

PSYCHOSOCIAL CHARACTERISTICS OF HEAVY AND NON HEAVY INTERNET USERS BASED ON A SAMPLE SURVEY AMONG UNIVERSITY STUDENTS, FROM GREECE

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Abstract

In recent years, a substantial amount of research has been devoted to the use and excessive use of the Internet (Young, 2004). In this paper, we present the results of a sample survey which was carried out among a random sample of 1876 Greek University students examining, for the first time, the consequences of heavy and non heavy Internet use. Multivariate Analysis of Variance (MANOVA), F- tests and t-tests were applied and the results showed that heavy Internet users compared to non heavy Internet users had more problematic interpersonal relations with parents, teachers, friends, were more depressed, lonely and with low self esteem, had a more disappointing academic performance and they were dependent on a greater percentage on alcoholism, smoking, drinking coffees and taking substances.

1. INTRODUCTION

The majority of individuals uses the Internet without negative consequences and even benefit from it, because the Internet is a great source of information in the fields of Science, Commerce, Communication and Social activities. A great deal of research has been accumulated - and is still being carried out - on the potential negative impact from excessive use of Internet and related physical and psychological problems (Griffiths, 1999, 2000a,b; (Young, 1996a,b, 1997, 1998, 1999, 2004; Young and Rodgers, 1998; Greenfield, 2000).

The essence of the research on the negative impact of the use of the Internet is that users who spend a significant amount of time online often experience academic, social, and occupational difficulties as well as psychological impairments (Brenner, 1997; Nie and Erbring, 2000). The issue of the Internet use by College students has been discussed in a number of studies (Chen and Peng, 2007; Chou, 2001; Jones and Madden, 2002; Frangos and Frangos, 2009).

This is the first study which examines the consequences of excessive Internet use in a random sample of 1876 Greek University students. The respondents were students in the Schools of Administration and Economics, Technological Applications, Graphical Studies, Food Technology and Health and Sciences of the Technological Educational Institution of Athens, the School of Law in the National University of Athens, as well as in the Economic and Agricultural Universities of Athens.

Previous studies in Greece had the aim of determining the percentage of problematic Internet users among high school students (Siomos et al., 2008) and among adolescents (Tsitsika et al., 2009). The above authors found that percentages of 8.2% and of 10.0% for male users respectively, are excessive Internet users. Therefore, the problems of excessive Internet use among the Greek University students deserve careful attention.

On the basis of Young's findings (Young, 1998), the mean weekly on-line time for excessive users was 30 to 40 hours. Following Young's findings, for purposes of comparison in this paper, we give the following definition: A student with a total on-line weekly time greater or equal than 35 hours is defined as *heavy*

internet user (HIUS), while a student with total on-line weekly time less than 35 hours is defined as *non heavy internet user* (NHIUS).

In the present study, we examined the following: (a) We applied MANOVA (Seber, 1984), to determine if there are statistically significant differences in the social relationships and the psychological characteristics (depression, loneliness, low self esteem, lack of objectives in life) between heavy and non heavy Internet users, (b) We used (t) and (F) tests to determine the difference between men and women with respect to time spent weekly on the Internet and the difference in academic performance and Internet dependence between students at Technological Educational Institutions (TEI) and students at Universities. (c) We used an Exploratory Factor Analysis to identify the different factors which determine the dependency of a person on the Internet .

2. METHODS

This study was based on data from a survey of University students in certain Universities and Technological Educational Institutions (TEI) in Athens. The number of students who have answered the questionnaire of this study was (1876), and the respondents were selected randomly from the five schools of the Technological Educational Institution of Athens (TEI), namely the School of Administration and Economics (TEIA-SDO) the School of Technological Applications (TEIA-STEF), the School of Health and Social Services (TEIA-SEYP), the School of Graphical and Artistic Studies (TEIA-SGKS) and the School of Food Technologies (TEIA-STETROD). Also, the questionnaire was answered by students at the Technological Educational Institute of Piraeus (TEIPIR), the Economics and Business University of Athens (EBUA), the School of Law at the National University of Athens (UNATLAW) and the Agricultural University of Athens (UNAGRIA).

