

Original Article

## Problematic Internet Use and Stress Levels in Students of Health and Social Sciences

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### Abstract

**Background:** Internet use has become increasingly widespread among young people throughout the world. Uncontrolled and excessive use of the internet by university students can cause serious harm to health. Young people commonly face both physical and psychological harm from long-term Internet use or Internet addiction.

**Objective:** This study aims to determine the relationship between Internet use and stress levels in university students and the factors affecting them.

**Methodology:** This descriptive study was conducted with a total of 433 students from the Nursing, Physical Therapy and Rehabilitation Departments of the Faculty of Health Sciences and Business and Labor Economics of the Faculty of Economics and Administrative Sciences in Turkey.

**Results:** The study found that the average duration of students' Internet use per week was  $23.1 \pm 20.1$  hours. The students' average Online Cognitive Scale (OCS) and average Stress Scale (SS) scores were  $85.3 \pm 32.9$  and  $17.9 \pm 10.2$ , respectively. The OCS scores of the nursing students were lower than those of the Business Administration students ( $p < .005$ ). There was a significant negative correlation between the students' university year, age, and OCS score ( $p < .001$ ). The study found a significant positive correlation between the students' OCS and SS scores and both daily and weekly amounts of Internet use ( $p < .005$ ). Stress levels and Internet addiction levels increased as the duration of Internet usage increased.

**Conclusions:** This study determined that student stress levels and Internet addiction levels increased as the duration of their Internet usage increased, and that stress and Internet addiction levels decreased as their ages and university years increased.

**Key words:** addiction, problematic internet use, stress, university student

## Introduction

Internet use has become increasingly widespread in all areas of life, especially among young people, throughout the world (Casale, Lecchi & Fioravanti, 2014; Ceyhan, 2010). International epidemiological studies consider Internet addiction to be a public health problem worldwide; a prevalence study conducted among university students indicated that prevalence of Internet addiction is around 8% to 13% (Chou et al., 2015). Students starting their university education use the Internet to do their homework, do academic research, and find out their course grades (Rotsztein, 2003; Adalier & Balkan, 2012). In addition, students can quickly and easily access the Internet from many places in their universities such as libraries, computer laboratories, dormitories, shopping centers and cafe (Tsimtsiou et al., 2015).

According to the Internet World Usage Statistics, 45% of the world population uses the Internet (Internet World Stats, 2015). The Household Information Technologies Research conducted in Turkey (Turkish Statistical Institute, 2014) found that 16–24 age group ranks first in Internet use, with a usage rate of 73%. It was found that this rate was 92.9% with high school, a bachelor's degree, and those having a higher degree such as a master degree level of education (TSI, 2014).

Casale, Lecchi and Fioravanti (2014) found that users used the internet the most for social media, information collection, chatting, sending e-mails, and shopping, and Chou and Hsia (2000) found that university students used the Internet primarily for chat program, surfing, and playing games. Ergin, Uzun and Bozkurt (2013) stated that university students in Turkey used the most the internet for chat, web surfing, and lessons and games the most.

While some people can limit the amount of time they use the Internet, some cannot; these people are adversely affected in terms of finances, academics, human relationships, and many other areas of life as a result of misuse of the Internet (Tsimtsiou et al., 2015; Ata, Akpınar & Kelleci, 2011). Internet addiction is defined as the inability to limit Internet use, continued use of the Internet despite its harms, and manifestation of symptoms such as stress, excessive nervousness, depression, social isolation, loss of academic post and job, divorce, weakening in decision-making ability (Thatcher, Wretschko & Fridjhon, 2008; Ozcan & Buzlu, 2005; Alam et

al., 2014). Yang and Tung (2007) reported that people with Internet addiction have family, school, financial, health, communication problems. Some studies found that individuals with Internet addiction used the Internet for fun, interaction, and the feeling of satisfaction (Batigun & Kilic, 2011), while individuals without Internet addiction used it rather for research and chatting (Kayri & Gunuc, 2010; Adalier & Balkan, 2012).

