

## AN EXAMINATION OF PREDICTOR VARIABLES FOR PROBLEMATIC INTERNET USE

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### ABSTRACT

This study examines problematic Internet use among university students in terms of gender, while also gauging the impact of personality traits, life satisfaction and loneliness variables on problematic Internet use. A total of 411 university students studying Education in North Cyprus participated in the study. The participants were selected using quota sampling; 64 percent (n=263) of the participants were female and 36 percent (n=148) were male. Data was collected using the Online Cognition Scale (OCS), UCLA Loneliness Scale, Life Satisfaction Scale (LSS) and Eysenck Personality Questionnaire Revised-Abbreviated Form (EPQR-A), and was analysed using “t-Test” and multiple regression methods. Findings suggest that problematic Internet use shows significant variation depending on gender. Predictor variables (neuroticism, extraversion, psychoticism, lie, life satisfaction, and loneliness) meaningfully predict problematic Internet use.

**Keywords:** Problematic Internet use, personality traits, life satisfaction, loneliness, university students

### INTRODUCTION

With recent technological developments, computers and the Internet have become crucial communication channels. While making life easier, however, these technologies have brought with them new risks. For over a decade, problematic Internet use has attracted unparalleled attention and has been widely researched. Researchers have sought to better understand problematic Internet use (Eldeleklioğlu, 2008; Griffiths, 1996; 1997; Kaltiala-Heino, Lintonen, Rimpela, 2004; Kim, LaRose & Peng, 2009; Morahan-Martin, 2007, 2008; Tahiroglu, Çelik, Uzel, Özcan & Avcı, 2008; Özcan, 2004, 2006; Özcan & Buzlu, 2005; Yellowlees, & Marks, 2007; Young & Rogers, 1998; and Widyanto & Griffiths, 2007).

Even though problematic Internet use is often labelled as a type of pathological behaviour, healthy people may also suffer from its symptoms. It was suggested that problematic Internet use as well as negative cognitive, emotional and behavioural consequences are caused by multidimensional interpersonal relationships and life challenges (Caplan, 2002; 2003; 2005; Chak & Leung, 2004; Davis, Flett & Besser, 2002; Leung, 2004; Morahan-Martin & Schumacher, 2000; Young, 1998; Young & Rogers, 1998). Studies conducted in Turkey primarily focus on Internet addiction and pathological Internet use (Bölükbaş, 2003; Gönül, 2002; Öztürk, Odabaşoğlu, Eraslan, Genç & Kalyoncu, 2007). However, more research needs to be done.

The relationship between psychosocial wellbeing and Internet use is an established area of research interest, with studies on obsessive Internet use suggesting the negative influence of uncontrollable Internet use on health variables such as depression and loneliness (Koç, 2011; Moody, 2001; Morahan-Martin, 2007, 2008; Whang, Lee & Chang, 2003). Whang, Lee, and Chang (2003) report that people obsessed with the Internet are oversensitive to disappointment resulting from interpersonal relationships and show increased anxiety when communicating with people they do not know well. When compared with the control group, Internet addicts were found to have higher levels of depression and compulsive tendencies (Özcan, & Buzlu, 2005; Öztürk et al., 2007).

Psychosocial disorders such as loneliness and depression are also associated with problematic Internet use. Studies suggest that such disorders can result in problematic Internet use (Caplan, 2007; LaRose, Lin & Eastin, 2003; Sanders, Field, Diego & Kaplan, 2000). To understand why people suffering from psychological disorders develop a tendency for problematic Internet use or how problematic Internet use leads to psychological problems, some theories on the topic need to be examined. Personal issues arising through problematic Internet use could be mitigated by identifying factors of problematic use that the user finds appealing (Griffiths, 2000). A number of theories have been suggested to explain the reasons for Internet use. Cognitive-behavioural theory (Davis, 2001), the social skill model (Caplan, 2005), and social-cognitive theory (LaRose, Lin, & Eastin, 2003) could be employed.

