

Araştırma Makalesi/ Research Article

The Relationship Between Digital Game Addiction and the Bullying Tendencies of Secondary School Students from a District in Southern Turkey

Türkiye'nin Güneyinde Bir Bölgedeki Ortaokul Öğrencilerinin Dijital Oyun Bağımlılığı ve Zorbalık Eğilimi Arasındaki İlişkinin İncelenmesi

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ABSTRACT

Objective: The aim of this study is to examine the relationship between secondary school students' digital game addiction and bullying tendencies.

Methods: This research is a descriptive cross-sectional study. The sample of the research consists of 381 secondary school students studying in a district in Southern Turkey. Information Form, Children's Digital Game Addiction Scale and Bullying Tendency Scale were used to collect the data. Descriptive statistics, Kruskal Wallis test, Mann-Whitney-U test and Spearman Correlation analysis were used.

Results: The average age of the secondary school students participating in the study was 12.53±1.13. Children's Digital Game Addiction Scale mean score was 18.77±6.53 (min.9; max. 42); The mean total score of the Bullying Tendency Scale is 79.70±10.92 (min.26; max. 83). It has been determined that there is a positive and weak correlation between the total scores obtained from the Children's Digital Game Addiction Scale and the Bullying Tendency Scale.

Conclusions: As a result of this study, it was seen that the bullying tendencies of the students with high digital game addiction were high. In order to minimize the negative effects of digital games, it is recommended that children are kept away from violent games as much as possible. It is recommended that students and parents, regardless of their educational background, be given training on digital game addiction and bullying.

Keywords: Digital game, addiction, bullying

ÖZ

Amaç: Bu çalışmanın amacı, ortaokul öğrencilerinin dijital oyun bağımlılığı ve zorbalık eğilimi arasındaki ilişkinin incelenmesidir.

Yöntem: Bu araştırma tanımlayıcı tipte kesitsel bir çalışmadır. Araştırmanın örneklemini, Türkiye'nin güneyinde bir ilçede öğrenim gören 381 ortaokul öğrencisi oluşturmaktadır. Araştırma verileri Tanıtıcı Bilgi Formu, Çocuklarda Dijital Oyun Bağımlılığı Ölçeği ve Zorbalık Eğilimi Ölçeği kullanılarak toplanmıştır. Verilerin değerlendirilmesinde tanımlayıcı istatistikler, Kruskal Wallis testi, Mann-Whitney-U testi ve Spearman Korelasyon analizi kullanılmıştır.

Bulgular: Çalışmaya katılan ortaokul öğrencilerinin yaş ortalaması 12.53±1.13'tür. Çocukların Dijital Oyun Bağımlılık Ölçeği puan ortalaması 18.77±6.53 (min.9; maks. 42); Zorbalık Eğilimi Ölçeği toplam puan ortalaması 79.70±10.92 (min.26; maks. 83) dir. Çocuklarda Dijital Oyun Bağımlılığı Ölçeği ve Zorbalık Eğilimi Ölçeğinden alınan toplam puanlar arasında pozitif yönde ve zayıf düzeyde ilişki olduğu belirlenmiştir.

Sonuç: Yapılan bu çalışmanın sonucunda, dijital oyun bağımlılığı yüksek olan öğrencilerin zorbalık eğilimlerinin yüksek olduğu görülmüştür. Dijital oyunlarının olumsuz etkilerini en aza indirebilmek için çocukların şiddet içerikli oyunlardan mümkün olduğunca uzak tutulması önerilmektedir. Ek olarak, öğrencilere ve eğitim durumları ne olursa olsun ebeveynlere, dijital oyun bağımlılığı ve zorbalık ile ilgili eğitimlerin verilmesi önerilmektedir.

Anahtar Kelimeler: Dijital oyun, bağımlılık, zorbalık

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Introduction

Maladaptive and stubborn behaviors are observed in those with a digital game addiction, which is accepted as a type of technological addiction that also falls under the category of internet addiction (King et al., 2013). Addictive behaviors can be irresistible, reiterative, and even harmful. Gambling, internet use, shopping, online gaming, eating, and sexual disorders are some of the most common. Behavioral addictions are psychologically similar to each other and are also comparable to substance addiction (Hafeez et al., 2017). Studies have shown that digital games have many positive and negative effects on players. The research has demonstrated that children, especially those in the developmental period, are strongly affected in terms of cognitive, affective, social, and physical aspects. Digital games interact directly with these developmental areas (Hazar and Hazar M, 2017). Digital game addiction negatively affects children in the developmental period by causing anxiety about games, social negligence, lying about what they did, loss of interest in other recreational activities, social and psychological isolation, escape problems, defense and anger reactions, as well as social and psychological stress, decrease in school performance, decrease in sleep quality, and suicidal ideation. For all these reasons, this problem is an issue that should be considered in dealing with maladaptive behaviors, especially in adolescents (Chacón-Cuberos et al., 2018; Han et al., 2017; Männikkö et al., 2014).

