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Sezgin Savas

ssavas@gelisim.edu.tr

İstanbul Gelişim Üniversitesi

Esra Tuncay

American University of the Middle East

Busra Kilic

Şükran Güzin Ilıcak Aydınalp

İstanbul Gelişim Üniversitesi

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Examining Variables Affecting Individuals' Digital Game Addiction: An Evaluation Based on Satisfaction with Life, Happiness, and Social Connectedness Variables

[1]Associate Professor Sezgin Savaş, New Media and Communication Department, Faculty of Economics, Administrative and Social Sciences, İstanbul Gelişim University, İstanbul, Türkiye, ssavas@gelisim.edu.tr

[2]Assistant Professor Esra Tuncay, Liberal Arts Department, American University of the Middle East, 54200, Egaila, Kuwait, esra.tuncay@aum.edu.kw

[3]Assistant Professor Büşra Kılıç, Independent Researcher, Antalya, Türkiye busra-kilic@windowslive.com

[4]Prof. Dr. Şükran Güzin Ilıcak Aydınalp, Public Relations and Publicity Department, Faculty of Economics, Administrative and Social Sciences, İstanbul Gelişim University, İstanbul, Türkiye sgilicak@gelisim.edu.tr

Contact information for the corresponding author

Name: Sezgin Savaş

Institutional Address: İstanbul Gelisim University, J. Kom. Er Hakan Öner Sk. No:1, 34310 Avcılar/İstanbul / Türkiye

Phone: +90 535 2295148

Email: ssavas@gelisim.edu.tr

ABSTRACT

This study examined the psychosocial, demographic, and behavioral variables associated with digital game addiction by conceptualizing scores from the digital game addiction scale as the dependent variable and investigating their relationships with demographic and behavioral characteristics, life satisfaction, happiness, and social connectedness. Data were obtained through a survey administered to 407 participants, of whom 51.1% were women and 48.9% were men. Validated scales were used to measure the constructs, and their reliability was assessed using Cronbach's alpha coefficients. Statistical analyses included correlation analysis, hierarchical

regression, and subgroup comparisons based on demographic and behavioral variables. The results showed that both life satisfaction and social connectedness had significant negative effects on digital game addiction scale scores, indicating that individuals reporting higher levels of life satisfaction and social connectedness obtained lower scores on the scale. In contrast, happiness was not a significant independent predictor when life satisfaction and social connectedness were controlled for. The regression model explained 9% of the variance in digital game addiction scale scores when only control variables were included, while the addition of psychological variables increased the explained variance by 11 percentage points, resulting in a total R^2 of .20. Correlation analyses provided support for these findings. Difference tests identified significant differences in 15 of 42 comparisons. These differences were associated with age, education, daily gaming duration, and the device used for gaming, whereas no significant differences were observed for income or occupation. Overall, the findings suggest that life satisfaction and social connectedness may play protective roles regarding digital game addiction scale scores, while behavioral exposure variables are more closely associated with these scores than certain demographic characteristics. The modest proportion of variance explained after incorporating psychological variables also indicates that additional psychological and environmental factors should be examined to provide a more comprehensive understanding of digital game addiction.

Keywords: Digital game addiction, Digital gaming disorder, Satisfaction with life, Happiness, Social connectedness

INTRODUCTION

The digital world opened a door to the gaming world in the early 1970s, ushering in the production of commercial games. By the 1990s, gaming platforms began to proliferate. Devices like arcade games, tablets, computers, and mobile phones have replaced everyday street games. Digital games,

which first started with console games, have now evolved into mobile games for personal computers, game consoles, and devices like mobile phones and tablets. It is estimated that the number of people playing digital games has increased in recent times, particularly alongside the rise of online multiplayer games during the pandemic.

According to TÜİK data, 90.8% of children who play digital games play these games regularly, 40.1% spend more time playing games than planned, 35.6% neglect their responsibilities because of games, 29.9% spend too much time playing games, and 23.4% feel uneasy and unhappy when they do not play digital games (TÜİK, 2024). When the rates of internet users who play video games on any device worldwide are examined in the third quarter of 2024; it is seen that 92.2% of males and 93% of females in the 16-24 age group; 89.6% of males and 90.2% of females in the 25-34 age group; 84.4% of males and 86.3% of females in the 35-44 age group; 75.6% of males and 80.4% of females in the 45-54 age group; 69.2% of males and 71.2% of females in the 55-64 age group; 57.6% of males and 53.7% of females in the 65 and over age group play digital games (Clement, 2025). It is estimated that there are approximately 2.6 billion global digital game players (Clement, 2024). The number of people playing digital games is expected to reach 3.02 billion by 2029 (Clement, 2025a). The magnitude of this figure becomes clear when you consider that 5.35 billion of the 8.08 billion people living in the world, or 66.2%, are internet users (Kemp, 2024).

Online Gaming Addiction

Addiction is characterized by a compulsion to seek out and obtain/use the substance, a loss of control during intake or use, withdrawal symptoms when access is blocked, and the emergence of negative emotions (anxiety, anger, etc.) (Koob & Volkow, 2010, p. 217). Behavioral addiction is defined as a functionally disruptive behavior that causes significant harm and distress, cannot be reduced by the individual, and is repeated over a considerable period (Kardefelt-Winther et al.,

2017, p. 1710). Addiction is considered across two dimensions: psychological and physical. While psychological effects include craving, salience, and loss of control, physical effects are thought to manifest as tolerance and withdrawal (Panova & Carbonell, 2018, p. 253).

Goodman, on the other hand, highlights five distinct points in defining addiction. He focuses on elements such as the individual's inability to resist the urge to engage in a particular behavior during the addiction phase, a heightened sense of tension before engaging in the behavior, a sense of pleasure and relief at the time of the behavior, a sense of lack of control during the behavior, and the persistence of symptoms of the disorder for at least one month and their recurrence. However, it also highlights the following: frequent preoccupation with the behavior, repeated efforts to reduce or stop the behavior, intensive time spent on efforts to participate in the behavior, an increase in the tendency towards addictive behavior when life-related responsibilities (career, home, social life) are involved, withdrawal from recreational and social situations for the addictive behavior, continuation of the behavior despite social, financial, mental, and physical harm caused by the addictive behavior, desire to increase the intensity or frequency of the addictive behavior (tolerance), restlessness and irritability when not participating in the addictive behavior (Goodman, 1990, p. 1404).

