

An exploration of the associations among internet use, depression, anxiety and stress among youths

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Abstract

The aim of present study was to investigate relationships between problematic internet use and depression, anxiety and stress, and to determine the predictive strength of problematic internet use on depression, anxiety and stress. Research group of the study was composed of 543 university students (154 male and 378 female). The age of university students including research group differed between 17 and 28, the mean age was 18.49 ($SD = 1.06$). In current study, Problematic Internet Use Scale, Depression, Anxiety and Stress Scale and personal data form developed by researchers were used as measures. Research results indicated that there were significant associations between problematic internet use and depression, anxiety and stress. As a consequence of regression results, problematic internet use was a significant predictor of depression,

anxiety and stress. The results were discussed in the light of the relevant literature.

Key words: Problematic internet use; depression; anxiety; stress

Introduction

Currently the internet is an important tool in human life allowing social interactions, obtaining and sharing of information, entertainment and shopping. It has taken its place at home, in school, in internet cafes, in work places, in all of life and the number of problematic and addicted internet users is increasing every day. In the related literature, problematic and addicted internet users are described as those with excessive internet use, internet addiction, unhealthy internet use and pathologic internet use (Block, 2008; Cooney & Morris, 2009). Some researchers have stated that problematic internet use is a multi-faceted syndrome with cognitive and behavioral symptoms and creates difficulties in the psychological, social and school and/or work life of the individual (Kim et al., 2006; Ostovar et al., 2016; Salmela-Aro, Upadyaya, Hakkarainen, Lonka, & Alho, 2017; Tekinarслан, 2017; Zhang, Brook, Leukefeld, & Brook, 2016).

Each day reveals more of the negative effects of problematic internet use. Recently many studies have proven that problematic internet use is related to a variety of problems. For example, Morahan-Martin and Schumacher (2000) proved that problematic internet users formed virtual relationship with new people on the internet, gained emotional support and played social interactive games more than users without problematic internet use. Kim et al. (2010) reported that users with high levels of risky internet use displayed incompatible behavior and this unqualified feedback negatively affects development and growth. Kraut et al. (1998) reported that children and youngsters spending more time in the internet felt more alone with each passing day and had difficulties forming face-to-face relationships. Frangos, Frangos and Sotiropoulos (2011) stated that problematic internet use was related to potentially addictive habits

such as constant smoking, alcohol and coffee addiction and drug habits. Seo, Kan and Yom (2009) stated that internet addiction played an important role in aggressive behavior. Kelleci and İnal (2010) reported an excessive correlation between adolescent internet use and many psychological symptoms. Morrison and Gore (2010) found a notably high level of correlation between internet addiction and symptoms of depression. Young (1998) noted that non-addicted internet users spend time on the internet checking e-mail and on the Web, while addicted users formed online relationships in chatrooms and played interactive games.

Though there are many studies investigating the correlation between problematic internet use and physical and psychological health, some questions still remain to

be answered. Firstly, as the majority of studies are completed in a defined region, the ability to generalize is limited (Chou & Hsiao, 2000; Wang, Zhou, Wu, Deng, & Hong, 2011; Wu & Tsai, 2006). Secondly some studies are completed using the same sampling group (Jang, Hwang & Choi, 2008; Gamez-Guadix, Calvete, Orue, & Las Hayas, 2015; Shek, Tang, & Lo, 2008; Skues, Williams, Oldmeadow, & Wise, 2016) which gives the impression that a specific group is at risk. Thirdly there are limited studies on problematic internet use and the important psychological variables related to it of depression, anxiety and stress. However studies revealing the correlation between problematic internet use and depression, anxiety and stress will provide guidance for preventive studies on psychological health of university students. Currently with developing technology in universities, universities benefit more from the internet and internet access is easy and rapid in the university environment. This situation is considered to allow university students to use the internet more and may lead to negative problems due to uncontrolled use. For all these reasons, this study was conducted with university students. The basic aim of this study was to investigate the correlations between problematic internet use and depression, anxiety and stress among young people aged from 17 to 28 years. This study will contribute to understanding the correlations between problematic internet use in young people and psychological

factors like depression, anxiety and stress and is hoped to aid in planning educational policies aimed at preventing problematic internet use.