Davis (2001) uses cognitive-behavioural theory to explain problematic Internet use as a psychiatric condition characterized by incompatible thoughts and pathological behaviour. Cognitive-behavioural theory does not define problematic Internet use simply as a behavioural addiction, but also as a cognitive-behavioural condition with serious negative impacts on one's life. According to Davis, people suffering from obsessive thoughts start

to accept the Internet as a 'friend,' and this in turn triggers problematic behaviour (Yellowlees & Marks, 2007). Grohol (1999) explains Internet addiction using the cognitive-behavioural approach. Rather than examining the nature of the addiction, he focuses on the 'compulsive behaviour' and its 'treatment' (Özcan & Buzlu, 2005). Problematic Internet use is defined as a multidimensional condition leading to negative social, academic and professional outcomes and manifesting cognitive-behavioural symptoms (Caplan, 2005). Cognitive-behavioural theory concentrates on 'irrational beliefs' and possible changes in these beliefs. The individual finds excuses to spend more time online. Classic conditioning, an aspect of behavioural theory, argues that even though the Internet does not have much meaning in the beginning, it can become a pleasure the user wants to repeat when s/he starts to have positive experiences with online games and chat. Operant conditioning, on the other hand, argues that reaching information quickly using the Internet and engaging in virtual relationships are reinforcing activities (Beard, 2005; Serin, 2011).

Research shows that personality traits and psychological disorders play an important role in developing Internet addiction, particularly in adults; it also demonstrates that Internet addiction leads to a decrease in psychosocial wellbeing for adults. These findings support the view that there is a two-way relationship between Internet addiction and mental health (Ceyhan, 2008; Morahan-Martin, 2007; Whang, Lee & Chang, 2003). It is possible to find users suffering from Internet addiction in different cultures, where adults are also reported as being most at risk (Ceyhan, 2008; Kim, Namkoong, Taeyun & Kim, 2008; Ko, Yen, Chen, Chen, Wu, & Yen, 2006; Lin, & Tsai, 2002; Yen, Ko, Yen, Chen, Chung, & Chen, 2008). An increasing number of adults show symptoms of Internet addiction or pathological/unhealthy Internet use, and their daily life, academic success and social relationships are influenced negatively (Ceyhan, 2008).

Davis (2001) states that psychosocial disorders such as loneliness and depression are indirect results of problematic Internet use. Caplan (2005) argues that these users prefer online communication because they find it much less risky than face-to-face communication. Involuntary Internet use, on the other hand, causes negative outcomes such as low grades, absenteeism, and reduced social interaction. Social-skills theory (Kim, LaRose & Peng, 2009) argues that individuals observe people around them and tend to exhibit behaviours that they feel are appropriate for the social context. Socio-cultural theory, on the other hand, focuses on the familial, social and cultural dynamics that lead to compulsive Internet use. For instance, for users who use the Internet to escape family-related problems, the Internet can turn into an addiction (Beard, 2005).

Lake (1990) suggests that lonely people often show symptoms of depression and anger while also demonstrating a tendency to misunderstand people. Loneliness can be described as the inner emotional reflection of interpersonal losses, needs and incompetence. The increase in loneliness is mirrored by the increase in depressive symptoms (Pretorius, 1993). Young (1982) argues that to prevent loneliness, irrational beliefs of lonely people need to be addressed. Killen (1998) has investigated loneliness within the sociocultural framework. This view states that the individual who has problems complying with social norms feels lonely in his lack of conformity. Scholars have described young people as deprived of social skills and pessimistic about relationships with other people (Demir & Tezer, 1995; Deniz, Hamarta, & Arı, 2005; Jones, Hobbs, & Hockenbury, 1982; Marcoen, Brumagne, 1985). Brage, Meredith, & Woodward (1993) found that older adults are lonelier than younger adults and that there is a significant correlation between loneliness and depression. In a study investigating loneliness in university students, Demir (1990) found that 15.4% of the research sample suffered from loneliness. There are also scholars who study the correlation between loneliness and Internet use (Caplan, 2002; Eldeleklioğlu, 2008; Kim, LaRose & Peng, 2009; Morahan-Martin & Schumacher, 2000; Özcan, & Buzlu, 2005; 2007; Whang, Lee & Chang, 2003).

