


Predicting Online Gambling Addiction with the Dark Triad Traits

Karanlık Üçlü Özellikleriyle Çevrimiçi Kumar Bağımlılığını Tahmin Etmek

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Abstract: Gambling poses new risks for individuals due to technological developments and easier and faster access to online games. The increase in participation in online gambling activities such as betting and games of chance further increases the prevalence of gambling and the risk of addiction. Identifying risk groups and factors is critical to prevent these harmful activities with adverse psychosocial and economic consequences. This study aimed to investigate the effect of gender and dark personality traits on online gambling addiction. Data were obtained from 376 Turkish university students ($M=20.40$, $SD=1.96$). The current study revealed the tendency of men towards online gambling addiction. 93% of participants were above the addiction score threshold. The findings showed a positive association between narcissism and psychopathy and online gambling addiction and no relationship between Machiavellianism and this addiction. Narcissism and psychopathy personality traits were determined to be risk factors for online gambling addiction. Since this study identified that men and students with the personality traits of narcissism and psychopathy are prone to online gambling, interventions with these groups may help prevent the negative consequences of online gambling before they occur.

Keywords: The Dark Triad traits, narcissism, machiavellianism, psychopathy, online gambling addiction, university students

Öz: Kumar, teknolojik gelişmeler ve çevrimiçi oyunlara daha kolay ve hızlı erişim sağlanması nedeniyle bireyler için yeni riskler oluşturmaktadır. Bahis ve şans oyunları gibi çevrimiçi kumar faaliyetlerine katılımın artması, kumarın yaygınlığını ve bağımlılık riskini daha da artırmaktadır. Olumsuz psikososyal ve ekonomik sonuçları olan bu zararlı faaliyetlerin önlenmesi için risk gruplarının ve faktörlerinin belirlenmesi kritik öneme sahiptir. Bu çalışma, cinsiyet ve Karanlık Üçlü kişilik özelliklerinin çevrimiçi kumar bağımlılığı üzerindeki etkisini araştırmayı amaçlamıştır. Veriler 376 Türk üniversite öğrencisinden elde edilmiştir ($M=20.40$, $Ss=1.96$). Mevcut çalışma erkeklerin çevrimiçi kumar bağımlılığına olan eğilimini ortaya çıkarmıştır. Katılımcıların %93'ü bağımlılık puan sınırının üzerindedir. Bulgular narsisizm ile psikopati ve çevrimiçi kumar bağımlılığı arasında pozitif ilişki olduğunu ve Makyavelizm ile bu bağımlılık arasında herhangi bir ilişki olmadığını göstermiştir. Narsisizm ve psikopati kişilik özelliklerinin çevrimiçi kumar bağımlılığı için risk faktörü olduğu belirlenmiştir. Bu çalışma, erkeklerin ve narsisizm ve psikopati kişilik özelliklerine sahip öğrencilerin çevrimiçi kumara yatkın olduğunu belirlediğinden, bu gruplara yönelik müdahaleler, çevrimiçi kumarın olumsuz sonuçlarının ortaya çıkmadan önce önlenmesine yardımcı olabilir.

Anahtar Kelimeler: Karanlık Üçlü kişilik özellikleri, narsisizm, makyavelizm, psikopati, çevrimiçi kumar bağımlılığı, üniversite öğrencileri

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Introduction

The prevalence of gambling among individuals is of concern in the fields of public health and addiction. Gambling can be defined as betting on something of value, such as money, where the outcome is by chance (Ladouceur, 2002). Easier and faster access to games through technological developments leads to an increase in online gambling rates, and preventing gambling becomes more difficult. It has been reported that 10% of offline gambling has been replaced by online gambling, and the likelihood of becoming a problem gambler has increased by 8.8-12.6% (Effertz et al., 2018). Although some of these games and bets are age-restricted or illegal activities in most countries, online sites have made it easier to access such activities, and subsequently, the prevalence rate and risk of gambling disorder are increasing (González Bueso et al., 2021). More importantly, individuals are constantly exposed to advertisements which lead to monetary spending on gambling activities or problematic gambling (Kristiansen & Severin-Nielsen, 2022). Thus, individuals' participation in these risky activities raises concerns.

