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DEPRESSION, LONELINESS, ANGER BEHAVIOURS AND INTERPERSONAL RELATIONSHIP STYLES IN MALE PATIENTS ADMITTED TO INTERNET ADDICTION OUTPATIENT CLINIC IN TURKEY

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SUMMARY

Background: *'Internet addiction' is excessive computer use that interferes with daily life of a person. We designed this study in order to evaluate the predictor effect of depression, loneliness, anger and interpersonal relationship styles for internet addiction as well as develop a model.*

Subjects and methods: *Forty (40) male internet addicted patients were selected from our hospital's internet Addiction Outpatient Clinic. During the study, the Internet Addiction Test (IAT), the Beck Depression Inventory (BDI), the State Trait Anger Expression Scale (STAXI), the UCLA-Loneliness Scale (UCLA-LS), and the Interpersonal Relationship Styles Scale (IRSS) were used for the evaluation of the patients.*

Results: *The results of this study showed that the 'duration of internet use' (B=2.353, p=0.01) and STAXI 'anger in' subscale (B=1.487, p=0.01) were the predictors of internet addiction.*

Conclusion: *When the clinicians suspect for the internet overuse, regulation of internet usage might be helpful. Psychiatric treatments for expressing anger and therapies that focus on validation of the feelings may be useful.*

Key words: *internet addiction – anger – depression – loneliness - interpersonal relationship styles*

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INTRODUCTION

Use of the Internet is an indispensable part of our daily life and it is widely used. The 'Internet addiction' concept arises from some people having a problem of excessive internet use and having disturbance in their daily lives. For the resolution of this common problem, various treatment interventions are proposed (Şenormancı et al. 2010). The first intervention was made by Young with the adaptation of pathological gambling criteria in the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV) (Young 1998b). Recently which disorders will be included in DSM5 became definite. Internet overuse was included in section 3 as Internet use gaming disorder and more research need to be done in order to be considered formal disorder (American Psychiatric Association 2012).

Loneliness is defined as lack of necessary social relations or lack of intimacy and sentimentality in existing social relationships (Peplau & Perlman 1982, DiTommaso & Spinner 1997). Studies on internet addiction and loneliness were generally population-based and the results were often conflictive. Some studies suggested that people in all age groups with excessive use of the Internet were feeling much lonelier (Walther 1996, Moharan-Martin 1999, Morahan-Martin & Schumacher 2000, Prezza et al. 2004, Ozcan& Frost 2007, Sum et al. 2008, Bonetti et al. 2010, Odaci & Kalkan 2010). On the other hand, some studies suggest that the use of internet has positive effects on social relationships (McKenna et al. 2002).

The way of expressing anger interacts with interpersonal relationships. The feeling of anger in reaction to a specific attack, criticism or perception of interception may cause interpersonal problems (Andersson et al. 2008). When people experience the sense of intense anger, they have difficulties with expressing themselves. Anger has a negative impact on interpersonal relationships (Davila & Beck 2002). Both generalized (chat, e-mail) and specific (internet shopping, gaming, gambling, etc.) uses of internet are related with aggressive behaviors and hostility feelings in 'real' life (Yen et al. 2007, Kim et al. 2008, Ko et al. 2009).

Comorbidity of depression in internet addiction has been shown in various studies (Ha et al. 2006, Kim et al. 2006, Ko et al. 2008). Although, several comorbid psychiatric disorders were co-existing with internet, it was established that internet addiction has the strongest relation with depression (Yen et al. 2007, Carli et al. 2013).

Aggression and hostility which are closely related with anger and depression, loneliness, and interpersonal

relationship styles have been associated with internet addiction. However, no study was conducted in patients, who were diagnosed with internet addiction in order to evaluate the relationship between these variables. The purpose of this study was to determine the predictor effect of depression, loneliness, anger and interpersonal relationship styles for internet addiction as well as to develop a model.