In today's digital age, addiction often comes to mind when thinking about digital technologies. Technology-related addictions are usually considered behavioral addictions based on functionality at the interaction points between humans and machines. Technology-related addictions, as a subset of behavioral addictions, can manifest in mood swings, withdrawal, conflict, relapse, and tolerance (Widyanto & Griffiths, 2006, pp. 31-32). These reflections also highlight the similarities between digital addiction and other addictions. Therefore, it can be argued that digital addiction should not be perceived as a separate addictive process.

The most prominent subsets of digital addiction stand out as internet addiction, social media addiction, and digital game addiction. "Digital addiction (DA) can be defined as an addiction to listening, watching, or playing games using an electronic device for entertainment purposes" (Aziz et al., 2021, p. 996). Digital game addiction, on the other hand, is referred to as a type of addiction that results in unhealthy daily life behaviors resulting from excessive gaming on technological devices (Jeong et al., 2017, p. 200). This addiction to listening, watching, and playing games can be expanded to include activities such as watching various videos on a platform, spending time on social media, and, most importantly for our topic, playing video games.

A review of the literature reveals many different studies on digital game addiction. Tso et al. (2022, p.1) found that children and adolescents with better digital proficiency are less likely to develop game addiction and that digital proficiency mediates the relationship between digital device use time and game addiction. Meng et al. (2022, p. 1) found that men are at higher risk of internet and gaming addiction and that digital addiction is more prevalent in low/and low-middle-income countries. Gunuc (2017, p. 1) suggested that individuals addicted to digital games interact with other digital game addicts by forming groups, while non-addicts similarly form groups with other non-addicts.

A review of the literature reveals that, when addressing issues related to gaming, various terms are used alongside "digital gaming addiction" (Jeong et al., 2017, p. 200). Concepts such as "problematic game use" (Kim & Kim, 2010), "problematic gaming" (Griffiths et al., 2015), "pathological video gaming" (Lemmens et al., 2011), and "Internet gaming disorder" (King & Delfabbro, 2014) are known to be used in the literature regarding gaming disorders. According to the WHO ICD-11 (2024), gaming disorder is defined as a pattern of gaming behavior—whether online or offline—characterized by impaired control over gaming, increasing priority given to

gaming to the extent that it takes precedence over other life interests and daily activities, and the continuation of gaming despite the occurrence of negative consequences. Generally speaking, for an individual to be considered a gaming addict, they must experience significant functional impairment and deterioration in personal and social domains over a 12-month period. In contrast to the WHO, the APA (2022)—which characterizes "Internet Gaming Disorder" as an area requiring further research rather than establishing a formal diagnosis—emphasizes the necessity of meeting five out of nine specific criteria within the last twelve months: preoccupation, withdrawal, tolerance, loss of control, loss of interest, continued use despite problems, deception, escape, and loss of relationships or opportunities.

Factors Contributing to Online Gaming Addiction

Three primary theoretical frameworks stand out in the literature attempting to explain the tendency to play games. These are known as Compensatory Coping Theory, Emotion Regulation Theory, and Self-Determination Theory. Each of these frameworks addresses different psychological mechanisms that drive individuals toward gaming and, together, they offer a more holistic explanation.

According to the Compensatory Coping Model, individuals seek refuge in the gaming environment to cope with real-life failures, low self-efficacy, or stress; gaming functions as a compensatory mechanism. Through his research in this field, Kardefelt-Winther (2014) demonstrated that individuals experiencing psychosocial difficulties turn excessively to gaming to manage stress and negative emotional states, and that motivations for escapism and achievement mediate the relationship between stress and excessive gaming. This perspective is frequently reflected in the studies of Demetrovics et al. (2011), King & Delfabbro (2014), and Billieux et al. (2013). These studies empirically demonstrate, from various angles, that the primary driving force behind

excessive gaming is the compensation—within the virtual world—for needs that remain unmet in real life. Viewed through the lens of the Compensatory Coping model, low life satisfaction and insufficient social connectedness can be considered sources of psychosocial vulnerability; in this context, individuals develop a tendency to game as they attempt to address real-life deficiencies within the virtual environment.

The emotion regulation perspective suggests that individuals attempt to manage negative emotional states—such as depression, anxiety, or boredom—through gaming, and emphasizes that this pattern carries the risk of becoming reinforced over time and evolving into addiction. Research indicates that individuals turn to distracting or rewarding activities when experiencing a negative mood; online games, in particular, improve mood by offering challenging tasks and diverting attention away from negative emotions (Larsen, 2000; Bowman & Tamborini, 2012). Systematic reviews examining the relationship between gaming addiction and emotion regulation have revealed that addiction-level gaming shows significant associations with various forms of emotion regulation difficulties, and that games are specifically utilized as a strategy to suppress emotional expression (Estupiñá et al., 2024). In a meta-analysis involving over 50,000 participants, Bäcklund et al. (2022)—who investigated the motivational dynamics underlying digital game addiction using a comprehensive dataset—confirmed the impact of gaming motivations on addiction symptoms. Research findings reveal that emotion-focused escapist motivations—representing an individual's attempt to withdraw from the challenges of real life—are the primary driving force most strongly correlated with problematic gaming behavior and gaming disorder. In this context, low levels of happiness and life satisfaction create an emotional vulnerability that can lead individuals to turn to gaming as a means of improving their mood.

Ryan and Deci's (2000) Self-Determination Theory posits that satisfying three fundamental psychological needs—competence, autonomy, and relatedness—strengthens individuals' intrinsic motivation and mental health, whereas the thwarting of these needs leads to diminished motivation and impaired well-being. Gaming environments serve as powerful magnets because they possess the potential to simultaneously satisfy these three needs: competence through achievement mechanisms, autonomy through free choices, and a sense of relatedness through multiplayer structures.

