International Journal of Sport Culture and Science
December 2024 : 12(4)
ISSN : 2148-1148
Doi : 10.14486/IntJSCS.2024.729

Predictives of Digital Game Addiction in Turkish High School Students

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*Type: **Research** Article (Received: 30.09.2024– Accepted: 23.12.2024)*

Abstract

Online gaming addiction, which is widely seen in children and young people all over the world, is a serious public health problem. It is important to determine the antecedents of this problem in preventing it. In this context, the aim of the research is to determine the possible effects of gender, age, school type, household monthly income, parental marital status and parental attitude in determining digital game addiction of Turkish high school students. The research used a relational screening model. A total of 295 high school students, 175 female and 120 male, participated in the study. Participants were included in the research using the convenient sampling method. Data were collected using the 'Digital Game Addiction Scale', 'Parenting Attitude Scale' and 'Personal Information Form'. Research findings showed that there was a relationship between high school students' digital game addiction and gender (r=.274), household income (r=.166) and parental marital status (r=143). Additionally, gender, household income and parental marital status were found to predict digital game addiction (R^2=.127; F=6.954; p=000). As a result, it can be said that high school students' digital game addiction levels are low, and gender, household income and parental marital status are predictors of digital game addiction.

Keywords: Digital game, addiction, Parental attitude, High school students

Introduction

One of the most important changes in the 21st century is undoubtedly the rapid development in technology (Güney, 2017). With this development, the internet has managed to take place in the lives of almost every individual with technological devices such as phones, computers, and tablets and has become an inseparable part of our lives (Savcı & Aysan, 2017). In the last twenty years, these technologies have become a popular leisure activity, especially among children and young people (Irmak & Erdoğan, 2019). In fact, children and young people have moved away from the traditional game world and turned to the digital game world (Horzum, 2011).

When the relevant literature is examined, digital games played in a controlled manner are seen to have many positive aspects such as providing hand-eye coordination, increasing

imagination, and developing spatial skills (Irmak & Erdoğan, 2016). Vlachopoulos and Makri (2017) stated that children playing digital games in a controlled manner contributes to learning new information and improving themselves. On the other hand, excessive use of digital games by children and adolescents can have negative effects on psychological, physiological development, and social relationships (Von der Heiden, Braun, Müller, & Egloff, 2019). In particular, along with the negative effects of violent games, a number of negative outcomes such as aggression, social isolation, and addiction are frequently discussed in the literature regarding digital games (Ferguson, 2007; Greitemeyer, 2019). Von der Heiden et al. (2019) stated that violent games played at an early age may have negative consequences on children's personality development and may increase the frequency of violent behavior in them. More importantly, it has been reported that digital games can turn into addiction when played excessively and compulsively, even for entertainment purposes (Mehroof & Griffiths, 2010).

Digital game addiction (American Psychiatric Association, 2013), for which different terms such as video game addiction (Griffiths & Hunt, 1995), pathological gaming (Johansson & Götestam, 2004) are used in the literature, is a condition with a high probability of causing physical, social and psychological problems (Lemmens, Valkenburg, & Peter, 2009), manifested by symptoms such as losing the ability to control oneself while playing games and continuing gaming behavior (Henderson, 2001), feeling deprived when prevented from playing games and/or becoming overly addicted to games. Digital game addiction can be defined as an addiction to listening, watching or playing games for entertainment purposes in online or offline environments using an electronic device such as a computer or console (Aziz, Nordin, Abdulkadir, & Salih, 2021). Addictive behavior refers to behavior that is maintained at an excessive, compulsive, uncontrollable level despite causing destructive problems physically, psychologically or socially (Weinstein, 2010).

While there is debate in the literature about whether playing digital games is beneficial or harmful, research has revealed that excessive gaming at the addictive level triggers anxiety, depression, neurotic disorders, attention deficit, aggression, eating disorders, sleep disorders, and physical inactivity (e.g., Gülü et al., 2023; Djannah, Tentama, & Sinanto, 2021; Mehroof, & Griffiths, 2010). Moreover, it has been found that excessive and compulsive video game playing has a relationship with poor psychosocial well-being (Lemmens, Valkenburg, & Peter, 2011), less satisfaction with daily life (Wang, Øfsdahl, & Mørch-Storstein, 2008), lower academic achievement (Skoric, Ching Teo, & Neo, 2009), and aggression and narcissism (Kim, Namkoong, Ku, & Kim, 2008). Liu and Peng (2009) revealed that there is a relationship between physical problems, deterioration of academic and professional performance and daily life problems experienced with playing digital games. Wang, Sheng, and Wang (2019) reported that mobile game addiction is positively associated with social anxiety, depression and loneliness. The World Health Organization (WHO) has also defined online game addiction, which is common all over the world, as a serious public health problem (WHO, 2018). Identifying the antecedents of this problem will help reduce or eliminate digital game addiction in children and adolescents.

When studies conducted to determine the factors associated with digital game addiction are examined, it is revealed that parenting attitude is an important determinant. Tuncay, Bozdoğan, and Bozdoğan (2023) reported that the interests, attitudes, and behaviors of families are related to children and adolescents' use of technology and digital game addiction. Şen (2022) revealed that there is a positive relationship between authoritarian parenting attitudes and digital game addiction. Çakır (2021) found that parental style affects game addiction in high school students and that children of negligent parents have a higher rate of

game addiction. Eni (2017), who conducted a study with high school students, reported that there is a relationship between parenting attitude and digital game addiction. Ayas and Horzum (2013) stated that family attitude affects children's internet addiction and that children of parents with negligent attitudes have higher levels of internet addiction. Young (1997) emphasized that children and adolescents who do not receive sufficient attention and affection from their families and who cannot establish healthy communication with their families resort to internet technologies as an escape, which will cause them to be exposed to the negative effects of technology. Studies show that children and adolescents who do not receive appropriate attitude from their parents are addicted to the internet (Chen, Li, & Long, 2007; Esen & Siyaz, 2011), and therefore addicted to digital games. Turkish Ministry of Health (2018) conducted a "Digital Game Addiction Workshop" to create an action plan to prevent digital game addiction, which is considered a public health problem, and the final report stated that parental indifference, inadequate supervision, and inconsistent and unhealthy parenting attitudes are important factors in digital game addiction. Therefore, it can be stated that the parent-child relationship and parenting attitude are important elements in preventing digital game addiction (Gladkaya, Gundlach, Bergert, Baumann, & Krasnova, 2018; Kwon, Chun, & Lee, 2011). However, research on the mediation of parenting attitude as a predictor of digital game addiction in children and adolescents is still insufficient.

