

Temperament and Character Dimensions of Personality in Individuals with Online Gambling Disorder in a High School Student Sample from Turkey

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Abstract

Background: The present study aimed to examine the relationship between online gambling addiction, temperament, and attachment styles in an adolescent sample in Istanbul, Turkey.

Methods: The participants of the study consisted of 790 adolescents who are high school students. Sociodemographic information of the participants was collected, and Temperament and Character Inventory - Turkish Version (Turkish-TCI), Relationship Scales Questionnaire (RSQ), Specific Internet, Online Gambling and Online Sexuality Addiction Scale were administered. All statistical analyses were performed using IBM SPSS Statistics (Statistical Package for the Social Sciences) 24.0 for Windows (SPSS Inc., Chicago, IL, USA). All variables were screened for accuracy of data entry, missing values, and homoscedasticity.

Results: Online gambling addiction scores were significantly higher in male participants ($M = 1.83$, $SD = 1.09$) compared to female participants ($M = 1.28$, $SD = 0.67$). A statistically significant difference was found when the online gambling addiction mean scores were compared in terms of maternal education level of the participants [$F(5,666) = 2.82$, $p < 0.05$, $h^2 = 0.021$]. It has been observed that sentimentality, which is one of the temperamental features, contributes 2.3% to the total variance in addition to age and average daily internet usage, negatively and significantly predicting online gambling addiction ($B = -0.163$, $p < 0.01$). All three variables together explained 9.1% of the total variance. Furthermore, study results revealed statistically significant correlations between online gambling addiction scores and Secure ($r = 0.09$, $p < 0.05$) and Preoccupied ($r = 0.10$, $p < 0.05$) subscales of the RSQ.

Conclusions: Online gambling addiction was predicted by sentimentality subscale of Reward Dependence, and it was related to Secure and Preoccupied attachment styles. Sentimentality subscale of Reward Dependence (RD) was found to be a significant predictor of online gambling addiction.

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INTRODUCTION

Until recent years in comparison to chemical addictions; behavioral addictions have been severely neglected in terms of scientific research, diagnosis, treatment, and social awareness [1]. Although gambling addiction, one of the most common and well-known behavioral addictions, was also subject to negligence and began to occur in the medical literature in the early 1800s. With the publication of third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III), gambling addiction was included in mental disorders diagnostic book [2].

Gambling addiction causes serious harm in individuals in a multifaceted manner. From a psychosocial perspective; the emergence of mood and personality disorders, social

isolation, loneliness, suicidal ideations and attempts, domestic violence, substance use, and other health problems were the most common damages caused by gambling addiction [3, 4]. In addition to the individual harms of gambling addiction, other social harms were reported. From a social perspective, gambling addiction also seriously damages the addict's inner circle and increases the orientation of individuals with addictions to commit crimes [5, 6, 7]. These problems include financial burden, legal costs, and treatment costs on the family budget [8]. According to Politzer and colleagues [7], 10-17 people from an individual's inner circle were negatively affected by an individual with a gambling addiction problem.

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Genetic and environmental contributions in gambling addiction development have similar effects in men and women [9]. However, while genetic factors are more effective in men in starting gambling early, a shared environment is more effective in women [10]. Adverse environmental conditions affect genetic factors and become an essential factor in starting gambling early and turning it into addiction [11]. Studies on the subject reported that adolescents who play online gambling showed much lower academic achievement, excessive drinking, and gambling behavior with people who are not their peers [12].

