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Teenagers' use of social network websites and privacy concerns: A survey

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Abstract— In the last few years students use the internet services and social network websites daily either at school or at home. Students create profiles, find friends and share with them personal information, thoughts and photos. In this work we have conducted a research, where we studied the relationship of Greek high school students with social networking sites as long as the information they publish and the privacy settings they make. Particular focus was given on gender differences concerning the use of social networking sites as well as their privacy settings.

Keywords- social web, social network websites, privacy

I. INTRODUCTION

Social networking sites are Web services that allow people create a public or almost public profile as well as a set of connections with other users. This allows user's relationships in the real world to be mapped and publicly declared on the web, generating users' *Social Graph*. Thus, social networking sites facilitate the communication and interaction between people (e.g. Facebook), or focus on relationship creation (Friendster). Others focus on connecting people with common interests (e.g. MySpace), or can even be job oriented (e.g. LinkedIn). Social networking sites are known to be very popular with teenagers, as they find a way to socialize and share their concerns, without the fear of criticism and devaluation [1].

Nowadays, Internet and particularly social networking sites are part of teenagers' everyday lives. Many parents claim that their children spend too many hours in social networking sites, away from their family and friends. Moreover, a lot of concerns have been expressed about teenagers' privacy regarding their use of social networking sites [2], [3]. Three main factors undermine privacy regarding social Web use: users reveal too much information for themselves, sites do not take adequate measures to protect the privacy of users and finally there is interest from third parties to acquire such information. Information such as the address, the telephone number, and other elements are revealed to unknown people in the cyberspace.

A lot of studies have been conducted for social networking usage patterns. These concern mostly the private data that are published at social sites and the dangers that arise from their publication. Most of these works study only one platform, like MySpace [4] or Facebook [5] and the

participants were mainly college students. According to previous research a high percentage of social web users reveal private information at their profiles [6]: 98.7% of user profiles have a user photo, 92.2% of users reveal their birthday, 10.5% of the users show their cell phone number and 7.9% reveal their home address. Most conducted research concerns Facebook, as it is the most popular social network site, and focus on private information revealed and the privacy settings that the users have made [7]. According to these studies a lot of facebook users, and especially the frequent ones have made adjustments to the default privacy settings.

In this work, we study the use of social networking sites from Greek high school students. Our study is conducted with questionnaires, handed over to a set of Greek high schools. Participants were approached and asked to complete anonymous surveys on social networking website use and privacy topics. In section II we present our sample and the questionnaire we used in our research and in section III we present the results derived from the answers' analysis.

II. METHODOLOGY

In this survey we examine the use of social networking sites from teenager students, regarding the time spent in these sites, the information revealed, as well as the privacy settings used. We also search for usage patterns with respect to student gender and parental education.

A. Data Sample

The survey was performed on paper rather than on the Web in order to avoid bias against students who are online less frequently. In our survey we used questionnaires with closed type questions. We handed over 150 anonymous questionnaires to students studying in 3 different Greek high schools. The choice of high schools was made carefully so as to have a representative sample. Specifically, we chose 3 high schools belonging to three region types: urban, semi-urban and rural. Of the 150 students who were approached, 144 completed the survey for a response rate of 96%. Data collection occurred during 2010.

In TABLE I. we can see the demographics of our sample. Although both genders are well represented, more men than women participated in the study. Almost every student in the sample was either 16 or 17 in 2010. Only a few

questionnaires were given to students of 18 years old, which at the end were excluded from the study. This was done because students at this age are dedicated to their final exams and spend no time at the internet, so the results wouldn't be credible.

We also collected data about parental education as an indication of socioeconomic status. Respondents were asked to report the level of education of both their mother and father using the following categories: (a) primary school, (b) secondary school, (c) high school and (d) university degree. We considered the highest level of education that either parent has. TABLE I. shows that there is considerable diversity regarding parental educational background. More than half of students come from families in which at least one parent has a university degree.

B. Questionnaire construction

The students were asked to complete a questionnaire, which consisted of four parts. The first part included demographic questions including age, sex, weight and number of brothers or sisters. The second part consisted of general Web usage questions, such as hours of web use in weekdays and weekends. In the third part, we give the respondents a set of closed questions regarding their social networking activities, such as checking people's status updates and commenting on other users profiles. The last part of our questionnaire was about student's privacy in the social web and privacy settings used in various social networking sites.

