

## How much Personal and Sensitive Information do Cypriot Teenagers Reveal in Facebook?

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**Abstract:** Web-based social networks are becoming increasingly popular over the past few years. With over 60 million active users worldwide, Facebook has become a major meeting portal for people of all ages, especially teenagers. This network offers attractive means for communication and interaction, but also raises security and privacy concerns.

Studies that investigate whether young people are aware of what type of personal data they disclose in social networking environments revealed not only a high level of concern but also a high level of ignorance. Major concerns revolve around the possibility of sexual predators and pedophiles finding and then assaulting adolescents who carelessly or unwittingly reveal identifiable information on their personal profile pages. Nevertheless, privacy concerned individuals join networks and reveal a great amount of personal information. For example, although members are concerned about privacy issues in Facebook they are willing to share identifying information and develop new relationships where the perceived privacy level is weak. Moreover, only a minimal percentage of users change the highly permeable privacy preferences.

However, currently no research is available concerning numbers, behavior, and perceptions of young Cypriot people using Facebook. In the context of the European safer Internet project "EU Kids Online," this study explored how the youth of Cyprus use social networking sites, on the example of Facebook. We evaluated the amount of information youngsters disclose and we studied their usage of the site's privacy settings. We sought to empirically ascertain the types of information Cypriot youth are publicly posting through an extensive content analysis of randomly selected Facebook profile pages. For each member, various types of disclosed personal and sensitive information were analyzed, for example name, gender, profile picture, and contact information. Other parameters involve quantification of activities published, such as number of personal photos uploaded, membership in groups etc.

Preliminary results show that Cypriot Facebook youth members are also willing to share personal information as the majority of the participants published their full name, gender, birthday and hometown. In addition, Cypriot youth actively use Facebook and its possibilities with activities such as joining groups, supporting causes, and using applications. Surprisingly, Cypriots are less likely to disclose contact details.

**Keywords:** Social Networking Sites (SNSs), Facebook, revealing personal information, youth, internet safety, online communities.

### 1. Introduction to Social Networking Sites and theoretical background

The number of web-based social networks, also known as Social Networking Sites (SNSs), has increased within the last few years. There are hundreds of SNS with various technological features, supporting a wide range of interests and practices, e.g. based on common language or shared racial, sexual, religious, or nationality-based identities (boyd & Ellison 2007). The remarkable success of SNSs is demonstrated by their membership numbers and web traffic. As of June 5, 2008, Wikipedia, for example, listed 126 different major SNSs, giving information about the target group, number of registered users, and registration. According to Wikipedia (2008) the top ten SNSs with respect to the number of active users are (1) Windows Live Spaces (formerly MSN Spaces) with 120 million users, (2) MySpace with 110 million users, (3) Habbo with 100 million users, (4) Facebook with 80 million users, (5) hi5 with 70 million users, (6) Orkut with 67 million users, (7) Friendster with 65 million users, (8) Flixster with 63 million users, (9) classmates.com with 50 million users, and (10) Bebo with 40 million users. These numbers clearly indicate that SNSs are becoming increasingly popular over the past few years. They have attracted millions of users, many of whom have integrated these sites into their daily practices (boyd & Ellison 2007). Moreover, the number of users is rapidly increasing. In spring 2008, Facebook advertised their site with the statement "More than 70 million active users". A few months later only - in summer 2008 - Facebook counts 80 million active users (Facebook, Wikipedia). Facebook, which came online in 2006 (boyd & Ellison 2007), ranks sixth overall in global web traffic according to Alexa (2008a) and ranks 16<sup>th</sup> in overall web traffic according to QuantCast,

with 15 million unique US visitors each month in 2007, 32 million in June 2008, and 36 million in July 2008 (QuantCast 2008a, 2008b).

### **1.1. Characteristics of Social Networking Sites on the example of Facebook**

This paragraph focuses on the SNS Facebook to portray the most common characteristics of SNSs. Although SNSs have implemented a wide range of technical features, their main characteristic consists of visible profiles that display not only an “articulated list of friends” (boyd & Ellison 2007) but also detailed personal information. After joining a SNS the new member needs to create a profile to “type oneself into being” (Sundén, 2003). To create the profile, the new member is asked to fill out forms with identifying information such as name, age/birthday, gender, hometown and/or location, religion, ethnicity, personal interests, contact information, and an “about me” section. Most SNSs also encourage users to upload a profile photo. Nobody is forced to join a SNS, create a profile, and reveal personal information – most SNSs we know about encourage their users to do so.

