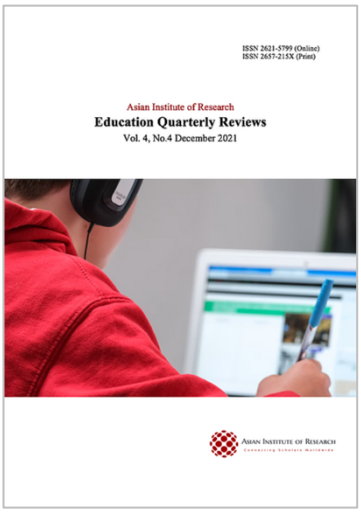

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The Relationship Between the Digital Game Addiction Levels of Secondary and High School Students and Their Motivation for Participation in Physical Activity During the Pandemic Process

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Abstract
This study aims to determine the relationship between the digital game addiction levels of secondary and high school students and their motivation for participation in physical activity during the pandemic process. the study participants include a total of 322 students, 227 males, and 95 females, aged between 11 and 18. the game addiction scale for adolescents and the motivation scale for participation in physical activity were used as data collection tools in the study. in the statistical method of the study, descriptive statistics (frequency, arithmetic mean, standard deviation), t-test, one-way analysis of variance (ANOVA), Tukey multiple comparisons, and Pearson correlation tests were used. In the research findings, it has been determined that there is a negative and low-level significant relationship between the individual reasons and causelessness sub-dimensions of the motivation scale for participation in physical activity and digital game addiction. there was a significant difference in the game addiction scale and sub-dimensions of the motivation for participation in physical activity according to the duration of digital gaming of the students and their education levels. A significant difference was determined in the motivation scale for participation in physical activity according to the branch variable, and in the scale of game addiction according to the situation of the parents' setting limits on the duration of digital gaming. A significant difference was not found in either scale according to gender. As a result, it was observed that the more the motivation for participation in physical activity, the lower the digital game addiction.

Keywords: Digital Game Addiction, Physical Activity, Pandemic

1. Introduction

The game has been an important phenomenon in human life from infancy to old age for centuries. The game, which is a part of the life of humanity along with the flow of life, has shown differences over the centuries.

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When we evaluate it today, it can emerge in many different ways. Especially with the development of technology, the change in the number and variety of games that appear on digital platforms is seen in people's lives.

Digital games, which attract great attention especially among children and young people, generally have users from all age groups, however, with the increase in the duration of playing games, the time allocated for digital games has increased even more, and addiction has begun to be mentioned (Lau et al, 2018). Video games have now become a normal part of daily life for all individuals, and they offer entertainment and social opportunities for adolescents (Anderson et al., 2010). Since mobile phones are like small computers, their use in the digital sense rather than communication, especially by young people, causes an increase in addiction (Morahan & Schumacher, 2000).

Addiction is expressed as a person's loss of control over an object they use or an application they make, and the inability to live a life without it (Kodaman & Dinç, 2016) whereas digital addiction is defined as the fact that users interact with today's digital devices a lot, focus their attention on these devices and technology as a priority and at an alarming level, and this negatively affects their well-being (Vaghela, 2016). With the advancement of technology, many complex situations arise. Internet addiction, mobile phone addiction, social media addiction, addiction to digital games negatively affect the natural life flow of children and individuals, however, limitation of movement, decrease or disappearance of the time devoted to physical activity, as well as changes in eating habits cause various physical negativities. Gülbetekin, Güven, and Tuncel (2021) stated that as a result of their research, children can be encouraged to do sports and created an appropriate environment, and attitudes and behaviors towards physical activity can be improved and the level of digital game addiction can be reduced.

It is a fact that physical activity and exercise play a very important role in weight control and thus in maintaining health (Swift et al, 2014). The coronavirus disease (COVID-19), which is accepted as a pandemic by the "World Health Organization," has adversely affected life all over the world, causing restrictions on people's movement areas and difficulties in accessing sports opportunities. Sports halls and sports fields have been closed and this has negatively affected the habit of doing sports. As a result, people started to spend more time with digital materials during their stay at home. The younger generation, who moved away from the physical activity with the pandemic, is more susceptible to digital addiction. In this context, our study aims to determine the relationship between the digital game addiction levels of secondary and high school students and their motivation for participation in physical activity during the pandemic process.