Life satisfaction is defined as the extent to which an individual accomplishes set targets (Koç, 2001) and as the positive evaluation of one's life with regard to set targets (Diener, Emmons, Larsen & Griffin, 1985). Life satisfaction refers to the state of wellbeing expressed by different positive emotions such as happiness and morale as well as feeling positive with regard to everyday relationships. Recently, an increase was observed in the number of studies investigating the variables that influence the degree of life satisfaction among university students (Bulut Serin, Serin & Özbaş, 2010; Bulut Serin, Aydınöğlü & Aysan, 2010; Çivitçi, 2007; Deniz, 2006; Gündoğar, Gül, Uskun, Demirci & Keçeci 2007; Çeçen, 2008). However, no study was found on the correlation of life satisfaction and problematic Internet use.

Problems faced by university students, such as adaptation difficulties and underlying psychological problems, cause problematic Internet use (İşbulan, 2011; Koç, 2011; Şahin, Balta & Ercan, 2010; Toprakçı, 2007). Kandell (1998) highlights that in comparison to other age groups, Internet addiction is a bigger problem among university students. Being away from home, using spare time badly, and use of the Internet for educational reasons are listed as some of the reasons for increased risk for addiction for this group. However, these studies have not

sufficiently set forth the reasons for problematic Internet use. Studies focusing on the reasons for problematic Internet use in Turkey are scarce, as is the case around the world. This study aims to investigate both the correlation between gender and problematic Internet use and the impact of personality traits, life satisfaction and loneliness variables on the problematic Internet use among university students. Within this general framework, answers to the following questions were sought:

- a. does problematic Internet use among university students show significant difference in terms of gender?
- b. to what extent do personality traits, life satisfaction and loneliness variables predict the levels of problematic Internet use?

## RESEARCH METHODOLOGY

### Research Design

This study uses a quantitative descriptive design to explain the correlation between levels of problematic Internet use among university students and personality traits, life satisfaction and loneliness variables.

### The Sample

The research sample is comprised of 411 students studying in the Faculty of Education at a private university in the Turkish Republic of Northern Cyprus, selected using quota sampling. 64 percent (n=263) of the participants are female and 36 percent (n=148) are male. Prior to data collection, students were provided with information about the study and only those who volunteered to take part were chosen.

### Data Collection Methods

Data was collected using Online Cognition Scale (OCS), Revised-Abbreviated Eysenck Personality Questionnaire Form (EPQR-A), Lie Satisfaction Scale (LSS) and UCLA Loneliness Scale. Each is explained below.

**Online Cognition Scale (OCS):** Developed by Davis, Flett, & Besser (2002), to assess Problematic Internet Use along with its four sub-dimensions (loneliness/depression, diminished impulse control, distraction, and social comfort), the scale is made up of 36 items on a 7-point Likert scale. The Online Cognition Scale was adapted for use in Turkey by Özcan with a test-retest reliability determined as  $r=.90$  and the standardized alpha .93 (Özcan, 2004). Reliability is high with Cronbach Alpha of .89.

**Eysenck Personality Questionnaire Revised-Abbreviated Form (EPQR-A):** Upon revising the 48 item Eysenck Personality Questionnaire, Eysenck, Eysenck & Barrett (1985) created the Eysenck Personality Questionnaire Revised-Abbreviated Form. The questionnaire is made up of 24 items and examines identity using three main factors: (a) extraversion, (b) neuroticism, and (c) psychoticism. Additionally, a lie sub scale is administered to prevent possible bias and to check validity. Each of these factors is examined through 6 items and participants are asked to answer each of the 24 questions 'yes' (1) or 'no' (0). For each personality type, participants are scored from 0 to 6.

**Life Satisfaction Scale (LSS):** The Life Satisfaction Scale was developed by Diener, Emmons, Larsen and Griffin (1985). It is made up of 5 items on a 7-point Likert scale and measures subjective wellbeing. Internal consistency ranges from .80 to .89. Cronbach Alpha reliability was .84.

**UCLA Loneliness Scale (UCLA-LS):** UCLA Loneliness Scale was developed by Russell, Peplau and Cutrona (1980); the validity and reliability of its adapted version is tested by Demir (1989). The scale measures the overall feelings of loneliness in individuals through a self-report Likert-type scale comprised of 20 items. 10 of these items are positive statements and the rest are negative statements. The scale reports range from 20 to 80 where higher scores mean a higher degree of feelings of loneliness. Reliability of the scale is reported as .96. In this study, Cronbach Alpha reliability is found to be .93.

