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SELF-REGULATION and ANXIETY SENSITIVITY as PREDICTORS of INTERNET ADDICTION among SECONDARY SCHOOL 7TH-and 8TH-GRADE STUDENTS

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ABSTRACT

It is very important to investigate the Internet addition, which is anticipated to be a serious problem in the future, and its associated concepts among children and adolescents because adolescence is one of the most critical periods of development. Whether this period is experienced in a healthy or unhealthy manner will have serious impacts on the identity development of the individual. Accordingly, this study aimed to investigate anxiety sensitivity and self-regulation as predictors of Internet addiction among secondary school students. Relational survey model of the general survey models was used in the research. The model was tested with hierarchical regression method. The study group consisted of 438 student attending a secondary school in Üsküdar, İstanbul in the academic year of 2017-2018. 210 (47.9%) of the students are girls and 228 (52.1%) are boys. Their age varied between 12 and 15 years old, and their mean age was 13.38. 227 (51.8%) of the students were 7th-graders while 211 (48.2%) were 8th-graders. The research data were obtained using the Internet Addiction Scale, the Childhood Anxiety Sensitivity Index and the Perceived Self-Regulation Scale. Before the analyzes were performed, it had been tested whether the data met multiple regression conditions, and the conditions were found to be met. The analysis concluded that anxiety sensitivity positive significantly explained Internet addiction in the secondary school students, and self-regulation explained it negative significantly. Experts in the field can shape therapy plans in consideration of the relationship between Internet addiction and anxiety sensitivity and self-regulation in reducing Internet addiction. Researchers can test the results of this research by studying the relationships between the concepts on different samples. Educators can benefit from modules aimed at reducing anxiety sensitivity and increasing self-regulation in their psychoeducation activities.

Keywords: Internet addiction, anxiety sensitivity, self-regulation, secondary school

INTRODUCTION

The Internet, as one of the most functional tools discovered by mankind, has become an indispensable element of daily life. With being accessible almost everywhere, this functional tool that can meet several needs (education, shopping, entertainment, etc.) has become a part of daily life. The Internet can be used in a functional way or in a non-functional way. Non-functional use brings about the state of addiction. Non-functional use can be triggered by some elements. Individual's psychological structure, or mental health, is one of these elements. An individual's psychological problems or his/her tendency to psychological problems may trigger Internet addiction. Nevertheless, some attributes of the individual such as self-regulation may reduce the risk of Internet addiction as self-regulation gives the individual the qualities of motivating himself/herself for his/her purposes, being controlled and managing his/her emotions. Such qualities can be effective in preventing the emergence of the addictive behavior.

The Internet is used intensively throughout the world. According to the data of March 2019, there are approximately 4.5 billion internet users around the world. As for the increase in Internet usage, there was an increase of 1.114% between 2000 and 2019 (Internet World Stats, 2019). This rate can be said to be very high. Intensive use of the Internet at this rate may lead to some problems. Internet addiction is a prominent one among these problems. Deteriorations in social, professional and academic life and in physical health (Ceyhan et al., 2007) seem to be the reflections of Internet addiction. Regarding the Internet addiction criteria, it is seen that different criteria have been proposed by different researchers (Shapira et al., 2003; Shaw & Black, 2008; Young, 1998). With the publication of DSM 5 (Diagnostic and Statistical Manual of Mental Disorders) by the American Psychiatric Association (APA, 2013), the criteria started to become clearer. The criteria that DSM 5 set for online gaming addiction also started to be adapted by researchers (Pontes & Griffiths, 2016) to Internet addiction. These criteria are that gaming is the most important activity for the individual; tolerance, withdrawal symptoms, wanting to stop playing but failing to do so, not doing other important activities (hobbies, tasks, etc.) due to gaming, lying about for how long one is gaming, using the gaming to escape from negative emotions, experiencing problems and conflicts with other people due to gaming a lot, missing or postponing important business, relationship and career opportunities due to gaming (APA, 2013). When taking a closer look at the criteria, it is seen that Internet addiction can cause serious problems in both adolescents' and adults' life.

