THE RELATIONSHIP OF ONLINE GAMBLING ADDICTION AND LONELINESS: A UNIVERSITY CASE FROM TURKIYE

ÇEVRİMİÇİ KUMAR BAĞIMLILIĞI İLE YALNIZLIK İLİŞKİSİ: TÜRKİYE'DEN BİR ÜNİVERSİTE ÖRNEĞİ

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Öz

Amaç
Bu çalışmanın amacı, Türkiye'de bir devlet üniversitesinde öğrenim gören genç erişkinlerde çevrimiçi kumar bağımlılığı ile yalnızlık arasındaki ilişkinin ve karşılıklı etkilerinin belirlenmesidir.

Gereç ve Yöntem
Bu çalışma kesitsel tipte tasarlanmış ve anket uygulama yöntemiyle toplanan bilgilerle hazırlanmıştır. Araştırma evrenini Türkiye'de bir devlet üniversitesinde öğrenim gören genç yetişkinler oluşturmaktadır. Veriler Aralık 2021'de demografik verileri içeren iki anket formu, Çevrimiçi Kumar Bağımlılığı (OGAS) ve Yetişkinler İçin Sosyal ve Duygusal Yalnızlık (SELSA-S) ölçekleri ile yüz yüze veri toplama yöntemi kullanılarak elde edilmiştir.

Bulgular
Araştırmaya toplam 449 üniversite öğrencisi katılmıştır. Bunların %52,8'i kadındı. Çevrimiçi kumar bağımlısı olanlar grubun %35,0'ini oluşturuyordu ve kumar bağımlısı genç yetişkinlerin yalnızlığı, bağımlı olmayanlara göre anlamlı olarak daha yüksekti (p=0.005).

Sonuç
Genç yetişkinlerde yalnızlığın çevrimiçi kumar bağımlılığı üzerinde yordayıcı bir etkiye sahip olduğu gösterilmiştir.

Anahtar Kelimeler: Kumar Bağımlılığı, Çevrimiçi Kumar Bağımlılığı, Yalnızlık, Sosyal ve Duygusal Yalnızlık

Abstract

Objective
The aim of this study was to determine the relationship and mutual effects between online gambling addiction and loneliness in young adults studying at a public university in Türkiye.

Material and Method
This study was designed in a cross-sectional style and prepared with the information collected by the survey application method. The study population was made up of young adults studying at a public university in Türkiye. The data were obtained in December 2021 using an in-person data collection method with two

questionnaire forms containing demographic data, Online Gambling Addiction Scale (OGAS) and Social and Emotional Loneliness Scale for Adults (SELSA-S).

Results
There were a total of 449 university students participated in the study. Of them, 52.8% were females. Those who were addicted to online gambling constituted 35.0% of the group, and those who were addicted to young adults gambling had significantly higher loneliness than those who were not (p=0.005).

Conclusion
In young adults, loneliness has been shown to have a predictive effect on online gambling addiction.

Keywords: Gambling Addiction, Online Gambling Addiction, Loneliness, Social and Emotional Loneliness

Introduction

Human is a social being by nature. Loneliness is a phenomenon that can threaten every individual at some point in their life. Although it is difficult to make a clear definition of the concept of loneliness, it can be handled in two different types. The first is the absence of other people around the individual, which is perceived as a physical condition. The second is psychological loneliness. It is expressed as the individual's feeling of great loneliness even in large crowds (1). Loneliness, which was the subject of a lot of study in the literature, had definitions that were handled in quite different aspects. The common points in the definitions are that loneliness is more qualitative than quantitative and is a subjective product of life. In addition, it is defined as an undesirable, avoided experience, associated with negative emotions such as anger, anxiety, sadness, stress (2–4). While it is stated in the literature that this feeling is a feeling that can be seen in almost every period of human life; contrary to popular belief, it occurs more frequently among adolescents and young adults than later in life (5). In the literature, it is stated that the reason why loneliness is a phenomenon that is perceived more in young adulthood may be related to the developmental tasks of this period (4). According to Erikson (1984), expected development in this period includes social behaviors such as establishing close and satisfying relationships with people, maintaining them, preparing for a spouse/marriage phenomenon, and feeling like they belong to a group (6). The individuals are eager for tasks of importance and tend to build intimacy. And sometimes when this relationship cannot be established, they may find themselves in the experience of loneliness.

On the other hand, the rapid development of technology has increased the use of the Internet, mobile phones, and other modern communication tools. The use of the Internet has become a necessity for today's people. The ease of Internet access and saving time play a big role in this. Beginning of this century the use of the Internet was limited to the business and academic worlds. Today children and young people in all modern societies more or less necessarily experience the Internet in their daily lives (7). The use of the Internet has gained a different dimension with the addition of many applications to the products and services offered on the Internet facilitating daily life (such as communication and entertainment tools, social networks, sites with music and video content, and game and entertainment sites). The increase in content giving pleasure to people has now caused it to become a habit or even an addiction that consumes the time of most users (8). Internet addiction distracts individuals from the real social environment they are in and leads to the deterioration of their functionality in daily life and a distressed mood. In the following period, it is seen that this situation results in some problems such as loneliness and deterioration in psychosocial functions (9).

