. More specifically, this paper addresses the following questions:

1. During a year in which Facebook altered its privacy settings accompanied by widespread media attention, to what extent did the site's users alter their settings?
2. How does frequency of Facebook use relate to whether or not people adjust their privacy settings?
3. How does confidence in managing privacy settings correlate with the practice of doing so?
4. Is gender correlated with either confidence in or the practice of managing privacy settings?
5. Is general Internet user skill related to either confidence in or the practice of managing privacy settings?

In this paper, we argue that both experience and gender shape how a cohort of youth view their confidence in being able to manipulate Facebook's privacy settings and that these factors also contribute to what users do regarding their privacy settings. We highlight that skill, experience, and confidence are linked. We also show that women are uncharacteristically confident in their ability to address privacy settings and somewhat more engaged in doing so than men. We suggest that the ongoing public messaging targeted at women concerning the safety of social network sites may explain this gender difference. Although contemporary privacy rhetoric focuses on gender-neutral messages, such as the potential risk of losing a job, the messages that were pervasive when these youth were in high school concerned the dangers of online predators (Marwick, 2008). Teens — and especially young girls — were told that privacy was an essential tool for risk prevention (Palfrey, *et al.*, 2008).

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## Data and methods

### Data collection

We draw on longitudinal survey data collected at two points in time of young adults enrolled as first-year students at the University of Illinois, Chicago (UIC) in the 2008–09 academic year administered by Hargittai (*e.g.*, Hargittai, 2010) [6]. In February–April 2009,

Hargittai's research team administered a paper-pencil survey in class to students and in April-June, 2010, followed up with the same group using a paper survey sent in postal mail.

Hargittai worked with the UIC First-Year Writing Program to administer the study, because it is the one course on this public university's campus that is required for everybody thereby avoiding any bias against people who may be less likely to take certain classes. Of the 92 course sections, 86 took part in the project for a 93 percent participation rate on the part of course sections. Overall, counting all students who were enrolled in the course, the final response rate is 80.5 percent. The analyses of the 2009 data set presented in this paper draw on 1,115 first-year students [7]. In 2010, Hargittai's team followed up with the 1,094 participants in the first wave of the study who gave permission for being recontacted and had provided mailing addresses [8]. The 495 valid completed surveys constituted a 45 percent response rate [9].

The survey was administered on paper rather than on the Web so as not to bias against students who are online less frequently or who would be less likely to fill out forms online for various reasons such as lack of enough privacy while using the Internet. Since having ample time online to engage in various activities is linked to the questions of interest in this study, it was important not to use a data-collection method that might be related to it.

### Sample descriptives

Table 1 presents the demographic make-up of both the full 2009 sample and the 2010 follow-up group. Although both genders are well represented, more women than men participated in the study in both years. Students were asked their year of birth to calculate their age. Almost everybody in the sample (close to 99 percent) was either 18 or 19 in 2009. For measures of race and ethnicity, students were first asked if they were Hispanic or of Latino origin and about a quarter (24.0 percent) indicated to be so (with 22.3 percent of the follow-up group representing this category). Then students were asked their race including the following options: (a) White/Anglo/Caucasian/Middle Eastern; (b) Black/African American; (c) Asian; (d) American Indian or Alaskan Native; (e) Other. Most responses in the "Other" category indicated Hispanic origin and were coded accordingly. As the data in Table 1 indicate, less than half of the sample is White in both years. There are a considerable number of Asians/Asian Americans in the group in both waves. African Americans are less well represented although they still make up over ten percent of participants in 2009 (although are a bit fewer in number representing eight percent in the follow-up group). There are also a handful of Native Americans in the sample.

|                                     | <b>2009</b> | <b>2010</b> |
|-------------------------------------|-------------|-------------|
| Women                               | 58.7        | 64.0        |
| Men                                 | 41.3        | 36.0        |
| Age in 2009                         |             |             |
| 18                                  | 66.2        | 65.9        |
| 19                                  | 32.6        | 33.7        |
| 20-24                               | 1.2         | 0.4         |
| Race and ethnicity                  |             |             |
| African American, non-Hispanic      | 10.6        | 8.1         |
| Asian American, non-Hispanic        | 22.2        | 23.8        |
| Hispanic                            | 24.0        | 22.3        |
| Native American, non-Hispanic       | 0.5         | 1.0         |
| White, non-Hispanic                 | 40.8        | 42.8        |
| Parents' highest level of education |             |             |
| Less than high school               | 7.2         | 8.3         |
| High school                         | 15.9        | 15.8        |
| Some college                        | 23.7        | 24.3        |
| College                             | 34.6        | 32.5        |
| Graduate degree                     | 18.7        | 18.3        |



We collected data about parental education as a proxy for socioeconomic status. Respondents were asked in the 2009 survey to report the level of education of both their mother and father using the following categories: (a) less than high school degree; (b) high school degree; (c) some college; (d) college degree (for example: B.A., B.S., B.S.E); (e) advanced graduate (for example: master's, professional, Ph.D., M.D., Ed.D.). We have aggregated this information by considering the highest level of education that either parent of a student has. Table 1 shows that there is considerable diversity regarding parental educational background. Close to a quarter of students come from families in which neither parent has more than a high school education and just below a fifth of participants have at least one parent who has a graduate degree.