Bullying can occur directly through behaviors such as pushing, kicking, insulting, and giving insulting nicknames or indirectly through spreading gossip, preventing the bullied child from communicating with his/her friends, and forcing exclusion from the group (Mischel and Kitsantas, 2020; Zych et al., 2017). In well-attended studies in Western Europe, it was seen that 4-9% of young people demonstrate frequent bullying behavior and 9-25% of school-age children are themselves bullied (Menesini and Salmivalli, 2017). In a study conducted in line with data from forty countries, it was seen that 10.7% of adolescents (between 11-15 years old) stated that they bullied others, 12.6% stated that they were bullied, and 3.6% stated that they both bullied others and were bullied (Craig et al., 2009). In studies conducted in Turkey, it was determined that 4.6%-72.4% of students are somehow involved in bullying (Şahin and Akbaba, 2010). It has been reported that bullying: is more common in secondary school, decreases towards the

end of high school, and is an issue more often for boys than girls. Research has also concluded that physical bullying is more often found in male relationships and indirect bullying in female relationships (Menesini and Salmivalli, 2017). The prevention of bullying, which is comprehensive and multidimensional, requires a multidisciplinary approach. Nurses who are multidisciplinary team members have a role in identifying children and families at risk and educating students. In addition, nurses can detect bullying-related behaviors, reveal the underlying causes, and identify potential risks. Therefore, it has been stated that they have responsibilities such as creating a safe school environment (Meral and Çağlar, 2021). Nurses should plan preventive and early intervention activities in schools for adolescents in situations that can be defined as bullying. Nurses should use psychosocial intervention programs such as anger management and the development of coping skills in schools (Bas and Kabak, 2020; Arı and Kütük, 2022). When the literature is examined, it is clear that digital games increase tolerance and feelings of aggression as well as aggressive behaviors, and they can also lead to reclusion from social environments. Nevertheless, studies on the relationship between game addiction and bullying tendencies in children were limited (Kılıç, 2019; Sezen and Murat, 2018; Yalaki and Taşar, 2019). Therefore, the aim of this study is to more closely examine the relationship between digital game addiction and bullying in secondary school students.

Methods

Study Design and Participants

This study was conducted as a descriptive cross-sectional study. The research population consisted of secondary school students living in a district in Southern Turkey. There were a total of 23,569 secondary school students studying in the district during the 2021-2022 academic year. The sample was determined according to the branches of the 5th, 6th, 7th and 8th grades. The sample universe of the research was calculated according to the known sample calculation method, the sample number was determined to be 378 students, and the study was carried out with 381 students considering that there might be sample loss. The school where the research would be conducted was determined by drawing lots. The determination of the sample was made according to the branches of the 5th, 6th, 7th and 8th grades. A lot has been drawn among the branches of the classes. In the classrooms, the

purpose of the study was explained to the students, and questionnaires were distributed to the students who wanted to participate in the study. Research data were collected between April-May 2022 after obtaining the ethics committee approval.

Inclusion criteria of the study: (i) volunteering to participate in the research, (ii) studying at secondary school, (iii) not having a severe psychiatric disorder, (iv) ability to read and write in Turkish.

Data Collection and Tools

A three-step questionnaire was given to the participants and included the Introductory Information Form, the Digital Game Addiction Scale for Children, and the Bullying Tendency Scale, which were created by the researchers.

Information Form: The form prepared by the researchers in line with the literature consisted of 15 questions related to the age and gender of the students, the school they attend, the educational status of the parents, internet use, and involvement in online gaming (Sezen and Murat, 2018; Yalaki and Taşar, 2019; Kılıç, 2019).

Short Form of the Game Addiction Scale for Adolescents: The short form of the "Game Addiction Scale", developed by Lemmens, Valkenburg, and Peter (2009) and adapted into Turkish by Ilgaz (2015), was developed by Anlı and Taş (2018). The scale consists of 9 items. A 5-point Likert scale was used to evaluate the statements in the scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree). The lowest score that can be obtained from the scale is "9" and the highest score is "45". The Cronbach Alpha internal consistency coefficient of this scale is 0.81 (Anlı and Taş, 2018). In this study, the Cronbach Alpha was determined as 0.765. Permission to use the scale was obtained from the author via e-mail.