When looking at Internet usage purposes in adults, it can be seen that escape from problems, entertainment, social media, film, series, music, sports, education, games, addiction, research, and communication are the main purposes. In addition, as reported in the literature, individuals who refuse to face their problems in their social environment become withdrawn, prefer to be alone, and see the internet as an escape. In this process, they prefer to use the Internet (8). At this point, online gambling emerges as an increasingly common choice among internet user (10).

Gambling can be simply defined as a game intended to obtain more than the amount invested. Gambling addiction, like other types of addictions, is characterized by repetitive and ongoing gambling behavior against disrupting the individual's family and work life and social harmony (11). It is a pathological behavior that is included in the "Non-Substance Related Disorder" subheading of the title "Substance

Related and Addiction Disorders" in the DSM-5 (12). Online gambling, on the other hand, refers to betting and gaming activities offered through Internet-enabled devices, including computers, smartphones, tablets, and digital television (13). The fact that it is free in terms of space and time, easily accessible, and that it has advantages such as hiding the identity of the person can make online gambling more attractive than normal gambling. Another important point reported in the literature is that the Internet environment carries three times more risk for addiction (14).

In the literature, it is mostly males who prefer to gamble online. They are relatively young, single, in managerial positions in their professions and well-educated people (15, 16).

In terms of the relationship between loneliness and gambling, it is seen that people who enjoy online gambling are lonelier, divorced, or disconnected from social life. According to a systematic review of gambling addiction, loneliness is a major cause of relapse for people with a gambling disorder (15–17). There is a generally agreed point in the literature about the types of internet addiction, including internet gambling addiction. The basis of these actions, which turn into addiction over time, is loneliness. Individuals try to initiate and maintain a social relationship with these behaviors. Thus, they are in an action to avoid loneliness (18).

The aim of this study was to determine the relationship and mutual effects between online gambling addiction and loneliness in young adults studying at a public university in Türkiye.

Material and Method

Participants
The research is a cross-sectional and analytical type of observational study. The freshman and senior students of the Faculty of Economics and Administrative Sciences of a public university participated to the study in December 2021. The population of the study consists of 3031 (male:1607, female:1424) students at this faculty. The sample size was calculated by Open Epi software considering the prevalence as 50%, power as 95% and the type-I error rate as 5%. The minimum sample size was found as 384. The simple random sampling method was used. The study was completed with a total of 449 participants of which 35.9% freshman (male:63, female:98) and 64.1% senior (male:149, female:139) students.

Online Gambling Addiction Scale (OGAS)
OGAS, developed by Karaibrahimoğlu et al. (2021), consists of 21 items and 3 sub-dimensions as motivation, addiction and negative psychology (19). There is no reverse coded item. A 5-point Likert type rating was used in the form of "always" (5) to "never" (1). The lowest score as 21 and the highest as 105 points can be obtained from the scale. The cut-off value of the scale was calculated as 27. A score above 27 indicates online gambling/betting addiction. The reliability Cronbach's Alpha coefficient was found to be 0.92 of the scale and the internal consistency coefficient was found to be 0.775 by Spearman-Brown.

Social and Emotional Loneliness Scale for Adults (SELSA-S)
SELSA-S is a scale developed by DiTomasso, Brannen and Best (2004), and adapted to Turkish culture by Akgül (2020), consisting of 15 items and 3 sub-dimensions (social, romantic, and family) (2,20). Of the scale items, 9 (2, 3, 5, 6, 8, 9, 11, 12, 14) items are coded in the reverse direction. It has a 7-point Likert-type rating as "Strongly Agree (7)" to "Strongly Disagree (1)". Social loneliness is calculated by social sub-dimension score where emotional loneliness is calculated by summing the family and romantic sub-dimension scores. To calculate general loneliness, it is necessary to sum the results of emotional loneliness and social loneliness. The lowest score is 15 and the highest score is 105. The reliability Cronbach's Alpha coefficient of the adapted scale was 0.83 and the internal consistency coefficient of the test-retest reliability was 0.93.

Data Collection
The data were collected by using an in-person data collection method with a questionnaire of 54 questions prepared by the researchers, including a personal information form, Online Gambling Addiction Scale (OGAS) and Social and Emotional Loneliness Scale for Adults (SELSA-S). Personal information form consists of age, gender, who lives with, family type, monthly income, class, school success, smoking-alcohol-stimulant substance use, hobby-social activity-exercise status, daily Internet time, gambling/gambling on the Internet-purpose-type and type, crypto money / stock market / foreign exchange such as the situation of using an investment tool.

Statistical Analysis
Statistical analyses of the study were performed with SPSS 20.0 (IBM Incorp, Chicago, IL, USA). The descriptive statistics were presented as mean±SD or median (min-max) for numerical variables and

frequency (percentage) for categorical variables. The Kolmogorov-Smirnov test was used to control the normal distribution of continuous variables. The student t-test and ANOVA were performed for comparison of two or more independent groups. The Pearson correlation analysis was used to determine the relationship between the scales. The reliability analyses of the scales were performed to obtain Cronbach's alpha and internal consistency coefficients. The response bias and Tukey's Nonadditivity analyses of the scales were performed. Structural equation modeling was established between the two scales using confirmatory factor analyses of the scales by JASP 0.14.1.0 open-source software. Moreover, the

multivariate General Linear Model analyses for social loneliness and online gambling scales were performed. The p<0.05 value was considered as statistically significant result considering the Type-I error as 5%.