III. RESULT PRESENTATION AND ANALYSIS

A. Measuring Internet and social use

In order to measure the hours of internet usage, in the second part of the questionnaire we asked the participants to report the hours spent using the Internet and the social web daily and during the weekends.

TABLE I. PARTICIPANTS DEMOGRAPHICS

Basic participants' elements	Frequency (%)
Boys	54
girls	46
16 years old	56
17 years old	44
Parents' highest level of education	Frequency (%)
none	1
primary school	4
secondary	4
high school	37
university	54
Number of brothers/sisters	Frequency (%)
0	11
1	53
2	23
>3	13

The results are shown in Table II and Table III. It is obvious that boys use the Internet more frequently than girls and both genders spend more hours during the weekends.

Moreover, the hours spent from students in social networking sites almost equals the total hours of internet usage. So we can assume that students primarily use the internet so as to gain access to social web services. In Figure 1. the hours of social internet usage are displayed per gender during the weekends, for direct comparison. It can be seen that boys spend on average more hours than girls in social web use.

B. Social networking usage patterns

The purpose of the third part of our questionnaire was to examine the usage patterns of social networking sites. The majority of students in our sample (97%) were found to have an account in at least one social network site.

TABLE II. INTERNET USAGE

hours	Boys' Internet usage daily (%)	Girls' Internet usage daily (%)	Boys' Internet usage weekends (%)	Girls' Internet usage weekends (%)
0-1	32	39	29	37
1-2	26	27	26	25
2-3	27	19	16	20
>3	15	15	29	18

TABLE III. SOCIAL WEB USE FROM BOYS AND GIRLS

hours	Boys' social web use daily (%)	Girls' social web use daily (%)	Boys' social web use weekends (%)	Girls' social web use weekends (%)
0-1	57	38	32	51
1-2	17	44	31	32
2-3	9	12	12	10
>3	17	6	25	7

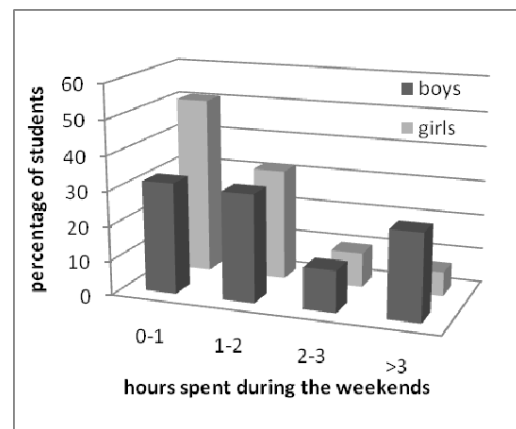


Figure 1. Social networking sites use during the weekends

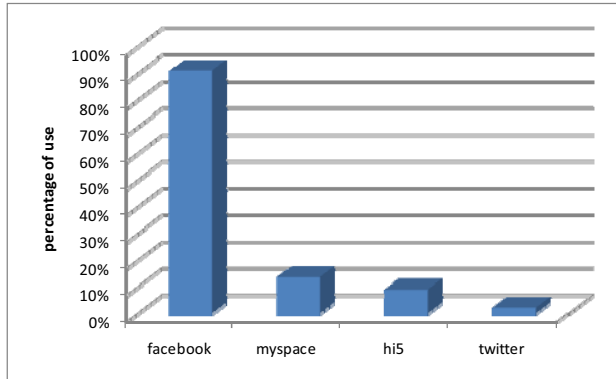


Figure 2. Social networking sites used

Students were asked about the social networking sites they use and were presented with a list of choices, as well as the option to add their own. The answers presented in Figure 2. showed that the vast majority of students use Facebook. The second most popular site appeared to be MySpace, which has a similar philosophy with Facebook albeit with a focus on connecting users with a common musical taste, while hi5 was third at the students' preferences. Twitter was the least popular, used by only 2% of the students. Students did not report using any other social network site.

We also examined the students' reasons for using the social networking sites and the differences between the two genders. The results presented in Figure 3. showed that the majority of boys use the social web to connect with friends, unlike girls who mostly use it to share their music preferences. Special attention should be given to the fact that many students (36% boys and 26% girls) use the social web so as to connect with new people. We should also note that girls tend to upload photos and comment to others' photos more frequently than boys do.

