

The Relationship between Attitudes towards Digital Gaming and Sports

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ABSTRACT

The fact that the passion for digital gaming, which brings a sedentary lifestyle, replaces traditional games requiring exercise and physical education also has a negative impact on the health of children and adolescents. In this study, it was aimed to examine and evaluate high school students' attitudes towards digital gaming and sports by certain variables. This study, which aimed to investigate and evaluate high school students' attitudes towards digital gaming and sports, utilized the correlational model. This study was carried out in Tefvik İleri Anatolian High School in Erzurum in the 2019-2020 academic year. 193 students participated in the study and the distribution of normality of data by each variable was tested with Skewness-Kurtosis and Shapiro-Wilk tests. As a result of the analysis, it was found that the data were not distributed between ± 1 . Therefore, non-parametric tests were used to analyze the data of the research. To sum, the increase in the attitudes towards digital gaming decreases the attitudes towards sports. It is an indisputable conclusion that playing digital games responsibly contributes to the development of students in some areas. However, the students should be informed about the fact that digital games containing physical activities will increase such a contribution to their mental and physical developments.

Keywords: Digital gaming, Attitudes, Sport, Body mass index (BMI)

INTRODUCTION

Since the beginning of the 21st century, technology has progressed rapidly, devices such as computers, tablets, and smartphones have been introduced to all areas of our lives, and internet access has been almost never interrupted. In the light of such developments, every realm of society, from education, health, and security to transportation, communication, and sports, has been becoming digitalized, facilitated, and accelerated. This is also prominent in the fields of games and entertainment and introduces an innovation called 'digital gaming' to the lives of children (Erboy 2010). The games of the 'age of parents', which prioritize group and social interactions, are obsolete and forgotten, and instead, individual games based on interaction with devices have become widespread. Accordingly, the time spent with digital games, in which the young show interest more, increases day by day, and the desire to play cannot be controlled and leads to changes in emotions and thoughts. (Gentile, 2009; Rideout, Foehr & Roberts, 2010).

Digital games have become a huge market with a budget of about 140 billion dollars (Entertainment Software Association, 2013) and cover seven different gaming types such as tactics, jigsaw puzzle, adventure, action, sports, role-playing, and simulation (Adams & Rollings, 2006). While debates on whether addiction to digital games go on, it is observed that those who consult psychiatry services with complaints about such an addiction and families suffering from this problem are looking for solutions (Griffiths & Meredith 2009). In 2018, the World Health Organization defined digital games or video games within the classification of dependency. It considers the following behaviors as indicators of game addiction:

- starting a game, and frequency and intensity of gaming
- whether the game prevails over other life activities, the priority of gaming,
- continuing to play the game despite adverse consequences.

Today, the young who follow technological developments closely, devote more time to digital games and digital games become prominent among popular culture images of the young.

In addition to all these negative consequences, digital games contribute to some areas of development of children and the young. These contributions include strategic thinking, fast and accurate decision-making, problem-solving, technology inclination, and the ability to use technology. (Tüzün, 2002; Tarhan & Nurmedov, 2011; Akçay & Özcebe, 2012; Şahin & Tuğrul, 2012). In contrast to these contributions, its most important

disadvantages are isolation and alienation of children and the young from the real-life, and consequently being away from social life. Particularly, violent games reinforce the sense of violence of children and cause them to be susceptible to violence. In the aspect of physical development, games that are inherent to be played in sitting position and for long periods of time lead to respiratory, circulatory, and musculoskeletal disorders (Aydođdu Karaaslan, 2015; Torun, Akçay & Çolaklar, 2015). At the same time, the popularity of digital games causes a decrease in playing mobile and physical-social games, so the severity of the above-mentioned problems increases and becomes widespread.

The weight of sports games is considerable on the preferences of people for the types of digital games. Sports has a universal structure built on the social and cultural infrastructure of society. It has undergone a rapid change in terms of its concept and taken part as a cultural element in defining the concept of nation (Yıldırım et al., 2006).

The term sports is defined by Şentürk as "all of the physical activities called as 'doing sports' among people and all of the activities which are performed in daily life with energy consumption utilizing muscles and joints, and which increase heart and respiratory rate and result in different degrees of fatigue." (Şentürk, 2012).

According to another definition, sports is "something which includes elements such as the one's social harmony and mental and physical health, and winning a competition; which is a discipline suggested by educators in terms of formation and development of personality; which is a spectacle that the masses admire; which is a method used by administrators to shape energy and to awake a combative understanding; and which is a narrative style with advanced rules of a game motivation that gives pleasure and satisfaction to people" (Kat, 2009).