Ethics Committee Approval
Ethics committee approval was received for this study from Suleyman Demirel University Faculty of Medicine Ethics Committee (date: 05.11.2021; number: 314).

Results

In the study, 52.8% of the participating students were female, more than half (64.1%) were in the 4th grade,

Table 1	Socio-demographic characteristics of the students (n=449)

		Male	**Female**	**Total**
		n(%)*	**n(%)***	**n(%)****
Class	Freshman	63 (%29.7)	98 (%41.4)	161 (%35.9)
	Senior	149 (%70.3)	139 (%58.6)	288 (%64.1)
Who he/she lives with	Family	62 (%29.2)	109 (%46.0)	171 (%38.1)
	Friend	65 (%30.7)	67 (%28.3)	132 (%29.4)
	Alone	85 (%40.1)	61 (%25.7)	146 (%32.5)
Family type	Nucleus	158 (%75.5)	194 (%81.9)	352 (%78.4)
	Wide	43 (%20.3)	30 (%12.7)	73 (%16.3)
	Divorced	11 (%5.2)	13 (%5.5)	24 (%5.3)
Monthly income	0-499 ₺	32 (%15.1)	32 (%13.5)	64 (%14.3)
	500-1499 ₺	62 (%29.2)	76 (%32.1)	138 (%30.7)
	1500-3000 ₺	57 (%26.9)	73 (%30.8)	130 (%28.9)
	>3000 ₺	61 (%28.8)	56 (%23.6)	117 (%26.1)
Alcohol	Never	79 (%37.3)	130 (%54.9)	209 (%46.5)
	Rarely	92 (%43.4)	90 (%38.0)	182 (%40.5)
	Often	41 (%19.3)	17 (%7.1)	58 (%12.9)
Cigarette	Yes	117 (%55.2)	70 (%29.5)	187 (%41.6)
	No	83 (%39.2)	149 (%62.9)	232 (%51.7)
	Left	12 (%5.6)	18 (%7.6)	30 (%6.7)
Stimulant substance	No	195 (%92.0)	230 (%97.1)	425 (%94.6)
	Yes	7 (%3.3)	5 (%2.1)	12 (%2.7)
	Left	10 (%4.7)	2 (%0.8)	12 (%2.7)
Age	**median (min-max)**	21 (18-31)	21 (18-32)	21 (18-32)
Total		212 (%100.0)	237 (%100.0)	449 (%100.0)

*Column percentage is given. **Row total and row percentage are given.

38.1% lived with family, 78.4% had a nuclear family, and the median age was 21 (min-max: 18-32). The income of 45% of the students was below 1500 ₺, more than half of them were people who drank alcohol (rarely/often: 53.5%), and almost half (smoking/ left: 48.3%) had a history of smoking. The proportion of participants who used stimulant substance was 2.7%, and there were participants who quit equally. Although those with middle or higher success (86.1%) and those with a hobby (88.2%) constitute the majority, the frequency of social activity was low (never/rarely:

73.3%), non-exercise (61.5%) was weighted and the prevalence of playing online gambling was 30.1%. Among young adults who answered, "I play online gambling", the goals were 39.8% 'making money', 30.1% 'fun' and 12.9% 'passion for adventure'. The rate of those who used an investment tool such as crypto/exchange/currency was 33.2%, and those who were addicted to online gambling constituted 35.0% of the group. In addition, the median amount of time young adults spent online per day was 4 (min-max: 0 to 16) (Table 1).

Table 1 continued — Socio-demographic characteristics of the students (n=449)

		Male	Female	Total
Course success	Very bad	7 (%3.3)	2 (%0.8)	9 (%2.0)
	Bad	25 (%11.8)	33 (%13.9)	58 (%12.9)
	Middle	97 (%45.8)	101 (%42.6)	198 (%44.1)
	Good	56 (%26.4)	72 (%30.4)	128 (%28.5)
	Very good	27 (%12.7)	29 (%12.3)	56 (%12.5)
Hobby	Yes	188 (%88.7)	208 (%87.8)	396 (%88.2)
	No	24 (%11.3)	29 (%12.2)	53 (%11.8)
Frequency of social activity	Never	16 (%7.5)	6 (%2.5)	22 (%4.9)
	Rarely	149 (%70.3)	158 (%66.7)	307 (%68.4)
	Often	47 (%22.2)	73 (%30.8)	120 (%26.7)
Regular exercise	Yes	103 (%48.6)	70 (%29.5)	173 (%38.5)
	No	109 (%51.4)	167 (%70.5)	276 (%61.5)
Gambling/ online gambling	Yes	99 (%46.7)	36 (%15.2)	135 (%30.1)
	No	113 (%53.3)	201 (%84.8)	356 (%69.9)
Purpose of gambling / online gambling †	Making money	32 (%47.8)	5 (%19.2)	37 (%39.8)
	Fun	24 (%35.8)	4 (%15.4)	28 (%30.1)
	Passion for adventure	8 (%11.9)	4 (%15.4)	12 (%12.9)
	Other ††	3 (%4.5)	13 (%50.0)	16 (%17.2)
Using an investment tool such as crypto/exchange/currency	Yes	112 (%52.8)	37 (%15.6)	149 (%33.2)
	No	100 (%47.2)	200 (%84.4)	300 (%66.8)
Addictive state of gambling / online gambling	Addicted	111 (%52.4)	46 (%19.4)	157 (%35.0)
	Non addicted	101 (%47.6)	191 (%80.6)	292 (%65.0)
Time spent online (hours/days)	median (min-max)	4 (0-16)	4 (0-15)	4 (0-16)
Total		212 (%100.0)	237 (%100.0)	449 (%100.0)