It is considered that playing digital games has positive functions regarding a range of motor, cognitive, affective, and motivational outcomes (Wang et al., 2020, p. 12) and serves as an ideal tool for conveying cultural norms (Veresov & Veraksa, 2023, p. 1098). On the other hand, while studies have shown that negative emotions are reduced through dopamine release during gameplay (Han et al., 2015, p. 78) and that digital gaming alleviates depression and feelings of hostility in players through mood management (Ferguson & Rueda, 2010, p. 99), other research has posited that aggression is a determinant of game addiction and plays a mediating role between depression and game addiction (Jeong et al., 2016, p. 3769).

At this point, it can be considered that various factors play a role in the development of addiction to digital games played for purposes such as entertainment, relaxation, grasping new educational content (Rajic & Tasevska, 2019, p. 97), and reducing stress and anxiety (Poels et al., 2010, p. 151). Factors such as gender, age, and poor parental relationships; personality traits such as low self-esteem, high levels of loneliness, and shyness; and psychological problems such as depression, compulsion, suicidal tendencies, attention deficit and hyperactivity, and low self-acceptance are thought to increase digital game addiction (Kneer et al., 2014, p. 587). Similarly, it is argued that playing games is an alternative to meet social needs when people cannot meet their social needs

in real life (Lai et al., 2016, pp. 6-7), and that problematic child-parent relationships and parental attitudes towards making their child competitive in education, parental neglect, child loneliness/anxiety and permissive parenting (Keya et al., 2020, p. 1) are factors that increase digital game addiction.

Digital game addiction is also seen to escape from and cope with real-world problems (Kneer et al., 2014, p. 586). In other words, it is also thought to facilitate ignoring other responsibilities by enabling escape from reality and losing the perception of time (Calleja, 2010, pp. 335, 344). This situation perhaps poses one of the most significant problems. Therefore, it can be argued that concepts such as life satisfaction, happiness, and social connectedness related to real life have become increasingly important. It can also be argued that individuals' positive emotions and well-being in their real lives play a role in preventing digital game addiction. In this context, it is crucial to investigate the variables associated with digital game addiction, and to exemine the pattern of these relations.

Present Study

Gaming addiction, which has become a common addiction today and impacts on people's quality of life, is a topic that deserves special attention. The impact of gaming on life satisfaction, the relationship between happiness and digital game addiction, and the effects of social connectedness on digital game addiction are all topics of debate.

Life satisfaction is an indicator of subjective well-being reflecting the extent to which an individual evaluates their life positively overall, and its close relationship with digital game addiction has been demonstrated in numerous studies. In a two-wave panel study conducted with 851 Dutch adolescents, Lemmens et al. (2011) found that life satisfaction did not significantly predict

pathological gaming; rather, only loneliness and social competence emerged as significant predictors in this relationship. In adolescent samples in Türkiye, this relationship has been confirmed; it has been demonstrated that problematic digital gaming negatively affects life satisfaction through emotion regulation difficulties and that gender plays a moderating role in this relationship (Yayla et al., 2025). Meanwhile, a study conducted with university students in Türkiye found that gaming addiction increases as life satisfaction decreases and that emotional schemas exert a full mediating effect in this relationship; when emotional schemas were included in the model, the direct effect of life satisfaction on gaming addiction became non-significant (Makas & Koç, 2025).

Happiness is considered a key indicator of subjective well-being—encompassing both cognitive and affective components—and is observed to have an inverse relationship with addictive behaviors. Chang (2023) examined the impact of subjective well-being on online gaming addiction using the PLS-SEM method, revealing a negative relationship between subjective well-being and addiction levels, and a positive relationship with happiness and general health. Furthermore, it was determined that online gaming addiction exerts a direct negative effect on happiness and general health. Similar findings have been supported by Maftei and Opariuc-Dan (2023); in a sample of university students in Romania, symptoms of internet addiction were found to be negatively associated with subjective happiness. Studies examining the relationship between online gaming addiction and psychological well-being also report that individuals' psychological well-being scores decline as the level of addiction increases. Indeed, a study conducted with university students in Egypt found a significant negative correlation between internet gaming disorder and psychological well-being (Shouman et al., 2023).

Social connectedness refers to the totality of meaningful relationships an individual establishes with peers, family, and society, and it is among the psychosocial predictors of digital game addiction. In a large-scale cross-sectional study conducted with adolescents in China, Yan et al. (2024) examined social connectedness across two dimensions—online and offline—and demonstrated that real-life social connectedness plays a partially mediating and protective role in the relationship between internet gaming disorder and somatic symptoms, whereas online social connectedness functions as a risk factor in this context. It has been determined that real-life social connectedness acts as a protective buffer, whereas online social connectedness functions as a risk factor. In a large-scale, multicenter, cross-sectional study involving 9,616 adolescents in China, Yang et al. (2025) demonstrated that low real-life social connectedness plays a partial mediating role in the relationship between internet gaming disorder and anger, establishing the indirect effect at 29.50%. Using longitudinal panel data, Lemmens et al. (2011) proved that loneliness is both a significant predictor and a consequence of pathological gaming, thereby revealing the reciprocal and cyclical nature of the relationship between these two variables. Gao et al. (2024) confirmed, through data obtained across three waves of measurement, that loneliness predicts online gaming addiction over time.

When the relevant theoretical frameworks and empirical findings are considered together, the literature has not systematically tested whether life satisfaction, happiness, and social connectedness—three variables representing the cognitive, emotional, and relational dimensions of subjective well-being, respectively—predict the tendency to play games. Kaya et al. (2025) demonstrated that happiness and loneliness predict digital game addiction in a large sample of university students in Türkiye (n = 4,548); however, they did not include life satisfaction as a separate variable in the model and focused their analyses on players exhibiting addiction-level

behaviors. Similarly, while Hull et al. (2013) demonstrated that happiness is the strongest predictor of game addiction, they excluded the dimension of social connectedness from their model. In a longitudinal study, Lemmens et al. (2011) revealed that social competence, self-esteem, and loneliness significantly predicted pathological gaming six months later; this finding suggested that low psychosocial well-being could be a precursor to pathological gaming. However, none of these studies have examined the trio of life satisfaction, happiness, and social connectedness within a single model as independent variables predicting the tendency toward excessive gaming.