Besides the so-called basic information about oneself as described above, Facebook encourages its users to also publish contact details, details about personal interests and activities as well as details about education and work. Some users decide not to publish any contact details, others to publish a few only such as Email address and Skype name, again others to publish main contact details in order to be reachable, i.e. Email address, mobile phone, land line, and website.

Another typical characteristic of SNSs is the connection to already in real life known persons, i.e. existing friends, or to completely new persons. All connections to other members are being displayed in a list of friends/contacts/fans and are visible to anyone who is permitted to view the profile. This list contains links to each friend's/contact's/fan's profile. The public display of connections is a crucial component of SNSs (boyd & Ellison 2007). In the case of Facebook the connections are called “friends”. A simple click offers a full list of friends with their names and profile pictures which in turn links to the respective friend's profile.

Most SNSs also provide a feature to leave messages on their friends'/contacts'/fans' profiles. At least one of the following three different mechanisms is being offered to the SNS members: (1) public message, (2) private message, and (3) instant message. (1) SNSs typically involve leaving public messages on a kind of black board feature as well as leaving public comments of uploaded pictures, videos etc. In Facebook, the board for leaving public messages is called “The Wall”. All messages published there are visible to everyone who has access to the profile. (2) A private message in SNSs resembles an email: the addressee is the only person who has access to reading the message. In Facebook, the private message section is also organized like an email account with an “Inbox” to view and read the received messages, to mark messages as unread or read and to delete messages, a “Sent Messages” part to see the messages that the profile owner has sent as well as a “Compose Message” button to write new messages to be sent. (3) A third communication possibility is instant messaging, also known as chat in which the receiver immediately receives messages sent in a chat so that a real-time conversation is possible. The mechanism of instant messages is a fairly new mechanism at Facebook.

With respect to privacy issues, different SNSs have different approaches: in some the users' profiles are by default visible to anyone as in Friendster, Tribe.net, and Hi5; MySpace gives its users the option to choose between a “public” or “friends only” profile. When we started our research at the beginning of 2008, profiles at Facebook used to be by default visible to any other user unless the profile owner denied permission. Now, a few months later Facebook has changed the settings and made the profiles by default visible to friends only, with the option to change one's own profile into a public one.

The following paragraph deals with privacy in SNSs on the example of Facebook.

### **1.2 Privacy in Social Networking Sites and in Facebook**

Internet users and members of SNSs in particular seem either not to be concerned about their privacy or are not aware of and do not understand the loss of privacy during the use of the internet and SNSs (Wildemuth 2008). Although consumers report to be concerned about privacy issues (Stark 2004), SNSs that encourage their users to reveal and exchange personal information are booming in popularity. Also adults are concerned about government's and corporations' invasion of privacy by centrally collecting and storing data about citizens and consumers, while teenagers freely disclose personal and private information in SNSs (Barnes 2006). Barnes called this situation the “privacy paradox” (p. 3), which led Dwyer (2007) to investigate which attitudes individuals hold toward privacy when using SNSs. She concluded her research with stating that privacy is often not expected or undefined in SNSs. Barnes (2006) says the privacy paradox occurs when users, especially teenagers,

are not aware of the nature of the Internet in general and SNSs in specific. Acquisti and Gross (2006) explain this phenomenon, however, with a disconnection between the users' desire to protect their privacy and their actual behaviors. In using SNSs people reveal personal information to strangers as well as friends. Although SNSs that we know of do not force users to reveal personal information, they encourage their users to do so. While members can control what appears on their profile, they can not control what appears on a friend's profile. "What if there is something about your friend's page that might cause embarrassment [to you] if viewed [...]?" (Dwyer, Hiltz, & Passerini 2007) In comparison to other SNSs, Facebook stands out for both its vast membership and quality of information on it; in fact any information is personally identifiable (Acquisti & Gross 2006). Up until the beginning of 2008, by default members' contact information and additional data rarely available on other SNSs (e.g., personal interests, education, and work) was shown openly to every other member; by default members' profiles were searchable by any other member; by default members' profiles were readable by any member of the same network. As privacy settings were permeable and external access to a network was easy; Facebook was a totally open site. By default anyone in a network could see everything that its members were doing on Facebook due to the fact that Facebook assumed that any user wants to share all his/her information with his/her global networks (engtech 2007). Looking at it in a conservative and strict way at the default privacy settings of Facebook, (a) *all my networks and all my friends* could see a user's profile by default when it should have been *only my friends*; (b) *only my friends* had access to a user's contact information when it should have been *no one*; (c) *all my networks and all my friends* were able to view all profile features such as messages on the wall, group memberships, online status etc when it should have been *only my friends, only me, or no one*; (d) *everyone* could search for any profile when it should have been *only my friends* (engtech 2007). Now by mid of 2008, default privacy settings have been changed from Facebook administrators: by default members' profiles contact information and additional data included is visible and readable by friends only; also by default members' profiles are searchable by friends only.