SUBJECTS AND METHODS

Subjects

Forty (40) male patients, who admitted to Bakirkoy Mental and Neurological Diseases Hospital, Internet Addiction Outpatient clinic, providing the inclusion criteria of our study, were consecutively included. Patients were diagnosed by experienced clinicians as Internet addicts according to Young's criteria (1998b). The study was carried out between December 2011 and February 2012. Forty patients of fortyeight were admitted into the study. Patients, who were at least 18 years of age, literate, and capable for completing the self-reported scales and who had provided written informed consent were included in the study. Patients, who were under the age of 18, or who had severe mental or physical illness, comorbid schizophrenia, schizophrenia-like psychotic disorder and bipolar affective disorder, substance and/or alcohol dependence/abuse were excluded from the study. Ethical approval to conduct the study was obtained from the Hospital's Ethics Committee prior to the initiation of the study.

Methods

Sociodemographic data form

Considering the objectives of the study, a form was prepared by investigators and used in order to obtain the sociodemographic information of the patients.

Internet Addiction Test (IAT)

This is a 20-item Likert-type scale scored from 1-5 which (Young 1998a). One of the 20 items in the test was removed from the scale as it was determined to reduce the reliability in a Turkish validation study. The internal consistency reliability of Chronbach's alpha is 0.89 (Balta & Horzum 2008).

Beck Depression Inventory (BDI)

This is a 21-item scale for measuring the emotional, cognitive, somatic and motivational symptoms of depression. Each item is scored between 1 and 3 and total score is calculated by the sum of all the items (Beck 1961). Cut-off score was considered as 17 in the Turkish validity and reliability study. The internal consistency reliability of Chronbach's alpha is 0.80 (Hisli 1988).

State Trait Anger Expression Scale (STAXI)

This is a scale used for evaluating the sensation and expression of anger without a time limitation in application (Spielberger 1983). The Turkish adaptation study was conducted by Ozer (1994). It is a 34-item Likert-type scale which is scored from 1 to 4. The subscales are named as; Trait Anger, Anger Expression-Out, Anger Expression In, Anger Control. While Anger Expression-Out, Anger Expression-In, Anger Control Scales are scored between 8 and 32, Trait Anger subscale is scored between 10 and 40. High scores in Trait Anger sub-scale indicates high levels of anger and high scores in Anger Control indicates high level of anger control, high scores in Anger Expression-Out sub-scale indicates the anger which can be expressed easily and high scores in Anger Expression In sub-scale indicates suppressed anger. Cronbach's alpha values for 'anger control', 'anger expression-out' and for 'anger expression-in' is found as 0.84, 0.78 and 0.62, respectively (Ozer 1994).

UCLA Loneliness Scale (UCLA-LS)

This is a 20-item scale in order to determine the individual perception level of loneliness (Russell et al. 1980). High scores show intensive level of loneliness. The internal consistency reliability of Chronbach's alpha is 0.96 in the Turkish validation study (Demir 1989).

Interpersonal Relationship Styles Questionnaire (IRSQ)

This is a 31-item scale for determination of interpersonal relationship styles. High scores in this scale indicate positivity in the style of interpersonal relationship. The scale consists of 4 sub-scales; open (α=0.73), respected (α=0.70), self-oriented (α=0.56) and condescending (α=0.78). In this study, we used 'contributing style' for subscales, which were used for the evaluation of open and respectful communication styles, and 'inhibiting style' for subscales, which were used for the evaluation of self-oriented and condescending communication styles (Sahin et al. 1994).

Statistical analysis

SPSS 16 for Windows was used for statistical analysis of study findings. The normal distribution was evaluated with Kolmogorov-Smirnov distribution test. Interscales relationship was determined by using Pearson correlation analysis for normally distributed data and Spearman correlation analysis for abnormally distributed data. In the tables, numeric variables were stated as median (values corresponding to 25-75%) and categorical variables were stated with both the number of observations and the percentage (n-%) notations. Significance level was set to $p<0.05$. Linear regression analysis was performed to investigate the possible predictors of Internet addiction.