The questionnaire included seven sections: demographics, academic performance, on-line experience, social relationships, Young's 8-item Diagnostic Test for Internet Addiction (YDTIA), self evaluation for psychological symptoms (SEPS) and other dependencies (excessive smoking, alcoholism, excessive drinking coffees and taking substances). The consistency of Young's Diagnostic Test for Internet Addiction (YDTIA) was tested with Cronbach's alpha (0.71) and Cronbach's alpha based on standardized items (0.73). Also, the Spearman-Brown Coefficient was (0.72) and Guttman Split-half coefficient was (0.72). The mean age of the respondents was 21 years with a standard deviation of 2.35 years. The male students were 878 and the female students were 998.

Non-response analysis did not find significant biases. Background characteristics of respondents and members of the whole population were almost identical, indicating that respondents were representative of the original population. To compare differences between these two groups we used MANOVA, t tests and F tests. Also, to compare differences among students at the different departments with respect to the characteristics of the mean weekly time spent on the internet applications (chat, sex pages, games and e-mail), we used MANOVA. The results are included in the following sections.

3. RESULTS

3.1 Demographics and on line experience

From the analysis of the questionnaires we found that (a) most of the respondents' Internet activities occurred at home (81.4%), at Internet Café (5.8%) at School (4.8%) and at a friend's house (3.7%). Participants' average total weekly time on the Internet was 19 hours with an average of 3.6 hours per week spent on chat rooms, 3 hours per week spent on games, 3.2 hours per week spent on sex-pages, 4 hours per week spent on searching for academic information and 4.5 hours per week spent on sending and reading incoming e-mail messages. These findings are in agreement with Chen and Peng's (2007) finding that University students use the Internet primarily for communicating. Some students have reported that they use MSN as a cheap Internet application for phoning to their friends.

Results also showed that, overall, men spent more time using the Internet than women ($t=8.55$, $p<0.0001$), and that men had been using the Internet for more years than women ($t=7.69$, $p<0.0001$). Men were using the Internet more time than women for chatting ($t=2.99$, $p<0.001$), searching sex pages ($t=10.62$, $p<0.001$), playing games ($t=9.69$, $p<0.001$) and reading announcements on blogs ($t=4.54$, $p<0.001$). Women were using the Internet more time than men for talking on e-radio.gr ($t=-1.4$, $p<0.01$) and searching for academic information ($t=-1.72$, $p<0.1$).

3.2 Comparison between University and Techn. Educ. Instit. students in certain aspects

The following Table 1 shows the differences between students at the Technological Educational Institutions of Athens and at Universities in Athens with respect to Internet addiction and its consequences.

Table 1. Differences between students at the Technological Educational Institutions of Athens and at Universities in Athens with respect to Internet addiction and its consequences