*Column percentage is given.
**Row total and row percentage are given.
†Only those who answered 'I play gambling/online gambling' were evaluated (n= male:67, female:26).
††The answers given in the other option were debt settlement, information, money-entertainment-adventure options.

Table 2   The relationship between sociodemographic characteristics and loneliness

Variable Mean±SD		Social loneliness		Family		Romantic		SELSA-S	
		Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
Gender	Male	13.5±6.6	**0.036**	11.9±7.1	0.145	22.7±8.7	**0.048**	48.2±15.3	**0.004**
	Female	12.3±6.6		11.1±6.8		21.1±8.9		44.5±15.5	
Who he/she lives with	Family*	12.1±6.2	0.169	10.1±6.1	**0.009**	21.8±8.8	0.640	43.9±14.1	**0.041**
	Friend	13.3±6.7		12.0±6.9		21.2±9.2		46.6±16.8	
	Alone*	13.4±6.6		12.6±7.7		22.5±8.5		48.5±15.5	
Family type	Nucleus	12.6±6.6	0.326	11.1±6.7	**0.013**	21.9±8.7	0.295	45.7±15.4	0.215
	Wide	13.8±6.5		11.8±6.9		20.7±9.3		46.4±14.9	
	Divorced	13.1±7.0		16.0±9.3		23.35±9.1		52.4±17.9	
Cigarette	Yes	12.7±6.7	0.778	11.9±7.0	0.426	20.6±9.5	0.060	45.1±16.3	0.422
	No	13.1±6.7		11.1±6.9		22.9±8.1		47.2±14.9	
	Left	12.5±5.7		11.6±7.1		21.7±9.6		45.8±15.2	
Frequency of drink alcohol	Never	13.1±6.7	0.122	10.7±6.2	**0.002**	22.1±8.2	0.596	45.8±14.5	**0.017**
	Rarely	12.1±6.2		11.3±7.0		21.3±9.5		44.8±15.7	
	Often**	14.4±7.3		14.9±8.3		22.8±9.0		52.1±17.1	
Stimulant substance	Yes	14.1±7.4	0.424	12.5±8.5	0.245	17.8±8.7	**0.039**	44.4±17.6	0.887
	No	12.8±6.6		11.4±7.0		22.1±8.9		46.3±15.5	
	Left	14.3±5.7		13.3±4.0		18.4±5.5		46.0±12.5	
Frequency of social activity	Never**	18.5±7.1	**<0.001**	15.0±7.6	**0.039**	23.3±9.4	0.690	56.7±19.3	**0.006**
	Rarely	12.8±6.5		11.4±7.0		21.9±8.6		46.2±14.9	
	Often	11.9±6.3		11.0±6.7		21.4±9.3		44.3±15.6	
Online gambling addiction	Yes	14.0±6.5	**0.003**	13.1±7.2	**<0.001**	21.7±8.9	0.855	48.8±15.7	**0.005**
	No	12.3±6.6		10.6±6.7		21.9±8.7		44.8±15.2	

SELSA-S: The Turkish short version of the Social and Emotional Loneliness Scale for Adults, SELSA-S sub-dimensions: social loneliness, family and romantic.

* According to Tukey's HSD Post-hoc analysis, there was a significant difference of 0.05 between these two groups.

** According to Tukey's HSD Post-hoc analysis, the significant difference of 0.05 level according to post-hoc analysis is between this group and others.

When participants were evaluated in terms of loneliness, there was no significant difference in terms of family type, smoking, and stimulant substance use (p>0.05). Males, by contrast, compared to females (p=0.004); those who live alone are compared to those who live with their families (p=0.041); often drinkers compared to those who drink alcohol at never or rarely were found to be significantly lonelier (p=0.017). It was observed that those who did not do any social activity experienced significantly higher loneliness than those who rarely or often did social activities (p=0.006) and those who were addicted to online gambling experienced significantly higher levels of loneliness than those who did not (p=0.005) (Table 2).