As evidenced by these descriptive statistics, while the sample is relatively homogenous when it comes to age and education level (everybody was at the same school in 2009), there is considerable diversity regarding parental educational background and race/ethnicity. *U.S. News & World Report's* college guide (2010) classifies UIC as a Tier 3 national university with an acceptance rate of 60 percent. The school consistently ranks among the most ethnically diverse universities in the United States (*U.S. News and World Report*, 2010), an important reason why it was chosen as the site of the research project upon which this paper draws. It is also worth noting that ten percent of the 2010 group was no longer at UIC with many having switched to community colleges and other schools with yet others dropping out of college altogether, suggesting differentiated academic tracks across the sample over time and thus more diversity than enrollment in the same university class in 2009 may imply at first glance.

### Internet experiences

Regarding experiences with the Internet, all participants have been online for several years and so lack of basic access to digital media cannot explain non-adoption of certain online services. On average, respondents use the Internet at 3.5 locations regularly (see [Table 2](#) for details), have been online for almost six years by their first year in college and spend over 17 hours weekly surfing the Web (excluding time spent on e-mail, chat and VoIP), a number that went up by an average of 2.3 hours by 2010. While everyone in the sample uses the Internet, there is some variation in the extent to which people spend time online and in what contexts. Similarly, while almost everybody in the sample owns a cell phone, participants report using these devices in very different ways again suggesting varied levels of engagement with technologies.

|  | In 2009 |                | In 2010 |                |
|--|---------|----------------|---------|----------------|
|  | Mean    | Std. deviation | Mean    | Std. deviation |
| Number of locations using the Internet | 3.5     | (1.8)          | 3.5     | (1.6)          |
| Number of use years                    | 5.7     | (2.3)          |         |                |
| Hours spent on the Web weekly          | 17.4    | (10.0)         | 19.7    | (10.6)         |
| Skill index (1–5 scale)                | 3.2     | (0.8)          | 3.2     | (0.8)          |

In addition to collecting data on general experiences with the Internet, the survey also included an assessment of students' online skills since, as discussed earlier, skills have been shown to matter for how people use the Internet (*e.g.*, Hargittai and Hinnant, 2008; Wasserman and Richmond–Abbott, 2005). This measure comes from aggregated information about 27 items asking respondents their level of understanding of various Internet-related terms on a five-point scale (Hargittai, 2009a). We averaged the valid responses to these items to come up with an index measure excluding cases that were missing on too many of the items (there were only two such cases in both 2009 and 2010). This measure is normally distributed with similar representations of low, medium, and high-skilled users in the sample. The average skill measure increased only at the hundredth decimal point level between the two years. These findings suggest that while everybody in the sample may be fully wired in a technical sense, there is considerable variation among respondents in their level of know-how when it comes to the Internet.

## Measuring Facebook use

To identify who are Facebook users in the sample, we first asked respondents about their experiences with the site (this question also asked about experiences with several other sites such as MySpace, Wikipedia, YouTube, Twitter, etc.). The usage question had the following five response options: (a) have never used it; (b) tried it once, but have not used it since; (c) have used it in the past, but do not use it nowadays; (d) currently use it sometimes; and, (e) currently use it often. Based on responses to this question, we group participants into three categories: little-to-no experiences with Facebook (answer options "a" or "b"), former user of the site ("c") or current user ("d" or "e"). Given that earlier research (Lewis, *et al.*, 2008) has found that frequency of use matters when it comes to privacy settings, we consider the practices of occasional versus frequent users separately.

The survey also asked about engagement in certain activities on social network sites such as checking people's status updates, posting one's own updates, commenting on close friends' status updates and commenting on others' updates more generally speaking [10]. We gave respondents eight options to indicate frequency of these activities. We grouped these into two or three categories for the purposes of presenting manageable tables. We created a three-category variable by indicating engagement in the activity (1) daily; (2) a few times a week to monthly; or (3) a few times a year or never. We also created a binary variable indicating either daily or less common engagement. Since updates and comments are the type of content people may want to keep private, we wanted to have a sense for how commonly people engaged in such activities beyond simply reporting use of Facebook [11].

Later in the survey — in the 2009 version only — we asked respondents to indicate the extent to which they agreed with the following statement: "I feel confident changing the privacy settings of my Facebook account." The five answer options ranged from "strongly disagree" to "strongly agree". Then further down on the questionnaire, we asked specifically about experiences with changing the privacy settings of one's Facebook account. There were four answer options to this question: "never", "have done it once", "have done it 2–3 times", and "have done it 4 or more time". This latter question was asked in the same way in both years. We look at who has ever changed their Facebook privacy settings, how often people have done so and what changes we see in this measure across the two data collection time points. In the next section, we outline people's experiences with Facebook generally speaking and then with respect to privacy settings in particular. First we report aggregate statistics to establish popularity of the site and what people tend to do on it. Next, we break down practices concerning privacy settings by amount of activity on these sites, by gender, and by skill to see whether the variables that we and the literature suggest may play a role in who changes their Facebook privacy settings are indeed related to these practices. Then we look at how confidence in changing privacy settings relates to these variables and the practice of doing so.