Bullying Tendency Scale: The "Bullying Tendency Scale" developed by Dölek (2002) was used. The scale can be implemented for individuals or groups. There are 26 items in the scale and 6 sub-dimensions containing these items. These sub-items firstly include "Negative Reflecting" consisting of 5 items (19, 21, 22, 23, 25), secondly, "Lack of Emotional Sharing" consisting of 6 items (14, 16, 18, 20, 24, 26), thirdly, "Seeing someone in the right" consisting of 4 items (9, 11, 12, 15), fourthly, "Upsetting" consisting of items (1, 3, 4, 6), fifthly, "Using Force" consisting of 6 items (2, 5, 7, 8, 13, 17), and lastly, "Not being Disturbed." Items 1, 3, 10, 14, 16, 18, 20, 24, and 26 are evaluated as reverse items. The scale is a 4-point Likert scale. A high score obtained as a result of scoring the scale

indicates a high tendency to bullying, and a low score indicates a low tendency to bullying. The Cronbach Alpha internal consistency coefficient of this scale is 0.67 (Dölek, 2002). In this study, the Cronbach Alpha was determined as 0.823. Permission to use the scale was obtained from the author via e-mail.

Statistical Analysis

The analysis of the data obtained from the research was carried out in the SPSS 21.0 statistical package program. The sociodemographic characteristics of the secondary school students participating in the study are given as numbers and percentage distributions. The conformity of the data to the normal distribution was analyzed with the Shapiro-Wilk normality test. Kruskal-Wallis and Mann-Whitney-U tests were used to examine the difference between sociodemographic variables and the Children's Digital Game Addiction Scale and Bullying Tendency Scale. Spearman Correlation analysis was used to examine the relationship between the scales. The statistical significance of the data was examined at the $p < 0.05$ level.

Ethical Considerations

To conduct the research, ethical approval was obtained from the Scientific Research and Publication Ethics Committee of a university with the decision number 2022/12. In addition, permission was obtained from the Mersin Provincial Directorate of National Education with the decision number 2022/E-34776202-605.01-49553894 to carry out the study. To obtain consent from the parents to carry out the study, a form containing the information about the research was prepared and sent out through the school administration. Parental consent was subsequently obtained. In addition, the purpose of the study was explained to the children participating in the study, and their consent was also obtained.

Results

The age average of the secondary school students participating in the study was 12.53 ± 1.13 , 32.82 ± 7.85 (minimum: 10, maximum: 15) and 52.8% of the students were female. 26% of the students are studying in the eighth grade. The mothers of 30.7% of the students are high school graduates, and the fathers of 28.9% are high school and university graduates. A total of 28.1% of the students spend their free time only doing homework or solving problems.

Table 1. Socio-demographic characteristics of the students (n=381)

		Number (n)	Percentage (%)
Gender	Female	201	52.8
	Male	180	47.2
Class	5	90	23.6
	6	92	24.1
	7	99	26.0
	8	100	26.2
Maternal education	Illiterate	8	2.1
	Literate	13	3.4
	Primary school	86	22.6
	Middle School	69	18.1
	High school	117	30.7
	University	88	23.1
Paternal education	Illiterate	7	1.8
	Literate	10	2.6
	Primary school	83	21.8
	Middle School	61	16.0
	High school	110	28.9
	University	110	28.9
Use of free time	Watching television	47	12.3
	By entering social media sharing sites	74	19.4
	Playing games on the internet	69	18.1
	Doing homework or solving questions	107	28.1
	Playing games on the Internet, doing homework or solving questions	13	3.4
	By watching television, entering social media sharing sites and playing games on the Internet.	2	0.5
	By watching television and entering social media sharing sites	3	0.8
	By entering social media sharing sites, doing homework or solving questions	18	4.7
	By entering social media sharing sites, playing games on the Internet	5	1.3
	Watching TV, doing homework or solving questions	14	3.7
	Watching TV, playing games on the Internet	7	1.8
	Watching TV, playing games on the Internet, doing homework or solving questions	9	2.4
	All of them	13	3.4
Availability of internet at home	Yes	356	93.4
	No	25	6.6
Playing time online	0-1 hours	117	30.7
	1-2 hours	134	35.2
	3-4 hours	61	16.0
	More than 4 hours	32	8.4
Type of game	Adventure games	76	19.9
	Sports and racing games	36	9.4
	War and strategy games	135	35.4
	Puzzle and intelligence games	76	19.9
	Sports and racing games, War and strategy games	9	2.4
	Adventure games, Puzzle and intelligence games	7	1.8
	Adventure games, War and strategy games	10	2.6
	Sports and racing games, Puzzles and intelligence games	3	0.8
	War and strategy games, Puzzle and intelligence games	8	2.1
	Adventure games, Sports and racing games	3	0.8
	Adventure games, Sports and racing games, War and strategy games	5	1.3
	Adventure games, Sports and racing games, Puzzle and intelligence games	3	0.8
	All of them	10	2.6
	Min.		Max.
Age	10	15	12.53±1.13

