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Anxiety Sensitivity in Online Gamers

Çevrimiçi Oyun Oynayanlarda Anksiyete Duyarlılığı

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Abstract

Objective: The aim of this study was to examine the levels of game addiction and anxiety sensitivity in young adults who play online games.
Method: The study was conducted cross-sectionally on the sociodemographic data form, the Anxiety Sensitivity Index and the Game Addiction Scale Short Form, which were delivered to volunteers who reported that they played online games through an online research platform. Game addiction was evaluated according to the monothetic and polythetic formats of the scale.
Results: 7.8% of the 438 participants are game addicts according to the Game Addiction Scale Short Form monothetic format, and 40.9% are game addicts according to the polythetic format. Anxiety sensitivity levels in game addicts are higher than in non-game addicts. Anxiety sensitivity is higher in women. According to the monothetic format, game addiction does not differ in terms of age, gender, marital status and educational status, and according to the polythetic format, game addiction is higher in undergraduate and widow/divorced individuals.
Conclusion: As a trait-like factor, anxiety sensitivity may lay the groundwork for game addiction. The relationship between anxiety sensitivity and problematic game playing needs to be examined in more detail to screen depression and anxiety disorders.

Keywords: Online gaming, anxiety sensitivity, game addiction scale

Öz

Amaç: Bu çalışmada çevrimiçi oyun oynayan genç erişkinlerde, oyun bağımlılığı ve anksiyete duyarlılığı düzeylerinin incelenmesi amaçlanmıştır.
Yöntem: Çalışma çevrimiçi bir araştırma platformu aracılığıyla çevrimiçi oyun oynadığını bildiren gönüllü katılımcılara iletilen sosyodemografik veri formu, Anksiyete Duyarlılığı İndeksi ve Oyun Bağımlılığı Ölçeği Kısa Formu üzerinden kesitsel olarak yürütülmüştür. Oyun bağımlılığı, ölçeğin monotetik ve politetik formatlarına göre değerlendirilmiştir.
Bulgular: 438 katılımcının Oyun Bağımlılığı Ölçeği Kısa Form monotetik formatına göre %7.8'i, politetik formatına göre ise %40.9'u oyun bağımlısıdır. Oyun bağımlılarında anksiyete duyarlılığı düzeyleri, oyun bağımlısı olmayanlara göre daha yüksektir. Anksiyete duyarlılığı kadınlarda daha yüksektir. Monotetik formata göre oyun bağımlılığı yaş, cinsiyet, medeni durum ve eğitim durumu bakımından farklılık göstermemekle birlikte politetik formata göre lisans mezunları ve dul/boşanmış olanlarda oyun bağımlılığı daha yüksektir.
Sonuç: Anksiyete duyarlılığı ayırıcı bir özellik (trait-like) olarak oyun bağımlılığına zemin hazırlıyor olabilir. Anksiyete duyarlılığı ile sorumlu oyun oynama arasındaki ilişkinin depresyon ve anksiyete bozukluklarını da tarayacak şekilde daha ayrıntılı incelenmesi gereklidir.

Anahtar kelimeler: Çevrimiçi oyun oynama, anksiyete duyarlılığı, oyun bağımlılığı ölçeği

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Introduction

Playing online games is an activity that can be defined as "problematic" depending on the frequency and duration of the game and can negatively affect the mental health of especially children/adolescents and young adults. In the literature, there is no consensus on when online gaming turns into problematic gaming, whether and/or when it can be qualified as a behavioral addiction (1). Nevertheless, problematic online gaming was stated in DSM-5 as a situation requiring further research and new criteria were determined under the name of "internet gaming disorder" (IGD) (2). Accordingly, if five out of nine criteria are met within a 12-month period, a diagnosis of IGD can be made. The mentioned criteria can be summarized as preoccupation, tolerance, withdrawal, deception, escape, continuing despite problems, loss of control, giving up other activities, and negative consequences.

In defining online gaming as a problematic behavior, biological (such as gender), psychological (such as impulsivity), social characteristics (such as social support) as well as some game-related features were reported (3,4). On the other hand, psychiatric disorders such as depression, ADHD, anxiety disorder, social phobia, and OCD were reported to be comorbid with IGD (5-7).