## Facebook use

The majority (87 percent) of respondents report using Facebook in 2009, three-quarters of the sample claim to use it often while 12 percent say they do so sometimes (see [Table 3a](#) for details). A small portion of the sample (three percent) has abandoned its use while just under a tenth has never used the site. When looking at changes over time ([Table 3b](#)), we find that there has been a bit of uptake in Facebook use among respondents and most of this is reflected in the frequent user group.

|   | <b>2009</b> |
|---|-------------|
| All Facebook users                            | 87%         |
| Frequent Facebook users                       | 75%         |
| Occasional Facebook users                     | 12%         |
| Former Facebook users                         | 3%          |
| Never used it (includes having tried it once) | 9%          |

|   | 2009* | 2010 |
|---|-------|------|
| All Facebook users                            | 87%   | 90%  |
| Frequent Facebook users                       | 76%   | 81%  |
| Occasional Facebook users                     | 10%   | 9%   |
| Former Facebook users                         | 4%    | 4%   |
| Never used it (includes having tried it once) | 9%    | 6%   |

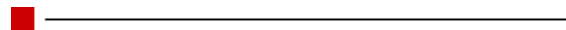
**Table 4a** shows the frequency with which respondents engage with certain types of social network site activities. We report both the aggregate numbers for all Facebook users as well as the numbers broken down by frequent versus occasional users of the site. Perhaps not surprisingly, the numbers suggest that frequent users engage in these activities much more than occasional users. While the majority of frequent users (85 percent) checks people's status updates daily, a much smaller portion (23 percent) of occasional users does so. It is also interesting to note that even among frequent users, less than half post a status update of their own daily and even fewer comment on close friends' updates daily. These numbers are especially small for occasional users, in fact, a quarter of such users almost never post their own status updates and almost a third never comment on close friends' updates.

|  | Daily         |                 | More than once a month<br>(but less than daily) |                 | Less than monthly |                 |
|--|---------------|-----------------|---|-----------------|-------------------|-----------------|
|  | Frequent user | Occasional user | Frequent user                                   | Occasional user | Frequent user     | Occasional user |
| Checking people's status updates             | 77%           |                 | 21%   |                 | 2%                |                 |
|  | 85%           | 23%             | 14%   | 68%             | 1%                | 9%              |
| Posting a status update                      | 40%           |                 | 53%   |                 | 7%                |                 |
|  | 44%           | 15%             | 51%   | 61%             | 5%                | 24%             |
| Commenting on a close friend's status update | 37%           |                 | 55%   |                 | 9%                |                 |
|  | 41%           | 10%             | 54%   | 61%             | 5%                | 29%             |

**Table 4b** shows how engagement in these activities changed from 2009 to 2010. Checking people's status updates daily became a much more frequent activity for occasional users going up from 13 percent to 28 percent. In contrast, we see no change in this activity among frequent users (86 percent). Interestingly, posting one's own status updates daily went down for frequent users from 45 percent to 37 percent while going up slightly for occasional users from six percent to nine percent. Commenting on close friends' updates daily became more popular among both frequent users (42 percent to 51 percent), while decreasing among infrequent users (nine percent to four percent). The 2010 survey also included a question about commenting on other people's status updates more generally speaking. Over half of frequent users do this daily (55 percent) while a considerably smaller portion (six percent) of occasional visitors to Facebook contribute to the site in this way. Overall, what we find is that especially among frequent users of Facebook, putting some types of content on Facebook on a regular basis is rather common. Since these are the types of comments users might want to protect from the public eye, we now turn to looking at confidence and experience with changing one's privacy settings on the site.

**Table 4b: Engagement in certain activities on social network sites among those who took the survey in both 2009 and 2010.**

| Activity                                     | Frequency\Year    | Frequent user |      | Occasional user |      |
|--|-------------------|---------------|------|-----------------|------|
|  |                   | 2009          | 2010 | 2009            | 2010 |
| Checking people's status updates             | Daily             | 86%           | 86%  | 13%             | 28%  |
|  | Weekly or monthly | 13%           | 13%  | 75%             | 68%  |
|  | Less than monthly | 1%            | 1%   | 11%             | 4%   |
| Posting a status update                      | Daily             | 45%           | 37%  | 6%              | 9%   |
|  | Weekly or monthly | 50%           | 58%  | 68%             | 64%  |
|  | Less than monthly | 5%            | 5%   | 26%             | 32%  |
| Commenting on a close friend's status update | Daily             | 42%           | 51%  | 9%              | 11%  |
|  | Weekly or monthly | 52%           | 47%  | 57%             | 68%  |
|  | Less than monthly | 6%            | 2%   | 34%             | 28%  |
| Commenting on other people's status          | Daily             | N/A           | 55%  | N/A             | 6%   |
|  | Weekly or monthly | N/A           | 44%  | N/A             | 77%  |
|  | Less than monthly | N/A           | 1%   | N/A             | 17%  |



## Experiences with privacy settings

Most Facebook users reported having modified their privacy settings at least once in 2009 (see [Table 5a](#)), and engagement with privacy settings increased significantly between 2009 and 2010 (see [Table 5b](#)) [12]. Interestingly, this finding extends to all categories of users from frequent users to occasional users and former users. This suggests that either Facebook's changes to the site or the public discussion about them that took place between 2009 and 2010 — or a combination of the two — may have influenced people's practices.