Table 2. Comparison of the relationship between the digital game addiction scale and the scores from the bullying tendency scale in secondary school students

	Digital Gaming Addiction Scale total score	
Bullying Tendency Scale total score	r	.277
	p	.000
Negative relection sub-dimension	r	.229
	p	.000
Lack of emotional sharing sub-dimension	r	-.018
	p	.727
Justification sub-dimension	r	.258
	p	.000
Upsetting others sub-dimension	r	.285
	p	.000
Using power sub-dimension	r	.288
	p	.000
Sub-dimension of discomfort	r	-.029
	p	.578

r: Spearman correlation analysis test $p < .05$

Of our study field, 93.4% of the students have the internet at home, and 35.2% of the students spend 1-2 hours playing games on the internet, and 35.4% of the students stated that the type of games they played were war and strategy games (Table 1).

The average score of the Children's Digital Game Addiction Level Scale was 18.77 ± 6.53 (min.9; max.42), and the total score average of the Bullying Tendency Scale was 79.70 ± 10.92 (min.26; max.83). It was determined that there was a positive and weak correlation between the total scores of the Children's Digital Game Addiction Scale and the Bullying Tendency Scale (Table 2). Table 2 shows the relationship between the Digital Game Addiction Level Scale and the sub-dimensions of the Bullying Tendency Scale, such as negative reflecting, emotional sharing, seeing someone in the right, upsetting, using force, and being disturbed.

The relationship between the students' gender, the class they are studying in, the internet presence at home, the duration of internet gaming, and the scores obtained from the Digital Game Addiction and Bullying Tendency Scales are shown in Table 3. A statistically significant relationship was found between the gender of the students and their class, and bullying tendencies. Another statistically significant relationship was found between the duration at which students play games on the internet and their digital game addiction, and bullying tendency (Table 3).

No statistically significant relationship was found between mother and father education level, digital game addiction, and bullying tendency.

The relationship between secondary school students' gender, class, internet presence at home, the duration of playing games on the internet, and the scores obtained from the sub-dimensions of the Bullying Tendency Scale are shown in Table 4. A significant relationship was found between the secondary school students' gender and Lack of emotional sharing. A significant relationship was found between the secondary school students' duration of playing games on the internet and all the sub-dimensions of the Bullying Tendency Scale.

Discussion

Digital game addiction, which is a behavior-based addiction, is a type of technology obsession that has negative consequences on people, which may include not being able to stop playing games for a long time, associating the game with their real life, and neglecting their responsibilities as a result of focusing too heavily on the games (Bas and Kabak, 2020). In the secondary school years, which encompasses the transition period from childhood to adolescence, digital game addiction negatively affects children mentally, physically, socially, and morally. It has been observed that especially violent digital games increase the perception and behavior of violence in real life (Mischel and Kitsantas, 2020; Yağmur and Yıldız, 2021).

Therefore, it was aimed to examine the relationship between digital game addiction and bullying tendencies in secondary school students in this study. The study seemed to show that secondary school students generally have a moderate digital game addiction. Similar to our findings, in the study of Güvendi et al. (2019), which aimed to examine the digital game addiction and aggression levels of secondary school students according to the variables, it was determined that the students were in the risky group for digital game addiction (Güvendi et al., 2019). In the study of Talan and Kalinkara (2020), it was seen that the computer game addiction scores of secondary school students were at a moderate level (Talan and Kalinkara, 2020). After studying adolescent behavior Wang et al. (2014) concluded that the majority of the sample group (94%) played video or internet games, while 15.6% were game addicts (Wang et al., 2014).

Another important finding of our study is a statistically significant relationship between the duration by which students play online games and digital game addiction. In the study of Gürarslan Baş and Karatay (2020), digital game addiction scores in secondary school students were significantly higher

in those who use computers, smartphones and tablets every day and for a long time, similar to our study (Gürarlan Baş and Karatay, 2020). Korkmaz and Korkmaz (2019) found that secondary school students who spend 2-3 hours or more on games have a significantly higher addiction to digital games (Korkmaz and Korkmaz Ö, 2019). It has been determined that digital game addiction is also seen in secondary school students. From these results, it is thought that the increase in the time spent playing games on the internet due to the COVID-19 pandemic epidemic, especially among secondary school students, affects the level of digital game addiction. Therefore, it is necessary to provide training to students and parents to limit the use of digital games, plan new activities as alternatives to digital games during their stay at home, and to maintain social interaction with family members and other groups of friends as much as possible.