Among these, the relationship with anxiety disorders has an important place. In a review study, it was reported that there was a significant relationship in most studies examining the relationship between IGD and anxiety (6). According to the results of a 2-year prospective study conducted by Gentile et al. on 3034 children and adolescents, anxiety was evaluated as a result of pathological gaming (8). In a study conducted with 3568 internet game players, anxiety was reported as a risk factor for IGD (3). In another study evaluating the relationship between IGD and generalized anxiety disorder (GAD), it was reported that GAD comorbidity was significantly higher in people with IGD compared to those without (9). On the other hand, it was reported that high IGD symptoms are associated with high anxiety levels in children aged 10, 12 and 14 years, but high IGD symptoms predict low anxiety symptoms after 2 years, and it was discussed that the association of IGD symptoms and other psychiatric symptoms can be explained by a common etiology (10). Therefore, it is not clear whether the presence of anxiety disorder facilitates the exposure of IGD, whether anxiety disorder develops as one of the negative consequences of IGD or whether IGD and anxiety disorder have a common etiology.

A concept known to be associated with anxiety disorders is anxiety sensitivity (AS). AS is a fear of signs and sensations known to be associated with anxiety and is thought to be a "trait-like" structure (11). There are many studies in the literature that AS predicts the onset of anxiety disorders and depressive disorders, especially panic disorder (12,13). In a longitudinal study, it was reported that the stability of AS in 2-year follow-up was high and it was positively associated with the severity of anxiety symptoms (14).

On the other hand, it seems important to investigate this issue as there is no study in the literature regarding whether AS is related to game addiction and, if so, the direction of this relationship. The main hypotheses of the study are that the levels of game addiction in the young adult group who play online games are compatible with the literature, AS is higher in people who play online games than those who do not play, game addiction is higher in men, and AS is higher in women. Therefore, in this study, considering the close relationships between AS and anxiety disorders and between anxiety disorders and IGD, it was aimed to evaluate whether AS levels in individuals who play online games problematic/excessively differ from non-problematic gamers.

Method

Sample

This cross-sectional study was conducted on young adults aged 18-40 who were literate and had been playing online games for at least 6 months and gave their consent to participate in the study. Of 454

participants, 438 young adults were included in the sample.

Procedure

The study link was delivered to the participants via social media. The questionnaires and scales offered through an online research platform (Google forms). After giving information about the purpose of the study, a directive ("Please answer this questionnaire package only if you have been playing online video games for at least 6 months on devices such as computers, consoles and mobile phones.") was given to the participants. What kind of online games the participants played was not examined in this study. No special method was applied to prevent the participants from re-participating in the study. The study forms could be filled in an average of 6 minutes. The data of 438 participants out of 454 who completely filled in all the questionnaires package were analyzed. This study was approved by the Non-Interventional Research Ethics Board of Üsküdar University with a protocol number of 61351342/2019-91 (date 27th February, 2019).

Data Collection Tools

Demographic Data Form

It questions age, gender, marital status and educational status.

Anxiety Sensitivity Index (ASI)

It is a scale developed by Reiss et al. in 1986 to detect AS (15). The scale aims to evaluate the possible negative outcomes associated with the anxiety experience. Sixteen items clustered in physical, cognitive and social sub-dimensions are in five-point Likert type and correspond to the option "0 = a little", "4 = a lot". The original scale was studied on university students, and its reliability coefficient was found between 0.71 and 0.75 (15). Its Turkish validity and reliability study was conducted among university students by Ayvaşık with a Cronbach's α coefficient of .85 (16). The original and Turkish version of the scales are very similar to each other. The scale does not have a cut-off point and high scores indicate high anxiety sensitivity level.

Game Addiction Scale Short Form (GAS-7)

The scale measures the components of game addiction such as salience, tolerance, mood modification, relapse, withdrawal, conflict, and problems in order to measure computer and videogame addiction levels. The validity of the original scale was made in adolescents and the reliability coefficient was found between 0.81 and 0.86. The Turkish validity and reliability of the scale, which was created by Lemmens et al. in 2009, was made by Baysak et al. (17). The 6th and 9th items of the Turkish version of the scale, which address adolescents, were changed to target the entire population. The scale, which consists of 21 items, is in the 5-point Likert type (1=never, 5=very often). The short form consists of 7 items. The Cronbach's α coefficient of the short form is .88. The short form of the scale is evaluated in two different ways, namely, monothetic and polythetic. Monothetic format determines "possible game addicts" when all items in short form are answered as "sometimes (3)", "frequent (4)", "very often (5)". In other words, in order for a person to be called addicted in the monothetic format, the person must answer all questions in short form as "sometimes", "often" or "very often". Polythetic format, on the other hand, identifies "people who play games excessively" when at least 4 of the 7 items are answered as "sometimes (3)", "often (4)", "very often (5)". In other words, in order to call a person addicted in the polythetic format, the person must answer at least 4 questions in short form as "sometimes (3)", "often (4)" or "very often (5)".