Table 1. Sociodemographic characteristics (n=40)

		Median (25-75%)
Age		18 (18-20)
Duration of Internet usage (hours /day)		8 (7-10)
		n (%)
Level of education (years)	0-8	4 (10%)
	8-12	27 (67.5%)
	Over 12	9 (22.5%)
Occupational status	Unemployed	8 (20%)
	Student	25 (62.5%)
	Self-employed	5 (12.5%)
	Civil servant	2 (5%)
Marital status	Single	34 (85%)
	Married	5 (12.5%)
	Divorced	1 (2.5%)
Siblings	Have sibling(s)	32 (80%)
	Only child	8 (20%)
Treatment request	Voluntarily	14 (35%)
	Encouraged by relatives	26 (65%)
Type of Internet use	Specific (MMORPG)	27 (67.5%)
	Generalized	13 (32.5%)
Divorced parents	Yes	7 (17.5%)
	No	33 (82.5%)
Self-injurious behavior	Yes	8 (20%)
	No	32 (80%)
Family history of internet addiction	Yes	3 (7.5%)
	No	37 (92.5%)

RESULTS

Sociodemographic characteristics of the patients were shown in Table 1.Correlation between the level of Internet addiction and state trait anger expression style loneliness, and interpersonal relationship styles were shown in Table 2.

In order to investigate the predictors of internet addiction, duration of internet usage and inhibiting style of interpersonal relationship, which were provided $p<0.20$ condition, as well as anger in and depression which was significantly correlated with IAT ($p<0.05$) were included in the multiple linear regression analysis as a result of correlations between the scales. After variables were placed to the analysis, elimination was performed by using backward stepwise method. Depression was eliminated in the 2nd step and inhibiting style was eliminated in the 3rd step. As a result, the regression model was revealed statistically significant ($F=7490$, $p=0.002$). IAT increased 2.353 with 1 point increase in duration of internet usage ($\beta=2353$, $t=2676$, $p=0.011$). IAT increased 1.487 points with 1 point increase in STAXI anger in score ($\beta=1487$, $t=3.136$, $p=0.003$). Duration of internet usage and anger in style explains the internet addiction with a rate of 0.250 (Table 3).

Table 2. Cross-correlations of examined variables (n=40)

		IAT
[+]Duration of internet usage	r	0.243
	p	0.131
STAXI		
[++]Trait anger	r	0.024
	p	0.885
[+]Anger in	r	0.366
	p	0.020*
[+]Anger out	r	0.159
	p	0.327
[++]Anger control	r	0.095
	p	0.559
[++]BDI	r	0.360
	p	0.022*
[++]UCLA-LS	r	0.045
	p	0.784
IRSQ		
[++]Inhibiting style	r	0.313
	p	0.050
[++]Contributing style	r	0.225
	p	0.163

[+]Spearman; [++]Pearson; *p<0.05; IAT=Internet addiction test; STAXI=State trait anger expression scale; BDI=Beck depression inventory; UCLA-LS=UCLA Loneliness Scale; IRSQ=Interpersonal relationship styles questionnaire

Table 3. Predictors of Internet addiction

Dependent variable	B	t	p	F	Model *p*	Adjusted R^2
Constant	3.842	0.299	0.767			
Duration of Internet usage	2.353	2.676	0.011*	7.490	0.002*	0.250
Anger in	1.487	3.136	0.003*			

*p<0.05

DISCUSSION

Psychiatric problems due to internet technology use have been considered as relatively new. Therefore, no current consensus is available in Internet addiction studies. Studies revealed a majority of males in both clinical and social sampling (Shaw & Black 2008, Carli et al. 2013). As the number of male patients was significantly higher in admission to our clinic we conducted our study only in male patients.

Key points in the diagnosis of Internet addiction are dysfunctions in occupational, personal, and social life of the individual (Beard & Wolf 2001, Davis 2001). Investigators suggested that excessive internet use is also crucial to make the diagnosis. For example, Eijnden et al. (2008) considered that 9 hours of weekly Internet use was sufficient for the clinical diagnosis of addiction, whereas Young suggested that this period was 39 hours (Young 1998b). This difference might arise from use of different scales, which were not validated and which used unreliable research methodology and target patient population (Şenormancı etal. 2010).