Some previous studies found that Internet use was widespread among university students (Akin & Iskender, 2011; Ceyhan, 2010; Sahin, 2011). Institutions of higher education encourage new students to use the Internet for many reasons, and even provide students with an e-mail address upon enrolment. The opportunity to use the Internet in education institutions is provided to students either low-cost or free of charge, which makes the Internet an affordable and useful option for students (Rotsztein, 2003).

Being a student at a university and university life itself are situations that cause anxiety and stress. Many young people are faced with problems like anxiety about making new friends, leaving family, adapting to dormitory life, economic difficulties, future profession, and work life. These social, cultural, and economic changes can adversely affect young people psychologically (Yan, Li & Sui, 2013) and cause to spend much more time on internet (Casale et al., 2014). Sun et al. (2016) reported that they had found higher stress levels with university students. Chou et al. (2015) found that 17% of university students were addicted to the internet. In some previous studies, Jie et al. (2014) and Yan et al. (2013) stated that there is a positive correlation between stressful life events and Internet addiction. Internet addiction has rapidly become widespread in recent years, especially among university students. Young people commonly face both physical and psychological harm from long-term Internet use or Internet addiction (Yang et al., 2014; Yang & Tung, 2007). The main purposes of this study are to determine Internet usage of university students in the Faculty of Health and Social Sciences, their levels of Internet addiction, and the correlations between their levels of stress and Internet addiction as well as the factors affecting them.

## Methodology

**Design and sample:** This is a cross-sectional study aimed evaluating the effect of problematic

internet use on stress levels students of health and social sciences. This research was conducted at a university located in the northwest of Turkey, with three different departments, total of 433 students from the Faculty of Health Sciences, Department of Nursing (n = 191), Department of Physical Therapy and Rehabilitation (n= 114), the Faculty of Economics and Administrative Sciences, Department of Business and Labor Economics (n = 128) between 03/01/2015 and 04/01/2015.

**Data collection:** The questionnaire forms, scales, and purpose of the study were described by the researchers in classrooms at appropriate course times. The forms were distributed to students who volunteered to participate in the study. It took 15 to 20 minutes for the students to fill out the forms. Questions, if any, were answered.

**Measurements:** The study data were collected using the Questionnaire Form, Online Cognitive Scale (OCS) and Stress Scale (SS).

**Questionnaire Form:** The questionnaire was prepared by the researchers in accordance with the literature (Yang et al., 2014; Ata, Akpınar & Kelleci, 2011; Batıgun & Kilic, 2011; Akin & Iskender, 2011; Alam et al., 2014; Casale, Lecchi & Fioravanti, 2014). The questionnaire comprised a total of 23 questions, 14 of which covered the socio-demographic characteristics of students and their families (age, gender, department, class in school, place of residence, etc.) and 9 of which covered Internet usage characteristics of students (duration of daily and weekly Internet use, purpose of Internet use, place of access to the Internet, etc.).

**Online Cognitive Scale (OCS):** Online Cognitive Scale was developed by Davis, Flett and Besser (2002) to assess Problematic Internet use. It comprises four sub-scales: Loneliness-Depression, Decreased Impulse Control, Social Support, and Attention Distraction. It is a seven-point Likert-type scale of 36 items, varying from “Strongly Disagree” = 1 to “Strongly Agree” = 7. The scale is assessed by calculating total scores and sub-scale scores. Higher scores are considered to be “problematic use.” The Turkish validity and reliability study of the scale was performed by Ozcan and Buzlu (2005). Ozcan and Buzlu (2005) found Cronbach’s alpha value of the scale to be 0.92. In the present study, Cronbach’s alpha value of the scale was found to be 0.94.