### Data Analysis

Multiple regression analysis was used to identify the main predictors of problematic Internet use while t-Test analysis assessed the correlation between gender and problematic Internet use. Data was analysed using SPSS. A significance level of .05 was accepted.

## FINDINGS

This study examines problematic Internet use in terms of gender variables. Table 1 reports the mean scores, standard deviation, and t-values of female and male students in relation to the Online Cognition Scale.

Table 1. Mean scores, standard deviation, and t-values of problematic Internet use according to gender

Variables	Gender	n	Mean	SD	t <sub>409</sub>	p-value
Social support	Female	263	28.866	13.835	3.604	.000*
	Male	148	33.932	13.397		
Loneliness-depression	Female	263	12.304	6.843	3.827	.000*
	Male	148	15.135	7.789		
Reduced impulse control	Female	263	22.836	10.853	3.747	.000*
	Male	148	26.966	10.495		
Distraction	Female	263	17.418	8.659	2.823	.005*
	Male	148	19.932	8.678		
Problematic Internet use	Female	263	81.425	36.390	3.933	.000*
	Male	148	95.966	35.244		

\*p<.05

In Table 1, the differentiation of levels of problematic use among students is examined using t-Test analysis. The independent variable is gender. A statistically significant differentiation can be found between the mean for levels of problematic Internet use ( $t=3.93 < .05$ ) and sub-dimensions of social support ( $t=3.60$ ;  $p < .05$ ), loneliness-depression ( $t=3.82$ ;  $p < .05$ ), reduced impulse control ( $t=3.74$ ;  $p < .05$ ), and distraction ( $t=2.82$ ;  $p < .05$ ). As Table 1 demonstrates, mean scores of males with regard to problematic Internet use and its sub-dimensions are higher than those of female students.

Correlations of scores for the Online Cognition Scale, Eysenck Personality Questionnaire Revised-Abbreviated Form, and UCLA Loneliness Scale are given in Table 2. It was found that the scattering diagram, which was designed for standardised residual values and predicted values, identifies a linear relationship, and points tend to be collected around an axis. arithmetic mean, standard deviation and correlation values about predictors (neuroticism, extraversion, psychoticism, lying, life satisfaction, loneliness) are given before regression analysis. When the scattering diagrams and correlations based on the partial relationships between predictor variables and problematic Internet use are examined, there is a positive and linear correlation between problematic Internet use and neuroticism, extraversion, psychoticism and lying. When Table 2 is examined, it is apparent that the correlation of dependent variables is not high enough to cause multicollinearity problem. During multi regression analysis a linear relationship was observed between predictors and problematic Internet use, as well as normal distribution.

Table 2. Arithmetic Mean, Standard Deviation and Correlation Martix Values of the variables used to predict problematic Internet use.

Variables	1	2	3	4	5	6	7	Mean	SD
Neuroticism (1)	-							3.260	1.763
Extraversion (2)	-.495**	-						3.669	1.792
Psychoticism (3)	-.092*	.122*	-					1.712	1.086
Lie (4)	-.119*	.119*	-.134*	-				3.785	1.561
Life Satisfaction (5)	-.070	.148*	.003	.341**	-			24.81 5	6.297
Loneliness (6)	-.003	.160*	-.162*	.192**	.198**	-		57.74 7	9.785
Problematic Internet use (7)	-.787**	.544**	.117*	.223**	.258**	.032	-	86.66 1	36.611

\*\*p< .01 \*p< .05

Multiple regression analysis relating to predictor variables of neuroticism, extraversion, psychoticism, life satisfaction and lying, and prediction of problematic Internet use. Results of the analysis is provided in Table 3.