According to Acquisti and Gross (2006; Gross & Acquisti 2005) individuals' privacy concerns are only a weak predictor of his/her membership to an SNS. In their studies, they could show that privacy concerned individuals join SNS and reveal great amounts of personal information while some SNSs members demonstrated significant misconceptions about the SNSs' reach as well as the visibility of their profiles. The authors, moreover, emphasize the existence of a potential ability to reconstruct users' social security numbers using information often found in profiles, such as hometown and date of birth. For all those reasons, not surprisingly privacy and security concerns are being raised by researchers and the press (e.g., Acquisti & Gross 2006, boyd & Ellison 2007).

Looking at trust and privacy issues in Facebook, a comparison study of popular SNSs revealed similar levels of privacy concerns in members of Facebook and MySpace (Dwyer, Hiltz, & Passerini 2007). Facebook members reported to have greater trust in Facebook and its members and are more willing to share identifying information. Nevertheless, MySpace members started to use the site more to meet new people than Facebook members. From these results, the authors concluded that in online interactions trust and privacy issues are not as important as in face-to-face meetings when establishing new relationships. Various studies have shown that Facebook members reveal a lot of potentially sensitive information about themselves openly, and at the same time are not aware of privacy options or about who can view their profile (Acquisti & Gross 2006, Stutzmann 2005, 2006a&b). In a study with a subject pool of a freshmen class, Stutzmann (2005) found that out of 88% of freshmen who have an active Facebook profile only 1-3% of them used privacy flags. Moreover, over time privacy use dropped from 3% to 1%. In an analysis of how much and which type of information Freshmen are sharing with their students, Stutzman (2006b) discovered that 75% of the student sample revealed their birthday, hometown, sexual orientation, relationship status, and political orientation. In another survey-based study, Acquisti and Gross (2006) investigated type and quality of information revealed in Facebook. Similar to Stutzman's (2006b) findings, 88% of the students published their birthdays, 58% their political views, and 62% their sexual orientation. Surprisingly, many members were aware of the type of information they provide as the majority published their birthday (88%) but a minority only published their home phone number (11%), personal address (27%), or cell phone number (41%) although the percentage of users having published their cell phone number is discussable. Moreover, the authors made the interesting observation that if particular information is provided it is very likely to be of high quality, i.e. complete and accurate. Moreover, Acquisti and Gross (2006) examined usage differences between male and female Facebook members; female members were significantly less likely to disclose their sexual orientation, personal address, and cell phone number than male members.

In sum, previous studies indicate a high degree of publicly disclosing personal and sensitive information on Facebook among high school students in the US. However, currently no research is

available concerning numbers, behavior, and perceptions of Cypriot young people using Facebook. In the aim of contributing to the research on SNS in general as well as SNS and privacy in specific, this study explored how the youth of Cyprus use social networking sites, on the example of Facebook. Therefore, an observational study was designed to give answers to the following research questions: (1) What personal/sensitive identity information are Cypriot teenagers disclosing in Facebook? (2) How much personal/sensitive identity information are Cypriot teenagers disclosing in Facebook?

## 2. Method

In contrast to the majority of the studies on SNS which used self-reporting methods such as survey – very popular for Facebook – and interview for data collection (Ellison & Lampe, 2006), we conducted a pilot study based on direct observation similar to the study by Gross and Acquisti (2005) on university students. Due to the changes of the default privacy settings in Facebook – from public profiles readable and searchable by any Facebook member to restricted profiles readable and searchable by friends only – a general search of profiles using the SNS's search feature was not applicable. Therefore, in July 2008, we searched for Cypriot Facebook profiles using three Cypriot teenagers' profiles to extract their Cypriot friends' profile IDs. Through an extensive content analysis of those randomly sampled Facebook profile pages, the profiles were hand-coded with respect to the type and number of information Cypriot youth are publicly posting.