According to the results of the analysis, in males, according to females (p<0.001); in those who live alone, according to those who live with their family (p<0.001); in those who have a divorced family (p=0.008); in smokers, according to those who do not use (p<0.001); in those who drink alcohol frequently

Table 3 The relationship between sociodemographic characteristics and online gambling addiction

Variable Mean±SD		Motivation		Dependency		Negative psychology		OGAS	
		Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
Gender	Male	18.6±10.8	<0.001	9.8±6.1	<0.001	8.7±8.7	<0.001	37.0±19.9	<0.001
	Female	12.4±6.5 pm		7.1±3.4		6.9±3.7		26.4±11.7	
Who he lives with?	Family*	13.6±8.5	0.001	7.5±4.3	<0.001	7.2±4.2	0.012	28.4±15.2	<0.001
	Friend	15.5±8.4		8.0±4.2		7.3±4.0		30.8±14.8	
	Alone*	17.2±10.5		9.7±6.2		8.6±5.1		35.5±19.6	
Family type	Nucleus*	14.6±8.7	0.012	8.1±4.8	0.010	7.4±4.3	0.044	30.1±15.9	0.008
	Wide	16.8±9.8		8.8±5.2		8.4±5.0		34.1±17.7	
	Divorced*	21.5±13.1		11.3±7.3		9.4±5.8		42.2±23.6	
Monthly income	0-499 ₺	13.0±7.0	0.047	7.0±2.8	0.015	7.0±3.3	0.301	27.0±10.9	0.083
	500-1499 ₺	14.9±9.4		8.4±5.4		8.0±4.3		30.7±17.9	
	1500-3000 ₺	16.2±9.4		9.2±5.8		8.1±4.9		33.4±17.5	
	>3000 ₺	16.2±10.0		8.2±4.5		14.6±8.7		32.5±17.2 pm	
Cigarette	Yes*	19.0±11.2	<0.001	9.8±6.4	<0.001	8.4±5.1	0.037	37.1±20.4	<0.001
	No*	12.6±6.5		7.3±3.4		7.2±3.9		27.0±12.1	
	Left	14.2±7.1		7.9±4.6		7.8±4.1		30.0±14.8	
Frequency of drink alcohol	Never	12.4±6.1	<0.001	7.3±3.2	<0.001	7.2±3.8	0.001	26.8±11.3	<0.001
	Rarely	15.6±9.1		8.3±5.2		7.5±4.4		31.4±16.4	
	Often*	25.2±12.1		12.5±7.4		10.1±6.2		47.8±23.9	
Stimulant substance	Yes	21.0±11.6	<0.001	11.9±7.6	0.002	8.8±4.7	0.082	41.8±22.2	0.001
	No*	14.9±9.0		8.2±4.8		7.6±4.5		30.7±16.4	
	Left*	25.5±10.5		12.0±7.5		8.8±4.1		46.3±19.8	
Frequency of social activity	Never**	20.5±10.5	0.016	11.6±6.3	0.003	9.7±4.8	0.033	41.7±19.4	0.012
	Rarely	15.1±9.4		8.2±5.0		7.6±4.6		30.9±17.1	
	Often	15.0±8.7		8.2±4.7		7.6±4.2		30.8±15.5	
Using an investment vehicle such as crypto/ exchange/ currency	Yes	19.9±11.6	<0.001	10.0±6.5	<0.001	8.4±5.1	0.022	38.3±21.4	<0.001
	No	13.1±6.8		7.6±3.9		7.4±4.2		28.0±12.9	

OGAS: Online Gambling Addiction Scale, OGAS sub-dimensions: motivation, dependency and negative psychology
* According to the post-hoc analysis, the significant difference is between these two groups.
** According to the post-hoc analysis, the significant difference is between this group and others.

or rarely (p<0.001); in those who use stimulant substances and give up, according to those who do not use them (p=0.001); in those who do not do any social activities, according to those who engaged in rare or frequent social activities (p=0.012); online gambling connectedness was found to be significantly higher in those who used an investment tool such as crypto/stock exchange/currency than in those who did not use it (p<0.001). Although there was a significant difference in the motivation and addiction sub-dimensions, there was no significant relationship between monthly income and online gambling addiction (Table 3).

Characteristics of the Scales
The reliability coefficient Cronbach's alpha of SELSA-S was calculated as 0.780. For internal consistency, Guttman-Split Half and Spearman Brown correlation

values were calculated and found to be 0.861 and 0.865, respectively. The mean score of a total of 15 items was found to be 3.08±0.60 points. Tukey's non-additivity value was not found to be significant (p=0.127). There was no response bias on the scale since the Hotelling's T2 value was 779.30 and p<0.001. The overall score value of the scale was calculated as 46.21±15.49 (min-max: 15-103) points.

The reliability level for the OGAS was found to be quite high and Cronbach's alpha=0.956 and the mean item was 1.50±0.69. For internal consistency, Guttman-Split Half and Spearman Brown correlation values were calculated and high consistency values such as 0.866 and 0.875, respectively, were found. According to Tukey's Non-additivity test, the scale was found to be homogenous structure among the participants since the non-additivity value was not significant (p=0.159). Hotelling's T2 value was 158.31 and p<0.001, so there was no response bias on the scale. The overall mean score of the scale was 31.41±16.90 (min-max: 21-105).

The correlations between the sub-dimensions were examined. There was a positive, low-significant correlation between social loneliness and online gambling addiction (r=0.137; p=0.004). Likewise social loneliness had a positive, low-significant correlation with addiction and negative psychology (r=0.151, p=0.001; r=0.176, p<0.001, respectively). There was a positive, low-significant correlation between family loneliness and online gambling addiction

(r=0.239; p<0.001). Moreover, family loneliness had a significant correlation with motivation, addiction, and negative psychology (r=0.185, p<0.001; r=0.251, p<0.001 r=0.233, p<0.001). Total loneliness had a significant correlation with motivation, addiction, and negative psychology (r=0.132, p:0.005; r=0.203, p<0.001 r=0.213, p<0.001). There was a significant but lower correlation between total loneliness and online gambling addiction (r=0.190, p<0.001). Significantly, online gambling addiction increased as loneliness increased (Table 4).