**Table 5a: Experiences with Facebook's privacy settings for all 2009 participants.**

|                           | Never | Once | 2–3 times | 4 or more times |
|---------------------------|-------|------|-----------|-----------------|
| All Facebook users        | 10%   | 27%  | 37%       | 26%             |
| Frequent Facebook users   | 8%    | 26%  | 39%       | 28%             |
| Occasional Facebook users | 21%   | 32%  | 28%       | 18%             |
| Former Facebook users     | 53%   | 24%  | 11%       | 13%             |

|                           | 2009  | 2010  | 2009 | 2010 | 2009      | 2010      | 2009            | 2010            |
|---------------------------|-------|-------|------|------|-----------|-----------|-----------------|-----------------|
|                           | Never | Never | Once | Once | 2-3 times | 2-3 times | 4 or more times | 4 or more times |
| All Facebook users        | 9%    | 2%    | 28%  | 9%   | 39%       | 38%       | 24%             | 51%             |
| Frequent Facebook users   | 7%    | 2%    | 26%  | 8%   | 41%       | 37%       | 26%             | 53%             |
| Occasional Facebook users | 25%   | 2%    | 36%  | 19%  | 25%       | 47%       | 15%             | 32%             |
| Former Facebook users     | 45%   | 11%   | 35%  | 5%   | 10%       | 47%       | 10%             | 37%             |

As the tables show, being a regular user of the site is associated with more frequent changes to one's privacy settings. While a quarter of occasional users had never changed their privacy settings in 2009 (see first column, third row in [Table 5b](#)), less than a tenth of frequent users had never done so. However, by 2010, only two percent of either group had never changed its privacy settings. In both waves of data, frequent users are more likely to have revised their settings more often than occasional users.

Not surprisingly, former users report having altered their privacy settings much less often presumably at least in part because they no longer spend time on the site. Yet, it is also noteworthy that 45 percent of former users reported never having modified their settings in 2009 while 84 percent of former users had modified their settings at least twice in 2010 (we get this figure by adding the 47 percent and 37 percent cells in [Table 5b](#)), suggesting that user disengagement with Facebook may be related to lack of experience with successfully managing the privacy settings.

Those who are more engaged on Facebook are more likely to modify their privacy settings more frequently. [Table 5c](#) breaks down the frequency of changing Facebook privacy settings by how frequently respondents check people's status updates, post their own status updates and comment on their friends' updates. Whether posting a status update or commenting on a friend's update, those who are regularly engaged in content-contributing activities on Facebook are more likely to modify their settings than those who share on the site less frequently. This makes sense given that those who regularly post content may be more conscious of their audience, *i.e.*, who might see the content they are publishing and also how this content might be perceived.

|                                  |            | Privacy settings changed |               |
|----------------------------------|------------|--------------------------|---------------|
|                                  |            | Never or once            | Twice or more |
| Checking people's status updates | Daily      | 33%                      | 67%           |
|                                  | Less often | 47%                      | 53%           |
| Posting a status update          | Daily      | 27%                      | 73%           |
|                                  | Less often | 43%                      | 57%           |

|  |            |     |     |
|--|------------|-----|-----|
| Commenting on a close friend's status update | Daily      | 36% | 74% |
|  | Less often | 43% | 57% |

In Tables 5d-1 and 5d-2, we look at 2009 and 2010 experiences with changing Facebook privacy settings by gender, respectively. Among frequent Facebook users we see little difference by gender with similar proportions of men and women reporting the practice, although women engage in it a bit more. The lack of substantial variation is itself notable, however, given that in most other domains that require active online engagement (*e.g.*, posting videos, editing Wikipedia entries), women report lower levels of involvement (Hargittai and Walejko, 2008; Hargittai, 2009b). Regarding occasional and former users, we find considerable variation among men and women. Among both of those groups, women are much more likely to have changed their Facebook privacy settings and to have done so multiple times, suggesting that women are more actively seeking to manage privacy. While in 2009, there is only a few percentage point difference between men and women who had changed their privacy settings four or more times, by 2010, the gender difference in this practice had increased. These findings are in line with those of Lewis and his colleagues (2008).