This study aims to examine the relationships of life satisfaction, happiness, and social connectedness with digital game addiction, as well as whether digital game addiction differs significantly based on demographic and behavioral variables, using a quantitative survey design administered to a non-clinical sample. The findings are expected to offer practical contributions to understanding gaming behavior from a perspective focused on need satisfaction rather than pathology. However, given that addiction signifies a neurobiological process requiring clinical assessment, it is methodologically incorrect to classify individuals who score highly on a scale as clinically "addicted." Therefore, instead of "digital game addiction," the present study focuses on the concept of "gaming disorder"—which is recognized in international classification systems (APA, 2022; WHO ICD-11, 2024)—and defines individuals with high scale scores not as "addicted," but as "individuals exhibiting symptoms of gaming disorder" (or displaying problematic gaming tendencies).

OBJECTIVE OF THE STUDY

As this research employed a survey-based design, no intervention was implemented; rather, data were collected through self-reported measures to examine the relationships among the study variables.

Within the scope of the research, four different hypotheses were created to determine the effect of independent variables on the dependent variable. The status of the research variables in the research model will be tested through the hypotheses.

H1: Life satisfaction is associated with digital game addiction.

H2: Happiness is associated with digital game addiction.

H3: Social connectedness is associated with digital game addiction.

H4: Dijital game addiction differs significantly based on demographic variables

METHODS

This section describes, in turn, the ethical statement, research participants, data collection instruments, the procedure followed during data collection, and the statistical analyses performed.

Ethical Statement

This research was approved by the Istanbul Gelisim University Ethics Committee on August 8, 2025 (Decision No. 2025-15-18). Research data were collected online using a survey method. Participants were informed about the purpose of the study, and their consent was obtained via an informed consent form. Participation was voluntary, and no rewards or incentives were offered to the participants. Participants' identities were kept anonymous in the raw data, stored data, and the final report; their personal rights and private information were protected. No personally identifiable information was included in the survey forms, and access to the data was restricted to the researchers. This research received no financial support from any institution or organization, and the authors declare no conflicts of interest.

Sample

In the study, a questionnaire was applied to 407 people. When Comrey and Lee (1992, pp. 216-217) talk about the adequacy of the sample, they define a sample of 300 people as good. A power analysis was also conducted to assess sample adequacy. Post-hoc power analysis was performed using GPower (Faul et al., 2007) for a multiple linear regression model with ten predictor variables. Based on a medium effect size ($f^2 = .15$), a significance level of $\alpha = .05$, and a sample size of 407, the statistical power was calculated as 1.00, significantly exceeding the recommended threshold of .80.

The survey participants consisted of individuals aged 18 and older. No minimum playtime threshold was established; the survey was administered to individuals who declared that they play digital games. There were no restrictions regarding age or game genre for participation. The survey was conducted online via Google Forms, and the participants were individuals residing in Turkey. A total of 454 responses were collected without the use of any attention-check questions; this sample size was determined based on time constraints. Of the 454 participants reached in total, 47 were excluded from the sample due to incomplete responses, resulting in a final sample size of 407. During the data cleaning phase, participants who left the survey unfinished or provided incomplete responses were excluded; the analyses were conducted based on the 407 participants with complete data.

In the study, demographic questions were asked of the survey participants about gender, age, education, income, and occupation. The table below shows the frequency and percentage values of the responses given by the survey participants to the relevant questions.

Table 1: Frequency Distribution of Responses Given by Survey Participants to Demographic Questions

[Insert Table 1 here]

An examination of Table 1 reveals a balanced gender distribution among the survey participants. Regarding age groups, the 20–24 age bracket accounts for the highest number of participants (28%); regarding education, bachelor's degree holders (32.7%) constitute the largest group; regarding income, those earning 10,000 TL or less represent the highest proportion (28.5%); and regarding occupation, students (33.7%) are the highest number of participants. The distribution across these categories indicates relatively balanced representation among the participants.

Instruments

Four different scales were used to measure four different variables in the research model. The "Game Addiction Scale" (GAS), originally developed in Turkish by Bülbül & Tunç (2018), was used to measure digital game addiction in the survey. There are 13 statements in the five-point Likert-type scale consisting of two sub-dimensions: "Desire dimension" (DSR) and "Ambition dimension" (AMB). In the phase of measuring life satisfaction, the "Satisfaction with Life Scale" (SWLS), developed by Diener et al. (1985) and adapted to Turkish by Dağlı & Baysal (2016), was used. There are five statements on a one-dimensional, five-point Likert-type scale. The Oxford Happiness Questionnaire Short Version (OHQ), developed by Hills & Argyle (2002) and adapted to Turkish by Doğan & Akıncı Çötok (2011), was used to measure happiness. There are seven statements on a one-dimensional, five-point Likert-type scale. Three reverse-coded questions in the scale were corrected in terms of coding. The "Social Connectedness Scale" (SCS), developed by Lee & Robbins (1995) and adapted to Turkish by Duru (2007), was used to measure social connectedness. The one-dimensional, six-point Likert-type scale includes eight statements. Since a high score on the scale in question indicates greater social disconnection, the scale responses were reverse-coded prior to analysis.

In addition to Likert scales, participants were asked a number of demographic questions. Within this scope, questions were posed regarding gender, education level, age, monthly net income, occupation, the amount of time spent daily on digital games, and the primary device used to play them. When considering the game addiction scale, three significant methodological limitations must be noted. First, no diagnostic threshold point has been established for the scale; the scores obtained reflect the severity of symptoms related to gaming disorder, meaning that individuals with high scores should be regarded as being at risk for gaming disorder symptoms rather than as clinically "addicted." Second, it is not possible to do caseness estimate in the sample who meet the criteria for the disorder. Thirdly, this study could not assess whether the daily functioning of individuals with high scale scores was clinically significant impairment. Therefore, when interpreting the findings, it is recommended that the results be viewed as a dimensional risk indicator rather than a clinical diagnosis. In this context, it must be emphasized—as previously noted—that high scale scores point to "individuals exhibiting symptoms of gaming disorder" or "individuals with high dependency scores" rather than to "dependent individuals."

Statistical analysis

During the data analysis phase, Cronbach’s alpha coefficient, t-test, one-way ANOVA, correlation analysis, and regression analysis were used. Since previously developed scales were used in this study, factor analysis was not performed. As the validity of the scales had already been established in prior research, the factor structures of the original scales were adopted, and internal reliability was assessed using the Cronbach's alpha coefficient.