2. Method

2.1. Study Group of the Research

Study participants include a total of 322 students, 227 males, and 95 females, aged 11 to 18 years (mean age 14.45±2.17), who did sports 3.72±1.45 days a week and played digital games for an average of 4.14±2.72 hours a day. 141 of the students participating in the research are middle school students and 181 are high school students. 221 of these students are doing team sports and 101 are individual sports. In addition, while 250 sporters participate in the competitions, 72 of them do not participate in the competitions. Of the 322 students who participated in the research, 283 stated that they had their electronic device, 147 of them stated that their parents set a limit on the time to play digital games, and 175 of them stated that no limit was set.

2.2. Data collection

The game addiction scale for adolescents and the motivation scale for participation in physical activity were used as data collection tools in the study. Participation in the study was based on volunteerism.

Motivation Scale for Participation in Physical Activity: The scale, of which validity and reliability study was conducted by Tekkurşun-Demir and Cicioğlu (2018), consists of 16 items and 3 sub-dimensions: individual causes (Cronbach Alpha .89), environmental causes (Cronbach Alpha .86) and causelessness (Cronbach Alpha

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.82). In the 5-point Likert scale, 1 includes strongly disagree and 5 strongly agree. The lowest score that can be obtained from the scale is 16, and the highest score is 80. High scores obtained from the scale indicate that the motivation for participation in physical activity is positive. The scores obtained from the scale show the motivation for participation in physical activity as follows: 1-16 points are very low, 17-32 is low, 33-48 is medium, 49-64 is high, 65-80 is very high. Items 3, 9, 13, 14, 15, and 16 of the scale are reverse (Tekkurşun-Demir & Cicioğlu, 2018). In this study, Cronbach's Alpha values were determined as .76 for individual reasons, .74 for environmental reasons, and .72 for the sub-dimension of causelessness.

Game Addiction Scale for Adolescents: The validity and reliability study of the scale, which was prepared by taking into account the criteria of internet gaming addiction, was made by Anlı and Taş (2018), and it consists of a single factor and 9 items. A 5-point Likert-type grading was used to measure the items in the scale. The 5-point Likert-type ratings are "Never," "Rarely," "Sometimes," "Often" and "Always." The lowest score to be taken from the scale is 9 and the highest score is 45. The Cronbach Alpha internal consistency coefficient of the scale was found to be .81. The Cronbach Alpha value for this study was determined as .81.

2.3. Analysis of data

SPSS 20 package program was used in data analysis in the research and the Kolmogorov-Smirnov test was applied to determine the distribution of study data. The distribution of Kolmogorov-Smirnov test results was found to be by the normal distribution. In the statistical method of the research, descriptive statistics (frequency, arithmetic mean, standard deviation), t-test, one-way analysis of variance (ANOVA), Tukey multiple comparisons, and Pearson correlation tests were used.

3. Findings

The findings of this study, which was conducted to determine the relationship between the digital game addiction levels of secondary school and high school students and their motivation for participation in physical activity during the pandemic process, are as follows;

Table 1: Average Analysis Results of Game Addiction and Sub-Dimensions of the Motivation Scale for Participation in Physical Activity

		N	Avg.±Sd.
Digital game addiction		322	16,75±5,91
Motivation Scale for Participation in Physical Activity	Individual reasons	322	25,54±3,63
	Environmental reasons	322	22,87±4,33
	Causelessness	322	16,74±3,00
	Total score	322	61,53±8,07

According to the results of the analysis in Table 1, it was seen that the motivation of the students to participate in physical activity was high and their game addiction was low.

Table 2: Correlation Analysis Results of Game Addiction and Sub-Dimensions of the Motivation Scale for Participation in Physical Activity

		Motivation Scale for Participation in Physical Activity		
		Individual reasons	Environmental reasons	Causelessness
Digital game addiction	r	-,132*	,008	-,124*
	p	,018	,882	,026
	N	322	322	322

In Table 2, Pearson Moment Correlation analysis was performed to determine the relationship between game addiction and the sub-dimensions of the motivation scale for participation in Physical Activity. Accordingly, it has been determined that there is a negative and low-level significant relationship between the individual reasons

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(r=-.132; p<0.05) and causelessness (r=-.124; p<0.05) sub-dimensions of the motivation scale for participation in physical activity and digital game addiction.