|                           | Men   | Women | Men  | Women | Men          | Women        | Men             | Women           |
|---------------------------|-------|-------|------|-------|--------------|--------------|-----------------|-----------------|
|                           | Never | Never | Once | Once  | 2 or 3 times | 2 or 3 times | 4 or more times | 4 or more times |
| All Facebook users        | 12%   | 8%    | 28%  | 26%   | 37%          | 37%          | 23%             | 28%             |
| Frequent Facebook users   | 9%    | 7%    | 27%  | 26%   | 39%          | 39%          | 26%             | 29%             |
| Occasional Facebook users | 25%   | 17%   | 37%  | 29%   | 29%          | 28%          | 10%             | 26%             |
| Former Facebook users     | 57%   | 47%   | 24%  | 24%   | 10%          | 12%          | 10%             | 18%             |

|                           | Men   | Women | Men  | Women | Men          | Women        | Men             | Women           |
|---------------------------|-------|-------|------|-------|--------------|--------------|-----------------|-----------------|
|                           | Never | Never | Once | Once  | 2 or 3 times | 2 or 3 times | 4 or more times | 4 or more times |
| All Facebook users        | 4%    | 1%    | 13%  | 8%    | 39%          | 37%          | 45%             | 54%             |
| Frequent Facebook users   | 5%    | <1%   | 9%   | 8%    | 39%          | 35%          | 47%             | 56%             |
| Occasional Facebook users | 0%    | 4%    | 35%  | 7%    | 35%          | 56%          | 30%             | 33%             |
| Former Facebook users     | 13%   | 9%    | 0    | 9%    | 50%          | 45%          | 38%             | 36%             |



Table 5e-1 and 5e-2 present experiences with Facebook privacy settings reported by skill level for both years. For each user category, the more highly skilled users were more likely to have changed their privacy settings. For example, among frequent Facebook users, in 2009 a third of respondents in the top quartile of skill level reported changing their privacy settings four or more times while less than a fifth (17 percent) of low-skilled frequent users had done so. The gap had narrowed somewhat by 2010, but even then the more skilled users were significantly more likely to have changed their privacy settings more often than their less-skilled counterparts. These findings suggest that general Internet skill may be connected with users' ability to manage their privacy settings on Facebook. Whether it is because lower-skilled users do not recognize the implications of not editing their privacy settings or do not know how to do so, lack of skill is related to managing one's social network site presence.

|                           | Low skill | High skill | Low skill | High skill | Low skill    | High skill   | Low skill       | High skill      |
|---------------------------|-----------|------------|-----------|------------|--------------|--------------|-----------------|-----------------|
|                           | Never     | Never      | Once      | Once       | 2 or 3 times | 2 or 3 times | 4 or more times | 4 or more times |
| All Facebook users        | 12%       | 5%         | 31%       | 23%        | 39%          | 39%          | 17%             | 33%             |
| Frequent Facebook users   | 10%       | 4%         | 30%       | 20%        | 41%          | 42%          | 19%             | 35%             |
| Occasional Facebook users | 27%       | 18%        | 35%       | 39%        | 30%          | 18%          | 8%              | 25%             |
| Former Facebook users     | 40%       | 33%        | 30%       | 42%        | 10%          | 8%           | 20%             | 17%             |

|                           | Low skill | High skill | Low skill | High skill | Low skill    | High skill   | Low skill       | High skill      |
|---------------------------|-----------|------------|-----------|------------|--------------|--------------|-----------------|-----------------|
|                           | Never     | Never      | Once      | Once       | 2 or 3 times | 2 or 3 times | 4 or more times | 4 or more times |
| All Facebook users        | 3%        | 0          | 9%        | 5%         | 43%          | 34%          | 44%             | 61%             |
| Frequent Facebook users   | 3%        | 0          | 9%        | 5%         | 44%          | 32%          | 45%             | 63%             |
| Occasional Facebook users | 0         | 0          | 17%       | 0          | 42%          | 50%          | 42%             | 50%             |
| Former Facebook users     | 11%       | 0          | 11%       | 0          | 44%          | 20%          | 33%             | 80%             |

## Confidence in managing privacy settings

As noted earlier, on the 2009 survey, we asked respondents to report their confidence level in knowing how to change Facebook's privacy settings since actions people take online are not simply a reflection of their preferences, but rather, they are also dependent on their abilities to perform various types of tasks. [Table 6a](#) reports the average confidence scores on a 1–5 scale among users of the site. We see a progression from highest to lowest reported confidence level going from frequent to occasional to former users of Facebook. Perhaps not surprisingly, experience with the site matters as those who report spending more time on it report higher-level confidence with its privacy options. This may be due to greater confidence in using Facebook more generally.