Educational institutions aim at emotional, social, physical, and mental development of children with physical education and sports activities and try to achieve these goals in physical education classes and in-school sports activities. Considering that human being needs education due to its physiological and psychological conditions, the realization of the goals of education is not only possible with intellectually-oriented education but also with physically-oriented education. As parts of general education, physical education and sports are complementary to intellectually oriented education (Yavaş, 1996).

Aim and Significance of the Study

Today, called the age of technology, demand for tablets, phones, computers, and console games is increasing with each passing day with the help of the proliferation of internet access. Digital games, which affect daily life in many ways, lead children, especially those playing outdoor games and with toys, to adopt a sedentary lifestyle. Children do not fulfill many responsibilities that they need to do and delay their academic tasks owing to these games, which are of great interest (Demir & Bozkurt, 2019; Demir & Hazar, 2018).

In the literature, it was found that the age at which children start playing digital games was 4.5 years, and the duration of gaming per day was approximately 3 hours. (Mustafaođlu & Yasacı, 2018) In a study, it was observed that the frequency of playing computer games increased as the children grew up. (Akçay & Özcebe, 2012) In another study, it was revealed that the age of digital gaming was decreasing and that the age of starting digital gaming was between 1 and 4 years. (Toran, Ulusoy, Aydın, Deveci & Akbulut, 2016). Greenberg, Sherry, Lachlan, Lucas, & Holmstrom. (2010) showed that male adolescents between 10-20 years were more prone to excessive and problematic gaming behaviors than other groups.

The fact that the passion for digital gaming, which brings a sedentary lifestyle, replaces traditional games requiring exercise and physical education also has a negative impact on the health of children and adolescents. Even if it helps to develop abilities such as quick decision-making and attention, it has adverse effects on obesity, circulatory system, muscle pain, and bone development and reduces children's interests in sports.

In this study, it was aimed to examine and evaluate high school students' attitudes towards digital gaming and sports by certain variables. In this context, Gökçearsan and Durakođlu (2014) indicate the passion for digital gaming, which leads to a decrease in participation in exercise, vary by gender; Mustafaođlu and Yasacı, (2018) point out that daily average gaming period is 3 hours; and Hazar and Hazar (2017) state that gaming causes obesity due to sedentary life. Therefore, the following sub-questions are tried to be answered based on the literature:

1. Does taking an active role in sports clubs or not affect the students' mean body mass indexes?
2. Is there a significant relationship between high school students' attitudes towards digital gaming and sports?

3. Is there a significant relationship between high school students' attitudes towards digital gaming and sports by the age variable?
4. Is there a significant relationship between high school students' attitudes towards digital gaming and sports by the gender variable?
5. Is there a significant relationship between high school students' attitudes towards digital gaming and sports by BMI index?
6. Is there a significant relationship between high school students' attitudes towards digital gaming and sports by the daily gaming period?
7. Is there a significant relationship between high school students' attitudes towards digital gaming and sports by the daily sports period?

METHOD

This study, which aimed to investigate and evaluate high school students' attitudes towards digital gaming and sports, utilized the correlational model. With the help of this model, which is among descriptive research methods, it is aimed to reach a generalizable result as a result of a measurement tool to be administered to a sample from large groups or the whole universe (Karasar, 2009).

Limitations and Permissions of the Study

Limitations and permissions of the study are gathered under four items:

1. The data collected in the research is limited to the measurement tools pertaining to digital gaming and attitudes towards sports.
2. The data were collected from a high school located in Erzurum with the ethical approval of the ethics committee of the university where the researcher is employed, and permission obtained from Yakutiye District Directorate of National Education.
3. Only the survey technique was used in data collection process.
4. Only the SPSS package program was used for the analysis of the collected data.

Study Group

This study was carried out in Tefvik Ileri Anatolian High School in Erzurum in the 2019-2020 academic year. 227 students participated in the study, and 34 of them that were found to deliver incomplete and erroneously filled questionnaires were not included in the analysis. The demographic variables of the participants are shown in Table 1.

Table 1. Descriptive Statistics Regarding Participants' Being an Athlete of a Club, and Their Gender and BMI

			BMI					
			Normal Weight	Overweight	Obese	Lean	Total	
Being an Athlete	Yes	Gender	Female	13(%21.6)	4(%6.7)	5(%8.3)	0	22
			Male	18(%30.0)	9(%15.0)	8(%13.4)	3(%5.0)	38
			Total	31(%51.6)	13(%21.7)	13(%21.7)	3(%5.0)	60
Being an Athlete of a Club	No	Gender	Female	26(%19.5)	16(%12.0)	20(%15.0)	2(%1.5)	64
			Male	32(%24.0)	14(%10.6)	18(%13.6)	5(%3.85)	69
			Total	58(%43.5)	30(%22.6)	38(%28.6)	7(%5.30)	133

(BMI data were calculated and classified according to the data of the World Health Organization.)