Then, then the frequency of social web use was examined. The students were asked how often they publish something

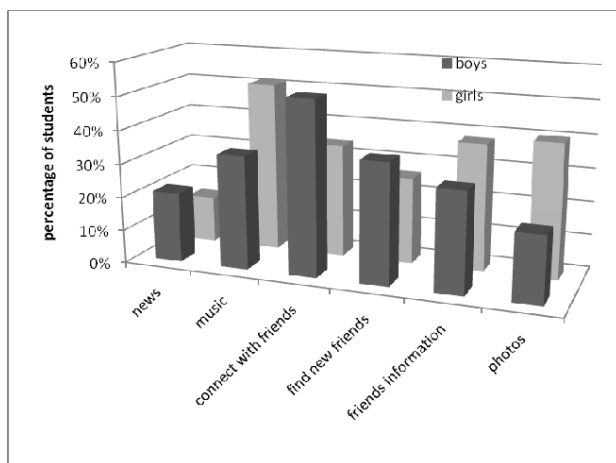


Figure 3. Why students use social networking sites

TABLE IV. FREQUENCY OF PUBLICATIONS

	<i>everyday</i>	<i>1-2 times a week</i>	<i>every 15 days</i>	<i>every month</i>	<i>never</i>
<i>boys</i>	30%	37%	10%	17%	6%
<i>girls</i>	16%	18%	25%	27%	13%

on the social web site they use. The results were clear, as shown in TABLE IV. : boys publish much more often than girls. We found that 67% of boys publish information at least once per week, while girls only 34%. A small percentage of students don't publish at all and use the social web just to keep track of the information published by others.

Then, we correlated the frequency of social web use with the level of parental education, as shown in TABLE V. However, we didn't find a statistically significant pattern thus no safe conclusions can be made.

Finally, we examined the correlation between the hours a student spends on the social networking sites and the number of his/her siblings. We observed no significant differentiation for students with one, two or more siblings, so we divided students in two groups: those with siblings and the only children. In Figure 4. we can see that during the weekends, the majority of students who had siblings spent very few hours on the social web, while a large proportion of only children (32%) spent more than three hours on the social web.

TABLE V. SOCIAL WEB USE AND PARENTAL EDUCATION LEVEL

<i>Updates' frequency</i>	<i>Primary school</i>	<i>High school</i>	<i>Univ. Degree</i>
<i>everyday</i>	19%	34%	43%
<i>1-2 times a week</i>	29%	34%	29%
<i>Every 15 days</i>	29%	14%	8%
<i>every month</i>	20%	16%	15%
<i>never</i>	3%	2%	5%

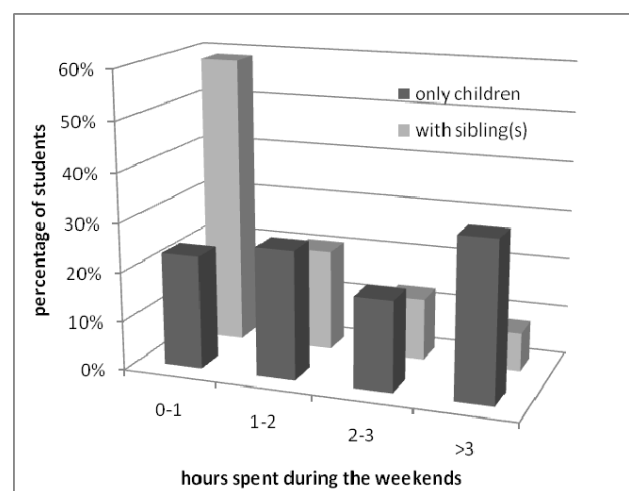


Figure 4. Hours spent on social web

C. Privacy issues

The last part of our study concerned the publication of private information and the privacy settings used by students. The students reported that they frequently publish information that can be regarded private, as shown in TABLE VI. In particular, the vast majority of the students have published their real name and a photo of themselves. This information makes the students' identification very easy. It is also noticeable that half of the boys and one third of the girls publish their relationship status (single, in a relationship) and the name of the person they are involved with. It is very encouraging that only a small proportion of boys and girls publish their telephone number. Overall, girls tend to publish more information than boys, excluding the relationship status information.

Then the students reported whether they made changes to the privacy settings, in order to ensure the privacy of their information and if they have created groups of friends with different rights. The answers showed that most of them (86%) had adjusted the default privacy settings, but only a minority had created groups of friends (17%). In the discussion that followed a lot of students reported that they were not familiar with this setting. Some of them answered that they connect only with their close friends so they didn't mind creating groups with different privacy rights. The students' answers can be seen in Figure 5.