Similar to other countries, studies in Türkiye have shown that economic crises, financial difficulties, low-income levels, and debts make gambling attractive and that individuals turn to gamble to improve their quality of life, add joy and attraction to their lives, seek excitement, get rid of stress, and

earn money (Çelik, 2016; Vayisoğlu et al., 2019). In addition, online gambling may lead to psychological, social, and academic problems. A study revealed that participants who engaged in online gambling became depressed, experienced sleep problems, and had difficulty concentrating in classes due to the addictive potential of online gambling (Amoah-Nuamah et al., 2023). Problem gambling has also been identified as a potential risk factor for suicidality (suicidal thoughts and suicide attempts) for both genders (Wardle & McManus, 2021). These results demonstrate the harmful and even irreversible effects of online gambling on individuals due to its easily accessible nature.

The term Dark Triad includes three socially aversive traits: narcissism, Machiavellianism, and psychopathy. Narcissism refers to a personality that is self-centered, self-aggrandizing, dominant, entitled, and manipulative. Narcissists have inflated perceptions of themselves, but the opposite is true for others. Since this personality has a low communion ability, their perceptions of others are deflated (Sedikides et al., 2013). Machiavellianism is a personality trait characterized by individual differences in manipulateness, insincerity, and callousness (Christie & Geis, 2013). Machiavellians plan for the future, form alliances, and strive to maintain a positive reputation (Jones & Paulhus, 2014). The psychopathy trait can be defined as the callous, ruthless manipulation and

exploitation of others. Psychopaths exhibit impulsive behavior, abandon people around them, such as friends and family, and their reputation is not very important (Hare & Neumann, 2008). This personality type can be considered as a psychological cause of antisocial and criminal behavior (Hare et al., 2013). Although the origins of the Dark Triad are different, this leads to socially malevolent characters with tendencies towards self-promotion, emotional coldness, hypocrisy, and aggression (Paulhus & Williams, 2002). Furthermore, the subclinical prevalence of the Dark Triad is assumed to be much higher than the prevalence of clinical levels of the Dark Triad (Wu & Lebreton, 2011).

Previous literature has shown a clear link between the Dark Triad traits and behavioral addictions. A study with undergraduate students showed that high narcissism, high Machiavellianism, and high psychopathy personality scores had an impact on susceptibility to internet addiction (Lee & Lim, 2021). Instagram addiction, social media addiction, problematic smartphone use, and gaming disorder were predicted by these traits (Demircioğlu & Göncü Köse, 2021; Nikbin et al., 2022; Servidio et al., 2021; Tang et al., 2020). These studies highlight the Dark Triad traits as a potential risk factor for addictive behaviors.

Machiavellianism, characterized by strategic planning and manipulation, is not expected to be associated with gambling because it is not associated with impulsivity and risk taking (Jones & Paulhus, 2011). The associations of narcissism and psychopathy with gambling may be explained by a combination of risk-taking tendencies (Jones & Paulhus, 2011), sensation-seeking tendencies (Emmons, 1981; Marcus et al., 2013) and cognitive biases in assessing risk (Foster et al., 2009). Narcissistic individuals share several characteristics in common with high sensation seekers, such as needing variety, being autonomous, dominant, and grandiose (Emmons, 1981). Since psychopathy involves fearless dominance and self-centered impulsivity, individuals with this trait may violate social norms and have sensation-seeking tendencies (Marcus et al., 2013). On the other hand, narcissists' risk-taking behaviors are associated with increased perceptions of benefits resulting from risky behaviors (Foster et al., 2009). In addition, narcissism and psychopathy were associated with behavioral risk, but Machiavellianism was not associated with risk-taking (Jones & Paulhus, 2011). Indeed, manipulation and callousness lie at the core of the Dark Triad. When these are combined with the characteristics of narcissism and psychopathy personality types, it becomes clear that individuals are willing to take risks. Although Machiavellianism is also a personality trait of manipulation and insensitivity, strategy and long-term planning are important for these individuals (Malesza & Ostaszewski, 2016). Therefore, they may not engage in risky behavior such as online gambling.

