ORIGINAL ARTICLE

The Relationship Between Game Addiction and Self-Handicapping, Anxiety Sensitivity, and Alexithymia Among University Students

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Main Points

- Game addition was determined in 13.5% of the study participants.
- Game addiction is positively related to self-handicapping, anxiety sensitivity, and alexithymia.
- Difficulties in describing feelings sub-dimension of alexithymia is a statistically significant predictor of game addiction.

Abstract

The main purpose of this research is to evaluate the relationship between levels of game addiction and self-handicapping, anxiety sensitivity, and alexithymia in university students and to determine the predictive power of these variables on game addiction. The relationship between these variables has been examined using the data obtained from a sample of 222 participants (144 female and 78 male). Findings showed that self-handicapping (weak positive correlation $r = .21$, $p < .01$), anxiety sensitivity (moderate positive correlation $r = .32$, $p < .01$), and alexithymia (moderate positive correlation $r = .34$, $p < .01$) have a significant relationship with game addiction. The whole model consisting of self-handicapping, the cognitive, physical, and social sub-dimensions of anxiety sensitivity, the identifying feelings, describing feelings, and extrovert-oriented thinking sub-dimensions of alexithymia was found to be explaining 19% of the variance of the game addiction ($F (7, 186) = 6.30$, $p < .01$). The "describing feelings" sub-dimension of alexithymia, one of the predictor variables, contributes to the model in a statistically significant ($ß = .28$, $t = 3.03$, $p < .01$) manner. According to the results of this research, individuals facing difficulties in describing their feelings can be said to be a risk group in terms of game addiction.

Keywords: Alexithymia, anxiety sensitivity, game addiction, self-handicapping

Introduction

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When computer games are used optimally, they can make a positive contribution to the cognitive development of an individual. Research on excessive game play and negative aspects of game addiction has shown that various physical and psychological problems are frequently encountered such as obsessive and aggressive behaviors, non-responsiveness or violent symptoms, personality changes, decreased emotional responses, hyperactivity, learning disorders, psychomotor disorders, health problems caused by lack of activity and movement, antisocial behavior, loss of desire, unwillingness to communicate, increased hostile attitude, poor academic performance, anxiety, deterioration in interpersonal relationships, avoidance of real dimensions of life, loss of vision and excessive weight, immature human relationships, confusion between dream and reality, boredom, and loss of sensation (Chiu et al., 2004; Hauge & Gentile, 2003; Setzer & Duckett, 1994; Wan & Chiou, 2006). The factor that comes to the fore in all the research regarding negative effects is addiction (Griffiths et al., 2012). Computer games can have many positive effects. Educational computer games help to develop reading and mathematics

skills, help an individual to control their power, contribute to information technology literacy, increase visual attention, and improve spatial visualization skills such as turning three-dimensional objects in the mind and reacting quickly. Computer games can also have an important role in the formation of surgical skills by contributing to fine motor development (Gentile & Anderson, 2006). The concept of "gamification" refers to the effective use of games in the field of education based on the fact that the game is a good method for motivation. Games may be oriented to be used in the field of education by using strong social psychological processes such as self-efficacy, group definition, and social approval (Deterding, 2012). However, there is also inherent harm in the games. Findings related to the harm of computer games are mostly related to aggressive behavior (Gentile & Anderson, 2006). Computer games increase feelings of aggression and a more aggressive mood which is sometimes accompanied by anger and hostility. Violent computer games have been found to increase verbal and physical violence, prejudice, and hostility in individuals. These games also reduce altruistic behavior and positive social emotions. In addition, poor academic performance, obesity, and musculoskeletal system disorders such as tendinitis are among the possible damage that can result from games. Long periods spent playing computer games can lead to physical and psychological health problems, such as epileptic seizures, obesity, sleep disorders, hallucinations, enuresis, encopresis, and various orthopedic disorders in the hands, neck, and back (Griffiths et al., 2012). Game addiction can also be associated with many psychosocial problems, such as absenteeism from work or school, withdrawal from the family and social environment, loneliness, stress, a decrease in psychosocial well-being, decreased social skills, low academic achievement, low self-esteem, decreased life satisfaction, decreased cognitive performance, and even suicidal thoughts (Griffiths et al., 2012).