TABLE VI. INFORMATION PUBLISHED

	<i>name</i>	<i>Sur-name</i>	<i>photo</i>	<i>phone</i>	<i>school</i>	<i>interests</i>	<i>Rel. status</i>
<i>boys</i>	87%	73%	76%	7%	18%	57%	53%
<i>girls</i>	91%	70%	82%	11%	26%	64%	36%

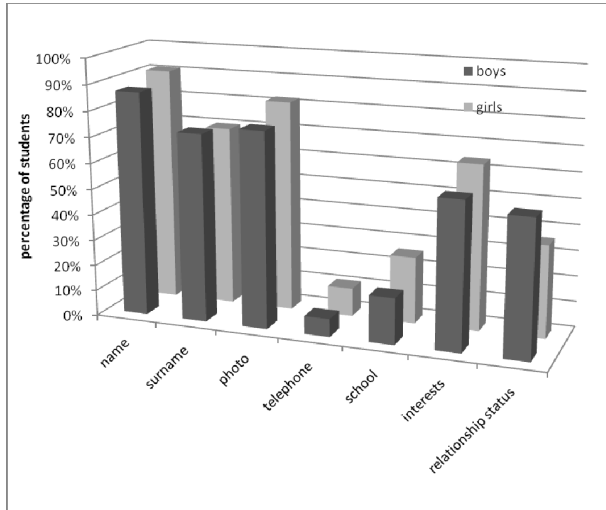


Figure 5. The information students publish

We also studied who had access to the data published by each student and the answers are shown in TABLE VII. It was reported that more than one third of the boys knew about the privacy settings and had changed the default

values, so that the information published would be visible only to their friends. Only a small percentage of boys did not know who could see their publications. But while most students were aware of the privacy settings, only a small percentage was actually interested in adjusting these settings. More than a third of the boys had left the default privacy settings with all information visible to everyone and almost nobody has created groups of friends with different privacy rights. Girls seem to pay less attention to their privacy settings. 26% of the girls doesn't know who can see their photos and 28% doesn't know who can see their private information.

Finally, we studied the relationship between adjusting privacy settings and frequency of social web use. The results are shown in TABLE VIII. Although privacy settings are especially useful to those who use the social web often

TABLE VII. FREQUENCY OF PUBLICATIONS

Boys answers				
	<i>photos</i>	<i>friends</i>	<i>updates</i>	<i>information</i>
<i>friends</i>	35%	32%	37%	42%
<i>friends of friends</i>	13%	12%	7%	4%
<i>groups of friends</i>	2%	2%	3%	3%
<i>everyone</i>	40%	42%	35%	34%
<i>don't know</i>	10%	13%	18%	17%
Girls answers				
	<i>photos</i>	<i>friends</i>	<i>updates</i>	<i>information</i>
<i>friends</i>	24%	22%	23%	22%
<i>friends of friends</i>	15%	20%	22%	16%
<i>groups of friends</i>	1%	1%	1%	1%
<i>everyone</i>	35%	37%	34%	33%
<i>don't know</i>	26%	20%	20%	28%

TABLE VIII. FREQUENCY OF USE FREQUENCY AND PRIVACY SETTINGS

Students' answers			
	<i>0-1 hours</i>	<i>1-3 hours</i>	<i>>3 hours</i>
<i>friends</i>	63%	49%	29%
<i>friends of friends</i>	5%	6%	5%
<i>everyone</i>	23%	23%	29%
<i>don't know</i>	9%	23%	38%

and share private information, the users' answers showed that frequent users do not bother changing the privacy settings. Specifically, only one third of the students who use social networking sites more than 3 hours a day adjusted their privacy settings. On the contrary, 63% of the students who use social web at most one hour per day have adjusted their privacy settings and share their private information only with their friends. This suggests that students who use the social networking sites wisely are more concerned about their privacy.

IV. CONCLUSIONS

In this study we examined the use of social networking sites from teenager students. Our sample consisted of students from three high schools belonging to different region types, so as to have a representative sample. We mainly studied the students' usage patterns, the kind of information that they publish on the social web and the privacy settings they use. We found that a vast majority of students has an account on a social network application and most students spend at least an hour per day on social networking sites. We observed differentiations in the usage patterns based on the students' gender and based on their having siblings or not. Students reported publishing private information frequently in the social web, and while the majority was aware of the private settings, most students chose to rely on the default settings.

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