While we have this information about gambling addiction, studies on online gambling addiction, which can be considered the new face and widespread version of gambling addiction in recent years, are particularly rare in our country. In a recent study on gambling and sexual addictions in Spain, gambling addicts have a low average in TCI-R in all dimensions except for novelty seeking, harm avoidance, and self-transcendence. These findings support the conception stating that excitement seeking and risk-taking behaviors are high in gambling addicts. Although sexual addicts and gambling addicts show many common features, it has been found that sexual addicts have higher socioeconomic status than other addicts. In comparison, gambling addicts have lower socioeconomic status and lower education levels [13]. In this study, which is intended to raise awareness, adolescents as a sample have been selected specifically since online gambling addiction, compared to pathological gambling addiction, were reported to be more prevalent in the young population [14]. However, it is still unknown which risk factors would lead to or affect online gambling addiction development. Although studies on classic gambling addiction show risk factors as being male, starting early, temperament traits, and parental behaviors [15,16]; further studies are needed to show that similar risk factors might be present in online gambling addiction as well. In this study, the relationship of online gambling addiction with temperament and attachment was also investigated in gender and age.

In this present study, we aimed examine the relationship between online gambling addiction, temperament, and attachment styles in adolescents.

METHODS

Study Participants

The study sample consisted of 790 high school students. In addition to erroneous and repetitive data, extreme values that distort the distribution were removed from the data set, and analyses were made using the remaining 716 students' data. The data were collected using a convenient sampling method. 325 of the students (45.4%) were male, and 353 (49.4%) were female. The participants' ages varied between 14 and 20, and the average age was 16.41 ± 1.01 . This present study was approved by the Marmara University Educational Sciences Institute's Review Board 2014/ 9-6 numbered decision.

Psychometric Measurements

Sociodemographic Data Form

The researchers prepared this form in order to determine the demographic (gender, birth year, maternal education level, paternal education level) characteristics of the adolescents.

Temperament and Character Inventory - Turkish Version (Turkish-TCI)

TCI evaluates the differences between individuals with seven basic temperament and character dimensions. These dimensions are adapted from Cloninger's biopsychosocial personality model [17]. Cloninger first focused on four biogenetic dimensions and then expanded it by adding three more-character dimensions to these dimensions. Four biogenetic dimensions; novelty seeking (NS), harm avoidance (HA), Reward Dependence (RD), and persistence (P); character dimension is self-directedness (SD), cooperativeness (C) and self-transcendence (ST) dimensions. TCI consists of 240 questions prepared in a way that the individual evaluates as "True" or "False" for himself/herself. Some items [69, 75, 101, 111, 118, 134, 140, 170, 176, 190, 213, 230, 239, 240] in the scale are not included in the scoring. Turkish validity and reliability studies were conducted by Kose et al. [18]. Since this study was conducted on temperament, items of character dimension were not used; a form consisting of only temperament dimension items was used. Studies have found Cronbach's alpha values between 0.60 and 0.85 for the temperament dimension and between 0.82 and 0.83 for the character dimension.

Relationship Scales Questionnaire (RS Q)

The Relationship Scales Questionnaire (RSQ), developed by Griffin and Bartholomew [19], was used to measure attachment styles. RSQ examines attachment styles of secure (questions 3, 9, 10, 15, 28), preoccupied [6, 8, 16, 25], dismissing avoidance (2, 6, 19, 22, 28), and fearful avoidance [1, 5, 12, 24]. While secure and avoidant attachment is measured with five items, anxious and fearful attachment styles are measured with four items each. Cronbach's alpha internal consistency values of the original scale were found between 0.41-0.70. The scale was adapted to Turkish by Sumer and Gungor [20]. In their study, Cronbach alpha values were found between 0.27-0.61, while test-retest reliability values were found in the range of 0.54-0.78. Despite the low Cronbach's alpha value, the scale was found to be reliable since the test-retest values were at an acceptable level.

Specific Internet, Online Gambling, and Online Sexuality Addiction Scale

The scale developed by Dinç and Otrar in 2015 was used to measure online gambling, sexuality, and specific internet addiction. On the 5-point Likert type scale, 1 corresponds to "Not suitable for me at all", 5 "Very suitable for me".