Method

Research Design

This study aiming to investigate the correlation between problematic internet use and depression, anxiety and stress in university students is designed based on relational patterns from the quantitative research approach. Relational patterns allow the evaluation of interrelationships between two or more variables (Cohen, Manion, & Morrison, 2007; McMillan & Schumacher, 2006). Studies based on relational patterns provide functionality for two important functions: (i) to explain important human behavior and (ii) to predict possible results of this behavior (Fraenkel, Wallen, & Hyun, 2012). In this study in accordance with relational research, the aim was to determine the predictive power of the determined independent variable (problematic internet use) on the dependent variables (depression, anxiety and stress).

Research Group

The sample was drawn from one public university located northeastern of Turkey. The university students in the sample are members of faculty of education. The research study group comprised a total of 543 university students, 378 females (69.6%) and 154 males (28.4%). A portion of students in the study group stated gender was undetermined (N =11, 2%). The ages of university students in the study group varied from 17 to 28 years, with mean age of 18.49 years (SD= 1.06). The majority of participants stated they owned a smart phone (N = 522, 96.1%). Of university students with smart phones, 491 (90.42%) had an internet packet linked to their GSM line. Among descriptive findings in the research group daily internet use duration was questioned. Accordingly 56 participants (10%) spent more than one hour per day, 253 (45.3%) spent from 1-3 hours per day, 163 (29.2%) spent 3-5 hours per day and 87 (15.6%) spent more than 5 hours per day on the internet.

Measures

To collect data, The Problematic Internet Use Scale, Depression, Anxiety and Stress Scale and personal data form were used.

Problematic Internet Use Scale. The Problematic Internet Use Scale (PIUS) was developed by Ceyhan, Ceyhan and Gürcan (2007) to determine the level of problematic internet use among university students. The five-point Likert-type evaluation comprises 33 items. In the scale two items (7 and 12) have inverse points. The scale range is from 33 to 165. With a three factor structure, high scores from the PIUS are interpreted as an indicator that internet use behavior is not healthy. The internal consistency of the scale was determined as 0.84. The data collected from the study group in this research had an internal consistency coefficient (α) of 0.93.

Depression, Anxiety and Stress Scale. The Depression, Anxiety and Stress Scale (DASS) was developed by Lovibond and Lovibond (1995) to determine depression, anxiety and stress levels in an individual. The Turkish adaptation studies for the scale were completed by Akın and Çetin (2007). The Depression, Anxiety and Stress Scale comprises 42 items and has a 4-point Likert-type evaluation. The structure of the Turkish version of the scale is reported to coincide with the factor structure of the original. The reliability internal consistency coefficient for the scale was assessed and the internal consistency coefficient for the whole scale was calculated as 0.89. In this study the data related to reliability of the DASS were recalculated. Accordingly the whole scale (α DASS=.94) and sub factors (α Depression= .89, α Anxiety= .83, α Stress= .88) can be said to be reliable. **Personal Data Form.** The Personal Information Form was developed by the researchers aimed to collect some demographic data belonging to the university students participating in the study. In this way statements questioning age, sex, smart phone ownership, internet packet use, and daily internet use duration were included in the Personal Information Form.

Statistical Approach

Before analyzing the data obtained in the research a range of statistical regulation is required. Lost value analysis, end-value analysis, normal distribution and linearity analysis are shown to be necessary assumptions (Field, 2013). In this study, first lost data analysis was performed and it was found there were no lost values in the data set. While end-value analysis was performed, points obtained from measurements related to the variables were transformed to standard z points and measurements with z points outside the range -3 to +3 (n =12) were removed from the dataset. In the third stage, the skewness and kurtosis related to the variables were investigated to assess the assumption of normality. When Table 1 is investigated, the kurtosis and skewness values remain within accepted limits in the literature (-1.5 to +1.5) and no variation from normality was determined (Tabachnick & Fidell, 2007).