**Stress Scale (SS):** The reliability and validity study of the scale, developed by Lovibond and Lovibond (1995), was performed by Akin and

Cetin in 2007. The Depression Anxiety Stress Scale (DASS) consists of 42 items. The scale is scored as follows: “Did not apply to me at all” = 0, “Applied to me to some degree, or some of the time” = 1, “Applied to me to a considerable degree, or a good part of time” = 2 and “Applied to me very much, or most of the time” = 3. The DASS consists of three sub-scales and a total of 42 items to examine depression (14 questions), anxiety (14 questions), and stress (14 questions). High scores received from the scale indicate that the individual has the relevant problem. Total scores in the scale range from 0–42 for each sub-scale. While Akin and Cetin (2007) found the Cronbach alpha internal consistency coefficient of the Depression, Anxiety, Stress Scale to be 0.89, the Cronbach alpha internal consistency coefficient for the stress sub-scale was found to be 0.92. The DASS Stress Sub-scale (SS) was used in this study and the Cronbach alpha value of the scale was found to be 0.93.

**Ethical Considerations:** For this study, Consent No. 03/11, dated 02/18/2015, was obtained from the Ethics Committee, Dean’s Office, Trakya University, Medical Faculty, and written permissions from the Dean’s Office, Faculty of Health Sciences and Faculty of Business Administration (where the study was conducted) were obtained. The students were given information about the study and its purpose before they completed the questionnaire forms and scales. The students’ verbal consent was obtained. The student volunteers were instructed not to write their names on the questionnaire forms and scales since the data would be used only for scientific purposes.

**Data Analysis:** The data was analyzed using Statistical Package for Social Sciences for Windows Program (SPSS 18.0). The data relating students' sociodemographic and internet usage were analysed by percent, mean and standard deviation. The normal distribution of the data was analysed using the Kolmogorov Smirnov test. In comparing the average scores of scale between the characteristics of the students, t-test and Mann Whitney U tests were used in the two groups, One-Way (ANOVA) and Kruskal Wallis tests were used in the triple groups. Spearman's correlation analysis was used for comparison of the students' scores of scale. The results obtained were evaluated at a confidence interval of 95% and significance level of  $p < 0.05$ .

**Limitations of the study:** This study was conducted with students from two health and one

social departments of a university. The study results cannot be generalized to all university students, and the results may vary when additional data is added. However, this study has provided scientific data on problematic Internet use by university students.