12 items measure online sexuality addiction in the scale, 11 items that measure online gambling addiction, and 7 items that measure specific internet addiction out of 32 items. Cronbach’s alpha reliability values were 0.98 for the sexuality factor, 0.98 for the gambling factor, and 0.93 for the specific internet factor. The total reliability value of the scale was calculated as 0.98.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics (Statistical Package for the Social Sciences) 24.0 for Windows (SPSS Inc., Chicago, IL, USA). All variables were screened for accuracy of data entry, missing values, and homoscedasticity. The data had less than 5% of missing items, and no pattern was detected. Descriptive statistics were reported using means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Independent samples t-test was used to compare two groups, One-Way Analysis of Variance (ANOVA) was used for comparison of three or more groups, Multiple Linear Regression Analysis was used to examine the relationship between the dependent variable (Online Gambling Addiction) and independent variables. Statistical significance was accepted as $p < 0.05$ in this study.

RESULTS

Sociodemographic Characteristics of Sample

The mean age of all the participants was calculated as 16.41, with a standard deviation of 1.01. In terms of gender, 353 (49.4%) of the participants were female, and 325 (45.4%) were male. 200 of the participants (27.9%) were 9th grade, 210 (29.3%) were 10th grade, 257 (35.9%) were 11th grade, and 4 (0.6%) were 12th-grade high school students. The sociodemographic characteristics of the sample were presented in Table 1.

Comparing Online Gambling Addiction in terms of Sociodemographic Characteristics

The participants’ online gambling addiction mean scores were compared in terms of gender (Table 2). The results of the independent samples t-test revealed that statistically significant differences were found between the groups in terms of online gambling addiction scores [$t(677) = 7.87$, $p < 0.01$, $d = -0.61$]. Online gambling addiction scores were significantly higher in male participants ($M = 1.83$, $SD = 1.09$) compared to female participants ($M = 1.28$, $SD = 0.67$).

A statistically significant difference was found when the online gambling addiction mean scores were compared in terms of maternal educational level of the participants [$F(5,666) = 2.82$, $p < 0.05$, $h^2 = 0.021$]. As can be seen in Table 3, according to the results of Sheffe multiple comparison tests, the mean scores of online gambling addiction of the participants whose maternal educational level was literate was found to be significantly higher than those

whose maternal educational level was illiterate, primary school, secondary school, high school, and university graduates.

Table 1. Sociodemographic characteristics of the sample

	M	SD
Age	16.41	1.01
	<i>n</i>	%
Gender		
Female	353	49.4
Male	325	45.4
Educational Level		
9th grade	200	27.9
10th grade	210	29.3
11th grade	257	35.9
12th grade	4	0.6
Mother Educational Level		
Illiterate	36	5.0
Literate	25	3.5
Primary School	228	31.8
Secondary School	184	25.7
High School	157	21.9
University	42	5.9
Father Educational Level		
Literate	14	1.9
Primary School	187	26.1
Secondary School	180	25.1
High School	218	30.4
University	76	10.6

M: Mean; n: Number; SD: Standard Deviation; %: Percentage

Table 2. The results of the independent sample t-test for gender

Variable	Female (n = 353)		Male (n = 325)		t(677)	p	Cohen's d
	M	SD	M	SD			
Online gambling addiction	1.28	0.67	1.83	1.09	7.87	0.001	-0.61

Table 3. Comparing online gambling addiction scores in terms of maternal education level

	Education Level	n	M	SD	F	p	h ²	Difference
Online gambling addiction	Illiterate ^a	36	1.64	0.91	2.82	0.016	0.021	b > a, c, b > d, e, f
	Literate ^b	25	2.18	1.25				
	Primary School ^c	228	1.47	0.89				
	Secondary School ^d	184	1.58	0.87				
	High School ^e	157	1.57	0.98				
	University ^f	42	1.55	0.93				

