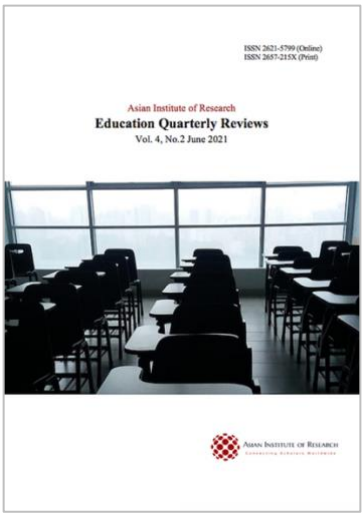

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An Investigation of the Digital Gaming Attitudes of the Faculty of Sports Sciences Students

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Abstract
Nowadays, digital games have become a part of the daily lives of individuals, and accordingly, the virtual world phenomenon, especially in the young population, has emerged. This phenomenon causes digital game users to experience other worlds as well as their real lives. The experiences of individuals through games in the virtual environment, on the one hand, provide link and communication, on the other hand, they distance them from concrete concepts of the real world. This study aimed to examine the digital game-playing attitudes of students studying at the faculties of sports sciences. The research group consisted of 911 students (415 females, 45.6%; 496 males, 54.4%) studying at the faculties of sports sciences in Konya Selcuk University, Ankara Gazi University, and Istanbul University-Cerrahpaşa. This study conducted in the period of November-December, 2019, and all students voluntarily participated in the study. The "Digital Gaming Attitude Scale (DGAS)" developed by Tekkurşun Demir and Mutlu Bozkurt (2019) was used to collect data in the study. This scale consists of 18 items and three sub-dimensions (cognitive, affective, and behavioral). Descriptive statistics (frequency, arithmetic mean, standard deviation), independent sample t-test, one-way analysis of variance (ANOVA), and Tukey multiple comparison tests were used in the analysis of the data. The arithmetic mean of the sub-dimensions was 15.41 ± 3.38 for cognitive, 15.72 ± 3.74 for emotional, and 23.58 ± 7.34 for behavioral. Statistical analysis of the data was made through the SPSS 19.0 program and the significant difference level of the values was accepted as $p < 0.05$. The analysis results showed that when the digital gaming attitude scale was evaluated according to gender, the mean score scores of male students in all cognitive, affective, and behavioral sub-dimensions were significantly higher than female students.

Keywords: Students, Faculty of Sport Sciences, Digital Gaming Attitude Scale, Digital Game Playing

1. Introduction

Digital games, which are widely used today, date back to the middle of the 20th century. A very simple tennis game called "Tennis for Two," developed for the Donner Model 30 analog computer on October 18, 1958, can be given to digital games as an example, also known as video games. The digital game is defined as entertainment or leisure activity software that is based on text or visuality, computer-based, electronic platforms such as game consoles or computers that one or more people can use together over the physical or online network (Frasca, 2001). When the digital game or games industry is examined, it is seen that the development process is handled in five different phases (Özhan, 2011). These phases are as follows: Before 1980 "early development phase" (Yalçın & Erdoğan, 2016); Between the mid-80s and mid-90s "growth phase" (Video Game Industry Statistics, 2019); End of the 90s the "phase of development" (Pan European Game Information, 2015); between 2000-2005 the "maturation phase" (Craddock, 2005); and from 2006 to the present the "phase of progress" (O'Hagan & Mangiron, 2013).

Digital games are very comprehensive and contain techniques developed from various disciplines. The fundamental development of the digital game industry consists of three stages. In the first stage, the transition to microprocessors was provided as the basic development dynamics, thus better animations emerged. Advances in sound technology made it possible to integrate music into games in the 1980s. The second major development has been with the introduction of game consoles into homes as well as game halls. The third fundamental development started with the production of computers used at home. Change and development continued by adding game mechanisms to these computers. The rapid development of technology in the world has contributed positively to the growth of the digital game industry. On the one hand, the cheaper technology and on the other hand, the introduction of the internet into people's business and home life has enabled the digital game industry to grow rapidly. Over the past 60 years, the digital game industry has made great strides in other areas, especially in the field of graphics (Squire, 2003). In the digital game development period that has continued until today, even seventh-generation consoles were produced. It is known by everyone that the population that closely follows technological developments and adopts digital technology as life is a younger population. This lifestyle is thought to cause the endangerment of the cultural heritage, which is a social heritage and transferred from generation to generation. The most important losses of societies in this cultural heritage such as their traditions, customs, and lifestyles such as grammar, vocabulary, nutritional characteristics, physical activity, sports activities occur in today's digital world (Lazzaro, 2004).