Other antecedents of digital game addiction, which is a problematic game playing behavior, are gender and age variables (Kneer, Rieger, Ivory, & Ferguson, 2014). According to the results of the studies, the frequency of this problematic behavior is higher in boys (Hussain, Williams, & Griffiths, 2015) and at a younger age (Škařupová & Blinka, 2016). Hussain et al. (2015) reported that children and adolescents are in the highest risk group for game addiction. Polat and Topal (2022), Deniz (2021), and Yayman (2019) revealed that male students have higher levels of digital game addiction than female students in in different samples in their studies. Greenberg, Sherry, Lachlan, Lucas, and Holmstrom (2010) stated that boys are more prone to playing digital games. It was seen as a result of the literature review that the results of studies on digital game addiction differ. For example, in a recent study conducted by Kızılkaya and Erol (2024), it was reported that gender was not a determinant of digital game addiction. Similarly, Başdaş and Özbey (2020) stated that the age variable did not affect digital game addiction.

When the literature on digital addiction is examined, it is seen that household income level and whether the parents are separated or together are among the antecedents of digital game addiction. In their current study, Sosyal and Kartal (2024) revealed that high school students whose parents live together have higher digital game addictions than those whose parents are separated. In contrast to this study, Deniz (2021) concluded that addiction level is higher in children and adolescents whose parents are separated. Similarly, Deniz, Aydın, and Odabaş (2022) reported that those living in broken families, in other words, those whose parents are divorced or living separately, have a higher risk of digital game addiction. Studies have reported that household income level, in addition to family relationships, affects digital addiction (e.g., Çelik & Çelik, 2023). Başdaş and Özbey (2020) reported that the level of digital game addiction increases as the income level increases. Ciris et al. (2022), who conducted a study with a similar sample, reported that children with high household income levels also have higher game addiction levels. Contrary to these studies, the results of the study conducted by Eni (2017) with high school students show that there is a negative relationship between household income level and digital game addiction. In some studies conducted to determine the variables related to digital game addiction, the type of school studied was examined. Soysal and Kartal (2024) found that the type of school predicted

digital game addiction. Aksoy and Erol (2021) reported that vocational high school students had a higher rate of digital game addiction than those in other high schools. However, there is a lack of studies on school type in the national and international literature.

Studies have shown that playing digital games has serious harms as well as benefits for children and young people. Preventing these harms will only be possible by determining the antecedents of digital game addiction. However, the antecedents of digital game addiction consist of a multidimensional structure and can be explained by many interrelated factors (Çelik & Çelik, 2023). When the national and international literature is examined, it is seen that studies have been conducted that address many different factors related to digital game addiction, but there are differences in the results of the studies. This is a situation that prevents understanding digital game addiction. Therefore, more studies are needed. The purpose of this research is to determine the possible effects of gender, age, school type, household monthly income, parental marital status and parenting attitudes of Turkish high school students in determining digital game addiction.

Material and Method

Research Model

The research model of this study, which was conducted to determine the predictors of digital game addiction among Turkish high school students, is the correlational survey model. Correlational survey models are research models that aim to determine the existence of a change between at least two variables and, if so, the level and direction of this change (Karasar, 2015). In the study, this model was preferred to determine the existence, level and direction of the relationship between the variables.

Research Group

A total of 295 students, 175 girls and 120 boys, studying at three different high schools in the Yenişehir district of Mersin province in the fall semester of the 2023-2024 academic year participated in the study. The ages of the participants ranged from 14 to 19, and the average age was 15.34. The participants were included in the study using the convenience sampling method. Due to the easy access to the participants in the study on the internet, the data collection tools were prepared by the researchers on Google form. The link to the data collection tools created on the Google Form was shared with the parent groups, and the students whose parents approved filled out the data collection tools voluntarily via this link. In this process, firstly the parents of the participants examined the instructions and measurement tools regarding the purpose of the study and accepted the parental consent. Then they informed the students of whom they were the parents and determined whether their students were volunteers. Students who wanted to participate in the study voluntarily filled out the data collection tools in accordance with the explanations and instructions regarding the data collection tools from the relevant link under the supervision of their parents. In addition, ethics committee permission was obtained from the Artvin Coruh University Scientific Research and Publication Ethics Committee before the data collection process in the study (decision numbered 113002 dated 11.11.2023).

Data Collection Tools

Data in the study was collected using the ‘Digital Game Addiction Scale’, ‘Parenting attitude Scale’ and ‘Personal Information Form’.

Personal Information Form:

Personal information of the students participating in the study was obtained using the 'personal information form' developed by the researchers. This form includes 6 questions regarding gender (female, male), age, school type (project high schools accepting students by exam, Anatolian high schools, vocational high schools), grade level (9th, 10th, 11th, 12th grade), household monthly income (low, medium, high) and parental marital status (joint, separated/divorced). Previous research suggests that the student's socioeconomic status will affect gaming addiction. Therefore, the information form asked questions about household monthly income and parental marital status.

Digital Game Addiction Scale:

In the study, the 'Digital Game Addiction Scale' developed by Lemmens et al. (2009) and adapted by Irmak and Erdoğan (2015) for 12-18 year old Turkish adolescents was used to determine the participants' problematic digital game playing attitudes and behaviors. The scale consists of 7 single-dimensional items. The scale is in the form of a 5-point Likert. Scores of 3 and above from the scale indicate that the individual is a problematic digital game addict. The test-retest stability coefficient of the scale was found to be .80, and the cronbach alpha internal consistency coefficient was found to be .73. The reliability of the scale for this study was calculated as .87.