To the extent we see, there is no research in the literature on the relationship between game addiction and self-handicapping. This research is the first study aiming to illuminate the relationship between these two notions. The fact that game addiction is a frequently studied subject in terms of forensic sciences has made it necessary to examine and explain the psychosocial dynamics of self-handicapping, which functions as a psychopathological dynamic closely related to this process. Anxiety sensitivity and alexithymia are conditions associated with various substance addictions and behavioral addictions. The scarcity of research on this subject necessitated this research.

Determining the variables that play a vital role in the formation of game addiction is of great importance. Researchers acknowledge that game addiction develops symptoms similar to those of other addictions such as jeopardization of interpersonal and social relationships, obsession by the game, persistence in playing despite being aware of negative consequences, withdrawal symptoms during gaming abstinence, and relapse. Self-handicapping, which is stated in the literature as one of the variables that plays a role in the formation of game addiction, is seen as different types of self-prevention methods such as shyness, setting an inaccessible goal, and alcohol or substance abuse (Arkin & Baumgardner, 1985; Chen et al., 2018). It has been argued that alcohol and substance abuse is related to self-handicapping as the use of alcohol or substance has a performance-decreasing

effect (Jones & Berglas, 1978). It has also been stated that the self-handicapping behavior of individuals becomes chronic over time (Feick & Rhodewalt, 1997; Snyder & Smith, 1982; Zarshenas et al., 2019). Therefore, it has become important to examine the relationship between game addiction and self-handicapping since playing computer games for several hours continuously, thereby losing functionality and delaying responsibilities, can also be described as self-handicapping behavior. Game addiction may be one of the methods of self-handicapping or there may be some common predictors in the development of these phenomena.

According to Reiss et al. (1986), anxiety sensitivity is an important factor in the emergence of alcohol and substance addiction. This finding is thought to be relatable to all other addictions, and behavioral addictions such as game addiction have been shown to be associated with anxiety sensitivity (Salem & JafariFazel, 2020). Öztürk and Çalıcı (2018) stated that anxiety tolerance in human life is important in terms of mental health and psychological integrity and that it is difficult for individuals to tolerate anxiety as the frequency, intensity, and duration of use of digital devices increase. In this context, it can be asserted that the hypothesis that game addiction is associated with anxiety sensitivity is becoming stronger and more important.

Another concept that is thought to be closely related to addiction is alexithymia. Alexithymia has a relationship with physiological addictions such as alcohol and substance abuse, as well as behavioral addictions such as pathological gambling and internet addiction (Chaudhury & Mujawar, 2019). Recent studies have reported that internet addiction and alexithymia are related (Mahapatra & Sharma, 2018; Özen & Topcu, 2017). It has been stated that advanced studies are required on game addiction in Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM 5) (APA, 2013).

The aim of this study was to evaluate the relationship between levels of game addiction and self-handicapping, anxiety sensitivity, and alexithymia in university students and to determine the predictive power of these variables on game addiction.

Methods

This study was structured within a quantitative research design using the causal model. The causal model is a procedure used to test for cause-and-effect relationships—as opposed to mere correlation—between multiple variables (VandenBos, 2007). The predictive power of these variables as well as the presence and degree of correlation between them on game addiction levels were measured. Researchers applied to the Local Ethics Committee of İstanbul University-Cerrahpaşa, Faculty of Medicine and started the data collection process for the research after the ethics decision numbered 12/12/2018-55439 and dated December 12, 2018, was obtained.

Participants

The universe of this research is university students in İstanbul. The sample consists of associate, undergraduate, graduate, and doctoral students at İstanbul University-Cerrahpaşa, İstanbul Medipol University, and İstanbul Arel University. The study sample consisted of 222 (144 female and 78 male) university students with a median age of 23.08 years (range: 18 – 40 years). The research was conducted with university students from November

2018 to February 2020. The scales used in the research were delivered and completed online via Google Documents by the participants who were selected using a convenience sampling method.

Measures

Game addiction. The Game Addiction Scale (GAS) was designed and developed by Lemmens et al. (2009) based on the DSM-IV pathological gambling criteria to assess the level of game addiction. There are two versions of the scale, with 21 or 7 items, for which Likert-type responses are given on a 5-point scale ranging from "never" to "very often." The seven-item scale was adapted to Turkish by Akın et al. (2016) and showed sufficient internal consistency with Cronbach alpha of .91. The Turkish version of the GAS-7 was used in this study with a total score ranging from 7 to 35. Two formats were used to diagnose game addiction. In the monothetic format, respondents endorse all seven items, and in the polythetic format, respondents endorse at least four of the items (Lemmens et al., 2009). To evaluate the game addiction prevalence rate in the current study, the monothetic format was used. The study participants were separated into two groups according to the GAS-7 results. Those who responded "often" or "very often" to all the items of the GAS-7 formed the "addict" group (n = 30, 13.5%), and those who did not meet the addict group criteria formed the "normal" group (n = 192, 86.5%). The internal consistency coefficient of the scale in this study was calculated as .90.