Emerging adulthood is roughly between the ages of 18 and 25, including adolescence and young adulthood (Arnett, 2000). In this developmental period, which corresponds to the university years, individuals begin to gain autonomy and there are changes in normative expectations regarding their social roles and behavior. Sussman and Arnett (2014) stated that this age range is the period when risky behaviors are most tolerated and, in some cases, encouraged, so it is possible for some substance and behavioral addictions to emerge during this

period. Accordingly, we conducted our study based on this age range. In addition, there are studies regarding the link between personality traits and online activities, problematic internet use, online game addiction, and gambling (Kim et al., 2008; Kircaburun & Griffiths, 2018). For example, neuroticism, openness, and impulsivity were associated with pathological gambling (Myrseth et al., 2009). A study with adults showed that narcissism, Machiavellianism, and psychopathy were positively related to the blackjack task (Refaie et al., 2024). Another study with undergraduate students who identified as sports gamblers investigated the relationship between Dark Triad traits and problem gambling (Onyedire et al., 2021). Considering these studies, it appears that they focus on offline gambling, or the sample of these studies consists of gamblers or a wide age range. It is known that the use of online gambling has become widespread among people who are very interested in gambling, that for some, this environment significantly contributes to gambling problems (Gainsbury, 2015), and that emerging adulthood is a critical period for this risky behavior. However, to our knowledge, little attention has been paid to the Dark Triad traits (narcissism, Machiavellianism, and psychopathy) of online gambling users, and there is no research in both domestic and international literature including the relationship between these traits and online gambling addiction, especially in emerging adulthood. To address this gap, in this study, we aimed to investigate the effect of gender and dark personality traits on online gambling addiction. To this end, the following hypotheses were generated:

H1: There would be a significant gender difference in online gambling addiction.

H2: Narcissism and psychopathy would predict online gambling addiction, while Machiavellianism would not predict online gambling addiction.

Method

Participants

The required sample size for this study was determined using G*Power software version 3.1. 9.7. A priori power analysis calculated that a sample size of 119 participants was required for a medium effect size ($f^2 = 0.15$) at an alpha of 0.05 to achieve a power of 0.95 (Cohen, 2013). 376 participants were reached. The power analysis was repeated with the same criteria using a post hoc procedure, and the power of the sample size ($1-\beta$ error probe) was calculated as 0.99. This value indicates that the sample had adequate power.

376 university students aged 18-25 participated in the research. The mean age was 20.40 years ($SD = 1.96$). Table 1 presents the demographic characteristics of participants. 191 (50.8%) of the students were women, and 185 (49.2%) were men. 136 (36.2%) of the participants were freshmen, 79 (21.0%) were sophomores, 51 (13.5%) were juniors, and 110 (29.3%) were senior students. 102 (27.1%) participants were from low-income families, 220 (58.5%) participants were from middle-income families, and 54 (14.4%) participants were from high-income families. 182 (48.4%) students stated that they were interested in games of chance or betting advertisements, and 190 (50.5%) students reported that they were willing to earn money by online gambling. 182 (48.4%) students stated that they gambled online within a year.

Table 1. Demographic characteristics of participants

		N	%
Gender	Women	191	50.8
	Men	185	49.2
	Freshman	136	36.2
Education	Sophomore	79	21.0
	Junior	51	13.5
	Senior	110	29.3
Income	Low	102	27.1
	Moderate	220	58.5
	High	54	14.4
Interest in games of chance or betting advertisements	Yes	182	48.4
	No	194	51.6
Willingness to make money by online gambling	Yes	190	50.5
	No	186	49.5
Online gambling in a year	Yes	182	48.4
	No	194	51.6
Total		376	100.0

Measures

Dirty Dozen Scale: Jonason and Webster (2010) developed the scale, and Satici et al. (2018) adapted the scale into Turkish culture. The scale measures the extent to which individuals are prone to the Dark Triad personality traits. The 12-item scale is a 9-point Likert type ranging from 1 = strongly disagree to 9 = strongly agree. The scale consists of three dimensions: narcissism, Machiavellianism, and psychopathy. Each sub-dimension consists of 4 items, and the scores that can be obtained from the sub-dimensions vary between 4 and 36 points. High scores indicate a tendency towards the high Dark Triad traits. Example items are "I tend to manipulate others to achieve my own goals.", "I don't regret what I've done." and "I expect special attention from others.". The Cronbach's Alpha coefficients were obtained as 0.87 for narcissism, 0.79 for Machiavellianism, and 0.71 for psychopathy. For this study, the Cronbach's Alpha coefficients were calculated as 0.83 for narcissism, 0.84 for Machiavellianism, and 0.72 for psychopathy.