Parenting Attitude Scale:

In the study, the 'Parenting Attitude Scale' form, developed by Lamborn et al. (1991) and adapted for Turkish high school students by Yılmaz (2000), was used to determine the parenting attitudes of the participants. This scale consists of 21 items in three dimensions prepared in a 4-point Likert format. The acceptance-care subscale of the scale consists of 9 items and the minimum score that can be obtained is 9, the maximum score is 36; the control-monitoring subscale consists of 7 items and the minimum score is 7, the maximum score is 28, and the psychological autonomy subscale consists of 5 items and the minimum score is 5, the maximum score is 20. In the evaluation of the scale, getting above average score in three subscales means that the parents have democratic attitude, getting below average score in three subscales means that they have undemocratic attitude, getting above average score in any two dimensions means that they have democratic attitude to some extent and getting above average score in only one dimension means that they have undemocratic attitude to some extent. The test-retest stability coefficient and Cronbach alpha internal consistency coefficient of the scale were found as .82 and .70 for acceptance/care subscale, .88 and .69 for control-monitoring subscale, .76 and .66 for psychological autonomy subscale, respectively. Cronbach alpha reliability coefficient of the scale in this study was calculated as .85 for acceptance-care subscale, .74 for control-monitoring subscale and .65 for psychological autonomy scale.

Data Analysis:

In the study, descriptive statistics such as frequency and mean were first examined in the analysis of the data. The skewness and kurtosis values were evaluated to see whether the data was normally distributed or not. It was observed that the skewness and kurtosis values varied between -1 and +1. In other words, the data was normally distributed. Multiple linear regression analysis was used in the data analysis because the data in the study was normally distributed and met all other assumptions for regression analysis. The analyses were performed using the SPSS program version 23.

Findings

Table 1. Mean and Standard Deviation Values of Participants' Scores on the Digital Game Addiction Scale in Terms of Demographic Characteristics

Variables	Group	Digital Game Addiction		
		N	x̄	SS
Gender	Female	175	1.75	.80
	Male	120	2.21	.80
School Type	Project School	142	2.02	.79
	Anatolian High School	102	1.85	.83
	All Kinds of Vocational High Schools	51	1.90	.92
Grade	9	102	1.89	.77
	10	62	1.83	.69
	11	80	2.03	.92
	12	51	2.02	.94
Parental Marital Status	Together	252	1.89	.79
	Separated/Divorced	43	2.22	.98
Household monthly income	Low	130	1.79	.74
	Middle	135	2.03	.84
	Good and above	30	2.18	1.02
Parenting Attitude	Democratic Attitude	127	1.89	.83
	Somewhat Democratic Attitude	134	1.93	.79
	Somewhat Undemocratic Attitude	33	2.15	.94
	Undemocratic Attitude	1	1.14	-

Table 1 shows the mean and standard deviation values for digital game addiction scores of the high school students participating in the study. When the data were examined, it was seen that the mean scores for digital game addiction varied between 1.14 and 2.21 in terms of all demographic variables. In addition, it was determined that the students' mean scores for digital game addiction were low.

Table 2. Correlation Analysis Results Between Participants' Digital Game Addiction and Gender, Age, School Type, Household monthly income Status, Parental Marital Status and Parenting Attitudes

Variables	Digital Game Addiction	
	r	p
Gender	.274	.000**
Age	.064	.136
School Type	-.067	.127
Household monthly income	.166	.002**
Parental Marital Status	.143	.007**
Parenting Attitude	-.066	.129

** p<.01

Table 2 shows the results of the correlation analysis between digital game addiction and gender, age, school type, household monthly income level, parental marital status, and parenting attitudes. The findings show that there is a low level positive relationship between digital game addiction and gender (r= .274; p= .000), household monthly income level (r=.166; p=.002), and parental marital status (r= .143; p= .007). No significant relationship was found between digital game addiction and the age of the students (r= .064; p= .136), the type of school they attend (r= -.067; p= .127), and the attitudes of their parents (r= -.066; p= .129).

Table 3. Results of Multiple Regression Analysis for Predicting Digital Game Addiction

Variables	B	S.H.	β	t	P
Gender	.435	.004	.259	4.609	.000**

Age	.027	.041	.024	.423	.673
School Type	-.005	.052	-.006	-.104	.918
Household monthly income	.228	.073	.180	3.124	.002**
Parental Marital Status	.363	.132	.155	2.755	.006**
Parenting Attitude	-.031	.068	-.025	-.452	.651
R=.356; R^2 =.127; Durbin Watson; =1.960; $F_{(6,288)}$ =6.954; p=.000					

** p<.01

Table 3 presents the results of multiple regression analysis to reveal the role of the gender, age, school type, household monthly income, parental marital status and parenting attitude of the high school students participating in the study in determining digital game addiction. In the regression analysis, the autocorrelation between the variables was examined with the Durbin-Watson coefficient and was calculated as 1.960. The fact that this coefficient is close to 2 indicates that the variables are not autocorrelated. The research findings reveal that gender (β= .259; t= 4.609; p= .000), household monthly income (β= .180; t= 3.124; p= .002) and parental marital status (β= .155; t= 2.755; p= .006) predict digital game addiction (R= .356; R^2= .127; $F_{(6, 288)}$= 6.954; p= .000). Furthermore, it was determined that these three variables explained only 12.7% of digital game addiction and the most important variable in this model was gender (β= .259).