Our sample consisted of patients with impaired functionality in all areas and beneficial use of the Internet was negligible. Therefore, the duration of beneficial internet usage was not stated separately in the results. In contrast with the population based studies, this point should also be considered while evaluating the duration of internet usage. Correlation analyzes showed no correlation between the scores of internet addiction and duration of internet usage. In the multiple regression models, duration of internet usage was determined as a predictor of internet addiction. As a result, it is important to consider the duration of internet usage as a predictor of addiction. But it must be noted that diagnosis should not be done only by using the duration of use.

Comorbidity of internet addiction with depression is common (Young & Rogers 1998, Kim et al. 2006, Yen et al. 2008). Patients with depression may use internet excessively for several reasons. Low self esteem, low motivation, fear of rejection, need for acceptance, and avoidance of problems of 'real' life in patients with depression trigger patients to use the Internet (Whang et al. 2003, Tsitsika et al. 2011). On the other hand, excessive use of the internet might also amplify the depression (Ko et al. 2012). Studies on comorbidity of internet addiction and depression do not have a pattern for demonstrating a causal relationship between these disorders. Thus, it should be considered that these disorders are coexisting pathologies rather than a cause or a symptom of the other (Morahan-Martin 2005). In our study, scores of internet addiction and depression were determined as positively correlated. We suggest that it was important to question the use of the internet, especially in young, male patients, who are admitted to a primary healthcare service.

Studies on internet addiction and loneliness are generally community-based and their results are often conflictive. It was stated that the Internet was a suitable environment for lonely people to develop social relationships. Anonymity, being physically invisible to the others, lack of nonverbal signals such as gesture and body language, and the feeling of freedom in selecting people any time and rejecting them easily create a feeling of control in lonely people, who build social relationships on the internet (Morahan-Martin & Schumacher 2003). Besides, lonely people use the Internet in order to avoid the problems of the outside world and as an alternative entertainment to the outside world (Shaw & Gant 2002, Whitty & McLaughlin 2007).

It was reported that there is a paradoxical effect between Internet use and loneliness. Although internet develops communication and ease in building social relationships, over time it causes the individual become lonely, by causing the replacement of 'real' social activities with 'virtual' activities and by distributing strong interpersonal relationships. Then, individuals become dependent to virtual social activities. While individuals are building weak social relationships by using Internet, they become lonely due to neglecting close friends and relatives (Kraut et al. 1998). Sample selection in this study was criticized because of the ignorance of personal characteristics of users and utilization of the internet (Shapiro 1999, Hamburger & Ben-Artz 2000). After three years of follow-up, Kraut et al. published different results in same patient population. Although they accepted that Internet based social relationships were weaker, they reported that the Internet had a positive effect on maintaining social relationships with long-distance close family members, friends and relatives. Extrovert people were reported as having more social support than introvert people and used the Internet beneficially for reducing their loneliness (Kraut et al. 2002). It was suggested that neurotic people were more lonely and tended to use the social opportunities of the internet, which means that loneliness was not a result but a cause of their internet use (Amichai-Hamburger & Ben-Artz 2003). Studies, focusing on Internet use and loneliness were mostly on

generalized use of internet. It was determined that massively multiplayer online games as an environment with more social interactions caused people to build emotional relationships and strong friendships (Cole & Griffiths 2007). According to the results of the study of Caplanet al. in 4000 massively multiplayer online role-playing games (MMORPG) players, a significantly positive correlation was found between internet addiction and instant messaging and accordingly a positive correlation was found between internet addiction and a stronger sense of belonging in internet based relationships comparing with personally established relationships (Caplan et al. 2009). We think that in our country, patients with specific (MMORPG) internet addiction are using the internet in order to meet their social needs not so differently than 'generalized' users. Unlike the previous studies we included both specific and generalized users in the same study by considering this situation. Patients with 'specific (MMORPG)' internet addiction, who were admitted to our clinic, stated that they were using online games for building up social relationships and interacting with other people in the game rather than entertainment purposes. For example, in Turkey, MMORPG player can stay awake the whole night in order to play with people in Mexico. Furthermore, some of them say that the only reason for playing MMORPG is to receive social support. In our study, internet addiction scores and loneliness level of the patients were not found to be correlated. Because of social support received through internet, we comment that these results show that internet use does not increase the level of loneliness.