Table 3: ANOVA Analysis Results of Game Addiction and Sub-Dimensions of the Motivation Scale for Participation in Physical Activity According to The Duration of Digital Gaming of The Students

Scales			N	Avg. ± Sd.	F	p	Tukey
Digital Game Addiction Scale		1-2 hours (1)	94	14,34±4,84	16,728	,000	2>1
		3-4 hours (2)	119	16,67±5,05			3>1
		5 hours or more (3)	109	18,93±6,76			3>2
Motivation Scale for Participation in Physical Activity	Individual reasons	1-2 hours (1)	94	25,48±4,15	1,290	,277	
		3-4 hours (2)	119	25,93±3,61			
		5 hours or more (3)	109	25,16±3,14			
	Environmental reasons	1-2 hours (1)	94	21,80±4,89	7,035	,001	2>1
		3-4 hours (2)	119	23,95±3,59			2>3
		5 hours or more (3)	109	22,60±4,32			
	Causelessness	1-2 hours (1)	94	16,61±3,37	1,036	,356	
		3-4 hours (2)	119	17,05±2,88			
		5 hours or more (3)	109	16,51±2,80			

As a result of the analysis made in Table 3, a statistically significant difference was found in the game addiction and the sub-dimensions of the motivation scale for participation in physical activity according to the duration of digital gaming of the students (p<0,05).

Table 4: T-Test Analysis Results of Game Addiction and The Sub-Dimensions of Motivation Scale for Participation in Physical Activity According to Gender

Scales		Gender	N	Avg. ± Sd.	t	p
Digital Game Addiction		Male	227	16,98±5,95	1,070	,286
		Female	95	16,21±5,79		
Motivation Scale for Participation in Physical Activity	Individual reasons	Male	227	25,41±3,58	-,964	,336
		Female	95	25,84±3,76		
	Environmental reasons	Male	227	22,92±4,28	,347	,729
		Female	95	22,74±4,46		
	Causelessness	Male	227	16,75±2,83	,090	,928
		Female	95	16,71±3,40		

As a result of the t-Test performed in Table 4, no statistically significant difference was found in the game addiction and sub-dimensions of the motivation scale for participation in physical activity according to gender (p>0,05).

Table 5: T-Test Analysis Results of Game Addiction and Sub-Dimensions of Motivation Scale for Participation in Physical Activity According to Branch

Scales		Branch	n	Avg. ± Sd.	t	p
Digital Game Addiction		Team	221	16,75±5,90	-,036	,971
		Individual	101	16,77±5,95		
Motivation Scale for Participation in	Individual reasons	Team	221	25,56±3,69	,118	,906
		Individual	101	25,50±3,52		
	Environmental	Team	221	23,17±4,24	1,880	,061

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Physical Activity	reasons	Individual	101	22,20±4,47		
	Causelessness	Team	221	16,99±2,71	2,278	,023
		Individual	101	16,18±3,52		

According to the results obtained from the branch variable in Table 5, there was no significant difference in the game addiction scale (p>0.05) whereas a statistically significant difference was found in the dimension of causelessness, one of the sub-dimensions of the motivation scale for participation in physical activity (p<0,05).

Table 6: T-Test Analysis Results of Game Addiction and Sub-Dimensions of Motivation Scale for Participation in Physical Activity According to Education Levels

Scales		Education Levels	n	Avg. ± Sd.	t	p
Digital Game Addiction		Secondary school	141	17,67±6,36	2,465	,014
		High school	181	16,04±5,43		
Motivation Scale for Participation in Physical Activity	Individual reasons	Secondary school	141	25,21±3,88	-1,430	,154
		High school	181	25,79±3,42		
	Environmental reasons	Secondary school	141	22,29±4,10	-2,117	,035
		High school	181	23,31±4,46		
	Causelessness	Secondary school	141	16,21±3,04	-2,802	,005
		High school	181	17,15±2,92		

As a result of the analysis made in Table 6, a statistically significant difference was found in the game addiction scale and the sub-dimensions of the motivation scale for participation in physical activity according to the education levels of the students (p<0.05).