It can be argued that Internet addiction adversely affects children and adolescents in particular as they go through their developmental period. Adolescence is a period of social, physical, emotional, moral and spiritual developments (Swetts, 1998: 25). This is a period in which the tendency towards risky behaviors is dominant (Plotnik, 2009: 411). Going through this period in a healthy manner minimizes the risk factors for both adolescents and their environment while unhealthy experiences in the periods may result in risky behaviors for adolescents and their social environment. Internet addiction can be considered a part of adolescent's risky behaviors (Rücker et al., 2015). Because Internet addicts are more exposed to several virtual world risks such

as harassment, pornography, violent content and violation of private life than non-addicts (Leung & Lee, 2012). Such risk factors of the virtual world threaten the healthy development of adolescents. Their destruction on adolescents will continue to be effective in the years following the adolescence.

As for the studies on Internet addiction among adolescents, it is observed that Internet addiction is positively correlated with interpersonal sensitivity (Anlı, 2018a), social and emotional loneliness (Anlı, 2018b), depression and anxiety (Taş, 2018; Nam et al., 2018), depression, anxiety, stress and loneliness (Ostovar et al., 2016) low metacognitive awareness level (Kılınç & Doğan, 2014), preoccupied attachment, fearful attachment and dismissive attachment (Savcı & Aysan, 2016), and depression and suicidal thoughts (Kim et al., 2006). When the Internet addiction-related concepts are examined, it is understood that addiction is observed mostly along with psychological problems.

As can be seen from previous research, one of the concepts that Internet addiction is associated with is the concept of anxiety. There are other studies (Bernardi & Pallanti, 2009; Tonioni et al., 2012; Dalbudak & Evren, 2014) in the literature showing that there is a relationship between Internet addiction and anxiety. Anxiety is addressed as a general concern about a possible future danger consisting of cognitive, physiological and behavioral elements (Butcher et al., 2013). In another study, anxiety was defined as an unknown cause, heartfelt fear, distress and anxiety that something bad would happen (Gülcez, 2007). Anxiety sensitivity, which is defined as the fear that the symptoms and sensations resulting from anxiety will have serious physical or social consequences, is similar to the expectation and fear that panic attacks experienced by panic attack patients will occur again (Mantar et al., 2011). High anxiety sensitivity, that is, the fear of anxiety's harmful consequences, will cause negative emotions to prevail in the individual. The individual who wants to get rid of these negative emotions may set off on new searches. The Internet offers individuals a way, a new world, for them to feel good with new people, new relationships and different feelings (Young, 1997). Individuals with high anxiety sensitivity may want to take refuge in the virtual world to feel better and prefer to stay online for longer to maintain their well-being and being online for a longer period is an important factor in the formation of Internet addiction which is a problematic behavior. Researches in the literature indicates a high relationship between Internet usage duration and Internet addiction (Kuss et al., 2013; Özçınar, 2011; Tonioni et al., 2012; Young, 1999).

Although anxiety sensitivity is associated with many psychological problems, limited number of studies have been found in the literature. In studies conducted on anxiety sensitivity, the concept is observed to be positively related to trait anxiety, depression, anxiety, and exaggeration of body sensations (Mantar, 2008), social anxiety, state anxiety and trait anxiety (Seçer & Gülbahçe, 2013), state and trait anxiety (Yılmaz & Zinnur Kılıç, 2015), obsessive-compulsive symptoms (Seçer, 2014), and depression (Taylor et al., 1996) and negatively related to self-esteem (Seçer & Gülbahçe, 2013).