Secondary school students had a high bullying tendency in our study, with a total score of 79.70 ± 10.92 (min. 26, max. 83) on the Bullying Tendency Scale. The findings of some other studies seem to support the results of the research. The rates of bullying, bullying others, and witnessing bullying reported in Han et al.'s (2017) study investigating school violence and bullying in China were 26.10%, 9.03%, and 28.90%, respectively (Han et al., 2017). In the study by Fenny and Falola (2020) on

secondary school students, the prevalence of bullying was 59.9%. In addition, a statistically significant relationship was found between the gender of the students (male) and the class they studied (8th grade) and their bullying tendencies in this study. Similar to the findings of our study, males are at a greater risk of bullying and being bullied. The study revealed that the male gender was more exposed to bullying and the most common bullying behavior for both genders was making fun of someone (Fenny and Falola, 2020). Abdulsalam et al.(2019) similarly concluded that bullying behavior was more closely associated with boys, especially those in eighth-grade (Abdulsalam et al., 2019). Malone et al. (2017) found that seventh-grade students had a lower discipline structure and higher bullying tendencies than primary school students (Malone et al., 2017). In addition, in our study, 35.4% of the students stated that the type of games they played were war and strategy games. It is expected that these types of games with violent content will also affect the bullying tendencies of the students. From these results, it is thought that the bullying tendency in secondary school students is higher in the male gender who are in the process of transition to adolescence and in 8th grade due to the stress related to the high school entrance exam that is required for students in Turkey.

Table 3. Comparison of the relationship between some characteristics of secondary school students and the scores obtained from the digital game addiction and bullying tendency scales

Socio-demographic characteristics	Digital game addiction scale total score		Bullying tendency total score	
	X±SD	Statistical value	X±SD	Statistical value
Gender				
Female	18.24±0.45	MWU:-1.720 p:0.86*	48.30±0.72	MWU:-2.541 p:0.01*
Male	19.27±0.49		51.26±0.85	
Class				
5. class	18.88±0.73	KWS:1.55 p:0.67**	48.03±1.25	KWS:13.01 p:0.05***
6. class	18.63±0.63		49.57±1.03	
7. class	17.57±0.61		47.89±1.03	
8. class	19.82±0.67		53.10±1.08	
Availability of internet at home				
Yes	18.86±0.34	MWU:-1.733 p:0.08*	49.47±0.57	MWU:-1.461 p:0.14*
No	16.84±1.38		53.04±2.35	
Playing time online				
0-1 hours	16.98±0.59	KWS:42.29 p:0.00**	46.78±1.07	KWS:30.208 p:0.00**
1-2 hours	17.89±0.46		48.56±0.81	
2-3 hours	19.24±0.72		51.39±1.15	
3-4 hours	20.41±1.11		53.09±1.77	
More than 4 hours	25.02±1.31		57.43±2.16	

*Kruskal-Wallis test, **Mann-Whitney U test, SD: Standard Deviation

Table 4. Comparison of the relationship between some characteristics of secondary school students and the scores obtained from the bullying tendency scale sub-dimensions