Table 1. Kurtosis and skewness coefficients related to measures

	N	Min	Max.	M	SD	Skewness		Kurtosis	
						Value	Error	Value	Error
PIU	543	35.0 0	122.0 0	65.1 9	18.72	.76	.10	-.01	.20
D	543	.00	38.00	12.3 8	8.77	.83	.10	.13	.20
A	543	.00	36.00	12.8 0	7.49	.62	.10	-.05	.20
S	543	.00	40.00	15.2 5	8.68	.52	.10	-.22	.20

PIU: Problematic Internet Use, D: Depression, A: Anxiety, S: Stress

After the required regulation of the data set, in light of the aims of the research statistical analysis was performed. Firstly to determine the correlation between problematic internet use, depression, anxiety and stress, the Pearson Product Moment Correlation Technique was applied. In the second stage to determine the predictive ability of problematic internet use for depression, anxiety and stress, simple linear regression analysis was completed. IBM SPSS 22.0 software was used for the statistical analysis.

Results

Correlation Analysis Results

According to correlation analysis results, there were significant correlations between problematic internet use and depression ($r = .42$, $p < .01$; 95% CI [.34, .48]; Cohen's $d = .92$), anxiety ($r = .43$, $p < .01$; 95% CI [.36, .49]; Cohen's $d = .95$) and stress ($r = .43$, $p < .01$; 95% CI [.36, .50]; Cohen's $d = .96$). According to the results, problematic internet use had the effect of increasing depression, anxiety and stress levels. Assessing the size of the effect, it may be said that problematic internet use had a strong effect on depression, anxiety and stress (Cohen, 1988).

Table 2. Correlation between variables

	M	SD	1	2	3	4
(1)PIU	65.19	18.72	1			
(2)D	12.38	8.77	.42**	1		
(3)A	12.80	7.49	.43**	.73**	1	
(4)S	15.25	8.68	.43**	.72**	.78**	1

** $p < .01$; PIU: Problematic Internet Use, D: Depression, A: Anxiety, S: Stress

Regression Analysis Results

With the aim of determining to what degree the independent variable of problematic internet use predicted the dependent variables of depression, anxiety and stress, the decision was made to perform simple linear regression analysis. The regression analysis was performed for each dependent variable in the research separately. According to the results problematic internet use explained 17% of variation in depression ($F(1, 541)= 11.33, p <.001$). The contribution of problematic internet use to the depression model was significant ($\beta = .42, p <.001$). In other words, problematic internet use negatively predict depression. In the second stage, the predictive power of problematic internet use on anxiety was researched. Problematic internet use explained 18% of the variance in anxiety ($F(1, 541)= 123.56, p <.001$). The contribution of problematic internet use to the anxiety model was significant ($\beta = .43, p <.001$). The final result of the regression analysis found that problematic internet use explained 18% of the variance in stress ($F(1,541)= 125.34, p <.001$). The contribution of problematic internet use to stress was significant ($\beta = .43, p <.001$).

Table 3. Regression analysis results

	Variables	B	SD	β	t	p
Depression	Constant	-.45	1.23		-.37	.712
	PIU	.19	.01	.42	10.78	.000
Anxiety	Constant	1.56	1.05		1.48	.139
	PIU	.17	.01	.43	11.11	.000
Stress	Constant	2.14	1.21		1.76	.079
	PIU	.20	.01	.43	11.19	.000