Self-Handicapping. To measure the players' level of self-handicapping, we utilized the Self-Handicapping Scale (SHS), which was constructed to identify self-handicapping tendencies as a general trait (Rhodewalt, 1990). This scale is the most commonly used self-report measure of self-handicapping in psychological research. It is a 1-dimensional measurement tool with 25 descriptive items to which respondents indicate their agreement with 6-point Likert-type responses. The items in the scale evaluate self-sabotage strategies such as effort, procrastination, illness, alcohol or drug use, sleeplessness, and some emotional problems. Items 3, 5, 6, 10, 13, 20, 22, and 23 are reverse scored, and the total score can range from 25 to 150, with higher scores indicating a higher tendency for verbal and behavioral self-handicapping. Validity and reliability studies of the Turkish version of the scale were performed by Akın (2012). The internal consistency reliability coefficient of the Turkish form was found to be .90 and the test – retest reliability coefficient to be .94, showing sufficient reliability of the Turkish SHS. The internal consistency coefficient of the scale in this study was calculated as .71.

Anxiety sensitivity. The Anxiety Sensitivity Index-3 (ASI-3) is an 18-item questionnaire that assesses an individual's fear of anxiety-related sensations. The scale has three dimensions: physical, social, and cognitive (Kemper et al., 2012, Marshall et al., 2010, Osman et al., 2010). The internal consistency for the ASI-3 total score in the current sample was excellent (α = .92). Validity and reliability studies of the Turkish version of the ASI-3 were conducted by Mantar (2010). Internal consistency was determined to be high (α = .93). Pearson's correlation coefficients of ASI-3 total scores and each item for the test – retest were calculated. The scale total scores were found to be moderately correlated in test – retest (r = .64, p < .001). Thus, it was seen that ASI-3 is a valid and reliable measurement tool to measure anxiety sensitivity (Mantar et al., 2010). In the current study, the Cronbach's alpha value for the ASI-3 was found to be .94.

Alexithymia. The Toronto Alexithymia Scale-20 (TAS-20), developed by Bagby et al. (1994), is the most psychometrically valid and widely used self-report measurement of alexithymia. It consists of 20 items in 3 subscales of difficulties in identifying feelings (DIF), difficulties in describing feelings (DDF), and externally oriented thinking (EOT). Responses are given on a five-point Likert-type scale with high scores indicating a high level of alexithymia. The Turkish adaptation was made by Güleç et al. (2009). The total Cronbach's alpha value of the scale was found to be .78, and the sub-scales were between .57 and .80. These results show sufficient reliability of the TAS-20. The internal consistency coefficient of the scale in this study was calculated as .80.

Results, Discussion

In the analysis of the data obtained in the research, the 21st version of the International Business Machines Statistical Package for the Social Sciences) program was used. Before the analysis, it was checked whether the data were normally distributed. The skewness – kurtosis values and normality tests were examined for each variable, and it was concluded that the normality hypothesis was met. The skewness and kurtosis values of the variables are given in the correlation table. Independent samples t-test, one-way analysis of variance, and post hoc Tukey test were used for comparisons between groups. Pearson's correlation analysis was used to examine the relationships between variables. Significance levels were made according to p < .05 value. The Pearson's correlation coefficients revealed that game addiction is positively related to self-handicapping, anxiety sensitivity, and alexithymia.

The Pearson's correlation coefficients revealed that game addiction is positively related to self-handicapping, anxiety sensitivity, and alexithymia. The results of the correlational analysis are shown in Table 1.

The whole model consisting of self-handicapping, the cognitive, physical, and social sub-dimensions of anxiety sensitivity, and the DIF, DDF, and EOT sub-dimensions of alexithymia was found to explain 19% of the variance of the variant of game addiction (F (7, 186) = 6.30, p < .01). The results of the regression analysis are shown in Table 2.