Online Gambling Addiction Scale: Karaibrahimoğlu et al. (2021) developed the scale. The scale aims to measure online gambling addiction. The 21-item scale is a 5-point Likert type ranging from 1 = never to 5 = always. The scale consists of three dimensions: motivation, addiction, and negative psychology. The total score that can be obtained from the scale varies between 21 and 105. The cut-off value is 27 points, and scores higher than this indicate internet gambling addiction. Example items are "I gamble/play games of chance on the internet to earn money.", "I have difficulty in controlling online gambling/games of chance." and "I think that gambling/games of chance on the internet negatively affects my daily life.". The Cronbach's Alpha coefficient was obtained as 0.92. For this study, the Cronbach's Alpha coefficient was calculated as 0.95.

Procedure

Using Google Form, an anonymous online survey form was created. Data were collected using the convenience sampling method, which is a sampling procedure aimed at reaching people in the most suitable situation. The inclusion criteria for the study were being between the ages of 18-25 and being a university student. The researcher collected data from volunteer participants by sending a link to group representatives of classes at a state university. The form was sent to the participants after the researcher informed them

about the content of the study and the rights of the participants. A consent form was obtained from the participants. The ethics committee of Agri Ibrahim Cecen University approved this study (Ethic Code: 98263).

Data Analyses

This study was carried out with the relational scanning model, which aims to determine the change between two or more variables and the effects of these variables on each other (Karasar, 2007). Cronbach's alpha values were calculated. Kurtosis and skewness values of all scales were examined for normality assumptions of the data with acceptable values between +1.5 and -1.5 (Tabachnick et al., 2013). Gender differences in online gambling addiction were examined by T-test for independent groups. The relationship between dependent (online gambling addiction) and independent variables (narcissism, Machiavellianism, and psychopathy) was examined by Pearson Correlation Analysis. After the necessary criteria for regression analysis were met, the predictive power of Dark Triad personality traits on online gambling addiction was examined by Multiple Linear Regression analysis. Analyses were performed with SPSS version 27. The statistical significance value was accepted as $p < 0.05$.

Results

Table 2 presents means, standard deviations, skewness and kurtosis values, and correlations. It was determined that the mean scores of online gambling addiction ($\bar{X} = 47.70$, $Sd = 18.76$, $min. = 24.00$, $max. = 93.00$) were above the cut-off score of the scale, 27 points. 93% of the participants were above this value. This showed that participants may be prone to online gambling addiction. Skewness values were between 0.28 and 0.95, and kurtosis values ranged between -0.14 and -1.14. These values indicated that there were no values that violate the normality assumption. Correlation analysis results showed that narcissism ($r = 0.60$, $p < 0.001$) and psychopathy ($r = 0.65$, $p < 0.001$) had significant positive correlations with online gambling addiction. Machiavellianism ($r = 0.06$, $p > 0.05$) had no significant correlation with online gambling addiction. Narcissism had a positive correlation with Machiavellianism ($r = 0.12$, $p < 0.05$) and psychopathy ($r = 0.64$, $p < 0.001$). Machiavellianism had a positive correlation with psychopathy ($r = 0.21$, $p < 0.001$).

Table 2. Mean, standard deviation, skewness, kurtosis, and correlations

Variables	M	SD	Skewness	Kurtosis	Correlation			
					1	2	3	4
1. Narcissism	16.03	7.85	.28	-1.14	-			
2. Machiavellianism	14.00	7.33	.76	-.61	.12*	-		
3. Psychopathy	13.45	6.24	.72	-.14	.64**	.21**	-	
4. Online gambling addiction	47.70	18.76	.95	-.47	.60**	.06	.65**	-

Notes: M = mean, SD = standard deviation, *p < 0.05, **p < 0.001.

Table 3. Independent sample t-test scores in terms of gender

	Gender	N	\bar{x}	Sd	df	t	p
Online gambling addiction	Women	191	40.34	15.37	354	-8.394	.00**
	Men	185	55.30	18.94			

Notes: \bar{x} = mean, Sd = standard deviation, df = degrees of freedom, **p < 0.001.