Considering the relationship between Internet addiction and anxiety (Younes et al., 2016; Nassehi et al., 2016), it can be said that anxiety sensitivity is related to Internet addiction and both conditions can be observed together. On the other hand, self-regulation (Arslan & Gelişli, 2015), which refers to goal setting, being controlled, having motivational belief and metacognitive skills, is expected to have a negative impact on the formation of Internet addiction. Self-regulation is a process that involves changing one's own emotions, thoughts and actions, including impulsive coercion (Baumeister & Tice, 2018). Concerning the components of self-regulation (being controlled, making and implementing plans), it is seen that these components are the opposite of impulsivity. How researchers define Internet addiction as an impulse-control disorder which does not involve use of an intoxicating drug (Wang et al., 2003) and the fact that there are studies emphasizing the relationship between problematic Internet use (Eroğlu, 2015), Internet addiction (Cao et al., 2007) and substance addiction (Dave & Loxton, 2004) and impulsivity also provide information about the relationship between Internet addiction and self-regulation.

Self-regulation is that the person is controlled while observing himself, evaluating the information obtained during self-observation, and motivating himself to achieve the goals he has set (APA Dictionary of Psycholgy, 2019). A self-regulated individual has the skills such as determining his/her own goal, using the strategies required for this goal, and evaluating the learning processes and learning outcomes (İrven & Şenler, 2017). Lack of self-regulation underlies several social and personal problems (Baumeister & Vohs, 2018). Regarded as lack of self-control, lack of self-regulation manifests itself clearly in the criteria used for diagnosing the media addiction (loss of control, mind's constant engagement with it, relapse) (LaRose et al., 2003). Such criteria are the basic criteria used to diagnose addictions. While manifesting itself in the criteria of media addiction, lack of self-regulation causes individuals to develop behavioral addictions such as smartphone addiction to avoid negative emotions (van Deursen et al., 2015). It is seen that lack of self-regulation and behavioral addictions are interrelated concepts. Even though self-regulation is an important concept in the emergence of positive behaviors, there are limited studies on this concept in the literature. In the literature, self-regulation was found positively correlated with student achievement (İrven & Şenler, 2017), secure attachment styles (Baysal & Özgenel, 2019) and negatively correlated with smartphone addiction (van Deursen et al., 2015). Furthermore, low self-regulation was found positively correlated with gaming addiction and other behavioral addictions (Wegmann et al., 2015) and Internet addiction and loss of control (Hahn et al., 2017).

The recognition of gaming disorder and online gaming addiction by the World Health Organization (WHO, 2018) and the American Psychiatric Association (APA, 2013) enabled Internet addiction to be evaluated under the same criteria. These developments seem to pave the way for the evaluation of Internet addiction as a serious mental health problem. It is seen that Internet addiction poses a serious risk especially among adolescents (Leung & Lee, 2012). Adolescence is a critical period in terms of identity formation, and the undesirable habits to be acquired during this period will adversely affect the subsequent years. Investigation of the variables related to Internet addiction among adolescents is important for better understanding of the

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problem and comprehension of its dimensions of effect. Researches (Ostovar et al., 2016; Taş, 2019) shows that Internet addiction is correlated with anxiety. The presence of anxiety in Internet addicts makes it important to investigate the variable of anxiety sensitivity. On the other hand, it is important to investigate the concepts which Internet addiction is negatively related to for the the addiction-reducing efforts. Although there are studies showing a negative relationship between the concept of self-regulation and behavioral addictions (LaRose et al., 2003; van Deursen et al., 2015), these studies are very limited in number. In the literature, the lack of studies examining anxiety sensitivity, which is a variable accompanying Internet addiction, and self-regulation, which is one of the variables that may be effective in reducing Internet addiction, makes this study important. To this end, answers to the following questions were sought:

Is anxiety sensitivity a significant predictor of Internet addiction?

Is self-regulation a significant predictor of Internet addiction?

METHOD

Research Model

Investigating anxiety sensitivity and self-regulation as predictors of Internet addiction among adolescents, this study was designed in the relational survey model. In relational survey models, the relationship between two or more variables is investigated without interfering with the variables (Büyüköztürk et al., 2010). The hierarchic regression model was used in the research. In the hierarchical regression model, explanatory variables are analyzed in the order determined by the researcher. The variance of the dependent variable explained by each variable is evaluated individually. In this analysis, the explanatory variables included in the model earlier serve as the control variable for the explanatory variables included in the model later (Büyüköztürk, 2014).