Discussion, Conclusion and Recommendations

This study aimed to determine the antecedents of digital game addiction in Turkish high school students and examined the possible effects of gender, age, school type, household monthly income, parental marital status and parenting attitudes in determining digital game addiction. The results show that there is a positive relationship between gender, household income and parental marital status and digital game addiction, and that these three variables positively predict digital game addiction in high school students. However, it was found that the participants' digital game addiction was low. These findings are consistent with the results of similar studies examining the effect of gender on digital game addiction in Turkey (Işık Afacan & Afacan, 2024; Polat & Topal, 2022; Deniz, 2021; Yayman, 2019; Ekinci, Yalçın, Özer, & Kara, 2017). According to the 2021 data of the Turkish Statistical Institute (TurkStat, 2021), it was determined that 94.7% of Turkish children aged 6-15 play digital games at least one day a week, and 96.2% of boys and 91.8% of girls play digital games regularly. This data shows that the rate of children playing digital games is generally high in Turkey, while boys play digital games at a higher rate. In the literature, similar research results on digital game addiction conducted in different cultures show that there is a relationship between gender and digital game addiction and that gender significantly predicts digital game addiction. Chiu, Lee, and Huang (2004), who examined digital game addiction in Taiwanese adolescents, found that there was a relationship between gender and digital game addiction in favor of males. Li and Wang (2013) reported that male adolescents in China were at higher risk of developing digital game addiction than females. Wittek et al. (2016) found that gender was positively associated with digital game addiction in a study conducted with Norwegian adolescents and adults. The results of a study conducted with adolescents in Hong Kong also reported that gender affected digital game addiction (Wang, Chan, Mak, Ho, Wong, & Ho, 2014). Similarly, Hussain et al., who conducted a study with a sample of many countries from Europe, America, and Asia such as Germany, Canada, and Japan, (2015) reported that males are in the risk group in terms of online game addiction. Lin and Yu (2008) reported that males prefer to play video and internet games, while females prefer to use the internet more for social media. In other words, the difference in digital game addiction in terms of gender may be due to males and females preferring different online activities.

There are also research results in the literature showing that digital game addiction does not differ between boys and girls. For example, Basha (2021) revealed that gender did not affect digital game addiction in his study with Kosovar adolescents. The results of a recent study conducted by Kızılkaya and Erol (2024) also showed that gender was not a determinant of digital game addiction. These research results contradict the results of the current study. Nowadays, both girls and boys have to spend more time at home and with technological devices such as phones due to different concerns of their families such as security (Basha, 2021). This may cause both genders to spend time playing games on digital platforms in a similar way. In addition, the similarity of digital addiction in terms of gender can be explained by the fact that in most societies, parental control is higher in girls than in boys, which causes girls to spend less time on the internet than boys (Tsai et al., 2009).

The research results show that the household monthly income level predicts digital game addiction and that digital game addiction scores increase as the income level increases. It is seen that different results are obtained in the studies in the literature examining the relationship between household monthly income and digital game addiction. For example, Ciris, Baskonus, Kartal and Tasdemir (2023), who studied high school students in Turkey, stated that household income is an important determinant for digital game addiction and that having a high household income increases the frequency of playing games and the time spent playing games. Başdaş and Özbey (2020) found that Turkish adolescents with high digital game addiction also have high income levels. Wu et al. (2016), who studied a Chinese sample, reported that adolescents with high socioeconomic status or family annual income were more likely to be addicted. Walther, Morgenstern, and Hanewinkel (2012) reported in their review that high socioeconomic status was associated with problematic computer game playing behavior. Göldal (2018) stated that children and adolescents with high-income families have easy access to technological tools such as computers, phones, and mobile internet used to play digital games. Aksoy and Erol (2021) reported that children from higher-income families spend more time on the internet for leisure or social interaction. They reported that this could increase game addiction in children and adolescents. Contrary to these studies, Aksoy and Erol (2021) reported a negative relationship between household income level and digital game addiction. Similarly, Eni (2017), who conducted a study with high school students in a Turkish sample, found that those with low household income had higher addiction. The high addiction level of adolescents from both low- and high-income families suggests that game addiction is not only affected by household income. Therefore, the effects of different socioeconomic parameters other than household income on game addiction should be examined.

Another result of the study is that whether the parents are together or separated or divorced does not predict digital game addiction. Wang et al. (2014) conducted a study on a Hong Kong sample and found that game addiction in adolescents is not associated with the marital status of the parents. This result supports our current research result. Behavioral addictions or behaviors such as technology or game addiction are seen as a simple habit or a means of emotional calming, especially by parents (Gökel, 2020), and these problematic behaviors can be ignored regardless of the marital status of the parents. This means that children experience these problematic behaviors in a similar way, whether their parents are together, divorced, or separated. However, there are also research results in the literature that show that parental marital status affects gaming addiction. Müller et al. (2015) conducted a study with 12,938 adolescents aged 14-17 in seven European countries and stated that children with separated or divorced parents have higher levels of addiction to the internet or online games. Frangos, Frangos, and Sotiropoulos (2011), who conducted a study on a Greek sample, reported that

university students with a divorced family were more problematic internet users. These research results (Müller et al., 2015; Frangos et al., 2011) contradict the results of the current study. This situation can be explained by the fact that the researchers worked with a larger sample group in the given studies and that in divorced, separated families, children living with a single parent have less control than those living with a single parent (Juthamanee & Gunawan, 2021). In addition, a single parent has less time and resources to support the interests and needs of their child compared to two parents (Schneider, King, & Delfabbro, 2017). This may result in the child playing games at an addictive level instead of alternative activities.

The current research results have shown that age is not a predictor of digital game addiction. There are research results supporting this result in both national and international literature. Basha (2021), who conducted a study with high school students in a Kosovo sample, revealed that age did not differentiate the level of digital game addiction. Wang et al. (2014) found that age and grade level did not affect digital addiction in a study with Hong Kong adolescents studying from 8th to 11th grades. Taylan, Topal, and Ayas (2018), who examined digital game addiction in a Turkish sample, concluded that age was not a precursor to digital game addiction in Turkish high school students. Başdaş & Özbey (2020) reported that there was no relationship between age and digital game addiction in university students. A recent study conducted with university students in a Nigerian sample showed that there is no relationship between age and game addiction (Badejo & Gandonu, 2024). In fact, this is an expected situation considering that children today are introduced to digital technologies at an early age (Kaya & Pazarcıkcı, 2023). There are also research results in the literature that show a relationship between age and game addiction. For example, Sayeed, Rasel, Habibullah, & Hossain. (2021) reported a relationship between increasing age and mobile game addiction in their study examining mobile game addiction among Bangladeshi university students. The results of this study contradict the current research result. This may be due to the fact that Sayeed et al. (2021) conducted their study with university students, that is, adults with higher awareness. Karabulut Coşkun & Akçay (2023) revealed that awareness of digital game addiction negatively affects gaming behavior. They also stated that awareness is a determinant of perceived usefulness. Sánchez-Mena, Martí-Parreño, & Aldás-Manzano (2017) reported that perceived usefulness directly and positively affects the intention to play the game. As a matter of fact, it is known that there is a relationship between awareness and behavior and attitude and that it can reinforce and strengthen the display of behavior (Hutton & Baumeister, 1992).