Socio-demographic characteristics	Negative reflection		Lack of emotional sharing		Justification		Upsetting others		Using power		Discomfort	
	X±SD	Statistical value	X±SD	Statistical value	X±SD	Statistical value	X±SD	Statistical value	X±SD	Statistical value	X±SD	Statistical value
Gender												
Female	8.34±0.21	MWU:-.696	11.43±0.18	MWU:-3.702	8.79±0.19	MWU:-1.466	7.21±0.17	MWU:-.827	10.55±0.24	MWU:-.947	1.98±0.09	MWU:-.793
Male	8.57±0.23	p:0.48*	12.78±0.25	p:0.00*	9.28±0.21	p:0.14*	7.46±0.19	p:0.40*	11.01±0.28	p:0.34*	2.13±0.10	p:0.42*
Class												
5. class	8.12±0.33	KWS:1.55	11.86±0.31	KWS:4.482	8.75±0.28	KWS:10.524	6.97±0.26	KWS:7.031	10.25±0.40	KWS:12.216	2.05±0.12	KWS:1.551
6. class	8.54±0.31	p:0.67**	12.38±0.31	p:0.21**	8.57±0.29	p:0.01**	7.50±0.24	p:0.07**	10.51±0.35	p:0.00**	2.06±0.10	p:0.67**
7. class	7.98±0.30		11.54±0.27		8.91±0.26		7.82±0.23		10.42±0.35		2.03±0.16	
8. class	9.12±0.32		12.49±0.35		9.78±0.29		7.82±0.27		11.81±0.37		2.08±0.15	
Availability of internet at home												
Yes	8.42±0.16	MWU:-.606	12.01±0.16	MWU:-1.317	9.06±0.15	MWU:-1.236	7.26±0.13	MWU:-2.011	10.71±0.19	MWU:-.472	1.98±0.06	MWU:-2.799
No	8.88±0.67	p:0.54*	12.88±0.66	p:0.18*	8.48±0.79	p:0.21*	8.20±0.47	p:0.04**	11.56±0.94	p:0.63**	3.04±0.51	p:0.00**
Playing time online												
0-1 hours	7.62±0.27		11.94±0.29		8.38±0.27		6.85±0.23		9.86±0.35		2.11±0.14	
1-2 hours	8.23±0.25	KWS:27.669	12.06±0.26	KWS:2.038	8.75±0.22	KWS:22.283	7.00±0.18	KWS:29.941	10.47±0.26	KWS:27.359	2.02±0.09	KWS:0.545
2-3 hours	8.81±0.33	p:0.00**	12.13±0.33	p:0.72**	9.72±0.33	p:0.00**	7.52±0.28	p:0.00**	11.26±0.43	p:0.00**	1.93±0.12	p:0.96**
3-4 hours	9.70±0.57		11.70±0.54		9.32±0.49		8.12±0.47		12.00±0.73		2.22±0.38	
More than 4 hours	10.18±0.65		12.67±0.62		10.62±0.47		9.00±0.46		12.86±0.73		2.08±0.17	

*Kruskal-Wallis test

**Mann-Whitney U test, SD: Standard Deviation

According to Anderson et al. (2010), increased time spent with violent digital games poses a risk for physically aggressive behaviors (Anderson et al., 2010). Our findings demonstrated that the playing time of the students increased the bullying tendency. In the school where the study was carried out, some of the students were educated from morning to noon and some of them were educated from noon to evening. Therefore, children have free time either in the afternoon or until noon. In addition, it is thought that there is an increase in bullying tendencies of students due to the rise in digital play times because of the curfews during the pandemic period and the fact that the type of game played is war games. For this reason, it has become necessary for parents to increase the out-of-school social activities of students and limit their children's internet usage.

There was also a positive and weak relationship between digital game addiction and bullying tendency in secondary school students in our study. Similarly, Gökbulut (2020) found a moderate positive relationship between bullying tendency and digital game addiction (Gökbulut, 2020). Hazar and Ekici (2021), in their research with secondary school students, discovered a positive and significant relationship between the total scores of "digital game addiction" and "bullying cognitions" (Hazar and Ekici, 2021). Similar to our study, Chacón-Cuberos et al. (2018) examined the effect of video games on aggressive behavior, bullying, and problematic use in primary school children in the province of Granada, playing violent action video games was associated with higher levels of aggressive behavior and bullying. In addition, a positive correlation was found between the problematic use of video games and all kinds of aggressive behaviors and bullying (Chacón-Cuberos et al., 2018). Kılıç's (2019) work with secondary school students showed that as the digital game addiction scores increase, the cognition levels in regards to bullying also increase (Kılıç, 2019). In the study of Bas and Kabak (2020), it was proven that there is a statistically significant low level of positive correlation between digital game addiction and the propensity to violence, which is a sub-dimension of social tendencies (Bas and Kabak, 2020). From these results, it is thought that types of games with content such as violence, war, adventure, etc., which cause digital game addiction in secondary school students, pave the way for bullying behavior. Based on the results of the study, secondary school students have a medium level of digital game addiction and a high level of bullying

tendency. As the digital game addiction level increases in secondary school students, bullying tendency increases.