	Total Random Sample (1876)			Technological Educational Institutions of Athens			Universities in Athens		
	Male (%)	Female (%)	Total (%)	Male (%)	Female (%)	Total (%)	Male (%)	Female (%)	Total (%)
YDTIA									
0-2 Symptoms	26,6	36,6	63,2	26,0	39,3	65,3	23,3	39,2	62,5
3-4 Symptoms	25,6	21,9	23,6	10,2	12,2	22,4	12,9	10,3	23,3
5-8 Symptoms (Internet addiction)	18,0	8,9	13,2	7,5	4,9	12,4	9,9	4,3	14,2
Gender Difference	$\chi^2=24.2$, df=2, p<0.0001			$\chi^2=24.258$, df=2, p<0.001			$\chi^2=13.91$, df=2, p<0.0001		
Psychological Attitudes									
Loneliness	9,3	10,4	19,7	7,7	11,7	19,5	9,9	6,9	16,7
Job uncertainty	26,3	30,4	56,7	22,1	30,7	52,8	31,6	39,0	70,6
Low Self esteem	11,1	11,0	22,1	9,8	11,1	20,9	13,0	12,2	25,2
Feelings of being abandoned	6,0	5,7	11,7	6,0	6,0	12,0	4,3	4,3	8,6
Gender Difference	NS*			NS*			NS*		
Overlapping Addictions									
Smoking (more than 7 cig/day)	3,5	1,3	4,9	3,7	1,5	5,1	2,8	0,5	3,3
Gender difference	$\chi^2=32,28$, df=5, p<0,0001			$\chi^2=31,45$, df=5, p<0,0001			$\chi^2=12,66$, df=5, p<0,0001		
Drugs (more than three times/week)	2,7	0,8	3,5	2,9	0,7	3,6	1,7	0,9	2,8
Gender difference	$\chi^2=46,95$, df=5, p<0,0001			$\chi^2=51,13$, df=5, p<0,0001			NS*		
Coffees (more than 7 coffees/day)	1,6	0,5	2,1	1,9	0,5	2,5	0,9	0,4	1,3
Gender difference	$\chi^2=31,55$, df=5, p<0,0001			$\chi^2=32,85$, df=5, p<0,0001			NS*		
Alcoholic drinks (more than 7 drinks/day)	2,4	0,6	3,0	2,7	0,6	3,3	1,7	0,9	2,6
Gender difference	$\chi^2=77.66$, df=5, p<0.0001			$\chi^2=70,63$, df=5, p<0,0001			NS*		
Location of computer									
Home	39,3	43,6	82,9	35,9	46,6	82,5	39,2	48,5	87,7
School	2,0	2,9	4,9	1,5	3,1	4,6	3,5	0,4	4,0
Internet café	2,8	3,1	5,9	2,7	3,3	6,1	2,6	3,1	5,7
Gender difference	NS*			NS*			NS*		
Hours of Internet use daily									
0<h<3	27,0	38,6	65,0	26,5	41,2	67,6	27,8	41,3	69,1
3<=h<6	12,6	10,7	23,3	10,4	11,1	21,5	13,5	10,0	23,5
h>=6	7,4	3,7	11,2	6,7	4,2	10,0	4,3	3,0	7,4
Gender difference	$\chi^2=56,9$, df=2, p<0,0001			$\chi^2=28,47$, df=2, p<0,0001			$\chi^2=6,06$, df=2, p<0,0001		
Academic performance									
Mark<5	4,0	2,1	6,0	4,1	2,1	6,2	2,1	2,1	4,2
5<=mark<6,5	20,4	16,6	37,0	19,2	18,3	37,5	20,2	14,4	34,6
6,5<=mark<8	19,6	27,7	47,3	17,4	30,2	47,7	18,1	27,7	45,7
8<=mark<=10	3,6	5,9	9,5	3,1	5,4	8,5	6,9	8,0	14,9
Gender difference	$\chi^2=45,66$, df=3, p<0,0001			$\chi^2=34,40$, df=3, p<0,0001			NS*		

NS* = non-significant

University students have achieved better marks in the last semester than Technological Educational Institution students ($t=2.41$, $p<0.1$). This is due to the better marks which they have achieved in the entrance exams than the students at Technological Educational Institutions ($t=-11.73$, $p<0.001$). Pearson's Correlation Coefficient (r) between the marks at the entrance exams and the marks achieved at last semester between all 1876 students was statistically significant ($r=0.25$, $p<0.001$). This is in agreement with the results of Efron (1979). On the other hand, students at the Technological Educational Institutions have obtained a diploma ECDL (European Driving Computer Licence) for knowledge of the basic function of Windows, Microsoft applications and the Internet at a striking 84 % whereas University students have obtained the same diploma at a 12% only. The students at the TEIs spent more time than University students on Internet applications such as e-radio.gr ($t=4.2$, $p<0.001$), advertisement pages ($t=4.82$, $p<0.001$), e-mail ($t=0.06$, $p<0.001$) and games ($t=2.45$, $p<0.1$).

3.3. Social Relationships

Using Multivariate Analysis of Variance (MANOVA), on heavy (HIUS) and non-heavy Internet users (NHIUS), we found significant differences of these two groups with respect to their relations with parents (Wilk's Lambda = 0.99, $F=4.88$, $p<0.001$), their relationships with teachers ($F=3.64$, $p<0.1$) and their relationships with fellow students and friends ($F=10.9$, $p<0.001$). This result supports previous studies by Chen and Peng (2007), suggesting that deterioration of interpersonal relationships is a consequence of heavy internet use.

Heavy Internet users (HIUS) are used to building relationships with friends through the Internet. The likelihood was that they could conceal their true identity, their habits and other characteristics of their personality and when the subjects of their virtual relationships might discover their true identity, they could be very disappointed.