The Effect of the Loneliness Scale on Online Gambling Addiction
The Confirmatory Factor Analysis was performed for the scales. The Structural Equation Model was created to determine the effects of the Loneliness Scale on Online Gambling Addiction. In the factor analysis for the Loneliness Scale, it was seen that the goodness-of fit level of the model was within acceptable limits since X2/SD=128.75/40=3.21 and RMSEA=0.070 were found. Since the fit indices of the model were calculated as CFI=0.967, GFI=0.953 and ECVI=0.403, it was observed that the index values were generally at an acceptable level. All the coefficients obtained in the model were significant and the standardized values of the coefficients were accurate above the value of 1.96. Due to the fact that the explanatory coefficient R2 values were quite low, it was decided to remove items 1, 7 and 10 from the model. In addition, the model was adapted by applying a modification between items 2 and 5

| Table 4 | Correlation values between scales and sub-dimensions |

Pearson Correlation		Motivation	Dependency	Negative psychology	OGAS
Social loneliness	R	0.082	0.151	0.176	0.137
	p	0.082	**0.001**	**<0.001**	**0.004**
Family	R	0.185	0.251	0.233	0.239
	p	**<0.001**	**<0.001**	**<0.001**	**<0.001**
Romantic	R	0.024	0.044	0.059	0.042
	p	0.614	0.350	0.211	0.374
SELSA-S	R	0.132	0.203	0.213	0.190
	p	**0.005**	**<0.001**	**<0.001**	**<0.001**

R=Pearson correlation coefficient.
OGAS: Online Gambling Addiction Scale, OGAS sub-dimensions: motivation, dependency and negative psychology.
SELSA-S: The Turkish short version of the Social and Emotional Loneliness Scale for Adults,
SELSA-S sub-dimensions: social loneliness, family and romantic.

of the social loneliness dimension to create an error covariance within the same sub-dimension within the modification indexes. While the coefficient between social and family loneliness sub-dimensions was 0.72, very low relationship values were obtained between romantic loneliness and social (0.05) and family (0.09) loneliness factors.

The goodness-of-fit values of the online gambling addiction scale were found to be significant. For model compatibility, X2/SD=550.45/143=3.84 and RMSEA=0.077 were calculated. Fit index values were generally within acceptable intervals (CFI=0.916, GFI=0.856 and ECVI=1.925). Since the explanatory coefficients were low, items 16 and 19 were removed from the model. Five modifications were made within the motivation sub-dimension and between the 20th and 21st items in the addiction sub-dimension. The correlation coefficient 0.66 between motivation and addiction, 0.86 between negative psychology and motivation, 0.85 between addiction and negative psychology were calculated.

Table 5 Fit index values according to the structural equation model

Goodness-of-Fit Measures	Measurement value	Good Fit Values	Acceptable Compliance Values	Result
Goodness-of-Fit tests				
X^2	1658.95			
Df	512			
X^2/DF	3.24	0≤X^2/SD ≤3	3 ≤ X^2/SD ≤ 5	Good fit
Goodness-of-Fit Indices				
Comparative Fit Index (CFI)	0.961	≥ 0.97	≥ 0.95	Good fit
Tucker-Lewis Index (TLI)	0.934	≥ 0.95	0.94-0.90	Acceptable
Bentler-Bonett Non-normed Fit Index (NNFI)	0.942	≥ 0.95	0.94-0.90	Acceptable
Bentler-Bonett Normed Fit Index (NFI)	0.916	≥ 0.95	0.94-0.90	Acceptable
Parsimony Normed Fit Index (PNFI)	0.776	≥ 0.90	0.89-0.70	Acceptable
Bollen's Relative Fit Index (RFI)	0.836	≥ 0.90	0.89-0.70	Acceptable
Bollen's Incremental Fit Index (IFI)	0.907	≥ 0.95	0.94-0.90	Acceptable
Relative Noncentrality Index (RNI)	0.891	≥ 0.90	0.89-0.70	Acceptable
Absolute Fit Indices				
Goodness of fit index (GFI)	0.873	≥ 0.90	0.89-0.85	Acceptable
McDonald fit index (MFI)	0.855	≥ 0.90	0.89-0.85	Acceptable
Expected cross validation index (ECVI)	4.064	≤ 3.0	3.0 – 5.0	Acceptable
Residual Fit Indices				
Root mean square error of approximation (RMSEA)	0.071	≤ 0.05	0.06-0.08	Acceptable
Standardized root mean square residual (SRMR)	0.064	≤ 0.05	0.06-0.08	Acceptable
Information Criteria				
Log-likelihood	-21909.66			
Akaike Information Criteria (AIC)	43985.32			
Bayesian Information Criteria (BIC)	44326.20			