Table 2: Results of Reliability Analysis of Research Scales

[Insert Table 2 here]

An examination of Table 2 reveals that the Cronbach's alpha values for the scales range from 0.842 to 0.941. This indicates that the scales possess internal consistency.

RESULTS

The study also included questions regarding the digital gaming habits of the survey participants. The table below presents the relevant questions, along with their frequency and percentage values.

Table 3: Frequency Distribution of Responses of Survey Participants to Questions on Digital Game Playing Habits

[Insert Table 3 here]

An examination of Table 3 reveals a balanced distribution across the groups. Regarding daily digital game playing time, the "less than 30 minutes per day" group accounts for the highest number of participants (22.6%), followed closely by the "30 minutes to 1 hour per day" group (20.1%). In terms of the most frequently used gaming device, the "smartphone" group has the highest number of participants (23.1%), followed closely by the "game console (PlayStation, Xbox, etc.)" group (21.9%).

Correlation Analysis

In this study, Pearson correlation analysis was conducted on a sample of 407 individuals to examine the direction and magnitude of the relationships between the variables. Statistical significance was evaluated based on the $p < .05$ criterion (George & Mallery, 2024), and correlation coefficients were interpreted according to the classification proposed by Vieira (2017).

Table 4: Correlation Analysis Results

[Insert Table 4 here]

An examination of Table 4 reveals significant relationships among all variables in the research model ($p < .05$). While gaming addiction and its sub-dimensions (DSR, AMB) are strongly and positively correlated with each other, they are negatively correlated with life satisfaction, happiness, and social connectedness. Conversely, these three variables—representing subjective well-being—are consistently positively correlated with one another. This pattern indicates that as the level of digital gaming addiction increases, an individual's levels of life satisfaction, happiness, and social connectedness decrease; meanwhile, these three indicators of subjective well-being exhibit a structure in which they reinforce and move in tandem with one another.

Regression Analysis

For the regression analysis, cross-sectional survey data from 407 participants were analyzed using the SPSS software. Hierarchical multiple linear regression analysis was employed to identify the predictors of GAS, the dependent variable. Hierarchical regression allows for the separate assessment of the relationships between the primary predictor variables and the dependent variable after controlling for the contributions of demographic variables. Accordingly, age, income, daily gaming duration, and device preference were included in the model in the first block, while life satisfaction (SWLS), happiness (OHQ), and social connectedness (SCS) were included in the second block. Including demographic and gaming-related variables in the first block of the model aims to control for the effects of potential confounding variables.

Although the variables of age, income, and daily playtime were not measured on an interval scale, they were included in the analysis as ordinal variables—based on the premise of an ordered relationship between their categories and to avoid complicating the model structure. The device preference variable, however, was treated as a nominal variable—since there is no inherent order among its categories—and was incorporated into the analysis using dummy coding. For dummy

coding, the smartphone category (23.1%)—representing the largest share in the sample—was selected as the reference category. The categories of computer, console, tablet, and handheld gaming device were evaluated in comparison to this reference category. Given that the variables in the model utilized different units of measurement (Weinberg & Abramowitz, 2015, pp. 496–501), standardized beta (β) coefficients were used to determine the relative relationships between the predictor variables and the dependent variable. Results are reported alongside 95% confidence intervals.

Fundamental statistical assumptions were examined prior to conducting the hierarchical regression. Regarding multicollinearity, it was observed that the VIF values for all predictors were below 2 (maximum VIF = 1.976) and Tolerance values were above 0.5 (minimum Tolerance = 0.506), indicating the absence of a multicollinearity issue. The normality of the residuals was assessed using histograms and P-P plots; it was determined that the observed values largely aligned with the expected values and that the residuals exhibited a distribution approximating normality. Although the scatterplot indicated a slight pattern of heteroscedasticity in the residuals, the sample size of 407 was deemed sufficient to maintain the validity of the results. Influential cases were examined using Cook's Distance values; it was concluded that all values remained below 1 (maximum = 0.059) and that no influential cases were present. The threshold for statistical significance was set at $p < .05$ for all analyses.

Table 5: Regression Analysis Results

[Insert Table 5 here]

An examination of Table 5 reveals that, in the first model, the control variables explain a significant portion of the variance in IGD; while Age emerges as a significant negative predictor, and Daily

Gaming Time as well as Computer and Tablet usage emerge as significant positive predictors, the variables of Income, Console, and Portable Gaming Device do not significantly predict IGD.

In the second model, the inclusion of psychological variables (SWLS, OHQ, SCS) resulted in a significant increase in the explained variance. While SWLS and SCS contributed to the model as significant negative predictors of GAS, OHQ was not found to significantly predict the dependent variable. Among the control variables, Age, Daily Gaming Duration, and Computer and Tablet usage maintained the significance observed in the first model, whereas console usage emerged as a significant positive predictor in the second model. The variables of income and portable gaming device were not found to be significant in either model. This finding demonstrates that incorporating psychological variables into the model does not eliminate the predictive role of demographic and behavioral control variables regarding gaming addiction; rather, it adds an additional and independent explanatory dimension.

Difference Tests

In this study, t-tests and ANOVA were employed to examine mean differences between independent groups based on a sample of 407 participants. Post-hoc tests were conducted to identify specific group differences whenever significant differences were detected (Gaur & Gaur, 2009, pp. 70, 76). ANOVA was used when the assumption of homogeneity of variance was met, whereas the Welch test was utilized when this assumption was violated (Vieira, 2017, pp. 261-262). For post-hoc comparisons, the Gabriel test was selected for samples exhibiting a normal distribution (Field, 2024, p. 591), while the Games-Howell test was chosen for samples that did not exhibit a normal distribution.

Table 6: T-Test and ANOVA Test Results

[Insert Table 6 here]

When Table 6 is examined, it is seen that there are differences in 15 of the 42 difference searches. There is no average difference in the responses given to the scale questions in terms of gender, income, and occupation. There is a mean difference between GAS and its sub-dimensions DSR and SCS in terms of the education variable; GAS and its sub-dimensions DSR and AMB in terms of the age variable; GAS and its sub-dimensions DSR and AMB in terms of the daily playing time variable; GAS and its sub-dimensions DSR and AMB in terms of the device used variable, and another variable, SCS. It can be said that the categories with the most differences are the middle school group in terms of education; the 18-19 age group in terms of age; the less than 30 minutes per day and 30 minutes - 1 hour per day groups in terms of daily playing time; and the computer (desktop or laptop), smartphone, tablet, portable game device (Nintendo Switch, Steam Deck, etc.) groups in terms of devices used.