Research Group

The study group consisted of 438 student attending a secondary school in Üsküdar, İstanbul in the academic year of 2017-2018. 210 (47.9%) of the students are girls and 228 (52.1%) are boys. Their age varied between 12 and 15 years old, and their mean age was 13.38. 227 (51.8%) of the students were 7th-graders while 211 (48.2%) were 8th-graders. The 6th-graders were not included in the study because the age subsector for which the Perceived Self-Regulation Scale was developed is 12. The research group was selected by simple random research method.

Data Collection Instruments

Personal Information Form

Socio-demographics of the participants were obtained with the personal information form prepared by the researcher.

Internet Addiction Scale

Young's Internet Addiction Scale was adapted to the short form by Pawlikowski et al. (2013). Adapted to Turkish language by Kutlu et al., (2016), the scale consists of 12 items and one factor. In the Likert-type (5-point) scale, higher scores indicate higher levels of Internet addiction. In the exploratory factor analysis of the scale, KMO (Kaiser-Meyer-Olkin) value was found to be .91, and Bartlett's Test for Sphericity $\chi2$ value was found to be 2077.04 (p<0.001). The fit indices achieved in the confirmatory factor analysis ($\chi2$= 144.93, sd=52, RMSEA=0.072, RMR=0.70, GFI=0.93, AGFI=0.90, CFI=0.95 and IFI=0.91) were seen to be within acceptable limits. The Cronbach's Alpha internal consistency coefficient of the scale is .91. The Cronbach's Alpha internal consistency coefficient calculated for this study is .80.

Childhood Anxiety Sensitivity Index

The instrument was developed by Silverman, Fleisig, Rabian and Peterson (1991) and adapted to Turkish culture by Yılmaz and Zinnur Kılıç (2015). The 3-point Likert-type instrument consist of three factors and 18 items. Higher scores obtained in the scale refers to higher anxiety sensitivity. In the construct validity study performed for the instrument, its KMO (Kaiser-Meyer-Olkin) value was found to be .78. A similar validity study was conducted with the State-Trait Anxiety Inventory for Children, and the instrument was found to be moderately correlated with the state anxiety subdimension (r=.326) and the trait anxiety subdimension (r=.421). The internal consistency coefficient (Cronbach's alpha) of the scale was found to be .74, and its test-retest reliability was r=.77. Its internal consistency coefficient was found to be .74 for this study.

Perceived Self-Regulation Scale

The scale was developed by Arslan and Gelişli (2015). The Likert-type (5-point) scale consists of two factors and 16 items. Higher scores from the scale mean that self-regulation is high. In the exploratory factor analysis, a two-factor structure explaining 54% of total variance was obtained. The chi-square value and fit indices obtained in the confirmatory factor analysis (x^2 = 147.60, sd = 95, p = 0.00, RMSEA = .042, CFI = .99, GFI = .94, AGFI = .92, SRMR = .035) show that the scale is a valid instrument. The Cronbach's Alpha internal consistency coefficients are .90 for the whole scale, .84 for the openness factor and .82 for the search factor. Scale's internal consistency coefficient was found to be .83 for this study.

Collection and Analysis of the Data

The data were collected from the participants in face-to-face interviews on a voluntary basis. First, the relevant permissions were obtained, and then the procedures were started. In the data analysis, incomplete data were extracted from the data set in the first place. Following this step, 455 data were decreased to 438 data. The data analysis was performed with 438 people. The data were analyzed with hierarchical regression model. The assumption of normality, linearity and multicollinearity among independent variables, which are the conditions of multiple regression, were tested before the analysis. For the assumption of normality, firstly, the univariate assumption of normality was tested, and the kurtosis-skewness values of the variables (-.073ie -.602) were found to be within the normal distribution range (Büyüköztürk, 2014). The multivariate normality and linearity problem was examined with the scatter plot, and it was observed that the distributions were ellipse; in other words, the assumption of linearity and multivariate normality was met. The multicollinearity among independent variables was investigated with VIF (Variance Increase Factors) and CI (Conditional Indices) analyses. In the analyses, it is seen that the VIF value is between 1.026-1.622 (VIF<10) and CI values are between 8.791 and 26.293 (CI <30), and there is no multicollinearity (Çokluk et al., 2012). After it was observed that multiple regression conditions were met, hierarchical regression analysis was started. In the first step, cognitive sensitivity, physical sensitivity and social sensitivity factors of the Childhood Anxiety Sensitivity Index were included in the model. In the second step, the openness and search factors of the Perceived Self-Regulation Scale were included in the analysis. The data were analyzed in SPSS 25 software package.