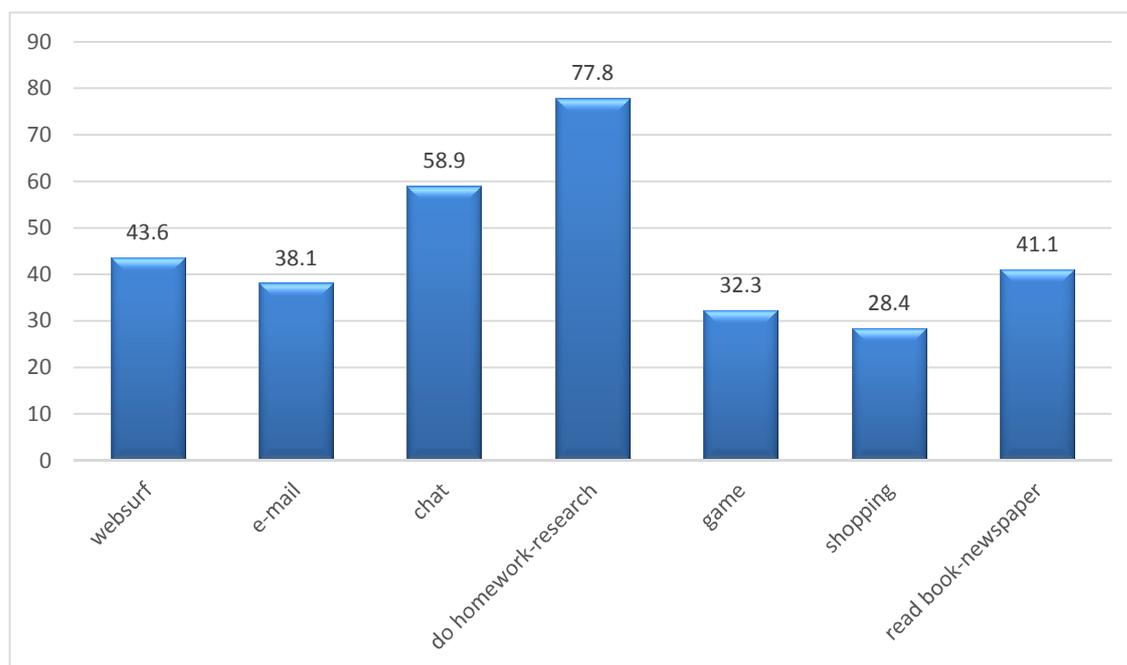
## Results

A total of 433 students participated in this study. The average age of the students in the study was  $19.8 \pm 1.6$ , and 72.7% ( $n = 315$ ) of them were female. Almost half of the students (44.1%) were nursing students and the other half (45.9%) ( $n = 195$ ) were freshman. Of the total number of students, 51.3% lived in a city for most of their lives, 12.2% were smokers, and 18% ( $n = 78$ ) used alcohol (see Table 1).

It was found that the students used the Internet for  $200.9 \pm 163.7$ /minutes within a day and  $23.1 \pm 20.1$ /hours within a week. Of the students in the study group, 77.8% ( $n = 337$ ) used the Internet for homework and research, 58.9% ( $n = 255$ ) for chatting, 43.6% ( $n = 189$ ) for web-surfing, and 41.1% ( $n = 178$ ) to read

books/newspapers. Internet access points were as follows: 85% ( $n = 368$ ) of the participants accessed the Internet via telephone, 59.4% ( $n = 257$ ) via personal computer, 17.8% ( $n = 77$ ) from an Internet cafe/library, and 9.5% ( $n = 41$ ) from a friend's home (see Table 2 and Figure 1).

The students' average scores on the Online Cognition Scale (OCS) were  $85.3 \pm 32.9$  and their average scores on the Stress Sub-scale (SS) were  $17.9 \pm 10.2$ . Average OCS scores of the Business Administration students were found to be higher than those of the nursing students ( $p = .017$ ). OCS scores of the freshman were found to be higher than those of students from other years ( $p < .001$ ). OCS scores of the students using the Internet for chatting and gaming purposes were found to be higher ( $p = .006$ ,  $p = .035$ ; respectively). The Internet addiction level of the students from the Department of Business Administration and Department of Labor Economics and Industrial Relations, the freshman, and those who used the Internet rather for chatting and gaming purposes, was higher ( $p < .001$ ) (see Table 3).



\*More than one option is checked **Figure 1: Students' Internet usage purposes**

**Table 1. Socio-demographic and Internet use characteristics of the students (n=433)**

<b>Characteristics</b>	<b>n (%) or Mean <math>\pm</math> SD</b>
<b>Age</b>	19.8 $\pm$ 1.6
<b>Gender</b>	
Female	315 (72.7)
Male	118 (27.3)
<b>Department</b>	
Nursing	191 (44.1)
Business and Labor	128 (29.6)
Economics	
Physical Therapy and	114 (26.3)
Rehabilitation	
<b>Year</b>	
1	195 (45.0)
2	87 (20.1)
3	111 (25.6)
4	40 (9.2)
<b>Background (where the student grew up)</b>	
Village	66 (15.2)
Town	145 (33.5)
City	222 (51.3)
<b>Smoker</b>	
Yes	53 (12.2)
No	380 (87.8)
<b>Alcohol Usage</b>	
Yes	78 (18.0)
No	355 (82.0)
<b>Duration of Internet use (minutes/day)</b>	200.9 $\pm$ 163.7
<b>Duration of Internet use (hours/week)</b>	23.1 $\pm$ 20.1
<b>Place of access to the Internet*</b>	
Telephone	368 (85.0)
Personal computer	257 (59.4)
Internet cafe/library	77 (17.8)
Friend's home	41 (9.5)