DISCUSSION

This study aimed to examine the relationships between digital game addiction and three dimensions of subjective well-being—namely life satisfaction, happiness, and social connectedness—and to determine whether digital game addiction differs significantly based on demographic and behavioral variables. Four hypotheses were formulated to test these relationships. As previously noted in the literature review, and consistent with the frameworks of the APA (2022) and WHO ICD-11 (2024), digital game addiction is treated in this discussion not as a confirmed clinical diagnosis, but as a continuum of symptoms associated with gaming disorder.

When the subject is approached from the perspective of H1, the relevant hypothesis is supported. Life satisfaction was found to be a significant negative predictor of digital game addiction; individuals with higher general life satisfaction were observed to exhibit lower levels of game-related symptoms. This finding is consistent with results reported in Turkish samples: Yayla et al. (2025) found that problematic digital gaming negatively affects life satisfaction through emotion regulation difficulties, while Makas & Koç (2025) determined that this relationship is fully mediated by emotional schemas. However, this finding does not align with all results in the literature: Lemmens et al. (2011) found that life satisfaction did not significantly predict pathological gaming, identifying only loneliness and social competence as significant predictors in this relationship. This discrepancy suggests that the relationship between life satisfaction and gaming addiction may vary depending on sample characteristics, cultural context, or the time frame of measurement.

Regarding H2, it appears that the relevant hypothesis is not supported. When life satisfaction and social connectedness were included in the model, it was observed that happiness (OHQ) did not significantly and independently predict digital game addiction. This result differs from the previously mentioned findings of Chang (2023), Maftei & Opariuc-Dan (2023), and Shouman et al. (2023). A plausible explanation for this divergence is that happiness and life satisfaction overlap as distinct yet related components of subjective well-being: when both are included in a simultaneous model, life satisfaction—being a more evaluative and cognitive judgment—may capture the shared variance, thereby depriving happiness (a more affective and momentary state) of its independent predictive power. This suggests that the cognitive-evaluative component of subjective well-being may be more central to understanding gaming addiction than the affective component. This distinction has not been directly tested in previous studies using single predictors.

When the issue is approached from the perspective of H3, it can be said that the hypothesis in question is supported. Social connectedness was found to be a significant negative predictor of digital game addiction: individuals with a stronger sense of connectedness to others reported lower levels of game-related symptoms. This finding is consistent with the previously mentioned studies by Yan et al. (2024) and Yang et al. (2025). Since the scale used in the present study—unlike the one in the aforementioned study—does not distinguish between online and offline forms of social connectedness, the general negative relationship observed here likely reflects the protective role of real-life connectedness, although it must be noted that this cannot be definitively confirmed by the current measurement. This finding aligns with the reciprocal (bidirectional) relationship between loneliness and pathological gaming identified by Lemmens et al. (2011) and is further supported by Gao et al. (2024), who demonstrated that loneliness predicts online gaming addiction over time. Taking together, these findings suggest that the relationship between social connectedness and addiction in the current cross-sectional data may also be bidirectional rather than unidirectional.

Finally, it can be considered that H4 is partially supported. This hypothesis was tested using two different analyses: one based on control variables in the regression model, and the other based on independent difference tests (t-test/ANOVA).

An examination of the control variables in the regression model reveals that age is a significant negative predictor of digital game addiction scale scores—meaning that scores decrease as age increases. As expected, daily gaming duration was found to be a significant positive predictor. Regarding the type of device used, the use of computers and tablets—when compared to the reference category of smartphones—was observed to be a significant positive predictor in both models.

While console usage did not significantly predict GAS in the first model, it became a significant predictor in the second model after the inclusion of psychological variables; this indicates that the relationship between console usage and GAS becomes more pronounced when psychological variables are controlled for. Portable gaming device usage, however, did not emerge as a significant predictor in either model. Similarly, the income variable was not found to be significant at any stage of the model. The significance of the age, daily gaming duration, computer, and tablet variables remained largely unchanged in the second model, demonstrating that these variables are associated with the scale scores independently of life satisfaction and social connectedness. Independent difference tests also support this pattern: a significant mean difference was observed in only 15 of the 42 comparisons tested, indicating that demographic variables play a limited role in explaining digital game addiction compared to psychological variables. The variables for which differences emerged were age, education, daily gaming duration, and the device used, rather than categories such as income or occupation.

A consistent pattern emerges when the two analysis methods are evaluated together: while age, daily playtime, and device type stand out both as independent predictors in the regression and as significant group differences in the difference tests, income remains non-significant in both types of analysis. This indicates that the amount and manner of gameplay are more closely linked to digital game addiction than certain demographic characteristics.

Furthermore, it should be noted that the regression model explained a modest portion of the variance in digital game addiction. In the first step, the model containing only control variables explained 9% of the variance ($R^2 = .09$). With the addition of psychological variables to the model in the second step, these variables contributed an additional 11 percentage points to the explained variance ($\Delta R^2 = .11$), raising the total explained variance from 9% to 20% ($R^2 = .09 + .11 = .20$).

In other words, it can be stated that approximately half (9%) of the 20% variance in digital game addiction is explained by control variables such as age, income, daily gaming duration, and device type, while the other half (11%) is explained by life satisfaction, happiness, and social connectedness.

The current findings can be considered to make a distinct contribution to the literature. While previous studies have separately examined life satisfaction, happiness, and social connectedness as predictors of gaming addiction, none have tested all three simultaneously within a single model. For instance, Kaya et al. (2025) investigated happiness and loneliness but did not include life satisfaction in the process; Hull et al. (2013) identified happiness as the strongest predictor but did not account for social connectedness; and Lemmens et al. (2011) focused on social competence, self-esteem, and loneliness. By modeling these three dimensions of subjective well-being together, the present study clarifies their relative and independent contributions to addiction. The findings indicate that life satisfaction and social connectedness continue to significantly predict digital game addiction even when the other two variables are statistically controlled, whereas happiness ceases to be a significant predictor under these conditions. This suggests that the relationship between happiness and digital game addiction is not an independent mechanism; rather, it operates largely through the variance shared with life satisfaction—meaning that this relationship involving happiness is statistically "swallowed up" by life satisfaction. This pattern is consistent with both theoretical approaches.