FINDINGS

The correlations between Internet addiction and other variables were examined before proceeding to the hierarchical regression analysis, and the results obtained are given in Table 1.

Table 1. The Correlations Between Internet Addiction and Anxiety Sensitivity and Self-Regulation

	IA	AST	SSF	PSF	CSF	SRT	OF	SF
IA	1	.311**	.160**	.279**	.172**	-.350**	-.282**	-.340**

*p<.05, **p<.01; IA: Internet addiction, AST: Anxiety sensitivity total score, SSF: Social sensitivity factor, PSF: Physical sensitivity factor, CSF: Cognitive sensitivity factor, SRT: Self-regulation total score, OF: Openness factor, SF: Search factor

According to Table 1, Internet addiction was moderate positively correlated with anxiety sensitivity total score (r=.311, p<.01), low positively correlated with social sensitivity factor (r=.160, p<.01), low positively correlated with physical sensitivity (r=.279, p<.01), low positively correlated with cognitive sensitivity (r=.172, p<.01), moderate negatively correlated with self-regulation total score (r=-.350, p<.01), low negatively correlated with openness factor (r=-.282, p<.01), and moderate negatively correlated with search factor (r=-.340, p<.01).

Following the examination of the relationships between Internet addiction and other variables, the hierarchical regression analysis was proceeded to, and the results are shown in Table 2.

Table 2. Hierarchical Regression Table for Predicting İnternet Addiction by Anxiety Sensitivity and Self-Regulation

Variable	B	Standard Error	β	*T*	*p*	Dual R	Partial R
Constant	12.161	2.271		5.354	.000		
SSF	.704	.262	.124	2.689	.007	.160	.0128
PSF	.435	.088	.242	4.935	.000	.279	.231
CSF	.450	.339	.065	1.327	.185	.172	.064
Block 1: R=.314; R²= .099; ΔR²= .099; F$_{(3, 434)}$ = 15.830; p< .01							
Constant	28.108	2.919		9.629	.000		
SSF	.700	.244	.123	2.873	.004	.160	.137
PSF	.447	.083	.249	5.417	.000	.279	.252
CSF	.434	.315	.063	1.375	.170	.172	.066
OF	-.271	.088	-.167	-3.093	.002	-.282	-.147
SF	-.287	.068	-.227	-4.225	.000	-.340	-.199
Block 2: R= .474 R²= .224; ΔR²= .126; F$_{(5, 432)}$ = 24.997; p< .01							

IA: Internet addiction, AST: Anxiety sensitivity total score, SSF: Social sensitivity factor, PSF: Physical sensitivity factor, CSF: Cognitive sensitivity factor, SRT: Self-regulation total score, OF: Openness factor, SF: Search factor

According to Table 2, the anxiety sensitivity factors which were included in the first block explained (predict) Internet addiction among the secondary school students positive significantly (F$_{(3, 434)}$ = 15.830; p< .01, R=.314; R²= .099). The anxiety sensitivity factors (social sensitivity, physical sensitivity and cognitive sensitivity) which were included in the first block were found to explain 10% of the total variance of Internet addiction among the secondary school students. In the second block, the self-regulation factors (openness, search) were included in the analysis. Accordingly, the self-regulation factors predicted Internet addiction negative significantly (F$_{(5, 432)}$ = 24.997; p< .01, R= .474 R²= .224; ΔR²= .126). The self-regulation factors explained 13% of the total variance of Internet addiction. In the model, it was seen that anxiety sensitivity explained 10% of the variance of Internet addiction among the secondary school students, and the variance explained reached 22.4% with self-regulation having been included in the analysis in the second step.