Table 7: T-Test Analysis Results of Game Addiction and Sub-Dimensions of Motivation Scale for Participation in Physical Activity According to The Situation of The Parents' Setting Limits on The Duration of Digital Gaming

Scales		Do your parents set a limit?	N	Avg. ± Sd.	t	p
Digital Game Addiction		Yes	147	17,78±6,03	2,894	,004
		No	175	15,89±5,67		
Motivation Scale for Participation in Physical Activity	Individual reasons	Yes	147	25,53±3,67	-,044	,965
		No	175	25,55±3,61		
	Environmental reasons	Yes	147	22,57±4,13	-1,121	,263
		No	175	23,11±4,49		
	Causelessness	Yes	147	16,65±3,05	-,470	,639
		No	175	16,81±2,98		

In Table 7, there was a statistically significant difference in the game addiction scale (p<0.05) whereas there was no statistically significant difference in the sub-dimensions of the motivation scale for participation in physical activity according to the situation of the parents' setting limits on the duration of digital gaming (p>0,05).

4. Discussion And Conclusion

As a result of this study, which tried to determine the relationship between the digital game addiction levels of secondary and high school students during the pandemic process and their motivation for participation in physical activity, it was observed that the motivation of the students to participate in physical activity was high and their digital game addiction was low when the average scores of the scale were examined. As a result of the literature review, similar to this study, Öncel and Tekin (2015) stated that the average of computer game addiction among students is not high in general; Kılıç (2020) stated that participants' perceptions of motivation for participation in physical activity are above the moderate level; on the other hand, Tekkurşun Demir and Cicioğlu (2019) stated that their students' motivation for participation in physical activity is at a high level.

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Unlike this study, as a result of the study conducted by Mutlu Bozkurt and Tamer (2020), it was determined that secondary school students' motivation for participation in physical activity was at a low level.

In this study, it was observed that there was a negative and low-level significant relationship between the individual reasons and causelessness sub-dimensions of the motivation scale for participation in physical activity and the game addiction scale. In this context, it can be said that as participation in physical activity increases, digital game addiction decreases. In other words, it is seen that the physical activity levels of the students whose digital game addiction decreases gradually increase. Similar to this study, as a result of the study conducted by Hazar et al. (2017b), it was determined that there is a highly significant negative correlation between the total scores of digital game addiction and physical activity level. As a similar result, in the study of Tekkurşun Demir and Cicioğlu (2019), as the motivation of the participants to participate in physical activity increased, it was seen that the desire of individuals to play digital games and their enjoyment of digital games decreased.

In the third finding of the study, when digital game addiction is examined according to the duration of digital gaming of the students, it was determined that the average score of the students who play digital games for 5 hours or more per day is significantly higher than the mean scores of the students who play digital games for 1-2 hours and 3-4 hours a day. As the reason for this high level, it can be said that factors such as the curfew imposed on children, restrictions on public transportation, the closure of gyms and playgrounds, the interruption of face-to-face education in schools within the scope of pandemic measures cause the decrease in the time of students' participation in physical activity and the increase in the duration of digital gaming. Similar to our research results, Gökçearslan and Durakoğlu (2014) stated that those who play more than 3 hours a day have a higher level of game addiction than others and that there is a direct correlation between game addiction and the duration of gaming. In the study conducted by Deri and Bilge (2016), it was observed that the probability of internet addiction increased when the frequency of internet use increased. Göldağ (2018) concluded that the digital game addiction levels of students who play games for 1-2 hours and 3-4 hours a day are lower than students who play games for 5-6 hours. It was determined that there is a significant difference in the environmental reasons sub-dimension of the motivation for participation in physical activity according to the duration of digital gaming of the students, which is another finding of the research in the same table. Based on the results, it was seen that students who played digital games for 3-4 hours were more motivated by environmental reasons in participating in physical activity than those who played digital games for 1-2 hours and 5-6 hours. The fact that students, who play digital games for 3-4 hours have a high motivation for participation in physical activity, may be due to the fact that 1-2 hours of the digital game may have a low effect on addiction, or that 5-6 hours of the digital game can seriously affect the level of addiction. When the studies in the literature are examined, similar to the result of this study, in the study conducted by Tekkurşun Demir and Cicioğlu (2019), it was concluded that the motivation for participation in physical activity decreases as the duration of daily digital gaming increases. Unlike this study, in the study of Hazar et al. (2017b), it was stated that the total score of the duration of daily average digital gaming and the physical activity level did not show a statistically significant difference.