Conclusion and Recommendations

Results of the research show that secondary school students had a medium level of digital game addiction and a high level of bullying tendency. Overall, bullying tendency was higher in male students than in female students. As far as the level of education is concerned, evidence shows the bullying tendencies of 8th-grade students were higher than the others. In addition, it was concluded that as the duration of playing games on the internet increased, both digital game addiction and bullying tendencies also increased. Moreover, it was determined that there is a positive and weak relationship between the level of digital game addiction and bullying tendencies in secondary school students. Reducing risky behaviors in students who will form the next generations of society will play a key role in protecting and improving public health. According to the nursing regulation in our country, the school health nurse is responsible for determining the needs and problems related to school health services, identifying health risks early, planning appropriate interventions and ensuring that necessary precautions are taken. Collaboration on this issue is important between nurses, families and school management/staff. To reduce digital game addiction and bullying tendency in secondary school students, it is important to cooperate with families to ensure the conscious use of technology and to increase the psychological resilience and self-esteem of students. In addition, it may be beneficial to prevent adolescents who grow up alone and sedentary from spending too much time on the Internet by allowing families to spend more time with adolescents and directing adolescents to group interactive sports and social activities. Intervention programs, cognitive-behavioral interventions, and training that cover the issues of bullying and digital game addiction together, in which children and their families will be integrated, should be planned and popularized.

Limitations

One of the limitations of the research was the regional nature. The study was conducted only amongst students in a single secondary school living in a district in Southern Turkey. The study's findings are limited to the scales used in the study.

Therefore, the findings of the study cannot be generalized to the whole population.

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What did the study add to the literature?

- It was determined that there is a positive and weak relationship between the level of digital game addiction and bullying tendency in secondary school students.
- It was seen that the bullying tendencies of the students with high digital game addiction were high.
- Reducing risky behaviors in students who will form the next generations of society will play a key role in protecting and improving public health.

References

- Abdulsalam AJ, Al Daihani AE, Francis K. (2019). Prevalence and associated factors of peer victimization (bullying) among grades 7 and 8 middle school students in Kuwait. *International Journal of Pediatrics*, 2017, 8462304. <https://doi.org/10.1155/2017/2862360>
- Anderson CA, Shibuya A, Ithori N, Swing EL, Bushman BJ, Sakamoto A, Saleem M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: A meta-analytic review. *Psychological Bulletin*, 136(2), 151-173. <https://doi.org/10.1037/a0018251>
- Anlı G, Taş İ. (2018). Ergenler için oyun bağımlılığı ölçeği kısa formunun geçerlik ve güvenilirlik çalışması [The validity and reliability of the game addiction scale for adolescents-short form]. *Electronic Turkish Studies*, 13(11), 189-203. Turkish.

- Bas M, Kabak S. (2020). The relationship between digital game addiction and social tendencies of secondary school students. *Ambient Science*, 07(1), 189-193. <https://doi.org/10.21276/ambi.2020.07.sp1.0a25>
- Arı S, Küçük, S. (2022). Adölesanlarda sosyal media kullanımı, siber zorbalık, yalnızlık ilişkisi ve hemşirelik [Social media use, cyberbullying, loneliness relationship and nursing in adolescents]. *Türkiye Sağlık Bilimleri ve Araştırmaları Dergisi*, 5(2), 34-44.
- Chacón-Cuberos R, Espejo-Garcés T, Martínez-Martínez A, Zurita-Ortega F, Castro-Sánchez M, Ruiz GR. (2018). Aggressive behavior, victimization, and problematic use of video games in schoolchildren of primary education from the province of Granada. *Revista Complutense de Educación*, 29(4), 1011-1024.
- Craig W, Harel-Fisch Y, Fogel-Grinvald H, Dostaler S, Hetland J, Simons-Morton B, et al. (2009). A crossnational profile of bullying and victimization among adolescents in 40 countries. *International Journal of Public Health*, 54, 216-224. <https://doi.org/10.1007/s00038-009-5413-9>
- Dölek N. (2002). Öğrencilerde zorbaca davranışların araştırılması ve bir önleyici program modeli [Investigation of bullying behaviors in students and a preventive program model] (dissertation). İstanbul. University of Marmara. Turkish.
- Fenny O, Falola MI. (2020). Prevalence and correlates of bullying behavior among Nigerian middle school students. *International Journal of Offender Therapy and Comparative Criminology*, 64(5), 564-585. <https://doi.org/10.1177/0306624X20902045>
- Gökbulut B. (2020). The relationship between peer challenge and digital game addiction of secondary school students. *Karaelmas Journal of Educational Sciences*, 8(1), 89-100. Retrieved from <https://dergipark.org.tr/en/pub/kebd/issue/67224/1049174>
- Gürarşlan Baş N, Karatay G. (2020). Effects of technology usage on the addictive behaviors of secondary school students. *Perspectives in Psychiatric Care*, 56(4), 871-877. <https://doi.org/10.1111/ppc.12504>
- Güvendi B, Tekkurşun Demir G, Keskin B. (2019). Digital game addiction and aggression in secondary school students. *OPUS International Journal of Society Researches*, 11(18), 1194-1217. <https://doi.org/10.26466/opus.547092>
- Hafeez M, Idrees MD, KimJY. (2017). Game Addiction: A brief review. *International Journal of Scientific Engineering and Research*, 5(10), 99-104.
- Han Z, Zhang G, Zhang H. (2017). School bullying in Urban China: Prevalence and correlation with school climate. *International Journal of Environmental Research and Public Health*, 14(10), 1116. <https://doi.org/10.3390/ijerph14101116>