df= degrees of freedom, X^2= Chi-square

Table 6	Multivariate analysis of subdimensions of loneliness

SELSA		Social loneliness	Family	Romantic	Emotional	SELSA-S
		p	p	p	p	p
Gender	Male	0.899	0.943	0.485	0.624	0.678
	Female					
Who he/she lives with	Family	0.589	0.453	0.119	0.617	0.656
	Friend					
	Alone					
Family type	Nucleus	0.919	0.479	0.755	0.444	0.584
	Wide					
	Divorced					
Cigarette	Yes	0.991	0.752	0.101	0.399	0.595
	No					
	Left					
Frequency of drink alcohol	Never	0.184	0.154	**0.046**	**0.037**	0.110
	Rarely					
	Often					
Stimulant substance	Yes	0.972	0.771	0.496	0.418	0.586
	No					
	Left					
Frequency of social activity	Never	0846	0.416	0.321	0.204	0.341
	Rarely					
	Often					
Online gambling addiction	Yes	**0.030**	**0.001**	0.554	**0.010**	**0.004**
	No					

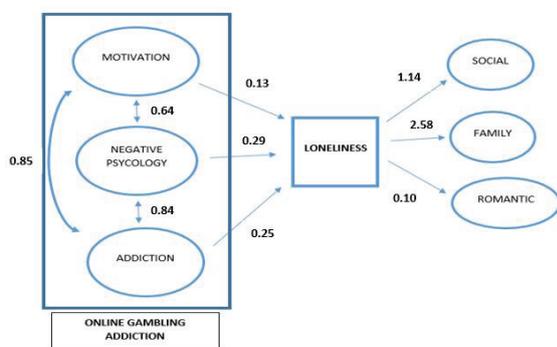SELSA-S: (The Turkish short version of the Social and Emotional Loneliness Scale for Adults)

Figure 1
Path diagram

A structural equation model was created between the scales in order to see the effects of the loneliness scale and its sub-dimensions on online gambling addiction and its sub-dimensions. The compatibility level of the model was found to be close to high (X2/SD=1658.95/512=3.24 and RMSEA=0.071). Fit index values were found to be good and acceptable (Table 5). Items 1 and 14 of the loneliness scale were removed from the model due to the fact that the explanatory coefficients were quite low. The proposed modifications were carried out only within the dimensions. The error covariances were created between the items 7 and 13 in the social loneliness sub-dimension; items 7 and 8, items 7 and 10, items

| Table 7 | Multivariate analysis of subdimensions of online gambling |

OGAS		Motivation	Dependency	Negative psychology	OGAS
		p	p	p	p
Gender	Male	0.832	0.988	0.726	0.822
	Female				
Who he lives with?	Family*	0.952	0.090	**0.047**	0.370
	Friend				
	Alone*				
Family type	Nucleus*	**0.018**	0.308	0.823	0.194
	Wide				
	Divorced*				
Monthly income	0-499 ₺	0.216	0.324	0.308	0.387
	500-1499 ₺				
	1500-3000 ₺				
	>3000 ₺				
Cigarette	Yes*	**0.043**	0.213	0.482	0.084
	No*				
	Left				
Frequency of drink alcohol	Never	0.116	0.413	0.827	0.421
	Rarely				
	Often*				
Stimulant substance	Yes	**0.026**	**0.002**	0.837	**0.027**
	No*				
	Left*				
Frequency of social activity	Never**	**0.036**	**0.014**	0.157	**0.027**
	Rarely				
	Often				
Using an investment vehicle such as crypto/exchange/currency	Yes	0.146	0.406	0.790	0.348
	No				
SELSA-S		0.164	**0.005**	**0.004**	**0.012**

OGAS (Online Gambling Addiction Scale) score,
SELSA-S: (The Turkish short version of the Social and Emotional Loneliness Scale for Adults)

2 and 9 in the motivation sub-dimension; items 18 and 19 in negative psychology sub-dimension; items 20 and 21 in the addiction sub-dimensions. There was a high correlation between the latent variable general loneliness and the family and social loneliness sub-dimensions, but a low level (0.10) with the romantic loneliness dimension. There was a low correlation (0.13) between the latent variable general loneliness and the motivation; 0.29 correlation level with the negative psychology and 0.25 correlation level with the addiction sub-dimension (Figure 1).

According to the multivariate analysis, the factors affecting the loneliness and online gambling addiction were determined. All subdimensions of loneliness except for "romantic" and total loneliness were significantly affected by online gambling addiction. The students playing online gambling were found more likely to be social lonely, more far away from their family and more emotional lonely (p<0.05). The students drinking alcohol often were found to be more likely romantic (p=0.046) and more emotional lonely (p=0.037). other factors were not found significant on loneliness. All subdimensions of online gambling addiction except for "motivation" and the total OGAS scale were significantly affected by total loneliness (p<0.05). It was found that the lonelier the student the more dependent on online gambling and the more have negative psychology on addiction. The students having never social activity were more likely to be motivated to play online gambling (p=0.036) and to be dependent to online gambling (p=0.014). To use stimulant substance was a significant factor on motivation (p=0.026) and dependency (p=0.002) on online gambling addiction. Smoking a cigarette had only significant effect on motivation of online gambling (p=0.043) while alcohol drinking was not related to online gambling. The student whose family is divorced were more likely to be motivated of online gambling (p=0.018) than other family types. The students who live alone were found more likely to have a negative psychology for online gambling (Tables 6 and 7).