**Table 6a: Confidence in changing Facebook's privacy settings (1–5 scale), 2009.**  
 Note: We do not report numbers here for former users as most did not answer this question given that they are not currently using the site.

|                           | 2009         | N   |
|---------------------------|--------------|-----|
| All Facebook users        | 4.3<br>(1.0) | 966 |
| Frequent Facebook users   | 4.4<br>(0.9) | 832 |
| Occasional Facebook users | 3.8<br>(1.1) | 134 |

**Table 6b: Confidence in changing Facebook's privacy settings by gender (1–5 scale), 2009.**  
 Note: As in Table 6a, we do not report these data for former users as most did not answer this question given that they are not currently using the site.

|                           | Men          | Women        |
|---------------------------|--------------|--------------|
| All Facebook users        | 4.3<br>(0.9) | 4.3<br>(1.0) |
| Frequent Facebook users   | 4.4<br>(0.9) | 4.4<br>(0.9) |
| Occasional Facebook users | 4.1<br>(0.9) | 3.6<br>(1.1) |

**Table 6c: Confidence in changing Facebook's privacy settings by gender and online skill (1–5 scale), 2009.**

|                           | Low Internet skill |              | High Internet skill |              |
|---------------------------|--------------------|--------------|---------------------|--------------|
|                           | Men                | Women        | Men                 | Women        |
| All Facebook users        | 3.9<br>(0.9)       | 3.9<br>(1.2) | 4.6<br>(0.7)        | 4.6<br>(0.7) |
| Frequent Facebook users   | 3.9<br>(1.0)       | 4.1<br>(1.1) | 4.6<br>(0.7)        | 4.6<br>(0.7) |
| Occasional Facebook users | 4.1<br>(0.8)       | 3.0<br>(1.2) | 4.3<br>(0.7)        | 4.4<br>(0.9) |
| Former Facebook users     | 3.0<br>(0)         | 4.0<br>(0)   | 4.0<br>(1.4)        | 5.0<br>(0)   |

**Table 6d: Practice of changing Facebook's privacy settings by confidence in the activity (1–5 scale), 2009.**

| <b>I feel confident changing the privacy settings of my Facebook account.</b> | <b>Never</b> | <b>Once</b> | <b>2–3 times</b> | <b>4 or more times</b> |
|---|--------------|-------------|------------------|------------------------|
| Strongly disagree   | 45%          | 32%         | 23%              | 0                      |
| Disagree  | 45%          | 39%         | 15%              | 0                      |
| Neutral   | 24%          | 42%         | 23%              | 10%                    |
| Agree   | 7%           | 35%         | 45%              | 13%                    |
| Strongly agree  | 3%           | 19%         | 39%              | 39%                    |

When we break down these numbers by gender (see [Table 6b](#)), we see no differences among frequent users of Facebook. This is noteworthy given that it is rare for women and men to report the same level of comfort with online tasks. In [Table 7](#), we show differences in confidence level with other types of tasks such as posting videos or editing Wikipedia entries underscoring that with most online activities, women report lower-level confidence. This makes a lack of such difference in confidence regarding changing Facebook's privacy settings a notable exception. What we find among occasional users is more in line with how confidence measures tend to break down along gender lines: female occasional users of Facebook report lower-level confidence compared to male occasional users.

**Table 7: Confidence with various online activities by gender among Facebook users (1–5 scale), 2009.**

Note: \*\*\* Statistically significant gender difference at the  $p < .000$  level.

|  | <b>Average</b> | <b>Men</b> | <b>Women</b> |
|--|----------------|------------|--------------|
| Changing the privacy settings of one's Facebook account  | 4.3            | 4.3        | 4.3          |
| Posting a comment on a blog  | 3.6            | 3.7        | 3.6          |
| Voting on the quality of content available on sites where users can rate content (such as YouTube or Digg) | 3.4            | 3.8***     | 3.1          |
| Uploading a video to a video-sharing site (such as YouTube)  | 3.4            | 3.7***     | 3.1          |
| Submitting a review about a product or service (on sites such as Amazon or Yelp)                           | 3.1            | 3.4***     | 2.9          |
| Creating a quiz or poll for friends to take online   | 2.9            | 2.9        | 2.8          |
| Turning to an online discussion group when needing help with something                                     | 2.6            | 3.0***     | 2.4          |
| Knowing the difference between <a href="#">http</a> and <a href="#">https</a>                              | 2.6            | 2.9***     | 3.0          |
| Changing information on a Wikipedia entry  | 2.2            | 2.6***     | 1.9          |

Another interesting finding from [Table 7](#) is that from among nine different online activities, confidence level with changing Facebook's privacy settings is considerably higher than for most other activities about which the survey inquired. Unfortunately, our data do not allow us to investigate whether this confidence is merited, that is, whether the changes students are making to their privacy settings are meeting their needs and expectations regarding how the site is treating their information. Additionally, we do not have confidence measures for 2010, which is unfortunate, because the increasing complexity may have come with decreased confidence, but we have no information on this. While our data are helpful in identifying general trends, more in-depth research is needed for a better understanding of how perceptions, preferences and practices align when it comes to people's approaches to privacy on Facebook.

Next, we look at how gender and level of general Internet skill relate to confidence with changing Facebook's privacy settings ([Table 6c](#)). Perhaps not surprisingly, the numbers suggest that those who are more knowledgeable in general about the Internet are also more confident about Facebook uses in particular. For highly-skilled respondents, we no longer observe a gender difference among occasional users. That finding for occasional users seems to be driven by the difference among women and men with lower skills.