In mean BMI of the participants by the variable of being an athlete of a club, while there were 13 (21.7%) overweight and 13 (21.7%) obese participants among those doing sports, there were 30 overweight (30.6%) and 38 obese (28.6%) participants among those not doing sports.

Data Collection Tools

The Digital Gaming Attitude Scale (DGAS): The scale developed by Demir and Bozkurt (2019) consists of a total of 18 items under the subscales of Cognitive (first 5 items), Affective (5 items), and Behavioral (last 8 items). Items 2, 3, 5, 6, 7, 10, and 18 contain negative statements. Demir and Bozkurt (2019) found the Cronbach's Alpha values of the subscales of Cognitive, Affective, and Behavioral of the DGAS to be .90, .81, and .91, respectively. According to the findings of the study, the Cronbach's Alpha values were found to be .78 for the Cognitive subscale, .71 for the Affective subscale, and .86 for the Behavioral subscale. The total variance explained by the scale was found to be 65.11%. A rating was done based on the lowest score that one can obtain from the scale and its multiples. Thus, the attitudes of the participants towards digital gaming were rated based on the scores 1-18 (very low), 19-37 (low), 38-54 (moderate), 55-72 (high), and 73- 90 (very high). *The*

Cognitive Subscale represents the items about participants' cognitive status and their ideas and knowledge about digital games. *The Emotional Subscale* represents items about participants' emotional states such as love and hate towards digital games. Finally, *the Behavioral Subscale* represents the items about participants' discourses and actions towards digital gaming.

The Sports Attitude Scale: The scale developed by Koçak (2014) consists of a total of 22 items under the subscales of Psychosocial Development (first 12 items), Physical Development (6 items), and Mental Development (last 4 items). There is no reverse item on the scale. Koçak (2014) found the Cronbach's Alpha values of the subscales of Psychosocial Development, Physical Development, and Mental Development of the Sports Attitude Scale to be .89, .86, and .76, respectively. According to the findings of the study, the Cronbach's Alpha values were found to be .90 for the Psychosocial Development subscale, .85 for the Physical Development subscale, and .89 for the Mental Development subscale. The total variance explained by the scale was found to be 50.35%.

Data Analysis

In the study, the distribution of normality of data by each variable was tested with Skewness-Kurtosis and Shapiro-Wilk tests. As a result of the analysis, it was found that the data were not distributed between ± 1 . Therefore, non-parametric tests were used to analyze the data of the research. Spearman's Rho Correlation test was used to find the relationship between the two scales by the age variable. The Mann-Whitney U test was used to compare mean scores on the subscales with gender and being an athlete of a club. The Kruskal-Wallis test was used to compare BMI, daily gaming period, and daily sports period. Dunn' Post Hoc test was used to determine which groups had significant differences. The significance level was taken as 0.05.

FINDINGS

The statistical results of the collected data are presented in this section of the research. The statistical results of the relationship between the participants' attitudes towards digital gaming and sports are given in Table 2.

Table 2. The Relationship Between the DGAS and the Sports Attitude Scale

		The Sports Attitude Scale			
		Psychosocial Development	Physical Development	Mental Development	
The DGAS	Cognitive	r	-.139	-.215**	-.067
		p	.056	.003	.361
		N	189	187	189
	Affective	r	-.112	-.263**	-.165*
		p	.120	.000	.022
		N	193	191	193
	Behavioral	r	.008	-.119	-.206*
		p	.915	.103	.934
		N	192	190	192

($p < 0.05$).

Table 2 shows the results of the Spearman's Rho Correlation test to determine the relationship between the DAS and the Sports Attitude Scale. Accordingly, there were negative and low significant differences between the Cognitive subscale and Physical Development subscale ($r = -.215$), between the Affective subscale and Physical Development subscale ($r = -.263$), and between the Behavioral subscale and Mental Development subscale ($r = -.165$) ($p < 0.05$).

The results of the analysis of the participants' attitudes towards digital gaming and sports by the gender variable are given in Table 3.