PIU: Problematic Internet Use

Discussion

The results obtained in this study provide information that allows better comprehension of problematic internet use and determines the correlation between problematic internet use and depression, anxiety and stress. Study results are noteworthy and contain some important information. The results of the research show that 96.1% of university students own smart phones and 90.42% have internet packets on their GSM lines. Of students in the study group, 15.6% reported spending more than 5 hours on the internet daily. This situation shows that a significant portion of university students in Turkey have easy access to the internet through GSM lines linked to smart phones and leads to the consideration these students have difficulty limiting their internet use. When studies in the literature are investigated, as the years pass there are significant increases in the internet use duration of students. A study of 1300 American university students found 6% of students spent more than 400 minutes per day on the internet and stated they were high-rate internet users (Anderson, 2001). Results from a study by Rotunda, Kass, Sutton and Leon (2003) on a sample of 393 university students identified that students spent a mean 3.3 hours on the internet per day. A study by Ceyhan, Ceyhan and Gürcan (2007) reported that university students spent from 3-6 hours per week on the internet. The university environment allows easy access to the internet for students and as many use smart phones to access the internet too, internet use has increased to provide for all needs in an intense manner. Another finding of the research is that there are significant correlations between problematic internet use and depression, anxiety and stress. Additionally it was determined that the main variable in the study of problematic internet use explained the dependent variables of depression, anxiety and stress at a high level. In other words, internet use by students directly affected depression, anxiety and stress levels. When the size of effect is investigated, it may be said that problematic internet use has a strong effect on depression, anxiety and stress.

There are studies in the related literature showing a correlation between unhealthy internet use and depression (Burnay, Billieux, Blairy, & Laroi, 2015; Caplan,

2002; McKenna & Bargh, 2000; Müller, Glaesmer, Brahler, Woelfling & Beutel, 2009; Shapira, Goldsmith, Keck, Khosla, & McElroy, 2000; Whang, Lee, & Chang, 2003; Yen, Ko, Yen, Chen, Chung, & Chen, 2008). A study of 1573 Korean young people by Kim et al. (2006) found that 38% of students were classified as internet addicts, with 1.6% diagnosed as internet addicts. They stated that depression and suicide attempts were very high in the internet addict group. A study of 1708 Taiwanese young people by Yang and Tung (2007) found the personality traits of students with internet addiction were shy, depressive and low self-esteem. All these studies and results show that as problematic internet use increases in an unhealthy fashion, depression levels increase. Though there are limited studies assessing the correlation between unhealthy internet use and anxiety and depression (Durak Batıgün, & Kılıç, 2011; Huang et al., 2009), there is much research revealing the correlation between socially and psychologically incompatible variables like loneliness, low self-esteem and life satisfaction and search for excitement (e.g., Inderbiten, Walters, & Bukowski, 1997; Ko, Yen, Chen et al., 2005; Lin & Tsai, 2002; Yang, 2001). Based on the results of this research, there was a positive significant correlation between problematic internet use and anxiety and stress and it may be said that anxiety and stress increase with problematic internet use. In short, working from these results it may be expected that anxiety and stress symptoms develop in individuals who cannot control their own internet use, experience a range of problems in academic and social life as a result and are criticized by those around them.

Conclusion

In terms of problematic internet use, perhaps the highest risk group in Turkey is university students. These students spend long hours on the internet and have difficulty limiting themselves. It may be said that this situation may cause increased depression, anxiety and stress as problematic internet use increases. In light of these results cognitive behavioral intervention programs may be organized to develop self-regulation skills and ensure self-control by students of internet use. Again, seminars and panel discussions to inform students about negative situations linked to the internet may be recommended. For students, the internet may be a way of avoiding the necessities of daily life or of spending their free

time, as a result psycho-educational based intervention programs should take note of this situation.

This study on the range of psychological complaints that may be experienced as a result of problematic internet use has some limitations. The study was completed with self-report scales, with participants accepted as filling in these scales to fully reflect themselves. The study group only comprised university students, as a result it should not be forgotten that the representative sufficiency of the study group is limited to student characteristics and these points should be noted during evaluation of results.

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