Correlations Between Online Gambling Addiction and Temperament Characteristics

Three different models emerged when age and average daily internet usage time were taken into the stepwise

regression model as independent variables, along with all temperament characteristics. The first model showed that the age variable alone predicted online gambling addiction positively and significantly ($\beta = 0.207, p < 0.01$). In the second model, it has been observed that in addition to age, average daily internet usage contributes 2.9% to the total variance and predicts online gambling addiction positively and significantly ($\beta = 0.184, p < 0.01$). In the third and last model, it has been observed that sentimentality, which is one of the temperamental features, contributes 2.3% to the total variance in addition to age and average daily internet usage, negatively and significantly predicting online gambling addiction ($\beta = -0.163, p < 0.01$). All three variables together explain 9.1% of the total variance.

Table 4. Linear regression analysis of age, average daily internet usage time, TCI temperament subscales for prediction of online gambling addiction

		B	SH	β	t	p	R ²
Model 1	(Constant)	-0.522	0.190		2.745	0.007	0.039
	Age	0.038	0.012	0.207	3.241	0.001	
Model 2	(Constant)	-0.508	0.187		2.715	0.007	0.068
	Age	0.035	0.011	0.190	3.015	0.003	
	Average daily internet usage time	0.009	0.003	0.184	2.913	0.004	
Model 3	(Constant)	-0.405	0.189		2.144	0.033	0.091
	Age	0.034	0.011	0.189	3.029	0.003	
	Average daily internet usage time	0.008	0.003	0.176	2.823	0.005	
	Sentimentality	-0.015	0.006	-0.163	2.620	0.009	

TCI: Temperament and Character Inventory

Correlations Between Online Gambling Addiction and Attachment

Our study results revealed that there were statistically significant correlations between online gambling addiction scores and Secure ($r = 0.09, p < 0.05$) and Preoccupied ($r = 0.10, p < 0.05$) subscales of RSQ. However, although there were negative relationships between online gambling addiction and Fearful ($r = -0.01, p > 0.05$) and Dismissing ($r = 0.02, p > 0.05$) subscales of Relationships Scales Questionnaire (RSQ), these correlation coefficients were not found to be statistically significant (Table 5).

Table 5. Pearson's Bivariate Correlations between online gambling addiction and RSQ subscales (n=716)

Variable	1	2	3	4	5
1. Online gambling addiction	-				
2. RSQ-Fearful	-0.01				
3. RSQ-Dismissing	0.02	0.56**	-		
4. RSQ-Secure	0.09*	-0.08	-0.01	-	
5. RSQ - Preoccupied	0.10*	0.18**	0.04	0.10*	-

RSQ: Relationships Scales Questionnaire; * $p < 0.05$, ** $p < 0.01$

DISCUSSION

In this present study, we examined the relationship between online gambling addiction, attachment styles, and temperament in high school students. The reason for selecting high school students in the study is that the internet and computers are mostly used between the ages of 14 and 24 (21, 22, 23), and the internet addiction problem is most common among adolescents (24). Although there are not many academic publications and reports on the subject, Turkey's most common behavioral addictions are sexuality and gambling. The age of exposure to the first online sexual material is predominantly between the ages of 14 and 17, which increases the importance of studying the subject with high school students (25).

As a result of the study, male adolescents were found to have higher addiction levels than female adolescents in all three dimensions (general internet addiction, online sexual addiction, and online gambling addiction). This result of our study supports many national and international studies conducted on the subject in the literature. Studies on addiction, behavioral addictions, internet addiction, online sexual addiction, and online gambling addiction have found that men have higher scores quantitatively and qualitatively compared to women (22, 26, 27, 28, 29). Therefore, it will be beneficial to focus on awareness-raising and informative activities specific to male adolescents at risk and their parents with preventive strategies. Again, it is thought that conducting studies that examine the reasons that reveal the gender differences related to the problems in detail and providing solutions based on underlying reasons will produce serious positive effects.