Table 3. Mann-Whitney U Test Results by Gender

Scale	Gender	N	Mean rank	Sum of ranks	Mann Whitney U	Z	p
DGAS	Cognitive	Female	86	81.38	6836.00	3266.000	-3.070
		Male	107	105.90	11119.00		
	Affective	Female	86	79.95	6875.50	3134.500	-3.812
		Male	107	110.71	11845.50		

Sports Attitude Scale	Behavioral	Female	86	76.48	6577.50	2836.500	-	4.501	.00*
		Male	106	112.74	11950.50				
	Psychosocial Development	Female	86	102.39	8805.50	4137.500	-	1.208	.22
		Male	107	92.67	9915.50				
	Physical Development	Female	84	104.00	8736.00	3822.000	-	1.809	.07
		Male	107	89.72	9600.00				
	Physical Development	Female	86	98.59	8478.50	4464.500	-	-.366	.71
		Male	107	95.72	10242.50				

(p<0.05).

Table 3 shows the findings of the Mann Whitney U test which was conducted to determine the relationship between the gender variable and the subscales of the DGAS and the Sports Attitude Scale. Therefore, a significant difference was found between the gender of participants and their mean scores on the subscales of the DGAS. Accordingly, the mean scores of males were found to be significantly higher than of females on the Cognitive subscale (A = -3.070; p =.00 <.05), Affective subscale (A = -3.812; p =.00 <.05), and Behavioral subscale (A = -4.501; p =.00 <.05).

The results of the analysis of the participants' attitudes towards digital gaming and sports by the BMI variable are given in Table 4.

Table 4. Kruskal-Wallis Test Results by BMI

	BMI	N	Mean Rank	χ^2_x	p	Sig. Dif.	
DGAS	Cognitive	Lean	10	82.53	.647	.78	-
		Normal Weight	89	97.96			
		Overweight	43	96.04			
		Obese	51	93.16			
	Affective	Lean	10	109.67	1.064	.23	-
		Normal Weight	89	94.70			
		Overweight	43	102.29			
		Obese	51	91.86			
	Behavioral	Lean	10	112.33	1.044	.36	-
		Normal Weight	89	92.22			
		Overweight	43	98.23			
		Obese	51	96.76			
Sports Attitude Scale	Psychosocial Development	Lean	10	112.87	28.983	.00*	2*-1-3-4
		Normal Weight	89	124.17			
		Overweight	43	74.35			
		Obese	51	71.56			
	Physical Development	Lean	10	107.23	28.879	.00*	2*-1-4-3
		Normal Weight	89	122.33			
		Overweight	43	70.92			
		Obese	51	75.64			
	Mental Development	Lean	10	94.57	30.816	.00*	2*-1-3-4
		Normal Weight	89	124.54			
		Overweight	43	79.33			
		Obese	51	71.68			

(p<0.05).

Table 4 shows the results of the Kruskal-Wallis test, which was conducted to determine the differences between the subscales of the DGAS and the Sports Attitude Scale by the participants' body mass indexes. Groups showing significant differences in favor are indicated by *. Thus, a significant difference was found between the BMI variable and the subscales of the Sports Attitude Scale. Accordingly, the mean scores of normal-weight participants (\bar{x} = 124.17) were found to be significantly higher than of lean (\bar{x} = 112.87), overweight (\bar{x} = 74.35), and obese (\bar{x} = 71.56) participants on the Psychosocial Development subscale (p <0.05). Besides, it was found the mean scores of normal-weight participants (\bar{x} = 122.33) were significantly higher than of lean (\bar{x} =

107.23), obese ($\bar{x} = 75.64$), and overweight ($\bar{x} = 70.92$) participants on the Physical Development sub-scale ($p < 0.05$). On the Mental Development subscale, the mean scores of normal-weight participants ($\bar{x} = 124.54$) were significantly higher than of lean ($\bar{x} = 94.57$), overweight ($\bar{x} = 79.33$), and obese ($\bar{x} = 71.68$) participants ($p < 0.05$).

The results of the analysis of the participants' attitudes towards digital gaming and sports by the variable of daily gaming period are given in Table 5.