3.4. Psychosocial Profile of Heavy Internet User

The overall percentage of heavy Internet Users in the sample of 1876 students is a striking 16.8% or 288 users of 1714 students who have answered the question about the weekly time of using the Internet. Heavy Internet users were more likely than non heavy Internet users to be depressed ($F=31.68$, $p<0.001$), to feel that they have been abandoned ($F=36.17$, $p<0.001$) and the differences in the way of facing problems of life (initiative, patience, work –oriented character) between heavy Internet users and non heavy Internet users were statistically significant (Wilk's Lambda=0.976, $p<0.001$), Hotelling's Trace = 0.024, $p<0.001$).

Heavy Internet Users were more likely than non heavy Internet Users to be low self-esteem persons ($F=21.55$, $p<0.001$), not to have objectives in their lives ($F=21.16$, $p<0.001$) and to have a pessimistic point of view about life ($F=20.27$, $p<0.001$). Heavy Internet Users have the same degree of lack of security about their job as non heavy Internet users ($F=0.002$, Non significant). Heavy Internet Users are more likely than non heavy Internet Users to do things in order to show off ($F=15.42$, $p<0.001$).

The likely explanation of the above findings is that the preoccupation of users with the Internet reduces their ability to form social relationships and, therefore makes them depressed and low self-esteem personalities.

3.5. Academic Performance

Ten percent of the heavy Internet Users were likely to fail in their studies during the last Academic semester, whereas only 5% of the non heavy Internet Users were likely to fail in their studies of the last semester. This result agrees with Young's findings (Young, 1998). The likely explanation for this is that students who spent excessive time on the Internet have difficulty completing work assignments, they have lack of sleep and, usually they do not follow closely their studies, appearing physically tired every day in the classrooms to listen to their teachers' lectures.

3.6 Identification of the social, occupational, psychological and academic dimensions of the users' personality which determine Internet addiction.

We applied Exploratory Factor Analysis in order to identify the major dimensions which determine the phenomenon of a user preoccupied with Internet which leads eventually to Internet addiction. We used rotation method "Varimax" and all the calculations were performed on the Statistical Package for the Social Sciences (SPSS) v.17.0 (Tabachnick and Fidell, 2007). The following nine factors were found, which explain 54,13% of the total variance:

- Social relationships with teachers, friends, parents*, explaining 16,24 of the total variance.
- Uncontrollable and damaging use of Internet*, explaining 8,65 % of the total variance.

- c. *Applications of the Internet (chatrooms, sexpages, e-mail, games) and length of time using them*, explaining 5,91% of the total variance.
- d. *Overlapping addictions (alcoholism, smoking, drinking coffees, taking substances)*, explaining 5,35% of the total variance.
- e. *Psychological characteristics (loneliness, low self esteem, lack of initiative)*, explaining 4,10% of the total variance.
- f. *Deep psychological feelings (deep disappointment from life, belief that user has been abandoned from everybody)*, explaining 3,93% of the total variance.
- g. *Job uncertainty*, explaining 3,48% of the total variance.
- h. *Academic performance*, explaining 3,34% of the total variance.
- i. *Demographic elements and University where the user is studying*, explaining 3,14% of the total variance.

4. DISCUSSION

The Internet has enriched our civilization with immediate access to an enormous source of academic, business and social literature and a reliable way for communication, entertainment and making friends. At the same time, the excessive use of the Internet can lead to antisocial behaviour, loss of confidence, depression and disappointment from life. This paper has focused on the differences of heavy and non heavy Internet users with respect to their psychosocial characteristics. This study aims in helping parents and educators to understand the psychological changes which are linked with excessive Internet use. Parents need to know more about the Internet applications, the dangers of Internet's excessive use and the safeguards against them.

More research is needed in order to determine the impact of the excessive Internet use in the workplace, between employees, and the deeper causes of Internet addiction in the student population. A further study will focus on the differences of Internet excessive use between the students in the main cities and the students in the country side. In future papers, we shall examine the percentage and intensity of Internet addiction in Internet cafés. We shall investigate also the intercollegiate differences with respect to Internet addiction.

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