The fact that the new generation follows technology closely and has grown up using this technology has caused them to prefer technological devices to traditional games played physically. This situation has revealed the curiosity of today's generation, which are described as "digital natives," for digital games. Especially the high interest of the young generation in digital games and their perception of this as socialization in the digital world show that digital games are an important field of occupation for this group (Quaiser-Pohl et al., 2006). The concept of attitude is accepted as one of the psychological separators that determine the social perception and attitudes of the people and also determine the formation of behavior (Alıs, 2013).

The desire of individuals to get away from the negative environment they live in, the desire to bring their real-life to the virtual environment, the disconnection and incompatibility they have experienced with their social environment are among the determining factors of the digital gameplay attitude. The effort to engage in recreational activities and to obtain some rewards such as power and trophies in digital games is also added to these factors (Tekkurşun & Bozkurt 2019). The concept of attitude is a bidirectional variable that shapes individuals' positive and negative emotional states (Erkuş, 2013). Attitudes consist of a total of three dimensions: mental, emotional, and behavioral, which are handled as cognitive, affective, and behavioral, and there is a dynamic link between the dimensions (Hazar & Demir, 2018). Accordingly, determining the factors that direct children and young people to digital games and enable them to participate in these game consoles or digital games at least once a day is among the objectives of this study. There are many researches in the literature on digital game playing and especially on students (Mustafaoğlu & Yasacı, 2018; Demir & Cicioğlu, 2019; Erten, 2019; Güvendi, Demir & Keskin, 2019; Bozkurt, Dursun & Arı, 2019; Topal & Aydın, 2018; Bozkurt & Tamer, 2020). Researches in the literature show that the digital game playing attitude is particularly

common among students, and this issue is seen to be current and important. Therefore, in order to contribute to the literature, this study aimed to determine the digital game playing attitudes of students studying at the faculty of sports sciences. The research questions created in line with the purpose of our study are listed below:

RQ1: Is there a significant difference in the gender variable in the Digital Gaming Attitudes of the students?
RQ2: Is there a significant difference in the age variable in the Digital Gaming Attitudes of the students?
RQ3: Is there a significant difference in the class variable in the Digital Gaming Attitudes of the students?
RQ4: Is there a significant difference in the mother's educational status variable in the Digital Gaming Attitudes of the students?
RQ5: Is there a significant difference in the father's educational status variable in the Digital Gaming Attitudes of the students?
RQ6: Is there a significant difference in the digital game playtime variable in the Digital Gaming Attitudes of the students?
RQ7: Is there a significant difference in time to participate in physical activity variable in the Digital Gaming Attitudes of the students?

2. Method

Research Group

This study was designed as cross-sectional research. A total of 911 students from 1st, 2nd, 3rd and 4th grades at Konya Selçuk University, Gazi University, and Istanbul University-Cerrahpaşa Faculty of Sport Sciences participated in the study between November and December 2019. No sampling method was used in the study, and the students who did not want to participate in the study and were not in the school were excluded from the study. The average age of 415 female and 496 male students participating in this study was 20.43 ± 2.58.

Scale

Digital Gaming Attitudes Scale: This scale was developed by Tekkurşun Demir & Mutlu Bozkurt (2019) in order to measure the digital gaming attitudes of university students. This scale, which consists of 18 items, consists of three sub-dimensions: cognitive (1, 2, 3, 4, 5 items), affective (6, 7, 8, 9, 10 items), and behavioral (11, 12, 13, 14, 15, 16, 17, 18 items). Items 2, 3, 5, 6, 7, 10, 18 of the scale are reversed. The digital gaming attitude scale was evaluated with a 5-point Likert-type scale (1 = "Strongly disagree", 2 = "Disagree", 3 = "Neutral", 4 = "Agree", 5 = "Strongly Agree") (Tekkurşun Demir & Mutlu Bozkurt, 2019). It is cognitive if the knowledge that an individual has about a situation enables him/her to look positively at that situation, affective if the individual has positive emotions, and behavioral if he/she shows this through various expressions and actions (Hazar & Demir, 2018).

Statistical Analysis of the Data

First, the Kolmogorov-Smirnov test was applied to determine whether the data showed normal distribution or not. The p values obtained from the Kolmogorov-Smirnov test showed that the distribution was normal ($p > 0.05$). Second, descriptive statistics (frequency, arithmetic mean, standard deviation), independent sample t-test, one-way analysis of variance (ANOVA), and Tukey multiple comparison tests were used to evaluate the data.

3. Findings

This section includes the findings of the digital game-playing attitudes of students studying at the faculty of sports sciences.