Table 4. Multiple linear regression analysis results on the Dark Triad traits variable as predictors of online gambling addiction

Variable	B	SE	β	t	p	Zero-order r	Partial r	LB UB 95% CI	
Constant	19.48	2.03		9.577	.00**			15.48	23.48
Narcissism	.72	.11	.30	6.279	.00**	.60	.31	.50	.95
Machiavellianism	-.19	.09	-.07	-1.958	.05	.06	-.10	-.38	-.01
Psychopathy	1.42	.14	.47	9.594	.00**	.65	.44	1.13	1.71
R = .701		R ² = .491							
F _(3,372) = 119.638		p = .00**							

Notes: B = unstandardized coefficient, SE = standard error, β = standardized coefficient, **p < 0.001.

Table 3 presents the results of whether there was a gender difference in online gambling addiction. T-test results showed that there was a gender difference ($p < 0.001$). When the difference was examined in terms of gender, it was determined that men had statistically significant higher scores on the online gambling addiction scale ($t_{354} = -8.394$, $\bar{X} = 55.30$, $p < 0.001$). In addition, it was determined that the online gambling addiction scores of women ($\bar{X} = 40.34$) and men ($\bar{X} = 55.30$) were above the cut-off score of 27. It was also determined that 89% of women ($n = 170$) and 98% of men ($n = 182$) were above the cut-off score.

Table 4 presents Multiple Linear Regression analysis results. Cohen (2013) determined the correlation coefficients as a small relationship between .10 and .29, a moderate relationship between .30 and .49, and a strong relationship between .50 and 1.00. When the correlations and partial correlations between the predictor variables and the predicted variable were examined, a positive, significant, and strong relationship was found between online gambling addiction and narcissism ($r = .60$, $p < 0.001$) and psychopathy ($r = .65$, $p < 0.001$). No relationship was determined between Machiavellianism and online gambling addiction ($r = .06$, $p > 0.05$). When the other variable was controlled, it was observed that there was a positive, significant, and moderate relationship between online gambling addiction and narcissism ($r = .31$, $p < 0.001$) and psychopathy ($r = .44$, $p < 0.001$). A positive significant relationship was found between online gambling addiction and narcissism and psychopathy variables ($R = 0.701$, $p < 0.001$). These two variables together explained 49% of the total variance in online gambling addiction ($R^2 = 0.491$). The standardized regression coefficients showed that the relative importance of the predictive variables on online gambling addiction was psychopathy ($\beta = 0.47$) and narcissism ($\beta = 0.30$).

Discussion

Online gambling is a common phenomenon among university students. It is essential to determine the predictors of this harmful habit. This study found that men were at greater risk of online gambling than women. The majority of university students were above the online gambling addiction threshold. In addition, narcissism and psychopathy predicted online gambling addiction, but Machiavellianism did not. These results indicate a tendency for men and people with narcissistic and psychopathic personality traits to have online gambling addiction.

The results of this study revealed that men were more prone to online gambling addiction than women. This result is consistent with previous studies providing evidence that the prevalence of gambling, in general, is higher in men than in women. For example, Blanco et al. (2006) found that the lifetime prevalence rate of pathological gambling is higher in men than in women due to differences in social norms and biological underpinnings. Similarly, men were more likely than women to engage in disordered gambling (Trombly & Zeigler-Hill, 2017). Therefore, it should be taken into consideration that men's gambling tendency may be exacerbated by online applications and preventive studies should be prioritized.

This study found a positive relationship between narcissism and psychopathy and online gambling addiction and no relationship between Machiavellianism and online gambling addiction. Narcissism, and psychopathy predicted online gambling addiction, Machiavellianism wasn't the predictor of this addiction. One possible reason for this result is that narcissism and psychopathy were associated with financial risk-taking, but Machiavellianism had no connection (Sekścińska & Rudzinska-Wojciechowska, 2020). Gambling is an activity that requires taking risks (Mishra et al., 2010). Therefore, individuals with high Machiavellian personality traits who engage in long-term strategic planning with a cold

and cynical worldview may not prefer online gambling because they avoid taking risks. In empirical research, past studies have presented conflicting results regarding the relationship between Dark Triad traits and gambling. Trombly and Zeigler-Hill (2017) determined a positive relationship between narcissism and psychopathy and gambling disorder, as well as a positive relationship with Machiavellianism, which contradicts our results. Another study showed that psychopathy was positively related to problem gambling, narcissism had a negative relationship, and Machiavellianism was not associated with problem gambling (Onyedire et al., 2021). These different findings emphasize that the mechanism underlying the Dark Triad traits and gambling relationship needs to be further investigated. One possible reason for these different results may be culture. A cross-cultural study determined that culture influences the Dark Triad traits (Aluja et al., 2022).