Table 5. Kruskal-Wallis Test Results by Daily Gaming Period

	Period	N	Mean Rank	χ^2	P	Sig. Dif.
Cognitive	30-60 min.	52	56.48	33.593	.00	3*4-2-1
	61-90 min.	75	89.33			
	91-120 min.	25	119.14			
	120 min. and over	41	108.45			
Affective	30-60 min.	52	52.61	40.524	.00	4*-2-3-1
	61-90 min.	75	98.18			
	91-120 min.	25	95.61			
	120 min. and over	41	122.89			
Behavioral	30-60 min.	52	49.89	47.042	.00	3*4-2-1
	61-90 min.	75	93.30			
	91-120 min.	25	121.45			
	120 min. and over	41	115.24			
Psychosocial Development	30-60 min.	52	90.92	.564	.90	-
	61-90 min.	75	87.28			
	91-120 min.	25	81.64			
	120 min. and over	41	86.11			
Physical Development	30-60 min.	52	96.64	4.658	.19	-
	61-90 min.	75	86.47			
	91-120 min.	25	77.82			
	120 min. and over	41	72.87			
Mental Development	30-60 min.	52	96.22	2.924	.40	-
	61-90 min.	75	82.22			
	91-120 min.	25	82.25			
	120 min. and over	41	90.48			

($p < 0.05$).

Table 5 reveals the results of the Kruskal-Wallis test, which was conducted to determine the differences between the subscales of the DGAS and the Sports Attitude Scale by the participants' daily gaming periods. Groups showing significant differences in favor are indicated by *. Accordingly, it was found that the mean scores of those spending 91-120 min. a day for gaming ($\bar{x} = 119.14$) were significantly higher than of those spending 120 min. and over ($\bar{x} = 108.45$), 61-90 min. ($\bar{x} = 89.33$), and 30-60 min. ($\bar{x} = 56.48$) on the Cognitive subscale ($p < 0.05$). On the Affective subscale, the mean scores of those spending 120 min. and over a day for gaming ($\bar{x} = 122.89$) were found to be significantly higher than of those spending 61-90 min. ($\bar{x} = 93.30$), 91-120 min. ($\bar{x} = 95.61$), and 30-60 min. ($\bar{x} = 52.61$) ($p < 0.05$). Finally, the mean scores of those spending 91-120 min a day for gaming ($\bar{x} = 121.45$) were found to be significantly higher than of those spending 120 min. and over ($\bar{x} = 115.24$), 61-90 min. ($\bar{x} = 93.30$), and 30-60 min. ($\bar{x} = 49.89$) on the Behavioral subscale ($p < 0.05$).

The results of the analysis of the participants' attitudes towards digital gaming and sports by the variable of daily sports period are given in Table 5.

Table 6. Kruskal-Wallis Test Results by Daily Sports Period

	Period	N	Mean Rank	χ^2	p	Sig. Dif.
Cognitive	30-60 min.	75	79.56	5.427	.14	-
	61-90 min.	77	93.83			
	91-120 min.	31	95.34			
	120 min. and over	10	113.35			
Affective	30-60 min.	75	83.02	4.143	.24	-
	61-90 min.	77	93.65			
	91-120 min.	31	100.27			
	120 min. and over	10	112.00			
Behavioral	30-60 min.	75	78.65	9.783	.02*	4*-2-1
	61-90 min.	77	96.50			
	91-120 min.	31	96.98			
	120 min. and over	10	128.70			
Psychosocial Development	30-60 min.	75	87.58	11.109	.01*	4*3-1-2
	61-90 min.	77	83.07			
	91-120 min.	31	114.31			
	120 min. and over	10	120.35			
Physical Development	30-60 min.	75	92.55	3.734	.04	3*2
	61-90 min.	77	85.01			
	91-120 min.	31	105.26			
	120 min. and over	10	83.15			
Mental Development	30-60 min.	75	88.65	5.600	.02	3*2-4
	61-90 min.	77	88.62			
	91-120 min.	31	111.37			
	120 min. and over	10	79.75			

(p<0.05).

Table 6 presents the results of the Kruskal-Wallis test, which was conducted to determine the differences between the subscales of the DGAS and the Sports Attitude Scale by the participants' daily sports periods. Groups showing significant differences in favor are indicated by *. Accordingly, on the Behavioral subscale, the mean scores of the participants doing sports 120 min or over a day ($\bar{x} = 128.70$) were found to be significantly higher than of those doing sports 61-90 min. ($\bar{x} = 96.50$), and 30-60 min. ($\bar{x} = 78.65$) (p <0.05). Besides, the mean scores of the participants doing sports 120 min. and over a day ($\bar{x} = 120.35$) were found to be significantly higher than of those doing sports 91-120 min. ($\bar{x} = 114.31$), 30-60 min. ($\bar{x} = 87.58$), and 61 -90 min. ($\bar{x} = 83.07$) on the Psychosocial Development subscale (p <0.05). It was also found that the mean scores of the participants doing sports 91-120 min. a day ($\bar{x} = 111.37$) were significantly higher than of those doing sports 61-90 min. ($\bar{x} = 88.62$), and 120 min. and over ($\bar{x} = 79.75$) on the Physical Development subscale (p <0.05).