Based on the arguments put forth by Charlton and Danforth (2007), Lemmens et al. (2009) adapted both the monothetic and polythetic formats to determine game addiction. According to the monothetic format, a score of $\geq$3 in all 7 items and in the polythetic diagnosis, a score of $\geq$3 in at least 4 of the 7 items are considered as game addiction. It has been suggested that both the monothetic and polythetic techniques could be used to determine game addiction, and it has been shown that the level of game addiction can be evaluated according to the total score increase obtained from the scale. In the current study, game addition was determined in 13.5% of the study participants according to the monothetic technique applied to the GAS. To analyze inter-group differences, the independent samples t-test was applied. The results of the analyses are shown in Table 3.

Table 1.
Correlations of Main Study Variables

	1	2	3	4	5	6	7	8	9	10
Game addiction (1)	1									
Alexithymia (2)	.340**	1								
DIF (3)	.280**	.891**	1							
DDF (4)	.366**	.807**	.687**	1						
EOT (5)	.130	.552**	.269**	.125	1					
AS (6)	.325**	.525**	.476**	.511**	.152*	1				
Physical (7)	.259**	.377**	.314**	.378**	.127	.899**	1			
Cognitive (8)	.334**	.550**	.546**	.508**	.144*	.919**	.726**	1		
Social (9)	.289**	.503**	.435**	.508**	.144*	.895**	.704**	.754**	1	
Self-handicapping (10)	.212**	.431**	.427**	.420**	.116	.484**	.405**	.456**	.458**	1
Skewness	1.15	.38	.75	.35	−.07	.27	.35	.42	.46	−.01
Kurtosis	.57	.14	.39	.03	93	−.47	-.44	−.09	−.37	.16

$*p < .05; **p < .005; ***p < .001.$

The aim of this study was to evaluate the relationship between levels of game addiction and self-handicapping, anxiety sensitivity, and alexithymia in university students and to determine the predictive role of these variables on game addiction. Each of the three variables included in the model was found to have a unique, statistically significant relationship with online game addiction, and the DDF sub-dimension of alexithymia was found to be a significant predictor of game addiction (Table 2).

Due to the lack of previous studies in literature which have examined game addiction and self-handicapping, no direct comparisons could be made with these findings. However, self-handicapping behavior in the axis of addiction (alcohol and substance use disorders) will be discussed within the framework of the literature. In a study by Uysal and Knee (2012) on the long- and short-term effects of self-handicapping, it was seen to have positive and adaptive effects in the short-term but to cause a level of addiction in the long-term, ranging from game addiction to alcohol and substance abuse. As there is no research in the literature about the relationship between game addiction and self-handicapping, this is the first study which has aimed to clarify the relationship

between these two phenomena. The fact that self-handicapping is related to alcohol and substance abuse (Arkin & Baumgardner, 1985), as well as game addiction, proves that this phenomenon is related to both physiological and behavioral addictions.

Anxiety sensitivity (Kelly et al., 2020; Reiss et al., 1986) has been shown in the literature to be an important factor in the emergence of alcohol (Cox et al., 1993; Stewart et al., 1997) and substance addiction (Schmidt, 1997). It is also correlated with game addiction (Kahraman & Yertutanol, 2021) and can be seen as a factor in behavioral addictions. However, studies examining the relationship between behavioral addiction types such as game addiction and anxiety sensitivity are limited. It has been reported that anxiety sensitivity can predict the frequency of excessive, problematic smartphone use (Elhai et al., 2018).

In the current study, anxiety sensitivity and self-handicapping were not seen to significantly predict game addiction (Table 2). More research is needed to determine the possible common predictors of these related structures. According to a study of 150 university students by Azarmehr and Ahmadi (2020), the cognitive

Table 2.
Linear Regression: Main Study Variables Associated with Online Game Addiction

	B	SS	β	t	p	R^2
Constant	1.318	3.307	—	.399	.691	R = .43
Self-handicapping	.018	.038	.037	.473	.637	R^2 = .19
Physical	.042	.102	.043	.409	.683	
Cognitive	.172	.111	.183	10.548	.123	
Social	−.008	.125	−.007	−.063	.950	
EOT	.131	.112	.080	1.171	.243	
DIF	−.049	.113	−.043	−.432	.666	
DDF	.458	.151	.285	3.036	.003**	

EOT = externally oriented thinking; DIF = difficulties in identifying feelings; DDF = difficulties in describing feelings.
$*p < .05; **p < .005; ***p < .001.$