Table 3. The variables that predict Problematic Internet use according to multiple linear regression analysis.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
(Constant)	89.047	7.853		11.339	.000			
Neuroticism	-13.737	.655	-.674	-20.983	.000	-.787	-.722	-.581

Extraversion	4.256	.779	.179	5.464	.000	.544	.262	.151
Psychoticism	1.242	.965	.037	1.287	.199	.117	.064	.036
Lie	1.709	.661	.078	2.586	.010	.223	.128	.072
Life satisfactor	.836	.152	.165	5.507	.000	.258	.264	.152
Loneliness	-.152	.110	-.041	-1.388	.166	.032	-.069	-.038
R= .831 R <sup>2</sup> =.690 F <sub>(6, 404)</sub> =150.211 p=.000								

**Predictors:** Neuroticism, extraversion, psychoticism, lying, life satisfaction, loneliness

**Dependent Variable:** Problematic Internet use

Examination of Table 3 reveals a negative correlation at a high level ( $r = -.79$ ) between neuroticism and problematic Internet use when the binary and partial correlations between predictor variables (neuroticism, extraversion, psychoticism, lying, life satisfaction, loneliness) and the dependent variable (problematic Internet use) are examined. However, when other variables are examined, it appears that the correlation between two variables is  $r = -.73$ . The analysis also reveals a positive meaningful correlation at a medium level between extraversion and problematic Internet use. However, when the other five variables are examined, it appears that this correlation is calculated as  $r = .26$ . A positive correlation at a low level ( $r = .22$ ) is perceived between lying and problematic Internet use; however, when this is compared with other variables, the correlation between two variables becomes  $r = -.13$ . Similarly, there is a positive correlation at a low level ( $r = .25$ ) between life satisfaction and problematic Internet use. When this is compared with other variables, the correlation between two variables becomes  $r = -.26$ . Along with extraversion, psychoticism, lying, life satisfaction, and loneliness, neuroticism has a strong meaningful correlation with problematic Internet use among university students ( $R = .831$ ,  $R^2 = .690$ ,  $p < .01$ ). The six variables examined here explain 69 percent of total variance in problematic Internet use. According to the standardised regression coefficient (B), predictor variables can be ordered relative to their importance in problematic Internet use as neuroticism, extraversion, psychoticism, lying, life satisfaction, and loneliness. When t-Test results about the significance of regression coefficient are examined, neuroticism, extraversion, lying and life satisfaction variables appear to be significant predictors for problematic Internet use. On the other hand, psychoticism and loneliness are not significant predictors of problematic Internet use. According to regression analysis, the regression equation of problematic Internet use prediction is as follows: Problematic Internet Use =  $89.047 - 13.737$  Neuroticism +  $4.256$  Extraversion, +  $1.242$  Psychoticism, +  $1.709$  Lie, +  $.839$  Life Satisfaction, -  $.152$  Loneliness.

From scatter diagrams that are based on the partial relationships of predictor variables (neuroticism, extraversion, psychoticism, lying, life satisfaction, and loneliness) with problematic Internet use, it is seen that there is a linear positive correlation between problematic Internet use and extraversion, psychoticism, lying and life satisfaction. It was also found that there is a linear and negative correlation between problematic Internet use, neuroticism and loneliness.

## DISCUSSION

This section discusses the findings derived from the statistical analysis with reference to the relevant literature.

In this study problematic Internet use and its sub-dimensions of social support, loneliness, depression, decreased impulse control and levels of distraction showed significant variations in terms of gender among university students. Male students were found to suffer more from problematic Internet use. These findings are consistent with the relevant literature (Balta & Horzum, 2008; Choi, 2001; Li & Chung, 2006; Tahiroğlu, Çelik, Uzel, Özcan, & Avcı, 2008; Weitzman, 2000). Possible interpretations of this data are that in comparison to male students, female students have better communication skills, or that male students prefer the Internet to face-to-face communication. On the other hand, Ceyhan (2007), Kim, Namkoong, Taeyun & Kim (2008), Oğuz, Zayim, Özel & Saka (2008) did not find any significant correlation between gender and problematic Internet use. Other studies have found a correlation between problematic Internet use and impulse control disorder (Beard & Wolf, 2001; Davis, Flett, & Besser, 2002). It was suggested that the majority of Internet users engaged in problematic Internet use suffer from impulse control disorder, have a history of addiction disorder, and express this as a deviant behaviour using salient online activities (Yellowlees & Marks, 2007).