As a result of the research, it was determined that the type of school does not play a role in determining digital game addiction and that the digital game addiction scores of students studying in different high schools are similar. There are very few studies in the literature examining the relationship between school type and digital game addiction. Soysal and Kartal (2024) revealed that students studying in science high schools have higher levels of digital game addiction in their study with high school students playing e-sports. This result is surprising since science high schools are the high schools in Turkey where students are accepted by exam and have the highest academic success levels. Contrary to the results of this study, Aksoy and Erol (2021) found that students studying in vocational and technical high schools have higher digital game addiction than those studying in Anatolian high schools and health vocational high schools. These results are not consistent with our research results. This situation can be explained by the fact that researchers group schools in different ways in the studies conducted. However, it is clear that the number of studies examining digital game addiction in terms of school type is insufficient in the national and international literature.

There are many studies in the literature examining digital game addiction and parenting attitudes in different cultures. Eni (2017), who conducted a study with Turkish high school students, reported that parenting attitudes affect digital game addiction and that parents' democratic attitudes reduce game addiction. Similarly, Çakır (2021), who conducted a study with a high school group, found that students with a neglectful parenting style had higher digital game addictions than others. In a South Korean sample, Jang & Ryu (2016) reported that parenting attitudes and behaviors were significant predictors of problematic gaming in children and adolescents, and that parental monitoring of high school students reduced problematic mobile game use. In a Singapore sample, a study with 2974 children and adolescents found that restrictive parenting attitudes, such as stopping gaming, were not effective in reducing excessive gaming, but the attitudes and behaviors of parents towards their children affected their gaming levels (Choo, Sim, Liau, Gentile, Khoo, 2015). Schneider et al. (2017), who conducted a systematic review by examining studies conducted in many countries on different continents of the world such as Germany, China, South Korea, Singapore, Turkey, and Australia, stated that problematic gaming in adolescents is directly related to poor parent-child relationships and parental supervision. Contrary to these studies, the results of the current study surprisingly revealed that parenting attitudes are not a predictor of gaming addiction in high school students. This result contradicts the findings of the literature. This situation can be explained by the fact that the current study was conducted in a different sample group and with a small number of participants.

As a result, with the increase in digitalization, digital games have inevitably become a part of the lives of individuals in all age groups. In recent years, the positive and negative effects of digital games, especially on children and adolescents, have been discussed. However, it is clear that excessive playing of these games at an addictive level has negative effects on children and adolescents. Therefore, it is important to reveal possible risk factors with research results in order to prevent the negative consequences of digital game addiction in different cultures and samples or to prevent its progression. In this study, the role of gender, age, school type, parental marital status, household monthly income status and parenting attitude in determining digital game addiction of Turkish high school students was examined and it was revealed that gender, household monthly income status and parenting attitude explained only 12.7% of digital game addiction.

Although the current study contributes to the literature, it is clear that it has many limitations. First, this study was conducted with a limited number of high school students in only two cities in Turkey. Second, the study is a quantitative study in which the sampling method was used in participant selection. Therefore, studies involving a larger number of participants and using quantitative and qualitative research designs together can be conducted. Third, the study addressed gender, age, school type, parental marital status, household monthly income, and parenting attitudes as determinants of digital game addiction. In the future, more comprehensive studies can be conducted by examining digital game addiction in terms of physical game playing in open and closed areas, game motivation, game type, academic school success, player personality traits, psychosocial structures such as loneliness and depression; relationships with family and peers, household income status and other socioeconomic indicators other than parental marital status. Indeed, digital game addiction is affected by many interrelated factors and can be explained by the interaction of these factors (Çelik & Çelik, 2023). These studies will contribute to the determination of policies for children and young people to play digital games in a safer and healthier way.

REFERENCES

Aksoy, Z., Erol, S. (2021). Digital game addiction and lifestyle behaviors in Turkish adolescents. *Clinical and Experimental Health Sciences*, *11*(3), 589-597.

American Psychiatric Association. (2013). Diagnostic and Statistical Manual of Mental Disorders (DSM-V). 5th Edition, Washington: American Psychiatric Publishing. https://doi.org/10.1176/appi.books.9780890425596

Ayas, T., Horzum. M. B. (2013). İlköğretim öğrencilerinin internet bağımlılığı ve aile internet tutumu. *Turkish Psychological Counseling & Guidance Journal, 4*(39), 46-57.

Aziz, N., Md, J. N., Said, J. A., Muhammad Muhaimin, M. S. (2021). Digital addiction: Systematic review of computer game addiction impact on adolescent physical health. *Electronics, 10*(9), 996. https://doi.org/10.3390/electronics10090996

Badejo, A. O., Gandonu, M. B. (2024). Poverty and demographic variables as predictors of online games addiction among students in Lagos State University, Ojo-counselling for skill acquisition. *Educational Perspectives, 12*(2), 210-221.

Basha, E. (2021). The Relationship between game addiction and personality traits. *Erciyes Journal of Education, 5*(2), 149-160. https://doi.org/10.32433/eje.871051

Başdaş, Ö., Özbey, H. (2020). Digital game addiction, obesity, and social anxiety among adolescents. *Archives of Psychiatric Nursing, 34*(2), 17-20. https://doi.org/10.1016/j.apnu.2019.12.010

Chen, X., Li, F., Long, L. (2007). Prospective study on the relationship between social support and internet addiction. *Chinese Mental Health Journal, 21*(4), 240-243.

Chiu, S. I., Lee, J. Z., Huang, D. H. (2004). Video game addiction in children and teenagers in Taiwan. *CyberPsych,ology & Behavior, 7*(5), 571-581. https://doi.org/10.1089/cpb.2004.7.571

Choo, H., Sim, T., Liau, A. K., Gentile, D. A., Khoo, A. (2015). Parental influences on pathological symptoms of video-gaming among children and adolescents: A prospective study. *Journal of Child and Family Studies*, *24*, 1429-1441.