Table 3.
Comparisons of the Study Groups Using the Independent Samples t-Test

	Group	N		SD	Df	t	p
Self-handicapping	Normal	192	77.96	12.72	34.92	−5.20	.046*
	Addict	30	83.16	16.05			
AS	Normal	192	28.61	15.839	35.00	−9.78	.003**
	Addict	30	38.40	19.847			
Physical	Normal	192	9.66	6.203	36.08	−3.03	.016*
	Addict	30	12.70	7.216			
Cognitive	Normal	192	11.19	6.195	34.54	−3.90	.016*
	Addict	30	15.10	8.065			
Social	Normal	192	28.61	5.3082	36.08	−2.82	.008**
	Addict	30	38.40	6.1453			
Alexithymia	Normal	192	47.20	9.610	34.67	−7.45	.003**
	Addict	30	54.66	12.38			
EOT	Normal	192	15.24	5.281	33.21	−3.00	.036*
	Addict	30	18.24	7.089			
DIF	Normal	192	12.56	3.807	35.72	−3.00	.002**
	Addict	30	15.56	4.576			
DDF	Normal	192	19.70	3.610	34.62	−1.52	.108
	Addict	30	21.23	4.847			

AS = anxiety sensitivity; EOT = externally oriented thinking; DIF = difficulties in identifying feelings; DDF = difficulties in describing feelings.
*$p < .05$; **$p < .005$; ***$p < .001$.

symptom sub-dimension of anxiety sensitivity predicts substance dependence. However, research on larger samples is required on this subject.

The DDF sub-dimension of alexithymia has been found to be a significant predictor of game addiction (Table 2). Unlike the current study, Yavuz et al. (2019) found that the other two sub-dimensions of alexithymia, DIF and EOT, were predictors of game addiction. However, similar to the current study, a previous study of Turkish university students reported that DDF and EOT were predictors of internet gaming disorder (Evren et al. 2019). In a study by Schimmenti et al. (2017) of older adolescents, alexithymia (total score of TAI-20) was determined to be a predictor of internet addiction, which is closely related to game addiction. Studies of predictors of mobile telephone addiction have found that alexithymia, anxiety, stress, and depression significantly predict mobile phone addiction (Gao et al., 2018; Mei et al. 2018). It has been seen that alexithymic individuals prefer gaming platforms where operational communication is dominant and there is no obligation to express their feelings. These individuals, who have problems in socialization, tend to pursue efforts that do not require communication. Based on this result, it can be said that alexithymic individuals, especially those who have difficulties in expressing their emotions, are at risk of becoming addicted to computer games. Difficulties in recognizing emotions cause difficulties in understanding their negative effects and the related cognitive processes. Individuals who do not have the ability to express negative effects tend to be more susceptible to mental disorders such as anxiety disorders and depression (Honkalampi et al., 2009). It can be said that computer games are used as a method of dealing with the negative emotions frequently seen in depression and anxiety disorder, as computer games make it possible for such individuals

to experience a power, achievement, and joy in life. Alexithymia is known to be associated with unhealthy psychological coping strategies (Tominaga et al., 2014). It has been stated that the coping strategy of "avoiding/escaping" is positively associated with "difficulty in defining emotions."

There were limitations to this study, primarily the relatively small sample size and the female gender predominance. Future studies with a greater number of participants and gender balance will be able to provide more meaningful data. Another limitation was that information was not obtained about which types of games were played and for how long and how often. Self-Handicapping Scale used in this study is currently the only valid and reliable measurement tool in Turkish. Therefore, there is still a need for a measurement tool that evaluates self-handicapping tendency with different sub-dimensions, both verbal and behavioral.

There is not enough research in the literature on subtypes of game addiction. Examining the behavioral consequences of the type of game played is extremely important in order to make sense of the behavior and consequences associated with this type of addiction. In future studies, it will be useful to include both types of games, that is, those played online as well as offline.

Research on game addiction in Turkey has generally been conducted with a sample of children and adolescents. The fact that this study was conducted on university students over the age of 18 makes the findings of our research important. In Turkey, there is a need to increase the focus on research on game addiction. In this study, the prevalence value was determined as 13.5%. Studies involving a large sample from the general population in order to obtain richer data on prevalence will contribute significantly to the literature.

In the literature, game addiction is associated with major depressive disorder, attention-deficit hyperactivity disorder, and obsessive-compulsive disorder (APA, 2013). In this study, the difficulty in expressing emotion sub-dimension of alexithymia was found to be a risk factor. It would be beneficial to design future studies with these notions taken into consideration. In addition, it will be illuminating to conduct research on possible mental problems that might be associated with addictions to different types of games.

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