### 2.1 Participants

The Facebook profiles of 73 Cypriot youth were analyzed. For 49 subjects the age was identifiable; their ages ranged from 15 to 48 ( $M = 22.43$ ,  $SD = 8.05$ ) with 16 and 17 years as the majority of the subjects, which corresponds to 20% and 27% respectively. Out of the 73 participants 22 were male and 49 female; for 2 persons the gender was not identifiable. The participants did not know about their profile being observed and analyzed as this process took place in the background with the researcher not engaging in the participants' activities.

### 2.2 Data analysis and measures

For each randomly selected Cypriot Facebook member who is a Facebook friend of the authors or data collectors, i.e. the teenagers, various types of disclosed sensitive information were analyzed with respect to their amount published. The following measures were used as measures of personal information revealed: type of profile name (real, partial, or fake), type of profile image (real, other, i.e. non-facial image such as group picture or joke picture, or none), type of birth date (full, partial, or none), gender, and hometown. The contact info section in the Facebook members' profiles with the option to publish email address, IM screen name, mobile phone number, other phone number, address, and website served as a measure of contact details/information. The number of memberships in networks, groups, and causes as well as the number of applications indicated a member's degree of activity in Facebook. In addition, the status update was used as a measure of activity.

## 3. Results

Preliminary results with respect to the types and amount of information are reported here.

With respect to *personal information*, all participants published their real names, 97% revealed their gender, 97% published a real facial profile picture of themselves which identifies them, 51% indicated their hometown and 88% published their birth date with 67% disclosing their full birth date with date, month and year and 21% partly disclosing their birth date with date and month.

As *contact details* are concerned, half of the participants (49%) publicly show their email address and 14% their IM screen name. However, only 3% published their cell phone numbers and full address.

Concerning the Facebook *activities*, 71% of the participants joined between one and three networks ( $M = .85$ ,  $SD = .66$ ), 79% installed between 4 and 100 applications ( $M = 28.81$ ,  $SD = 24.15$ ), 73% joined between 1 and 140 groups ( $M = 25.08$ ,  $SD = 32.26$ ), and 23% supported between 1 to 67 causes ( $M = 7.16$ ,  $SD = 12.37$ ). Moreover, 26% revealed their current situation and status by stating what they are doing now.

## 4. Discussion and conclusions

Teenagers are attracted by online SNS as they offer appealing opportunities for communication, interaction, and sharing as well as various activities. At the same time SNS raise privacy concerns because many members publicly reveal personal and often sensitive information. Among SNSs, Facebook stands out for its popularity and enormous number of members. Moreover, members openly share a variety of unique and personal information that is identifiable.

In our study we have chosen the observation method, which is rarely been used in this field. Our study quantified patterns of information revelation from actual field data, rather than from surveys. We looked at the behavior of Cypriot Facebook members with respect to publishing personal and sensitive information as well as activities pursued. Our study is going to be complemented by other data collection methods in addition to more Facebook profiles to be investigated with a deeper analysis, but we can summarize here a number of initial results.

In accordance with previous findings (Acquisti & Gross 2006, Stutzman 2006b) Cypriot Facebook youth members are willing to share personal information, i.e. real full name, gender, hometown and full date of birth, that can potentially be used to reconstruct the members' social security numbers. Hence, by publishing personal information in Facebook Cypriot youth make themselves easily identifiable to strangers. However, only few Cypriot members are likely to disclose full contact details. Half of the Cypriot youth reveal their personal email addresses but only a tiny minority reveals address and cell phone number. This finding indicates that most Cypriot Facebook members are not only aware of the type of information they are publishing but also of the potential dangers related to publishing detailed contact information. Clarifying the knowledge and consciousness of privacy issues in SNSs with surveys or interviews is part of our continuing research agenda. In addition, Cypriot youth actively use Facebook and its possibilities with activities such as joining groups, supporting causes, and using applications, which confirms Facebook's popularity among youngsters. Our future research will moreover investigate differences in revealing information between male and female users as well as compare behavior patterns of Cypriot and international youth and contrast different popular SNSs.

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