The results of the analysis of the participants' attitudes towards digital gaming and sports by the variable of being an athlete of a club are given in Table 7.

Table 7. Mann-Whitney U Test Results by Being an Athlete of a Club

Scale		N	Mean Rank	Sum of Ranks	Mann Whitney U	Z	p
DGAS	Cognitive	Yes	60	112.76	6314.50	2729.500	-
		No	133	87.52	11640.50		
	Affective	Yes	60	112.17	6281.50	2986.500	-
		No	133	90.80	12439.50		
	Behavioral	Yes	60	107.92	5935.50	3139.500	-
		No	133	91.92	12592.50		
Sports Attitude Scale	Psychosocial Development	Yes	60	107.65	6028.50	3239.500	-
		No	133	92.65	12692.50		
	Physical Development	Yes	60	104.16	5833.00	3323.000	-
		No	133	92.65	12692.50		

	No	133	92.61	12503.00		1.341	
Mental Development	Yes	60	111.22	6228.50	3039.500	-	.01*
	No	133	91.19	12492.50		2.341	

($p=.01<.05$).

Table 7 presents the findings of the Mann Whitney U test, which was conducted to determine the relationship between the variable of being an athlete of a club and the subscales of the DGAS and the Sports Attitude Scale. Therefore, significant differences were found between the participants' mean scores on the Cognitive and Affective subscales and the Cognitive and Mental Development subscales by the variable of being an athlete of a sports club. Accordingly, on the subscales of Cognitive ($A = -2.904$; $p = .00 < .05$) and Affective ($A = -2.418$; $p = .01 < .05$), it was found that the mean scores of those playing in a sports club are significantly higher than of the mean scores of those who do not. Moreover, it is the case on the Mental Development subscale ($A = -2.341$; $p = .01 < .05$).

RESULT AND RECOMMENDATIONS

With Hazar's (2018) words, digital games have become the plague of our age and started to affect all age groups at the level of addiction. It has become the focus of the attention of researchers because of its up-to-date nature as well as research on its benefits and harms. Some of the researchers argue the benefits of digital games on subjective well-being (Allahverdipour et al., 2010), decision-making (Ferguson and Olson, 2014), overcoming mental problems (Hagström & Kaldo, 2014; Przybylski et al., 2011; Snodgrass et al., 2011). Others, on the other hand, assert that they lead individuals to psychological problems, sleep disorders (Wolfe et al., 2014), sedentary life, and obesity (Bozkurt et al., 2018) as the gaming period increases. Park (2014), who concluded that long-term digital gaming caused malnutrition and obesity, also found that the gamers were getting away from exercise-sports.

In this study conducted to uncover high school students' attitudes towards digital games and sports in the light of previous studies in the literature, the numbers of overweight and obese participants among those doing sports were the same 13 (21.7%). On the other hand, the number of overweight participants among those not doing sports was 30 (22.6%), while this was 38 (28.6%) for obese ones. Therefore, the numbers of overweight and obese students who attend sports clubs are less than those who do not attend any sports club. However, a difference of 10% is interesting. Such a result also shows us that the younger generation is fed unhealthy. In parallel with the results of their study, Mustafaoğlu, Zirek, Yasacı, and Özdiñçler (2018) state that those who allocate more time to digital games face weight problems due to adoption of a sedentary lifestyle. In his study, Horzum (2011) was able to make obese and overweight individuals control their weights with the help of games with body motion.

In Turkey, Çiçek (2019) has investigated the problems of the young in digital gaming addiction for the first time within school health practices by the OMAHA system (one of 12 classification terminologies accepted by the American Nurses Association). Accordingly, the most identified seven problems of the young at risk are mental health problems, visual impairment, pain, sleep disorders, nutritional disorders, decreased social interaction, and physical activity.