According to Sedikides et al. (2013), narcissists can derive meaning from three areas: achievement, materialism, and reflections of glory. Narcissists are preoccupied with success, vanity, and victory. The reason for this is that these orientations instill positivity into their self-system by making them feel special, strong, important, and successful. They may also do this to compensate for internal fragility. In addition, it can be said that narcissists probably cannot gain the admiration they desire, feel excluded, feel unloved by others, and experience problematic social relationships in which they cannot have a pleasant and fun time (Nikbin et al., 2022; Twenge & Campbell, 2003). Therefore, online gambling may offer an opportunity for them to turn to alternatives that can meet their needs that cannot be met in offline environments, gain admiration, and feel successful.

The personality type whose basic elements are manipulativeness, callous affect, and strategic calculation is Machiavellianism (Jones & Paulhus, 2014). In particular, Machiavellians are strategic, not impulsive (Jones & Paulhus, 2011). They do not engage in behavioral tactics that could be perceived as weakness and damage their reputation (Shepperd & Socherman, 1997). They may stay away from online gambling because losing in gambling may be perceived as loss of reputation.

The main character elements of psychopathy include high impulsivity and sensation seeking as well as low empathy and anxiety (Paulhus & Williams, 2002). Because individuals with high levels of psychopathy are often impulsive and risk-takers (Lilienfeld et al., 2016), they may be motivated by the potential gains from gambling without adequate consideration of the potential losses that often accompany online gambling (Onyedire et al., 2021).

Gambling activities such as internet casino games, sports betting, and bingo were associated with problem gambling (Moore et al., 2013). Bayındır (2018) found that the most preferred games and bets in Türkiye are lotto games, legal games of chance organized by the National Lottery Administration, slot machine games, and horse racing. These games, which can be started for fun or to try luck, can become a habit over time. While those who experience the feeling of winning continue to experience this pleasure again and earn more, they can continue to play these games to regain what they lost when they lose. In addition, the legality of some games of chance and betting, played through dealerships and supported by the state, allows people from all parts of the society to participate with a small amount of money (Bayındır, 2018). University students may also be interested in these

games as they are at the beginning of adulthood and have less parental control. Accordingly, it is critical to pay attention to gambling behavior that can lead to addiction, especially in emerging adulthood, and to organize preventive practices.

Although this study has several strengths, the results should be interpreted within the context of a number of potential limitations. One potential limitation is the sample of the study. The sample consisted of university students in emerging adulthood. Future studies may focus on other developmental periods. A second potential limitation is that our results are based solely on self-report measures, which are likely to be influenced by socially desirable responses. Social desirability is a common issue where participants may have to exaggerate or underestimate their responses to form positive or negative attitudes. Finally, the current study was a cross-sectional study. Additional methodologies, such as longitudinal studies, may be used in further studies to increase the validity of the present results.

In conclusion, legal gambling and online gambling appear to play a role in the spread of gambling and problems among young people. On the other hand, there is an age limit for games of chance and betting in Türkiye. However, online sites have made it easier to access such activities, and some personality types may influence the tendency towards online gambling. This study confirmed the tendency of men towards online gambling addiction. The online gambling addiction averages of both women and men were above the limit. The findings revealed the positive association between narcissism and psychopathy and online gambling addiction and no relationship between Machiavellianism and this addiction. The most important result of this study was the predictive effects of the Dark Triad traits (narcissism and psychopathy) on online gambling addiction. Based on the current study results, it is possible to say that men and university students with high narcissism and psychopathy personality traits are vulnerable to online gambling addiction, but Machiavellianism wasn't a predictor of online gambling addiction. In this regard, given the adverse impact of online gambling on students' future, preventive and awareness-raising practices by parents, universities, psychologists, and psychological counselors towards this problem are essential. It may be useful to identify personality traits and develop practices to alleviate the adverse effects of these traits on the probability of online gambling addiction.

Author Contributions

The author declares that no other author contributed to the study and that she has read and approved the final version of the study.

Ethical Declaration

Agri Ibrahim Cecen University Ethics Committee granted approval for the present research on 28.03.2024 (Protocol No. 98263).

Conflict of Interest

The author declares no conflict of interest with any person or institution.

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