Ciris, V., Baskonus, T., Kartal, T., Tasdemir, A. (2022). A study on digital game addictions of adolescents in the Covid-19 pandemic. *Journal of Education in Science, Environment and Health (JESEH), 8*(2), 168-186. https://doi.org/10.55549/jeseh.01113707

Çakır, V. D. (2021). Analysis of the digital game addiction of high school students ın terms of the relationship between loneliness and ınternet parenting styles, and ınvestigation of digital game addiction ın terms of various demographics (Unpublished doctoral dissertation, Graduate Education Institute, Istanbul, Turkey). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Çelik, E., Çelik, O. T. (2023). Çocuklarda dijital bağımlılığın öncülleri ve ardılları: Bir metasentez çalışması. *Milli Eğitim Dergisi, 52*(239), 1913-1944. https://doi.org/10.37669/milliegitim.1156463

Deniz, G. (2021). Ankara il merkezinde bulunan ortaokul ve lise öğrencilerinin dijital oyun bağımlılığı ve anne baba tutumlarının incelenmesi (Yayımlanmamış yüksek lisans tezi. Ankara Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Deniz, G., Aydın, S., Odabaşı, D. (2022). Ankara il merkezindeki ortaokul ve lise öğrencilerinin dijital oyun bağımlılığı ve anne baba tutumlarının incelenmesi. *Halk Sağlığı Hemşireliği Dergisi, 4*(1), 43-55.

Djannah, S. N., Tentama, F., Sinanto, R. A. (2021). Game addiction among adolescents and its' health impacts. *International Journal of Public Health Science (IJPHS)*, *10*(3), 480-492. https://doi.org/10.11591/ijphs.v10i3.20920

Ekinci, N. E., Yalçin, I., Özer, Ö., Kara, T. (2017). An investigation of the digital game addiction between high school students. *Online Submission, 14*(4), 4989-4994. https://doi.org/10.14687/jhs.v14i4.4936

Eni, B. (2017). Lise öğrencilerinin dijital oyun bağımlılığı ve algıladıkları ebeveyn tutumlarının değerlendirilmesi (Yayımlanmamış yüksek lisans tezi. Haliç Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Esen, E., Siyez, D. M. (2011). An investigation of psycho-social variables in predicting ınternet addiction among adolescents. *Turkish Psychological Counseling and Guidance Journal, 4*(36), 127-136. https://doi.org/10.17066/pdrd.38243

Ferguson, C. J. (2007). The good, the bad and the ugly: A meta-analytic review of positive and negative effects of violent video games. *Psychiatric Quarterly, 78,* 309-316. https://doi.org/10.1007/s11126-007-9056-9

Frangos, C. C., Frangos, C. C., Sotiropoulos, I. (2011). Problematic internet use among Greek university students: an ordinal logistic regression with risk factors of negative psychological beliefs, pornographic sites, and online games. *Cyberpsychology, Behavior, and Social Networking, 14*(1-2), 51-58. https://doi.org/10.1089/cyber.2009.0306

Gladkaya, M., Gundlach, J., Bergert, C., Baumann, A., Krasnova, H. (2018, August). We need to talk! Antecedents and consequences of children's smartphone use-A literature review. Adoption and Diffusion of Information Technology (SIGADIT). *Twenty-fourth Americas Conference on Information Systems*, New Orleans, USA. Retrieved from https://aisel.aisnet.org/amcis2018/AdoptionDiff/Presentations/16

Gökel, Ö. (2020). Teknoloji Bağımlılığının Çeşitli Yaş Gruplarındaki Çocuklara Etkileri Hakkındaki Ebeveyn Görüşleri. *Kıbrıs Türk Psikiyatri ve Psikoloji Dergisi, 2*(1), 41-47. https://doi.org/10.35365/ctjpp.20.2.6

Göldağ, B. (2018). Lise öğrencilerinin dijital oyun bağımlılık düzeylerinin demografik özelliklerine göre incelenmesi. *Van Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi, 15*(1), 1287-1315.

Greenberg, B. S., Sherry, J., Lachlan, K., Lucas, K., Holmstrom, A. (2010). Orientations to video games among gender and age groups. *Simulation & Gaming, 41*(2), 238-259. https://doi.org/10.1177/1046878108319930

Greitemeyer, T. (2019). The contagious impact of playing violent video games on aggression: Longitudinal evidence. Aggressive Behavior, 45(6), 635-642. https://doi.org/10.1002/ab.21857

Griffiths, M. D., Hunt, N. (1995). Computer game playing in adolescence: Prevalence and demographic indicators. *Journal of Community & Applied Social Psychology, 5*(3), 189-193. https://doi.org/10.1002/casp.2450050307

Gülü, M., Yagin, F. H., Gocer, I., Yapici, H., Ayyildiz, E., Clemente, F. M., Ardigò, L. P., Zadeh, A. K., Prieto-González, P. Nobari, H. (2023). Exploring obesity, physical activity, and digital game addiction levels among adolescents: A study on machine learning-based

prediction of digital game addiction. *Frontiers in Psychology, 14*(1097145), 1-10. https://doi.org/10.3389/fpsyg.2023.1097145

Güney, B. (2017). Dijital bağımlılığın dijital kültüre dönüşmesi: Netlessfobi. *Yeni Medya Elektronik Dergisi, 1*(2), 207-213.

Henderson, E. C. (2001). *Understanding addiction*. Mississippi: University Press of Mississippi.

Horzum, M. B. (2011). İlköğretim öğrencilerinin bilgisayar oyunu bağımlılık düzeylerinin çeşitli değişkenlere göre incelenmesi. *Eğitim ve Bilim, 36*(159), 56-68.

Hussain, Z., Williams, G. A., Griffiths, M. D. (2015). An exploratory study of the association between online gaming addiction and enjoyment motivations for playing massively multiplayer online role-playing games. *Computers in Human Behavior, 50*, 221-230. https://doi.org/10.1016/j.chb.2015.03.075

Hutton, D. G., Baumeister, R. F. (1992). Self-awareness and attitude change: seeing oneself on the central route to persuasion. Personality and Social Psychology Bulletin, 18, 68-75. https://doi.org/10.1177/0146167292181010

Irmak, A. Y., Erdogan, S. (2016). Digital game addiction among adolescents and young adults: A current overview. *Turkish Journal of Psychiatry*, *27*(2), 1-10.