\*More than one option is checked

**Table 2. Comparison of some characteristics of the students with their average OCS and SS scores**

Characteristics	n	OCS Mean ± SD	p-value	SS Mean ± SD	p-value*
<b>Department</b>					
Nursing	191	81.0 ± 29.7		18.5 ± 9.7	
Labor Economics and Business	128	93.2 ± 37.9	0.017**	17.8 ± 10.6	0.435
Physical Therapy and Rehabilitation	114	83.7 ± 30.7		17.1 ± 10.4	
<b>Gender</b>					
Female	315	83.4 ± 31.4	0.83***	18.4 ± 9.8	0.166***
Male	118	90.1 ± 36.3		16.9 ± 11.0	
<b>Year</b>					
Freshman	195	93.5 ± 36.5		17.9 ± 10.6	
Sophomore	87	82.5 ± 31.8	<0.001**	17.7 ± 9.7	0.993
Junior	111	77.2 ± 26.7		18.0 ± 9.8	
Senior	40	73.7 ± 20.8		18.2 ± 9.9	
<b>Internet use for gaming</b>					
Yes	140	90.1 ± 33.5	0.035***	18.3 ± 10.2	0.599
No	293	83.0 ± 32.4		17.4 ± 10.1	
<b>Internet Use for Chatting</b>					
Yes	140	88.9 ± 33.9	0.006***	18.3 ± 10.2	0.392
No	293	80.1 ± 30.8		17.4 ± 10.1	

OCS, Online Cognitive Scale Stress Scale. SS, Stress Scale. \*Statistically significant association by adjusted residual analysis,  $P < 0.05$ . \*\*Chi-square Test \*\*\*Mann-Whitney U

**Table 3. Correlation between the students' OCS and SS scores and certain parameters**

		OCS	SS
<b>Age</b>	$r_s$	-.225	-.056
	p	<0.001	0.241
<b>Class</b>	$r_s$	-.222	.013
	p	<0.001	0.792
<b>Daily Internet use/min.</b>	$r_s$	.401	.156
	p	<0.001	0.001
<b>Weekly Internet use/h</b>	$r_s$	.384	.124
	p	<0.001	0.010
<b>OCS</b>	$r_s$	1,000	.307
	p	.	<0.001

OCS, Online Cognitive Scale SS, Stress Scale  $r^s$ , Spearman Correlation

A statistically significant positive correlation was found between the students' OCS and SS scores ( $p < .001$ ). It was determined that when the students' OCS scores increased, their SS scores increased. A statistically significant negative correlation was found between the students' ages and university years and their OCS scores ( $p < .001$ ,  $p < .001$ ; respectively). It was determined that the lower the students' years and ages, the higher their Internet addiction levels. A statistically significant negative correlation was found between the students' daily Internet use/minutes and weekly Internet use/hours and their OCS and SS scores ( $p < .001$ ,  $p = .001$ ; respectively). Their Internet addiction and stress levels became higher as the duration of their daily and weekly Internet use increased (see Table 4).

### Discussion

Internet addiction is becoming increasingly widespread in conjunction with the rapid development in information technology; however, Internet usage is a mandatory requirement in today's world. This study

examined the correlation between Internet usage and the stress levels of 433 students from the Health and Social Sciences Faculties, along with the factors affecting this correlation. The average OCS scores of the students were found to be  $85.3 \pm 32.9$  in the study. In comparison, the average OCS scores of the university students found by Ozcan and Buzlu (2007) and Floros et al. (2015) were  $84.6 \pm 33.5$  and  $117.7 \pm 5.8$ , respectively. In our study, the average SS scores of the students were found to be  $17.9 \pm 10.2$ . Examination of similar studies revealed that Bilgel and Bayram (2010) had found the average SS score to be  $15.94 \pm 7.51$  and that Zlomke (2009) had found it to be  $12.18 \pm 8.96$ .

It was determined in this study that the students' stress levels became higher as problematic Internet use levels increased. Similarly, other studies in the literature also reported positive correlations between Internet addiction, stress, and stressful life events (Lam & Wong, 2015; Akin & Iskender, 2011; Yan et al., 2013). In Turkey, Ozcan and Buzlu (2007) and Esen and Siyez (2011) reported that Internet addiction affected loneliness and depression levels of the

university students and adolescents and that there was a negative correlation between their social support levels and Internet addiction. Aker et al. (2017) revealed that depression, anxiety and insomnia, and familial social support predicted smartphone addiction. Personal and environmental factors can pose a risk for increasing young people's stress levels. Young people can see the Internet as a way of escape to overcome the problems they face in their schools, families, or social lives; this leads to an increase in the duration of their Internet use and accordingly, their levels of stress.