According to Self-Determination Theory, when an individual's need for relatedness is not sufficiently met in daily life, attempts are made to satisfy this need in other domains; gaming becomes more appealing when it fills this void, and the risk of addiction may increase over time. The finding in this study that addiction levels are higher among individuals with low social

connectedness supports this view. Similarly, according to the compensatory coping approach, individuals experiencing psychosocial difficulties in their general lives may turn to gaming to manage stress and negative emotional states; the finding of higher addiction levels among participants with low life satisfaction aligns with this perspective as well. When these two theories are considered together, they suggest that digital game addiction is associated less with a momentary emotional state (happiness) and more with deficiencies in an individual's enduring evaluations of their life (low life satisfaction, weak social connectedness); and that gaming can compensate for these deficiencies to some extent, albeit in an unhealthy manner.

APPLICATIONS OF THE FINDINGS

These findings carry various practical implications. For educators and families, they suggest that—rather than focusing narrowly on limiting screen time—interventions aimed at enhancing young people's social connectedness and overall life satisfaction may offer a more effective preventive approach. For policymakers, they indicate that public health responses to digital gaming addiction should not be treated as isolated behavioral issues confined solely to gaming, but rather addressed in an integrated manner alongside broader mental health and social support initiatives. For clinicians, they suggest that life satisfaction and social connectedness should be routinely considered when evaluating individuals exhibiting symptoms of gaming disorder; consistent with the protective role identified by Yan et al. (2024), these two variables appear to be closely related correlates that could inform treatment planning through interventions designed to strengthen real-life social ties.

LIMITATIONS OF THE STUDY

Various limitations should be considered when interpreting these results. First, regarding the issue of reverse causation, the cross-sectional design does not allow for conclusions to be drawn about the direction of causality. It cannot be determined whether low life satisfaction leads to higher digital game addiction or whether digital game addiction reduces life satisfaction. Second, considering the possibility of a reciprocal influence, it is possible that digital game addiction and the psychological variables under study influence each other in a bidirectional manner over time. Thirdly, since all variables were measured using the same self-report questionnaire, the observed relationships may be partially inflated due to shared-method variance. Fourthly, unmeasured variables—such as depression or anxiety—might independently influence both digital game addiction and the psychological variables under study, raising the possibility of unmeasured confounding. Finally, the participants who chose to respond to the survey may not fully represent the broader population of digital game players, suggesting potential selection effects.

Given that the psychological variables examined here account for only a modest portion of the variance in digital game addiction, it is suggested that future studies investigate additional predictors capable of explaining the remaining variance. Furthermore, longitudinal and experimental designs, more comprehensive psychological measures, and more representative sampling strategies are needed to clarify the direction of the relationships identified here.

CONCLUSION

This study was conducted within the framework of four hypotheses (H1–H4) to examine the relationships between digital game addiction and life satisfaction, happiness, and social connectedness, and to test whether digital game addiction differs according to demographic and behavioral characteristics.

The findings supported H1, indicating that life satisfaction is a significant negative predictor of digital game addiction, and supported H3, showing that social connectedness is also a significant negative predictor. H2 was not supported; happiness did not significantly predict digital game addiction when the other two variables were controlled for. H4 was partially supported; in the regression analysis, age, daily gaming duration, and computer and tablet usage significantly predicted digital game addiction in both models, whereas console usage—while not significant in the first model—became a significant predictor in the second model after the inclusion of psychological variables. Income and the use of portable gaming devices did not emerge as significant predictors for either model. In tests for independent differences, digital game addiction varied significantly across 15 of the 42 demographic and behavioral comparisons; these differences centered on age, education, daily gaming duration, and the device used. The regression model explained 9% of the variance in digital game addiction in the first step (control variables) and 20% (9% + 11%) in the second step following the inclusion of psychological variables.

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Conflict of interest

We wish to confirm that there are no competing interests, personal financial interests, funding, employment, or other competing interests associated with this publication.

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Ethics approval

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of the Istanbul Gelisim University, Turkiye, approved the study (with the approval number of 2025-15-18).

Human Ethics and consent to participate declarations

All subjects were informed about the study and all provided informed consent.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authorship Confirmation/Contribution Statement

Author 1: Methodology (equal); software (lead); conceptualization (equal). Author 2: Formal analysis (equal); writing – review and editing (lead). Author 3: Methodology (equal); conceptualization (equal); formal analysis (lead). Author 4: Writing – original draft (lead); formal analysis (equal).

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Tables

Table 1: Frequency Distribution of Responses Given by Survey Participants to Demographic Questions

Gender	***Frequency***	***Percentage***
Woman	208	51.1
Man	199	48.9

Education	***Frequency***	***Percentage***
Elementary School Graduate	20	4.9
Secondary School Graduate	51	12.5
High School Graduate	87	21.4
Vocational School Degree	53	13
Undergraduate Degree	133	32.7
Master's Degree	35	8.6
PhD Degree	28	6.9

Age	***Frequency***	***Percentage***
18-19	59	14.5
20-24	114	28
25-34	97	23.8
35-44	98	24.1
45 and older	39	9.6

Income	***Frequency***	***Percentage***
10.000 TL and less	116	28.5
10.001-30.000 TL	95	23.3
30.001-50.000 TL	75	18.4
50.001 - 70.000 TL	68	16.7
70.001 and more	53	13

Job	***Frequency***	***Percentage***
Student	137	33.7
Educator (Academician, Teacher, etc.)	39	9.6
Architect' Engineer, Technician	35	8.6
Private Sector (Sales Representative, Technician, HR, Secretary, Manager, Clerk, Cook, etc.)	87	21.4
Health Sector (doctor, nurse, pharmacist, health worker etc.)	48	11.8
Other (tradesman, civil servant, retired, housewife)	61	15