Irmak, A. Y., Erdogan, S. (2019). Predictors for digital game addiction among Turkish adolescents: a Cox's interaction model-based study. *Journal of Addictions Nursing, 30*(1), 49-56. https://doi.org/10.1097/JAN.0000000000000265

Irmak, A. Y., Erdoğan, S. (2015). Dijital oyun bağımlılığı ölçeği Türkçe formunun geçerliliği ve güvenilirliği. *Anadolu Psikiyatri Dergisi, 16*(1), 10-18. http://doi.org/10.5455/apd.170337

Işık Afacan, M., Afacan, E. (2024). Investigation of Volleyball Players' Metaphorical Perceptions Regarding the 2023 Kahramanmaraş Centered Earthquakes in Turkey: The Sultan's League Example. International Journal of Sport Culture and Science, 12(3), 277-289.

Jang, Y., Ryu, S. (2016). The role of parenting behavior in adolescents' problematic mobile game use. *Social Behavior and Personality: An International Journal, 44*(2), 269-282. https://doi.org/10.2224/sbp.2016.44.2.269

Johansson, A., Götestam, K. G. (2004). Problems with computer games without monetary reward: Similarity to pathological gambling. *Psychological Reports, 95*(2), 641-650. https://doi.org/10.2466/pr0.95.2.641-650

Juthamanee, S., Gunawan, J. (2021). Factors related to internet and game addiction among adolescents: A scoping review. *Belitung Nursing Journal*, *7*(2), 62-71.

Karabulut Coşkun, B., Akçay, A. (2023). Examining the prediction of digital game addiction awareness on digital educational game usage. Journal of Learning and Teaching in Digital Age, 8(1), 71-81. https://doi.org/10.53850/joltida.1098602

Karasar, N. (2015). *Bilimsel araştırma yöntemleri*. *Ankara: Nobel Akademik Yayıncılık.*

Kaya, A., Pazarcıkcı, F. (2023). Structural equation modeling analysis of risk factors for digital game addiction in adolescents: A web-based study. *Archives of Psychiatric Nursing, 43*, 22-28. https://doi.org/10.1016/j.apnu.2022.12.031

Kızılkaya, M. F., Erol, F. Z. (2024). Üniversite öğrencilerinin dijital oyun bağımlılığı düzeylerinin incelenmesi. *Batı Anadolu Eğitim Bilimleri Dergisi, 15*(2), 987-1012. https://doi.org/10.51460/baebd.1454087

Kim, E. J., Namkoong, K., Ku, T., Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry, 23*(3), 212-218. https://doi.org/10.1016/j.eurpsy.2007.10.010

Kneer, J., Rieger, D., Ivory, J. D., Ferguson, C. (2014). Awareness of risk factors for digital game addiction: interviewing players and counselors. *International Journal of Mental Health and Addiction, 12*, 585-599. https://doi.org/10.1007/s11469-014-9489-y

Kwon J.H., Chung C.S., Lee J. (2011). The effects of escape from self and interpersonal relationship on the pathological use of internet games. *Community Mental Health Journal, 47*, 113–121. https://doi.org/10.1007/s10597-009-9236-1

Lemmens, J. S., Valkenburg, P. M., Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media Psychology, 12*(1), 77–95. https://doi.org/10.1080/15213260802669458

Lemmens, J. S., Valkenburg, P. M., Peter, J. (2011). Psychosocial causes and consequences of pathological gaming. *Computers in Human Behavior*, *27*(1), 144-152. https://doi.org/10.1016/j.chb.2010.07.015

Li, H., Wang, S. (2013). The role of cognitive distortion in online game addiction among Chinese adolescents. *Children and Youth Services Review, 35*(9), 1468-1475. https://doi.org/10.1016/j.childyouth.2013.05.021

Lin, C., Yu, S. (2008). Adolescent internet usage in Taiwan: Exploring gender differences. *Adolescence*, *43*(170), 317–331.

Liu, M., Peng, W. (2009). Cognitive and psychological predictors of the negative outcomes associated with playing MMOGs (massively multiplayer online games). *Computers in Human Behavior*, *25*(6), 1306-1311. https://doi.org/10.1016/j.chb.2009.06.002

Mehroof, M., Griffiths, M. D. (2010). Online gaming addiction: The role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety. *Cyberpsychology, Behavior, and Social Networking*, *13*(3), 313-316. https://doi.org/10.1089/cyber.2009.0229

Müller, K. W., Janikian, M., Dreier, M., Wölfling, K., Beutel, M. E., Tzavara, C., Richardson, C., Tsitsika, A. (2015). Regular gaming behavior and internet gaming disorder in European adolescents: Results from a cross-national representative survey of prevalence, predictors, and psychopathological correlates. *European Child & Adolescent Psychiatry, 24*, 565-574. https://doi.org/10.1007/s00787-014-0611-2

Polat, A., Topal, M. (2022). Relationship between digital game addiction with body mass index, academic achievement, player types, gaming time: A cross-sectional study. *Journal of Educational Technology & Online Learning, 5*(4), 901-915. https://doi.org/10.31681/jetol.1156594

Sánchez-Mena, A., Martí-Parreño, J., Aldás-Manzano, J. (2017). The Effect of age on teachers' intention to use educational video games: A TAM approach. Electronic Journal of E-Learning, 15(4), 355-366.