Statistical Analysis

Data analysis was done with SPSS 21 package program. In normality tests, 16 people with extreme values were excluded from the study and the data of 438 participants were analyzed. Since the skewness and kurtosis values of the scale scores were between -3 and +3, it was determined that the data were suitable for normal distribution. For this reason, in the analyzes, the t-test was used in the comparison of ASI scores between groups according to gender and presence of addiction and one-way ANOVA was used in

the comparison of ASI scores according to age, marital status, and educational status. The relationship between categorical variables (demographic data and game addiction) was analyzed using the Chi-square test. Significance value was accepted as p<0.05.

Results

Descriptive data of the participants are given in Table 1. According to the monothetic format, 404 (92.2%) of the participants were not game addicts, 34 (7.8%) were game addicts. According to the polythetic format, 259 (59.1%) of the participants were not game addicts, while 179 (40.9%) were game addicts. In terms of ASI scores, there was a significant difference between the game addicted (M=35.91, SS=12.98) and non-game addicted (M=22.77, SS=11.64) groups (t (436)= -6.267, p=.000). Accordingly, the ASI scores of the game addicted group were higher than the non-game addicts group according to the monothetic format. In terms of ASI scores, there was a significant difference between the game addicted (M=27.66, SS=12.36) and non-game addicted (M=21.11, SS=11.45) groups (t (436)= -5.702, p=.000). Accordingly, the ASI scores of the game addicted group were higher than the non-game addicted group according to the polythetic format.

Table 1. Demographic variables

		n	%
Age	18-20	121	27.6
	21-25	152	34.7
	26-30	113	25.8
	31-40	52	11.9
Gender	Female	226	51.6
	Male	212	48.4
Marital status	Single	314	71.7
	Married	111	25.3
	Other	13	3.0
Educational status	Primary school	13	3.0
	High school	94	21.5
	Associate degree	76	17.4
	Undergraduate	220	50.2
	Graduate	30	6.8
	PhD	5	1.1

Table 2. Comparison of Anxiety Sensitivity Index scores according to GAS-7 formats

GAS-7 monothetic format		n	Mean	sd	t	p
Anxiety Sensitivity Index	Not game addicted	404	22.77	11.64	-6.267	.000*
	Game addicted	34	35.91	12.98		
GAS-7 polythetic format		n	Mean	sd	t	p
Anxiety Sensitivity Index	Not game addicted	259	21.11	11.45	-5.702	.000*
	Game addicted	179	27.66	12.36		

GAS-7: Game Addiction Scale Short Form. *p<0,05

ASI scores were evaluated by one-way ANOVA test among age groups, and no significant difference was found between the groups (F (3, 434)= 2.586, p>0.05). ASI scores were evaluated with the t-test according to gender and it was observed that the scores in women (M=25.96, SD=11.78) were significantly higher than in men (M=21.47, SD=12.34) (t (436)= 3.902, p=.000). Similarly, ASI scores were evaluated by one-way ANOVA test according to the marital group variable, and no significant difference was found between the groups (F (2, 435) = 1.041, p>0.05). ASI scores were evaluated by

one-way ANOVA test between educational status groups, and no significant difference was found between the groups (F (4, 433)=1.896, p>0.05).

Table 3. Examination of Anxiety Sensitivity Index scores according to demographic characteristics

Age		n	Mean	sd	F	p
Anxiety Sensitivity Index	18-20	121	24.43	11.89	2.586	.053
	21-25	152	25.38	12.72		
	26-30	113	22.36	10.88		
	31-40	52	20.73	13.84		
Gender		n	Mean	sd	t	p
Anxiety Sensitivity Index	Female	226	25.96	11.78	3.902	.000*
	Male	212	21.47	12.34		
Marital status		n	Mean	sd	F	p
Anxiety Sensitivity Index	Single	314	24.07	12.56	1.041	.354
	Married	111	22.61	11.12		
	Other	13	27.00	13.82		
Educational status		n	Mean	sd	F	p
Anxiety Sensitivity Index	Primary school	13	21.00	12.38	1.896	.110
	High school	94	23.52	11.43		
	Associate degree	76	23.92	14.57		
	Undergraduate	220	24.78	11.93		
	Graduate/PhD	35	19.00	9.93		