Our study results revealed that increased age and prolonged daily use were related to online gambling addiction. The relationship between internet addiction, age, and the duration of daily use is also consistent with the results of studies in the current literature. However, in accordance with the concepts of transition between specific addiction and multiple dependencies, which are frequently included in the addiction literature, it can be predicted that the interest in online sexuality can turn into online gambling with increasing age. Long-term and regular internet use facilitates the development of internet addiction (30, 31, 32, 33, 34, 35). The reason for this situation is that, as the age increases, the control of the parents of adolescents related to internet use decreases over both content and duration, and the curiosity of sexuality increases due to physiological and psychological reasons. In addition to these, online gambling is seen as an easy way to earn money, a circle of friends with negative influences, making an effort to be accepted by peers. The frequent presence of online gambling advertisements in online videogames and online movie/series websites that children and adolescents frequently enter and adolescents' regular exposure to these advertisements can also be considered as additional severe risk factors (36).

Our study results revealed that the sentimentality subscale of reward dependence (RD) is a significant predictor

of online gambling addiction. However, there was no other significant relationship between TCI subscales and online gambling addiction. In a similar study on the subject, excessive sensitivity was found in online game addicts towards the reward dependence dimension of the temperament measured by the TCI (24). There are almost no studies on the relationship between online gambling and temperament traits. Although our study did not find a multidimensional and effective relationship between TCI and online gambling addiction, studies on personality and internet addiction found a close relationship. In studies on Internet addiction and temperament measured by the TCI, high harm avoidance, low self-directedness, low openness to collaboration, and high self-transcendence were found to be related to internet addiction (37). In another study, it was found that the low scores of the reward dependence and the high scores of harm avoidance and novelty seeking were positively related to internet addiction (38). A recent study on gambling and sexual addictions in Spain reported that individuals with gambling addiction and sexual addiction have a low score in all dimensions of TCI-R except for novelty seeking, harm avoidance, and self-transcendence. These findings support studies stating that gambling addicts have higher excitement-seeking and risk-taking behaviors (13). In the study by Kayis et al. (39) on the relationship between the big five personality inventory and Internet addiction, 12 different studies were examined. A significant relationship was found between the five dimensions of the test and internet addiction. Accordingly, while extraversion, openness to experience, agreeableness, and conscientiousness were negatively associated with internet addiction, emotional stability was found to be positively associated with internet addiction. These different results may be due to the different factors affecting internet addiction and online gambling addiction. Besides, in this study, we only discussed temperament traits. However, online gambling addiction might also be related to character traits measured by the TCI.

As a result of the study, it was found that there was a significant difference in online gambling scores in terms of maternal educational levels. No study has been found in the literature on the relationship between maternal educational level and online gambling addiction. However, studies in the literature reported a relationship between maternal educational level and drug addiction (40) and game and social media addiction (41). This might be due to the fact that children need more protection from their mothers, especially concerning gambling addiction. Therefore, as their mothers' educational level increases, children have access to more information and awareness about protecting themselves from online gambling addiction. Beyond that, in the studies found in the literature, it has been found that the mother's interest and positive motherhood skills are determinative in the emergence or absence of Internet addiction (42). Therefore, conscious parenting may potentially protect children, especially in problems with complex risk factors such as gambling addiction. It would be beneficial to increase and distribute special informative

activities, especially for socioeconomically disadvantaged parents.

In this study, as in every study, there are certain limitations. Our study's most important limitation is that the sample consisted of only high school students aged between 14 and 18 living in Istanbul. Besides, using only self-report scales is another limitation of our study.

As a result, the development of valid psychometric tools for understanding, diagnosing and treating specific internet addiction in all its dimensions, as directed by current research results and led by current research in the world, screening studies on clinical prevalence, psychometric tools and clinical spreadclinical trials are needed to increase clinical trials, to evaluate the natural processes of the problem, to examine cultural factors, understand genetic studies, especially in order to understand the relationship with other addictions, neurobiological research and research to evaluate the relationship between specific internet form of addiction and psychopathologies.

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