It was determined that the students used the Internet for 23.1 hours per week, 3.35 hours per day (200.9 minutes/day). Young and Rodger (1998) discovered that the average duration of Internet use was 38.5 hours per week for users with problematic use and 4.9 hours per week for normal use. Koc (2011) reported a higher number of psychiatric symptoms in university students using the Internet for six hours per day. Yang and Tung (2007) reported the duration of weekly Internet use as 21.2 hours in their study conducted with adolescents. In some studies conducted in Turkey, Adalier and Balkan (2012) reported that the average duration of daily Internet use by university students was 1–3 hours, while Ata, Akpinar and Kelleci (2011) reported that duration as 1.93 hours. We can say that the increase in the frequency of Internet use is due to its use for both educational and non-educational purposes, such as communication, entertainment, chatting, gaming, etc.

According to this study, Internet addiction levels of the students from the Faculty of Business Administration were higher than those of students from the Department of Nursing (Table 3). Orsal et al. (2013) reported that Internet addiction levels of the students from the Faculty of Economics and Administrative Sciences were higher than those of students from other departments. Similarly, Ozcan and Buzlu (2007) reported that Internet addiction levels of the students from the Faculty of Social Sciences were higher. These results are attributed to two main factors: nursing programs are intensive (more intensive theoretical and clinical practice courses), and students in the social sciences take fewer credit-bearing courses; since they have more spare time, their increased Internet use leads to higher levels of Internet addiction.

In this study, it was determined that the lower the students' university years and ages, the higher their Internet addiction levels. Similarly, Sahin (2011) and Yang and Tung (2007) found a negative relationship between year-age and Internet addiction level. It is reported that increased duration and addiction level occur at younger ages because children meet the Internet at earlier stages in their lives, a phenomenon that is of great concern to social scientists (Alam et al., 2014; Sahin, 2011; Yang & Tung, 2007). In their study, Wang et al. (2011) found the Internet addiction level of high school students to be 12.2%. In a study conducted with high school students, Sasmaz et al. (2013) reported that 15.1% of the participants were in the group with Internet addiction disorder and that the level of Internet addiction was higher in freshman and sophomore students. It is stated in the literature that the age at which children start using the Internet is decreasing, and that young people are at risk (Yang & Tung, 2007; Sahin, 2011; Wang et al., 2011). Therefore, it is necessary to organize training programs to raise public awareness on proper Internet use and increase awareness among university students about Internet addiction and its effects.

In this study, the OCS scores of the students using the Internet for gaming and chatting were found to be high. Internet addiction levels of the students using the Internet for gaming and chatting were also found to be high in agreement with other studies described in the literature (Chou & Hsiao, 2000; Canan, 2010; Ergin, Uzun & Bozkurt, 2013). Using the Internet for chatting and gaming extends the duration of Internet use, and consequently, increases the level of addiction. Jang, Hwang and Choi (2013) reported that chatting and increased duration of daily Internet use was associated with Internet addiction.

In this study, Internet addiction and the students' stress levels increased as the average duration of daily and weekly Internet use increased. Andreou and Svoli (2013) reported that the extent of Internet usage was an important indicator for all aspects of Internet addiction. A positive correlation has been found between Internet addiction levels and Internet usage for individuals in several studies conducted in recent years (Yang & Tung, 2007; Thatcher, Wretschko & Fridjhon, 2008; Kayri & Gunuc, 2010; Batigun & Kilic, 2011).

## Conclusion

To conclude, this study found that stress levels and problematic Internet usage levels among university students increased as the duration of their Internet use increased. In addition, it was found that stress levels and problematic Internet usage levels among university students increased as their ages and university years decreased. Intensive use of the Internet by young people is inevitable, because the Internet is an important tool for the integration of today's society with the modern world. Therefore, it is necessary to raise awareness among Internet users about effective and proper use of the Internet rather than preventing its use. We recommend educational and institutional arrangements to help effective and proper use of the Internet.

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