Similar with our study, IAT, IRSQ UCLA loneliness scales were used in a population based study and found ‘inhibiting style interpersonal relationship’ as the predictor of internet addiction (Batigun & Hasta 2010). In our study, we could not determine a correlation between internet addiction scores and ‘contributing style interpersonal relationship’ scores, which were reflecting the positive relationship styles in interpersonal relationships. At the minimum significance level, a significant positive relationship was determined with ‘inhibiting style interpersonal relationship’, which reflected the negative relationship styles in interpersonal relationships. These results were supporting the idea that people having difficulties in interpersonal relationships were using the internet to have satisfactory relations more than the others and they might have a tendency for addiction.

Definitions for hostility, aggression and anger can vary; Hostility is the negative attitudes or cognitive features towards other people. Aggressiveness is a verbal or physical behavioral pattern, expressed with yelling, intimidation or physical assault. Anger is an emotional state, ranging from mild irritation or annoyance to anger or fury (Chida & Steptoe 2009). A study was conducted in adolescents and determined comorbid hostility with internet addiction in males but no comorbidity was found in females (Yen et al. 2007). A study was conducted in 9405 adolescents, who were using various features of internet such as online chatting, adult sex Web viewing, online gaming, online gambling and Bulletin Board System, and stated that excessive use of internet was associated with aggressive behaviors in ‘real’ life. A study wasperformed in addicts of online games and determined that there was a positive correlation between aggression and online game playing (Kim et al. 2008). A study was performed in adolescent internet users to investigate the predictor effect of game types for problematic behaviors. While first-person shooter games were associated with externalizing behaviors such as aggression, delinquency, potentially addictive online role-playing games were associated with internalizing problems such as anxiety, depression and somatic complaints (Holtz & Apel 2011).

In our study, internet addiction scores were not found to be correlated with STAXI trait anger, anger-out, anger-control scores. However, internet addiction scores were found to be correlated with STAXI anger-in scores. It was concluded that, if anger was not clearly expressed, it may cause internet addiction in the form of a coping mechanism. In addition, expression and perception of anger may differ with cultural differences in different populations.

Anger suppression contributes to an unhealthy lifestyle by causing consumption of alcohol and tobacco products and by enabling people to avoid regular physical activity (Musante & Treiber 2000, Golden et al. 2006). Similarly, unexpressed anger may cause harmful and unhealthy, excessive use of internet. These results are consistent with our clinical observations. Internet addiction is more common among the young, male population. These people use computers almost every day while they are growing and they can not develop their skills for expressing themselves. As a result, therapies for encouraging and developing anger expression may be useful to treat internet addiction. According to the results of a study, which was conducted in young game addicts, communication with parents reduced the occurrence of internalizing and externalizing behaviors (Holtz & Apel 2011). Therefore, family therapies, giving particular importance to validation of feelings should be included in the treatment plan, in addition to individual treatment approaches.

Limitations

Our study was of the whole male sample population. Although our sample represents the clinical population, studies in both genders may be useful. As the study was cross-sectional, we could not establish a causal relationship. We believe that multi-factorial studies can be conducted in order to assess the causalty. Our study was conducted in Turkish internet addicts and these results need to be confirmed with studies in other nations.

CONCLUSION

In our study, we determined the duration of internet usage and STAXI anger-in scores as the predictors of internet addiction. Although it was not adequate for the diagnosis, the duration of internet usage was determined as the predictor of internet addiction. It is helpful for clinicians to regulate the hours of internet usage for patients suspective of excessive or uncontrolled internet use. Psychiatric treatments for expressing anger and therapies that focus on validation of the feelings may be useful for patients with internet addiction.

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