In the fourth finding of the study, no significant difference was found in digital game addiction according to the gender of the students. This finding is similar to the studies conducted by Taş, Eker and Anlı (2014) and Aydoğdu (2018), however, it differed from the studies conducted by Güvendi, Tekkurşun Demir, Keskin (2019), Derin ve Bilge (2016), Kılıç (2019), Hazar et al. (2017a), Erboy ve Akar Vural (2010), Göldağ (2018) ve Gökçearslan ve Durakoğlu (2014) as the game addiction scores of males were higher than those of females. In his study on primary school students, Horzum (2011) concluded that male students cannot stop playing games, associate the game with their real-life, disrupt their duties due to playing the game, prefer playing games to other activities, and their total game addiction levels are quite high compared to female students. In the same table, no significant difference was found in the sub-dimensions of motivation for participation in physical activity according to gender. Similar to this finding, in the study conducted by Tekkurşun Demir and Cicioğlu (2019), it was concluded that there was no significant difference in motivation for participation in physical activity. In the study of Hazar et al. (2017b), it was also found that male and female secondary school students had similar physical activity levels. Unlike the study, Mutlu Bozkurt and Tamer (2020) concluded that the individual reasons scores of male students were significantly higher than those of females. It can be said that the lack of difference

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in this study is due to the fact that both females and males spend equal time at home together with the bans implemented due to the pandemic.

In the fifth finding of the study, no significant difference was found between digital game addiction and the branch. Similar to our study, in the study conducted by Can and Tozoğlu (2019), no relationship was found between the type of participation in sports and internet addiction. In the same table, a statistically significant difference was determined in the sub-dimension of causelessness of the motivation for participation in physical activity according to the sport type variable. According to this, it was seen that the students who do team sports have a higher causelessness sub-dimension than the students who do individual sports. This difference in the causelessness sub-dimension may be due to the fact that the socialization dimension of team sports, which is inherent in it, is given importance by the families, and that students are directed to such branches against their will, and that families do not adequately explain the benefits of physical activity in terms of motivation for participation in physical activity.

In the sixth finding of the study, there was a significant difference in the digital game addiction scale according to the education levels of the students. Accordingly, the digital game addiction average scores of secondary school students are significantly higher than those of high school students. It can be said that this situation is due to the exam anxiety of high school students for the future and the fact that they spend more time preparing for the exam. In addition, it is thought that high school students have a higher social interaction time than secondary school students. This finding is consistent with the studies conducted by Horzum (2011) and Şahin and Tuğrul (2012). Similarly, Mustafaoğlu and Yasacı (2018) reported that high school students play fewer digital games than secondary school students. However, in other studies conducted in the literature, it was found that game addiction did not differ significantly according to the class of students (Keser & Esgi, 2012; Cakir, 2011; Turner & Jeffreys, 2010; Taş et al. 2018). In the same table, a significant difference was found in the environmental and causelessness sub-dimensions of the motivation scale for participation in physical activity according to the education levels of the students. According to this, it was determined that high school students use environmental and causal motivation sources more in participation in physical activity. Unlike this study, as a result of his study, Kılıç (2020) stated that the motivations for participation in physical activity did not differ significantly according to the class variable.

In another finding of the study, there was a significant difference in the digital game addiction scores of the students according to the situation of the parents' setting limits on the duration of digital gaming. In this study, it was concluded that students whose parents' set limits were more dependent. In the research, setting limits by parents can be interpreted as taking precautions against their children who play a game too much and are thought to be addicted. In the same table, there was no significant difference in the motivation of students for participation in physical activity according to the situation of limiting the duration of digital gaming.

As a result, it was observed that digital game addiction decreased as the motivation for participation in physical activity increased. The increase in the time spent in front of the computer causes the emotional gaps to be filled with games and causes anti-sociality, in addition, being inactive causes health problems to begin and increasingly aggressive attitudes. To minimize or eliminate these situations, it can be said that one of the most effective methods of coping with digital game addiction is to direct children to physical activities and their motivation for participation in physical activity should be increased to prevent students' access to digital games and addiction.

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