In the other finding of the study, significant differences were found between the subscales of Cognitive and Affective of the DGAS and the Physical Development subscale of the Sports Attitude Scale, and between the Behavioral subscale of the DGAS and the Mental Development subscale of the Sports Attitude Scale. Accordingly, it was found that there was a negative low significant difference between the subscales of Cognitive and Affective of the DGAS and the Physical Development subscale of the Sports Attitude Scale. Therefore, it can be said that the level of physical development of individuals increases with the improvement in their gaming knowledge and feelings such as love and hate, which is why the participants' attitudes towards sports decrease due to their increasing interest and attitudes towards digital games. In parallel with the current study, in a study conducted by Demir and Cicioğlu (2019) on high school students, it was found that as the motivation of gaming increased, the motivation to participate in physical activity decreased. Nevertheless, Hazar, Demir, Namlı, and Türkeli (2017) did not find any significant difference between the digital gaming period and the physical activity level. Çakır (2013) stated that individuals are deprived of other activities due to the excessively time allocation to digital games. On the other hand, a negative low significant difference was found between the Behavioral subscale of the DGAS and the Mental Development subscale of the Sports Attitude Scale. Therefore, it can be said that as the time allocated to gaming and the level of researching digital games increases, participants' mental development levels decrease in sports. In this case, participants' gaming behaviors, following magazines and online news about digital games, and spending considerable time on such activities may cause a decrease in the level of mental development, which is critical for technical and tactical improvement

in sports. As a matter of fact, the interest in digital games increases, but participation in physical activities decreases due to the increasing urbanization, the parents' avoidance to send their children to the parks alone, and the traditional games' tending to be forgotten (Demir & Cicioğlu, 2019; Postman, 1995). In addition, the decrease in the participation of the young in physical activities can be shown as the reason for increasing preferences for digital games that have many adverse psychological and physical effects (Demir & Cicioğlu, 2019; Kırcaburun et al., 2018).

As a result of the analysis performed to determine the relationship between the subscales of the Sports Attitude Scale and the DGAS by the gender variable, significant differences were found between the subscales of the DGAS, but there was no significant difference between the subscales of the Sports Attitude Scale. Therefore, it can be argued that male and female participants have similar attitudes towards sports. Such a result can be attributed to the fact that men and women do similar sports and take advantage of the factors that form sports. In the study conducted by Türkmen, Abdurahimoğlu, Varol, & Gökdağ, (2016) with the students of the faculty of Islamic sciences, it was found that the attitudes of male students towards sports were higher than of female students. Unlike the results of the present study, in the study conducted by Kaya, Cicioğlu, & Demir, (2018) on university students, it was found that the attitudes of male students towards sports were higher than of female students. In a study conducted with disabled athletes, Demir and İlhan (2019) did not find any significant difference between females' and males' motivation to participate in sports. On the other hand, a significant difference was found between the gender variable and the participants' mean scores on the subscales of Cognitive, Affective, and Behavioral. According to the results, it was observed that the mean scores of males were significantly higher than of females. This is because girls do not spend time on digital games since they are more home-loving and emotional and have more communication with the social environment. Besides, boys are more affected by cognitive factors such as knowing digital games; emotional factors such as enjoyment, excitement, and happiness; and behavioral factors such as playing digital games, and following magazines and online news about digital games. As a matter of fact, according to Griffiths and Davies (2005), the reasons that boost males to play games more than females are that the games are generally produced in accordance with the interests of males, and therefore contain mostly masculine images, males are more successful in gaming, and males are likely to keep gaming thanks a relatively higher success in gaming. In a study conducted by Demir and Cicioğlu (2019) to examine high school students' motivation for digital gaming, it was found that male participants had higher motivation to play digital games than females. In parallel with our study, Ferguson and Olson (2014) and Keser and Esgi (2012) found that male participants played digital games more than female participants. In a similar study, Gökçeşlan and Günbatır (2012) stated that male students had higher scores on digital game addiction than female students.

As a result of the analysis conducted to determine the differences between the subscales of the DGAS and the Sports Attitude Scale by the BMI variable, another sub-problem of the study, no significant difference was found between participants' BMI values and the DGAS. Accordingly, it can be said that attitudes towards digital gaming do not correlate with body mass indexes of the participants. In contrast to the results of the present study, it has been previously found that individuals spend a large part of the day in indoor spaces thanks to the development of technology, and disappearance of traditional street games and playgrounds due to rapid urbanization have increased BMI values of people (Çakır, 2019; Demir & Bozkurt, 2019; Kaya, 2013; Kıran, 2011; Horzum, Ayas & Çakırbalta, 2008). Significant differences were found between the subscales of Psychosocial Development, Physical Development, and Mental Development by the BMI variable. Therefore, the mean scores of normal-weight participants were found to be significantly higher than of lean, overweight, and obese participants on the Psychosocial Development subscale. Besides, it was found the mean scores of normal-weight participants were significantly higher than of lean, obese, and overweight participants on the Physical Development sub-scale. On the Mental Development subscale, the mean scores of normal-weight participants were significantly higher than of lean, overweight, and obese participants. These results reveal that normal-weight participants have higher attitudes towards sports than other groups. Çakır (2019) examined the relationship between high school students' motivation to participate in physical activities and body mass indexes and found that enthusiasm, excitement, desire, and enjoyment levels of obese students to participate in physical activities were significantly lower than of others.