The study has also found that neuroticism, extraversion, psychoticism and lying variables are meaningful predictors of the problematic Internet use variable. Neuroticism was found to be the best predictor followed by extraversion, psychoticism and lying. Examination of the relevant literature shows that these findings are consistent with the previous studies. In their studies of adults, Cao & Su (2007) found that those suffering from

Internet addiction received higher scores on the neuroticism, psychoticism, and lying sub-dimensions of Eysenck Personality Questionnaire Revised-Abbreviated Form. Adults with neurotic personality traits use the Internet for interpersonal communication and entertainment whereas extraverts use it solely for interpersonal communication (Wolfradt & Doll, 2001 cited in Ceyhan, 2008). Another study found positive correlations between game addiction and high narcissistic personality traits, higher degrees of aggression, and low self-control (Kim, Namkoong, Taeyun & Kim, 2008).

Life satisfaction was found to predict problematic Internet use at a low level. Studies focusing on the correlation between problematic Internet use among university students and life satisfaction are highly limited. Studies concentrate on the impact of personality as an internal factor on subjective wellbeing (Diener, Oishi & Lucas, 2003). Deneve & Cooper (1998) found that personality is a strong predictor of life satisfaction and happiness. In a study on Taiwanese adults, Ko, Yen, Yen, Lin & Yang (2007) investigated the extent to which personality traits, self-esteem, life satisfaction, mental health, and family functions predict Internet addiction. Research shows that personality traits and mental health disorders, particularly in adults, play an important role in developing Internet addiction and Internet addiction leads to a decrease in life satisfaction and social wellbeing (Koç, 2011; Moody, 2001; Morahan-Martin, 2007, 2008; Whang, Lee & Chang, 2003).

Loneliness was also found meaningfully to predict problematic Internet use at a low level. There is research showing that those who are suffering from high levels of problematic Internet use also have high levels of loneliness (Ayaroğlu, 2002; Ceyhan, 2007; Caplan, 2002; Eldeleklioğlu, 2008; Kim, LaRose & Peng, 2009; Kurtaran, 2008; Morahan-Martin & Schumacher, 2000; Morahan-Martin & Schumacher, 2003; Sanders, Field, Diego & Kaplan, 2000; Özcan, & Buzlu, 2005; Whang, Lee, & Chang, 2003). In a study on university students, Koç (2011) concluded that Internet use leads to an increase in psychological disorders such as depression and loneliness. Furthermore, Internet addicts who lack social support look for online solutions to their problems, and this leads to further psychological problems and symptoms of anxiety.

## CONCLUSIONS AND RECOMMENDATIONS

This section makes informed suggestions about Internet addiction using the findings of this study.

This study concludes that males are more at risk than females in terms of problematic Internet use. Social support programs as well as individual and group work could be suggested for both male and female students that are at risk. Personality traits, life satisfaction and loneliness are significant predictors of problematic Internet use among students. Precautions need to be taken for university students to develop healthy personality traits, to enhance positive feelings and happiness, and to form social support networks.

It was observed that university students are the group most at risk in terms of developing problematic Internet use (Nalwa & Anand, 2003). That the Internet is always available, and is fast and free, are given as reasons for the problem. Researchers who argue that the Internet addiction is formed cognitively believe that cognitive behavioural therapy is a viable treatment (Davis, 2001; Yellowlees, 2001). These treatment strategies suggest a cognitive reconstruction regarding the Internet applications users often use, along with behavioural exercises and therapies. Students who manifest a high degree of problematic Internet use could be treated by cognitive behavioural therapy provided by psychological consultants working in counselling and guidance centres. Additionally, seminars, conferences and activities could be organised to highlight the negative consequences of problematic Internet use.

This study has some limitations. It examines solely problematic Internet use, personality traits, life satisfaction and loneliness and the correlation among these factors. With regard to the methods, the main limitation of the study is its being a descriptive study and as such not being able to identify causal linkages among the factors it investigates. Another limitation of the study is that it was carried out only in one university with no consideration of the socio-economic conditions of the participants. It would be appropriate to conduct quantitative and qualitative studies with a larger and more heterogeneous sample. These are the serious limitations of this study. However, studies focusing on the impacts of the Internet within the context of Northern Cyprus are very new and highly limited. It is believed that the findings of this study can help decrease the negative consequences of problematic Internet use.

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