Discussion

This study examined the relationship between loneliness and online gambling addiction in young adults, and it was seen that loneliness was a predictor for online gambling addiction.

In this study, it was seen that in terms of loneliness, males had significantly higher loneliness than females. There are many studies on this subject and different results have been revealed. In a meta-analysis conducted in 2015, the relationship between gender and loneliness parameters was evaluated. There were 38 studies included in the meta-analysis. While the relationship between gender and loneliness was not significant in 24 studies, it was significant in 14 studies. In 10 of the 14 studies, males were lonelier, while in 4 studies females were significantly lonelier (21). Considering the different results in the literature, it is not possible to say that gender is a predictor of loneliness.

In this study, drinking alcohol was associated with significantly higher levels of loneliness. When the literature is examined, different results are apparent. In a study conducted on this subject, it was reported that there was no significant difference between those who drank alcohol and those who did not drink alcohol (22). In another study, it was found that individuals who drank alcohol had significantly higher loneliness than those who did not (23). More work is needed to draw an inference on this issue.

The relationship between loneliness and frequency of social activity was evaluated. The loneliness of those who do not do social activities was found to be significantly higher than those who rarely do social activities or those who do social activities frequently. The findings on this subject have been found to be consistent with other studies in the literature. In a study, loneliness was found to be significantly lower in students who did 2 activities compared to those who engaged in a single activity (24). This can be explained by the fact that social activity requires involvement in communities and creates a positive effect by creating a common purpose in bilateral relations. In this way, the person can get rid of the feeling of loneliness both physically and emotionally.

In the analysis, it was seen that online gambling addiction was significantly higher in males than in females. Online gambling is mostly preferred by individuals in male, young, single, well-educated and professional/managerial professions (25). In the literature review, no study was found reporting that problem gambling behavior is more common in females than in males. As a function of gender, this difference is likely to have both biological and environmental underpinnings.

While a stable environment and a healthy family environment are protective factors, the ties of weak and conflicted families can cause addictive behaviors to occur more easily (26). As a matter of fact, in parallel with this, in our study, online gambling addiction was found to be significantly higher in those living alone than those living with their families, and in dispersed family, owners compared to those with nuclear families.

Online gambling addiction was found to be significantly higher in those who used cigarettes, alcohol, or stimulants. Findings that disparate objects stimulate similar neurobiological pathways suggest that regardless of the object of addiction, the neurobiological circuits of the central nervous system are the ultimate common pathway for addictive behaviors (27). Both psychoactive drugs (e.g., alcohol, cocaine, and heroin) and behaviors (e.g., gambling)

have the capacity to stimulate neurobiological systems in general and the dopamine reward system of the brain in particular (28–30). From this point of view, it is usual that there is a relationship between other types of addiction and online gambling addiction.

When we look at the relationship between social activity and online gambling addiction the online gambling addiction rate of those who did not do any social activities was found to be significantly higher. Literature supports this finding. The fact that it has been reported that people who enjoy online gambling more are lonelier, divorced, disconnected from social life, and prefer online gambling environments in order to get rid of boredom and social interaction (31,32). In addition, there are reports study that gambling is associated with the motivation to feel good and socialize (33,34). This finding suggests that individuals view online gambling as a social activity.

In this study, it was seen that loneliness in young adults is a predictor of online gambling addiction. When other research in the literature was examined, similar results were seen, and it was reported that high levels of loneliness prevailed in those with problematic Internet use (34). In addition, according to the literature, the feeling of loneliness is thought to be an important risk factor for gambling problems in adult males and females (35, 36). This can be explained by the fact that the person moves away from social norms when he/she is alone and sees riskier behaviors as normal. For this reason, it can be deduced that loneliness is an important predictor of gambling addiction.

Limitations and Directions
One of the strengths of the study is that it is the first study to examine the relationship between loneliness and online gambling addiction in individuals who are evaluated by a scale of online gambling addiction in young adults and who are described as "online gambling addicts". On the other hand, the first limitation of the study is that it is a cross-sectional and analytical type of design. The other restriction is that it is limited to students in a faculty of a public university. In this sense, as a further study, participants in a wider age range and education would better reflect the young adult population.

Conflict of Interest Statement
The authors have no conflicts of interest to declare.

Ethical Approval
Ethics committee approval was received for this study from Suleyman Demirel University Faculty of Medicine Ethics Committee (date: 05.11.2021; number: 314).

Consent to Participate and Publish
Written informed consent to participate and publish was obtained from all individual participants included in the study.

Availability of Data and Materials
Data are available on request due to privacy or other restrictions.

Authors Contributions
AK: Conceptualization; Methodology; Formal analysis; Writing-original draft; Writing-review & editing; Supervision.
KB: Formal analysis; Investigation; Data curation; Writing-original draft; Writing-review & editing.

EK: Writing-original draft; Writing-review & editing.

RÖ: Writing-original draft; Writing-review & editing.

ANK: Conceptualization; Supervision; Investigation; Validation; Writing-review & editing.

EU: Supervision; Validation; Writing-review & editing.

ÖÖ: Methodology; Investigation; Visualization; Validation; Writing-review & editing.

Editorial
Although AK, one of the authors of the article, is statistical editor of the journal, he has not taken part in any stage of the publication processes of this article.

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