In the study, it was sought whether there were any differences between the subscales of the DGAS and the Sports Attitude Scale by the participants' daily gaming periods. Accordingly, there was no significant difference between the scores on the Sports Attitude Scale by the variable of daily gaming period, which infers that the differences in gaming periods are not related to the attitude towards sports. Unlike the results of the present study, Demir and Cicioğlu (2019) found that the increase in the gaming period decreased the level of participation in physical activity. In their study carried out with high school students, Demirel, Cicioğlu, & Demir, (2019) found that students who participated less in physical activities participated more in digital games.

In addition, significant differences were found in the subscales of Cognitive, Affective and Behavioral of the DGAS by the variable of daily gaming period. Therefore, it was found that the mean scores of those spending 91-120 min. a day for gaming were significantly higher than of those spending 120 min. and over, 61-90 min., and 30-60 min. on the Cognitive subscale. Such a result implies that participants who play digital games 91-120 min. a day have higher levels of knowledge for gaming, and commentary skills on digital games. On the Affective subscale, the mean scores of those spending 120 min. and over a day for gaming were found to be significantly higher than of those spending 61-90 min., 91-120 min., and 30- 60 min. Therefore, it can be said that those who play digital games 120 min. and over a day experience better motivation, excitement, comprehension, and learning processes pertaining to digital game world. Finally, the mean scores of those spending 91-120 min. a day for gaming were found to be significantly higher than of those spending 120 min. and over, 61-90 min., and 30- 60 min. on the Behavioral subscale. Hence, those who play digital games 91-120 min. a day are said to be more effective in shaping their gaming-oriented behaviors and gaining diverse experience. Considering that there are three elements of attitudes, such as cognitive, affective, and behavioral, and there is a dynamic relationship between these elements (Tavşancıl, 2002), it can be asserted that the participants' attitudes towards digital gaming are strong.

Moreover, results revealed that the mean scores of the participants doing sports 120 min. and over a day were found to be significantly higher than of those doing sports 61-90 min., and 30-60 min. on the Behavioral subscale. Besides, the mean scores of the participants doing sports 120 min. and over a day were found to be significantly higher than of those doing sports 91-120 min., 30-60 min., and 61 -90 min. on the Psychosocial Development subscale. It was also found that the mean scores of the participants doing sports 91-120 min. a day were significantly higher than of those doing sports 61-90 min., and 120 min. and over on the Physical Development subscale. Although the mean scores of participants doing sports 120 min. and over a day are significantly higher than of other groups in one each subscale of the two scales, it was observed that those doing sports 91-120 min. a day had higher attitude scores than others. It can be argued that long-term and regular sporting affects positively the attitudes towards sport in terms of cognitive, affective and behavioral aspects. Kaya et al., (2018) stated that the attitudes of those, who do regular sports, to sports are significantly higher than those who do not. There are also studies with similar results in the literature (Alparslan, 2008; Cox et al., 2008; Güllü, 2007; Singh & Devi 2013).

The last finding of the study revealed that the mean scores of those playing in a sports club are significantly higher than of the mean scores of those who do not on the Cognitive and Affective subscales, which is thought to stem from the fact that knowledge levels, emotional approaches, and attitudes of those who play in a sports club are more evident and that they play digital games specific to their branches.

In addition, it was concluded that, on the Mental Development subscale, the mean scores of those who play in a sports club were significantly higher than of those who do not. Therefore, it can be stated that the mental skills of the players who play in a sports club, such as immediate decision-making and tactics development, are more solid than those who do not. This may be due to the fact that those who do regular sports in a club spend more time in sports activities and that they use mental processes effectively in sports. Previous studies (Saygılı, Atay, Eraslan & Hekim, 2015; Filiz & Demirhan, 2018) reveal that the levels of academic achievement of people who do regular sports are higher than those who do not do sports.

To sum, the increase in the attitudes towards digital gaming decreases the attitudes towards sports. It is an indisputable conclusion that playing digital games responsibly contributes to the development of students in some areas. However, the students should be informed about the fact that digital games containing physical activities will increase such a contribution to their mental and physical developments.

This research was conducted on a specific sample of high school students. Expanding the research and increasing the number of samples, identifying the game preferences of students and determining their psychological effects, and increasing the diversity by taking samples from middle school and university students are among the recommendations of the researchers.

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