The comparison of the Anxiety Sensitivity Index scores in terms of gender was made with the t-test and the comparison of the other variables with one-way ANOVA. *p<0,05

Table 4. Relationship between demographic data and game addiction according to the GAS-7 monothetic format

Variable		Monothetic				Chi-square	P
		Not game addicted		Game addicted			
		n	%	n	%		
Age	18-20	111	91.7	10	8.3	.563a	.905
	21-25	139	91.4	13	8.6		
	26-30	106	93.8	7	6.2		
	31-40	48	92.3	4	7.7		
Gender	Female	206	91.2	20	8.8	.489	.484
	Male	198	93.4	14	6.6		
Marital status	Single	289	92.0	25	8.0	5.137a	.077
	Married	105	94.6	6	5.4		
	Other	10	76.9	3	23.1		
Educational status	Primary school	12	92.3	1	7.7	.047a	1.000
	High school	87	92.6	7	7.4		
	Associate degree	70	92.1	6	7.9		
	Undergraduate	203	92.3	17	7.7		
	Graduate/PhD	32	91.4	3	8.6		

GAS-7: Game Addiction Scale Short Form.

The relationship between GAS-7 monothetic and polythetic format data and demographic data was evaluated by Chi-square test. According to the GAS-7 monothetic format, there was no significant relationship between being a game addict and age (x2(3)=.563, p=.905), gender (x2(1)= .489, p= .484), marital status (x2(2)=5.137, p=.077), and educational status (x2(4)= .047, p=1.00) (Table 4).

According to the GAS-7 polythetic format, there was no significant relationship between being a game

addict and age (x2(3)= 1.995, p=.573) and gender (x2(1)= 2.050, p=.152). On the other hand, there was a significant relationship between being a game addict and marital status (x2(2)= 6.953, p=.031). According to this, the majority of the single people and the majority of those who were married were not game addicts, while the majority of those who define themselves as other were game addicts. Similarly, there was a significant relationship between being a game addict and education level (x2(4)= 9.751, p=.045) (Table 5). In all educational situations, the majority were not game addicts. While the rate of problematic gaming was highest among those with a bachelor's degree, it was lowest among those with primary education.

Table 5. Relationship between demographic data and game addiction according to the GAS-7 polythetic format

		Polythetic				Chi-square	P
		Not game addicted		Game addicted			
		n	%	n	%		
Age	18-20	71	58.7	50	41.3	1.995[a]	.573
	21-25	84	55.3	68	44.7		
	26-30	71	62.8	42	37.2		
	31-40	33	63.5	19	36.5		
Gender	Female	141	62.4	85	37.6	2.050[a]	.152
	Male	118	55.7	94	44.3		
Marital status	Single	176	56.1	138	43.9	6.953[a]	.031*
	Married	77	69.4	34	30.6		
	Other	6	46.2	7	53.8		
Educational status	Primary school	11	84.6	2	15.4	9.751[a]	.045*
	High school	62	66.0	32	34.0		
	Associate degree	48	63.2	28	36.8		
	Undergraduate	116	52.7	104	47.3		
	Graduate/PhD	22	62.9	13	37.1		

GAS-7: Game Addiction Scale Short Form. *p<0,05

Discussion

According to the results of this study, while being game addict assessed with the GAS-7 monothetic format was present in 7.8% of the participants, the status of being game addict assessed with the polythetic format was detected in 40.9% of the participants. The AS levels of the participants defined as game addicts according to both formats were found to be significantly higher than the participants who were not game addicts. AS was higher in female participants. There was no difference between the game addicts and those who were not in terms of demographic data characteristics. However, among those who defined their marital status as other and undergraduate graduates, the situation of being game addict was more according to the polythetic format. While discussing the study data, the situations defined by the monothetic and polythetic formats of GAS-7 should be known. In studies using the scale, it was reported that the monothetic format detects game addicts more accurately, and the polythetic format unnecessarily shows the number of addicts high by including non-addicted risky individuals (18). Therefore, in this study, we think that the results obtained with the monothetic format better reflect the data of real addicts. In a study in which 1420 international players in a wider age range were evaluated with GAS, the game addiction rates were found to be 3.6% according to the monothetic format and 44.5% according to the polythetic format (18). In a similar study using GAS, the same rates were found as 11.1% and 47%, respectively, in 726 Travian players. (17). According to the data of the current study, 7.8% of the participants can be defined as game addicts. Nevertheless, the wide range of data obtained may be due to differences in the participant profiles. The difference in addiction rates can be explained by features such as the fact that the participants in the present study did not consist of the players of a specific digital game, and it was limited to young adults between the ages of 18-40.