Savcı, M., Aysan, F. (2017). Teknolojik bağımlılıklar ve sosyal bağlılık: İnternet bağımlılığı, sosyal medya bağımlılığı, dijital oyun bağımlılığı ve akıllı telefon bağımlılığının sosyal bağlılığı yordayıcı etkisi. *Düşünen Adam, 30*(3), 202-216. https://doi.org/10.5350/DAJPN2017300304

Sayeed, M. A., Rasel, M. S. R., Habibullah, A. A., Hossain, M. M. (2021). Prevalence and underlying factors of mobile game addiction among university students in Bangladesh. *Global Mental Health, 8*(35), 1–10. https://doi.org/10.1017/gmh.2021.34

Schneider, L. A., King, D. L., Delfabbro, P. H. (2017). Family factors in adolescent problematic Internet gaming: A systematic review. *Journal of Behavioral Addictions, 6*(3), 321-333. https://doi.org/10.1556/2006.6.2017.035

Škařupová, K., Blinka, L. (2016). Interpersonal dependency and online gaming addiction. Journal of *Behavioral Addictions, 5*(1), 108-114. https://doi.org/10.1556/2006.5.2016.002

Skoric, M. M., Ching Teo, L. L., Neo, R. L. (2009). Children and video games: Addiction, engagement and scholastic achievement. *CyberPsycology & Behavior, 12*(5), 565-572. https://doi.org/10.1089=cpb.2009.0079.

Soysal, S., Kartal, A. (2024). E spor oynayan ortaöğretim öğrencilerinin algıladıkları ebeveyn tutumlarının dijital oyun bağımlılığına etkisinin incelenmesi. *Uluslararası Bozok Spor Bilimleri Dergisi, 5*(1), 122-144.

Şen, C. (2022). Öğrenme güçlüğü tanılı çocuklarda anne baba tutumlarının dijital oyun bağımlılığına etkisinin incelenmesi (Yayımlanmamış yüksek lisans tezi. Üsküdar Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Taylan, H. H., Topal, M., Ayas, T. (2018). Sakarya'daki lise öğrencilerinin dijital oyun oynama eğilimlerinin incelenmesi. *Online Journal of Technology Addiction and Cyberbullying, 5*(1), 53-68.

Tsai, H. F., Cheng, S. H., Yeh, T. L., Shih, C. C., Chen, K. C., Yang, Y. C., Yang, Y. K. (2009). The risk factors of Internet addiction—A survey of university freshmen. *Psychiatry Research, 167*(3), 294-299. https://doi.org/10.1016/j.psychres.2008.01.015

Tuncay, P. Y., Bozdoğan, K. E., Bozdoğan, E. (2023). Ergenlerde dijital oyun bağımlılığı ve aile içi iletişim arasındaki ilişkinin incelenmesi. *Eğitim ve Toplum Araştırmaları Dergisi, 10*(2), 177-195. https://doi.org/10.51725/etad.1334923

Turkish Ministry of Health. (2018). Dijital oyun bağımlılığı çalıştayı sonuç raporu. Retrieved from https://sggm.saglik.gov.tr/Eklenti/30051/0/yenidijitalpdf.pdf

Turkish Statistical Institute. (2021). *The child in statistics*. Ankara: Turkish Statistical Institute.

Vlachopoulos, D., Makri, A. (2017). The effect of games and simulations on higher education: A systematic literature review. *International Journal of Educational Technology in Higher Education, 14*, 1-33. https://doi.org/10.1186/s41239-017-0062-1

Von der Heiden J. M., Braun B., Müller K. W., Egloff B. (2019). The association between video gaming and psychological functioning. *Frontiers in Psychology, 10*(1731), 1-11. https://doi.org/10.3389/fpsyg.2019.01731

Walther, B., Morgenstern, M., Hanewinkel, R. (2012). Co-occurrence of addictive behaviours: Personality factors related to substance use, gambling and computer gaming. *European Addiction Research*, *18*(4), 167-174. https://doi.org/10.1159/000335662

Wang J-L., Sheng J-R., Wang, H-Z. (2019). The association between mobile game addiction and depression, social anxiety, and loneliness. *Frontiers in Public Health, 7*(247), 1-6. https://doi.org/10.3389/fpubh.2019.00247

Wang, A. I., Øfsdahl, T., Mørch-Storstein, O. K. (2008, April). An evaluation of a mobile game concept for lectures. *21st Conference on Software Engineering Education and Training*, Charleston, SC, USA (pp. 197-204). https://doi.org/10.1109/CSEET.2008.15

Wang, C. W., Chan, C. L., Mak, K. K., Ho, S. Y., Wong, P. W., Ho, R. T. (2014). Prevalence and correlates of video and internet gaming addiction among Hong Kong adolescents: A pilot study. *The Scientific World Journal*, *2014*(874648), 1-9. https://doi.org/10.1155/2014/874648

Weinstein, A. M. (2010). Computer and video game addiction—a comparison between game users and non-game users. *The American Journal of Drug and Alcohol Abuse, 36*(5), 268-276. https://doi.org/10.3109/00952990.2010.491879

Wittek, C. T., Finserås, T. R., Pallesen, S., Mentzoni, R. A., Hanss, D., Griffiths, M. D., Molde, H. (2016). Prevalence and predictors of video game addiction: A study based on a national representative sample of gamers. *International Journal of Mental Health and Addiction, 14*, 672-686. https://doi.org/10.1007/s11469-015-9592-8

World Health Organization. (2018). Gaming disorder. Retrieved from: http://www.who.int/features/qa/gaming-disorder/en/.

Wu, X. S., Zhang, Z. H., Zhao, F., Wang, W. J., Li, Y. F., Bi, L., ... Sun, Y. H. (2016). Prevalence of Internet addiction and its association with social support and other related factors among adolescents in China. *Journal of Adolescence, 52*, 103-111. https://doi.org/10.1016/j.adolescence.2016.07.012

Yayman, E. (2019). Ergenlerde sosyal medya bağımlılığı oyun bağımlılığı ve aile işlevleri arasındaki ilişkinin incelenmesi (Yayımlanmamış yüksek lisans tezi. İstanbul Sabahattin Zaim Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi

Yılmaz, A. (2000). Anne-baba tutum ölçeği'nin güvenirlik ve geçerlik çalışması. *Çocuk ve Gençlik Ruh Sağlığı Dergisi, 7*(3), 160-172.

Young, K. S. (1997, August). What makes the Internet addictive: Potential explanations for pathological Internet use. *In 105th Annual Conference of the American Psychological Association*, Chicago, IL, USA, 15, 12-30. Retrieved from https://www.healthyplace.com/addictions/center-for-internet-addiction-recovery/what-makes-the-internet-addictive-potencial