Finally, we look at the relationship of confidence in changing privacy settings and the practice of doing so in [Table 6d](#). Those with the lowest level of confidence have either never or only once changed their privacy settings (45 percent and 32 percent respectively) and no such person has changed it four or more times. In contrast the majority (78 percent) of those with the highest level of confidence have done so more than once. There is a clear connection between confidence and practice.

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## Discussion and conclusion

Overall, our data show that far from being nonchalant and unconcerned about privacy matters, the majority of young adult users of Facebook are engaged with managing their privacy settings on the site at least to some extent. The frequency with which they adjust their settings and their confidence in doing so may vary, but most report modifying their settings.

The data that we present do not explain why engagement escalated from 2009 to 2010. One explanation could be the increase in public attention to privacy matters; another could be the increased changes in Facebook's default settings; yet another could be the prompts the site displayed to users. While many believe youth are disconnected from public discourse, boyd (2008b) found that teenagers' rhetoric about online safety with regard to social media mirrored the narratives presented by the news media. In addition to being prompted, possibly, by the site notices, one possibility is that the increase in adjustments to privacy settings is connected to the public discussions that took place about the topic between 2009 and 2010. An alternative explanation may be that users became aware of their privacy settings through the prompts they encountered in December 2009. It is unclear whether or not users in the study were referring to this site message when they reported the frequency with which they changed their settings.

The connection between regularly posting content on Facebook and adjusting privacy settings highlights the interplay between privacy and content; privacy settings are especially useful to those who are sharing information so that they can manage who gets access to that information. As sociologists have long shown, managing social situations and navigating impression management require understanding one's audience (Goffman, 1959). In a mediated environment where one's audience is not easily understood, privacy settings can be used to control and manage one's audience (Marwick and boyd, in press).

The relationship between adjusting privacy settings and frequency of use as well as skill suggests that technological familiarity matters when it comes to how people approach the privacy settings of their Facebook accounts. This is particularly significant when we consider the role of default settings. If those who are the least familiar with a service are the least likely to adjust how their account is set up regarding privacy matters then they are the most likely to be exposed if the default settings are open or if the defaults change in ways that expose more of their content. This suggests that the vulnerability of the least skilled population is magnified by how companies choose to set or adjust default privacy settings.

In contrast to other work on skill, we find no gender differences among the majority of our users when it comes to confidence in changing privacy settings on Facebook, which is particularly notable given that in almost all other online domains women report lower-level know-how than men. Research on Internet skills has consistently found a relationship between gender and online abilities: women tend to report lower-level online skills than men with implications for what they do online (Wasserman and Richmond-Abbott, 2005; Hargittai and Hinnant, 2008; Hargittai, 2010; Livingstone and Helsper, 2007). For example, Hargittai and Walejko (2008) found that men were more likely to post videos online, however, when looking at men and women of the same skill level, these gender differences disappeared. That is, whether perceived or actual (see Hargittai and Shafer, 2006), skill matters in what people do online with higher reported skills related to more diverse Internet uses (e.g., Hargittai and Hinnant, 2008; Hargittai, 2010).

It is significant, then, that we find no differences between men's and women's confidence in managing their Facebook account's privacy settings. Since this is one of the few domains in which a gender difference does not exist for a confidence measure, it is important to reflect on what may be causing such uncharacteristic confidence among women. Lewis and colleagues (2008) suggested that safety may explain why women are more likely to alter their privacy settings than men. This may also help explain women's confidence in this arena. The users surveyed here were in high school during the period in which MySpace was being framed as a dangerous place (Marwick, 2008). Given the popularity of online safety programs in U.S. high schools in recent years, it is possible that many of them were required to attend assemblies about online safety or were lectured about the dangers of the Internet by their parents and/or teachers. Given that the fears centered on predation, girls were especially believed to be at risk and strongly encouraged to alter their behaviors to reduce risk. While some adults recommended disconnecting from MySpace, consciously seeking privacy was more generally touted as a compromise solution.

In her ethnographic work, boyd (2008b) found that many teens pointed to safety issues as a driving force behind their practice of making their MySpace profiles Friends-only or switching to Facebook because of its heightened privacy settings (see also boyd, in press); many teens were truly scared and wanted to protect themselves from stranger danger. Teen girls were especially concerned, which is not surprising given that the narrative of fear was targeted specifically at them (Cassell and Cramer, 2007). It is reasonable to assume that the teen girls who learned to navigate privacy settings on MySpace in order to be permitted to stay on the site would be confident in doing so when on Facebook in college. In other words, it is possible that the familiarity that teen girls developed in high school in response to the technopanics surrounding MySpace gave them confidence in this domain later on.