CONCLUSION and DISCUSSION

Internet addiction poses a severe danger for children and adolescents. However, studies on Internet addiction among children and adolescents and related variables are not sufficient. This study investigated anxiety sensitivity and self-regulation as predictors of Internet addiction among secondary school students. Firstly, the relationships between Internet addiction and anxiety sensitivity and self-regulation were addressed, and it was found that Internet addiction was related to the variables in question. The research concluded that anxiety sensitivity and self-regulation were significant predictors of Internet addiction.

The first research question was whether anxiety sensitivity among the secondary school students significantly explained Internet addiction. It was found that social sensitivity and physical sensitivity factors of anxiety sensitivity explained Internet addiction positively whereas the cognitive sensitivity factor was not a significant predictor. No studies investigating the relationship between Internet addiction and anxiety sensitivity were observed in the literature. Nevertheless, this findings of the research coincides with the findings of studies

investigating the relationship between Internet addiction and anxiety (Bernardi & Pallanti, 2009; Dalbudak &Evren, 2014; Nassehi, et al., 2016; Taş, 2018; Tonioni et al., 2012; Younes et al., 2016). It can be said that anxiety sensitivity, that is, the fear that the undesired symptoms resulting from anxiety will have serious social and physical consequences (Mantar et al., 2011), orientates the person towards different searches so that he/she can get rid of this negative emotion. One of these orientations seems to be towards the online world, which is also very risky as well as attractive for children and adolescents. Given that the online world offers individuals different experiences and create new social environments, therefore making them feel good (Young, 1997), this orientation becomes more understandable. The individual who feels better in the virtual world will want to spend more time there. This will, in turn, increase the likelihood of addiction behavior (Kuss et al., 2013; Özçınar, 2011). In other words, it can be argued that anxiety sensitivity is an effective factor in the emergence of Internet addiction, and individuals with high anxiety sensitivity are more likely to become Internet addicts.

The second research question was whether self-regulation was a significant predictor of Internet addiction among the secondary school students. It was observed in the study that both of the openness and search factors of self-regulation were significant predictors of Internet addiction among the secondary school students. Both factors negatively explained Internet addiction. This result of the research coincides with the studies investigating the relationships between self-regulation and Internet addiction (Hahn et al., 2017), smartphone addiction (van Deursen et al.,, 2015) and gaming addiction, and other behavioral addictions (Wegmann et al., 2015). Considering that individuals with self-regulation skills can change their emotions, thoughts and actions (Baumeister & Tice, 2018) and they are controlled (Arslan & Gelişli 2015), it is better understood that individuals with high self-regulation skills have low levels of Internet addiction. In this context, it can be said that individuals who can control their own worlds, have motivational beliefs and can set goals and organize accordingly are less likely to become addicts. In other words, it seems that self-regulation is an effective variable in preventing or reducing Internet addiction, and individuals with high self-regulation are less likely to be addicts.

SUGGESTIONS

As a result, it was observed that anxiety sensitivity levels of the secondary school students with high levels of Internet addiction were high while they had lower levels of self-regulation. Accordingly, it can be recommended that the experts working in the field consider anxiety sensitivity levels when working with children and adolescents, who are addicted to the internet, and if necessary, work on reducing or eliminating this symptom in the first place. Based on the negative relationship between self-regulation and Internet addiction, practitioners can work on improving self-regulation skills when studying with Internet addicts. Experts working in schools can benefit from modules aiming to reduce anxiety sensitivity and increase self-regulation skills in psychoeducation studies on reducing Internet addiction. No studies investigating the relationships between Internet addiction and anxiety sensitivity and self-regulation were observed in the

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literature. Researchers can examine the relationships between these concepts to test the results obtained from this study. Moreover, they can study the variables on different sample groups to compare their findings with the results of this study.

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