Table 2: Results of Reliability Analysis of Research Scales

Scale	***Cronbach's Alpha (α)***
Game Addiction Scale - GAS	.94
Satisfaction with life Scale – SWLS	.84
The Oxford Happiness Questionnaire Short Version – OHQ	.88
Social Connectedness Scale – SCS	.90

Table 3: Frequency Distribution of Responses of Survey Participants to Questions on Digital Game Playing Habits

Daily Time Allocated to Digital Games	***Frequency***	***Percentage***	***The Most Common Device Used When Playing Digital Games***	***Frequency***	***Percentage***
Less than 30 minutes a day	92	22.6	Computer (Desktop or Laptop)	86	21.1
30 minutes to 1 hour per day	82	20.1	Game Console (PlayStation, Xbox, etc.)	89	21.9
1 to 2 hours per day	53	13	Smart Phone	94	23.1
Between 2 and 4 hours per day	62	15.2	Tablet	84	20.6
Between 4 and 6 hours per day	54	13.3	Portable Gaming Device (Nintendo Switch, Steam Deck, etc.)	54	13.3
Between 6 and 8 hours per day	35	8.6			
More than 8 hours	29	7.1			

Table 4: Correlation Analysis Results

Pearson (r) Two T.	GAS	SWLS	OHQ	SCS
GAS	1	-.30*	-.29*	-.28*
SWLS	-.30*	1	.64*	.38*
OHQ	-.29*	.64*	1	.48*
SCS	-.28*	.38*	.48*	1
*(Sig.) = 0.000 < 0.050				

Pearson (r) Two T.	GAS	DSR	AMB	SWLS	OHQ	SCS
GAS	.94*	.93*	-.30*	-.29*	-.28*	.94*
DSR	.94*	1	.77*	-.28*	-.27*	-.25*
AMB	.93*	.77*	1	-.28*	-.28*	-.28*
SWLS	-.30*	-.28*	-.28*	1	.64*	.38*
OHQ	-.29*	-.27*	-.28*	.64*	1	.48*
SCS	-.28*	-.25*	-.28*	.38*	.48*	1
*(Sig.) = 0.001 < 0.05						

Table 5: Regression Analysis Results

Model	***Variable***	***Unstandardized***		***95% Confidence Interval***		***Standardize***		***Sig***	***R^2***	***F***	***Tolerance***	***VIF***
		B	***Std. S***	***Lower***	***Upper***	***ß***	***t***					
1	(Constant)	1.84	.15	1.53	2.15		11.60	.001	.09 / ΔR^2 = .09	5.80 / F Change = 5.80		
	Age	-.13	.04	-.22	-.05	-.19	-3.32	.001			.65	1.51
	Income	.01	.03	-.05	.08	.02	.37	.71			.68	1.46
	Daily Time Allocated to Digital Games	.05	.02	.01	.09	.11	2.45	.01			.98	1.01
	Device_d1 (Computer)	.32	.12	.08	.57	.15	2.60	.01			.65	1.53
	Device_d2 (Game Console)	.24	.12	-.001	.48	.11	1.96	.05			.64	1.55
	Device_d3 (Tablet)	.34	.12	.09	.58	.16	2.72	.007			.66	1.51
	Device_d4 (Portable Gaming Device)	-.09	.14	-.37	.19	-.03	-.64	.52			.71	1.39
2	(Constant)	3.25	.23	2.78	3.72		13.61	.001	.20 / ΔR^2 = .11	10.32 / F Change = 19.04		
	Age	-.14	.04	-.22	-.06	-.20	-3.60	.001			.64	1.54
	Income	.03	.03	-.02	.10	.06	1.14	.25			.66	1.51
	Daily Time Allocated to Digital Games	.05	.02	.01	.09	.11	2.62	.009			.98	1.01
	Device_d1 (Computer)	.33	.11	.10	.56	.15	2.86	.004			.65	1.53
	Device_d2 (Game Console)	.24	.11	.01	.47	.11	2.07	.03			.64	1.55

	Device_d3 (Tablet)	.24	.11	.01	.47	.11	2.08	.03			.65	1.53
	Device_d4 (Portable Gaming Device)	-.04	.13	-.30	.22	-.01	-.31	.75			.71	1.40
	SWLSORT	-.18	.06	-.30	-.06	-.17	-2.95	.003			.56	1.77
	OHQORT	-.07	.06	-.19	.05	-.07	-1.10	.26			.50	1.97
	SCSORTTERS	-.14	.04	-.22	-.05	-.17	-3.38	.001			.72	1.37
Dependent Variable: GASORT - Reference Category (Device): Smartphone												

Table 6: T-Test and Anova Test Results

Variable	***Variable***	***sig***	***Difference Groups***	***Variable***	***Variable***	***sig***	***Difference Groups***
Gender	GAS	.06		Job	GAS	.08	
	DSR	.03			DSR	.07	
	AMB	.04			AMB	.16	
	SWLS	.16			SWLS	.37	
	OHQ	.45			OHQ	.28	
	SCS	.65			SCS	.41	
Education	GAS	.01	2-3, 2-4	Daily Time Allocated to Digital Games	GAS	.001	1-3, 4; 2-3, 4
	DSR	.002	2-3; 2-4; 2-5; 2-6		DSR	.001	1-3, 4; 2-3, 4
	AMB	.12			AMB	.001	1-3, 4; 2-3, 4
	SWLS	.61			SWLS	.66	
	OHQ	.52			OHQ	.96	
	SCS	.005	2-6		SCS	.17	
Age	GAS	.001	1-2,3,4,5	Device	GAS	.001	1-3,5; 4-5
	DSR	.001	1-2,3,4,5		DSR	.01	1-5; 4-5
	AMB	.001	1-3,4		AMB	.001	1-3,5; 3-4; 4-5
	SWLS	.06			SWLS	.35	
	OHQ	.58			OHQ	.18	
	SCS	.07			SCS	.01	1-4; 4-5
Income	GAS	.46		***GAS= Game Addiction Scale***			
	DSR	.48		***DSR= Desire***			
	AMB	.25		***AMB= Ambitions***			
	SWLS	.15		***SWLS= Satisfaction With Life Scale***			
	OHQ	.57		***OHQ= The Oxford Happiness Questionnaire***			
	SCS	.23		***SCS= Social Connectedness Scale***			

Supplementary Files

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