While fear may be an effective technique for prompting the development of skills, the long-term results may not be ideal. The culture of fear tends to center on marginalized populations and is often used as a tool for continued oppression and as a mechanism for restricting access to public spaces and public discourse (Glassner, 1999; Valentine, 2004; Vance, 1984). To the degree that women are taught that privacy is simply a solution to a safety issue, they are deprived of the opportunities to explore the potential advantages of engaging in public and the right to choose which privacy preferences and corresponding privacy settings on sites like Facebook serve their needs best. For example, many young people value the opportunities to participate in communities of interest or peer-based production (Ito, *et al.*, 2009). These communities support a wide variety of public practices — they serve as a distribution channel for participants to share artistic creations or promote their bands; they provide infrastructure for participants to learn about their practice or develop new skills; and, they provide a cohort for collaboration. In interviewing teens, boyd (2008) found that some girls who wanted to participate in these public forums were too scared to do so. Fear paralyzed some girls, limiting their engagement with some of the "geeking out" communities that Ito and her colleagues (2009) highlight. Furthermore, by adopting and promoting a gender-differentiated narrative that focuses on women's safety matters, core issues about privacy that concern both men and women get overlooked. While our data do not allow a direct examination of these questions, future work should examine the role that safety rhetorics and fear play in online participation and practices.

Based on the findings of this paper regarding the widespread practice of changing privacy settings among a group of diverse young adults, it may appear that all is fine regarding related issues on Facebook since many young adult users are actively managing their profile's public access. However, while helpful in recognizing general trends regarding young adults' approaches to their Facebook privacy settings, there are limitations to what questions our data allow us to answer. Future research and policy discussions should take these limitations of our study into consideration. For example, while we know that most of our respondents have changed their privacy settings at one point or another, we do not know the extent to which they understood the changes they were implementing. More importantly, we

have no information about the extent to which these changes met their preferences when it comes to how their content is treated on the site. Familiarity with and decisions to adjust privacy settings are not equivalent to actual privacy protection. In a pilot study conducted after the December 2009 privacy settings changes, d. boyd (2010) found that teenagers' mental model of their privacy settings did not often match their actual settings. This suggests that more work is needed to examine the relationship between what it is that people say they do, what they actually do, and what their settings functionally mean. More work along the lines of Acquisti and Gross' (2006) project from the early days of Facebook would help answer such significant questions.

Our project lays the groundwork for recognizing that experience and skill matter when it comes to how people approach their Facebook privacy settings. Assumptions that all users have a uniform approach to the site and how their accounts are set up are incorrect and may leave certain user populations especially vulnerable. If experience and skill matter — and it appears that they do — it is imperative that companies and policy makers consider how default privacy settings and changes in these settings affect populations differently. 

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## Acknowledgments

The authors appreciate the generous support of the John D. and Catherine T. MacArthur Foundation for making this project possible. They are also indebted to Microsoft Research New England and Harvard's Berkman Center for Internet & Society for enabling work on this project. They thank the helpful assistance of Ericka Menchen-Trevino, Cassi Saari and the group of undergraduate and graduate research assistants in the Web Use Project lab during the 2008-09 and 2009-10 academic years for data collection and data entry. The authors also thank A. George Bajalia for input on the paper, Amanda Lenhart and Mary Madden for inspiration, and Ann Feldman, Tom Moss, and Karen Mossberger for their support.

## Notes

1. Kirkpatrick, 2010, p. 202.
2. The diagram "The evolution of privacy on Facebook" found at <http://mattmckeeon.com/facebook-privacy/> gives a helpful overview of how privacy options changed over time.
3. Acquisti and Gross, 2006, p. 53.
4. Lewis, *et al.*, 2008, pp. 94-95.
5. Stutzman and Kramer-Duffield, 2010, p. 8.
6. The authors of this piece are not now nor have ever been affiliated with this school beyond the scope of this project. This campus was chosen due to the diverse composition of its student body and the importance of that factor to the questions of interest in the overall study. The data come from a larger project administered by Hargittai.
7. The questionnaire included an item to verify students' attentiveness to the survey. A



small portion of students, 4.5 percent, responded incorrectly to this verification question, suggesting that they were checking off responses randomly instead of replying to the substance of the questions. These students have been excluded from the data and analyses presented here so as to minimize error introduced through such respondents. The 1,115 students represent those who answered the verification question correctly.

8. To incentivize participation, potential respondents were offered a US\$20 gift certificate for returning the survey in the mail and a chance to win one of five iPods in a drawing.

9. The 2010 questionnaire also included an item to verify students' attentiveness to question wording (see note 6 above). We received 15 surveys — or less than three percent of respondents — that had this question marked incorrectly and were thus excluded from the analyses. The 495 surveys represent those who answered the verification question correctly.

10. This last activity was only asked on the 2010 survey.

11. Although these questions did not specify Facebook as the location of the activity, since Facebook is by far the most commonly used social network site in the sample, there is a good chance that responses to these questions reflect actions taken on Facebook.

12. [Table 5a](#) presents data for the full 2009 sample while [Table 5b](#) shows those respondents' practices who took the survey in both 2009 and 2010. To facilitate data interpretation, for tables starting with 5b, we break down experiences with changing the privacy settings into three categories: (1) never; (2) once; (3) two or more times.

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## Editorial history

received 21 July 2010; accepted 26 July 2010.

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Facebook privacy settings: Who cares?

by danah boyd and Eszter Hargittai.

*First Monday*, Volume 15, Number 8 - 2 August 2010

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