There are many studies investigating the role of AS in alcohol and substance use disorders. There are data in the literature showing that people with high AS use more alcohol and are more risky in terms of addiction. It was reported that there is a positive correlation between excessive alcohol consumption and AS (19), and AS is a prospective predictor for alcohol use disorder (20). It is stated that people with high AS are more sensitive to the negative reinforcing effects of alcohol and substances (21, 22). It was reported that AS is associated with sedative use in women (23). It was also been shown that AS predicts dropout in patients receiving treatment for heroin and crack cocaine use (24). On the other hand, to the best of our knowledge, there is no study in the literature evaluating the relationship between AS and problematic online gaming or IGD. Our study showed that AS was significantly higher in participants who were game addicts than participants who were not. Since AS and IGD are closely related with anxiety disorders, high AS in online game addicts may be an expected result. It was stated that playing digital games can become problematic by using it as a way to escape from problems in people with high anxiety levels, followed by academic/social failures that will develop as a result of spending too much time in the game, leading to a vicious circle by increasing anxiety (9). In our study, important clinical situations known to be closely related to AS might be missed, since we only evaluated AS in people playing online games and did not evaluate the anxiety and depression levels of the participants. It would be appropriate to consider this point in future studies on people who play online games.

Another result we obtained in the study, as shown in many studies (25, 26), was that AS in women was higher than in men. In a study on twins, AS was reported to be heritable only in women (27), which may contribute to women's susceptibility to AS. It was reported that AS mediates the relationship between both gender and physiological anxiety symptoms and gender and depressive symptoms, physical and social concerns mediate anxiety symptoms, and cognitive concerns mediate depressive symptoms (13). Researchers evaluated AS as a factor that mediates the prevalence of anxiety disorders and depression in women (13). On the other hand, in our study, there was no difference between genders in terms of game addiction. Therefore, the relationships between gender, AS, and online game addiction should be evaluated multidimensionally with more participants.

In the literature, although it was reported that online game addiction is more common in males, it was suggested that the rate of gaming is increased in the female population (28). A study conducted using GAS on players who played Travian in Turkey showed that although the proportion of female participants was very small, there was no difference between the genders in terms of game addiction (29). Further studies are needed to assess addiction in terms of genders in people playing online games in Turkey. No significant relationship was found between game addiction and age in the study. The most important reason for this may be the very narrow age range. Similarly, according to the monothetic format, there was no difference between those who were game addicts and those who were not, in terms of marital status and educational status. According to the polythetic format, game addiction was higher in undergraduate graduates and those whose marital status was widow/divorced. However, these results cannot be interpreted properly, since the monothetic format did not support this result and the groups were not equally distributed in terms of marital status and educational status.

The most important limitations of this study were the online collection of data and the usage of a single game addiction scale to determine game addiction of participants without a comprehensive psychiatric examination. Although clinician evaluation is necessary to decide whether a person has game addiction or not, it is obvious that it is not practical to evaluate large samples by clinicians as in this study. Other limitations of this study were the age range of young adults, and the fact that important psychiatric conditions such as depression and anxiety disorder were not screened in the participants.

Nevertheless, we believe that this study is important in that it showed that AS was higher in those who were game addicts according to monothetic format of GAS-7 than those who were not. Other results showed that game addiction rates among online gamers was 7.8%, AS was higher in females, and demographic data didn't differ between game addicted and not game addicted groups. AS may be paving the way for game addiction as a trait-like feature. Depression and anxiety disorders or different intervening

variables may create this background. Expanding future studies to screen depressive disorders and anxiety disorders, especially panic disorder in a wider gamer population is necessary to evaluate the relationship between AS and IGD. On the other hand, investigating the gaming motivation of people with high AS and playing digital games, and prospectively monitoring children and adolescents with high AS levels in terms of game addiction will also help to illuminate the AS-IGD relationship.

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