- Hazar Z, Ekici F. (2021). Investigation of the relationship between digital game addiction and cognitions bullying of secondary school students. *Gazi Journal of Physical Education and Sport Sciences*, 26 (1), 1-15.
- Hazar Z, Hazar M. (2017). Digital gaming addiction scale for children. *International Journal of Human Sciences*, 14 (1), 204-216.
- Kılıç KM. (2019). Ergenlerde dijital oyun bağımlılığı, zorbalık bilişleri ve empati düzeyleri arasındaki ilişkiler [Relationships between Digital Game Addiction, Bullying Cognitions and Empathy Levels in Adolescents]. *Elementary Education Online İlköğretim Online*, 18(2), 549-562. Turkish.
- King DL, Delfabbro PH, Griffiths MD. (2013). Principles of addiction. *Comprehensive Addictive Behaviors and Disorders*, 1, 819–825. <https://doi.org/10.1016/B978-0-12-398336-7.00082-6>
- Korkmaz Ö, Korkmaz Ö. (2019). Middle school students' game addictive levels, game habits and preferences. *İnönü University Journal of the Faculty of Education*, 20(3), 798-812. <https://doi.org/10.17679/inuefd.505200>
- Malone M, Cornell D, Shukla K. (2017). Association of grade configuration with school climate for 7th and 8th grade students. *School Psychology Quarterly*, 32(3), 350–366. <https://doi.org/10.1037/spq0000174>
- Männikkö N, Mendes L, Barbosa F, Reis LP. (2014). Health determinants related to digital game playing: a systematic review. *Journal of Health Science*, 4(3), 53-63. <https://doi.org/10.5923/j.health.20140403.02>
- Menesini E, Salmivalli C. (2017). Bullying in schools: The state of knowledge and effective interventions, *Psychology, Health & Medicine*, 22 (1), 240-253. <https://doi.org/10.1080/13548506.2017.1279740>
- Meral B, Çağlar S. (2021). Siber zorbalık: Çocuklarda zorbalığın yeni dönemi ve hemşirelik yaklaşımları [Cyber Bullying: The New Period of Childhood and Nursing Approaches in Children]. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi*, 14(3), 261-267.
- Mischel J, Kitsantas A. (2020). Middle school students' perceptions of school climate, bullying prevalence, and social support and coping. *Social Psychology Education*, 23, 51–72. <https://doi.org/10.1007/s11218-019-09522-5>
- Şahin M, Akbaba S. (2010). İlköğretim okullarında zorbaca davranışların azaltılmasına yönelik empati eğitim programının etkisinin araştırılması [Investigating the efficiency of empathy training program for preventing bullying behaviors in primary schools]. *Kastamonu Eğitim Dergisi*, 18, 331-342. Turkish.
- Sezen MF, Murat M. (2018). Examination of the relationship between the bullying in adolescents, internet addiction and levels of emotional intelligence. *OPUS International Journal of Society Researches*, 9(16), 160-182.
- Talan T, Kalinkara Y. (2020). Investigation of secondary school students' tendencies to playing digital games and computer game addiction levels: The case of Malatya province. *Journal of Instructional Technologies and Teacher Education*, 9 (1), 1-13.
- Wang CW, Chan CL, Mak KK, Ho SY, Wong PW, Ho RT. (2014). Prevalence and correlates of video and internet gaming addiction among Hong Kong adolescents: A pilot study. *The Scientific World Journal*, 2014, 874648. <https://doi.org/10.1155/2014/874648>
- Yağmur R, Yıldız Y. (2021). Investigation of the effect of secondary school students' digital game playing levels on loneliness. *Pakistan Journal of Medical & Health Sciences*, 15(3), 948-953.
- Yalaki Z, Taşar M. (2019). Do online gaming features in adolescents cause peer bullying? *Ege Journal of Medicine*, 58(4), 336-343.
- Zych I, Farrington DP, Llorent VJ, Ttofi MM. (2017). *Protecting children against bullying and its consequences*. New York: Springer.