Table 1: Average Scores of the Sub-Dimensions of the Digital Gaming Attitude Scale

Digital Gaming Attitude Scale	N	Min.	Max.	Mean ± SD
Cognitive	911	5.00	25.00	15.41 ± 3.38
Affective	911	5.00	25.00	15.72 ± 3.74
Behavioral	911	8.00	40.00	23.58 ± 7.34

Table 1 shows that the behavioral sub-dimension of the digital gaming attitude scale has the highest score average compared to the others.

Table 2: Independent Sample T-Test Analysis Results of Digital Gaming Attitude Scale by Gender Variable

Digital Gaming Attitude Scale	Gender	N	Mean ± SD	t	p
Cognitive	Female	415	14.65 ± 3.36	-6.363	.000
	Male	496	16.05 ± 3.26		
Affective	Female	415	14.86 ± 3.53	-6.553	.000
	Male	496	16.44 ± 3.76		
Behavioral	Female	415	21.61 ± 7.45	-7.582	.000
	Male	496	25.23 ± 6.83		

Table 2 shows that there is a significant difference at $p < 0.05$ level in all sub-dimensions of the digital gaming attitude scale by gender. According to these values, the average scores of cognitive, affective, and behavioral dimensions of men are higher than female students.

Table 3: Independent Sample T-Test Results of Digital Gaming Attitude Scale by Age Variable

Digital Gaming Attitude Scale	Age	N	Mean ± SD	t	p
Cognitive	17-19	432	15.23 ± 3.42	-1.505	.133
	More than 20	479	15.57 ± 3.34		
Affective	17-19	432	15.86 ± 3.71	1.047	.295
	More than 20	479	15.60 ± 3.76		
Behavioral	17-19	432	23.52 ± 7.45	-.237	.813
	More than 20	479	23.63 ± 7.25		

Table 3 shows that there is no significant difference in all sub-dimensions of the digital gaming attitude scale in terms of age.

Table 4: ANOVA Results of Digital Gaming Attitude Scale by Students' Class

Digital Gaming Attitude Scale	Class	N	Mean ± SD	F	p	Tukey
Cognitive	1	290	15.20 ± 3.33	3.437	.016	3rd Class > 2nd Class
	2	263	15.05 ± 3.36			
	3	160	15.93 ± 3.65			
	4	198	15.78 ± 3.19			
Affective	1	290	15.64 ± 3.70	243	.866	-
	2	263	15.68 ± 3.82			
	3	160	15.69 ± 3.89			
	4	198	15.92 ± 3.57			
Behavioral	1	290	23.35 ± 7.14	1.598	.188	-
	2	263	23.66 ± 7.34			
	3	160	22.80 ± 7.90			
	4	198	24.43 ± 7.13			

Table 4 shows that there is a significant difference in the cognitive sub-dimension of the digital gaming attitude scale ($p < 0.05$), but there is no significant difference in the affective and behavioral sub-dimensions. The result of the Tukey test, which is an advanced test, showed that the difference observed in the cognitive sub-dimension was between 3rd and 2nd grades. Accordingly, the mean score of the cognitive sub-dimension of 3rd-grade students (15.93 ± 3.65) was higher than the mean score of the 2nd-grade students (15.05 ± 3.36).

Table 5: ANOVA Results of Digital Gaming Attitude Scale by Mother's Educational Status

Digital Gaming Attitude Scale	**Mother's Educational Status**	**N**	**Mean ± SD**	**F**	**p**
Cognitive	Uneducated	69	16.33 ± 3.49	1.901	.108
	Primary	239	15.32 ± 3.28		
	Secondary	212	15.45 ± 3.40		
	Lycee	199	15.50 ± 3.37		
	University	192	15.05 ± 3.42		
Affective	Uneducated	69	15.31 ± 3.68	.766	.547
	Primary	239	15.56 ± 3.73		
	Secondary	212	16.04 ± 3.83		
	Lycee	199	15.63 ± 3.55		
	University	192	15.81 ± 3.87		
Behavioral	Uneducated	69	22.85 ± 7.01	.431	.786
	Primary	239	23.78 ± 7.18		
	Secondary	212	23.60 ± 7.38		
	Lycee	199	23.91 ± 7.56		
	University	192	23.22 ± 7.43		

Table 5 shows that there is no significant difference in all sub-dimensions of the digital gaming attitude scale according to the mother's educational status variable.

Table 6: ANOVA Results of Digital Gaming Attitude Scale by Father's Educational Status

Digital Gaming Attitude Scale	**Father's Educational Status**	**N**	**Mean ± SD**	**F**	**p**
Cognitive	Uneducated	38	14.63 ± 3.18	1.923	.105
	Primary	241	15.65 ± 3.18		
	Secondary	185	15.31 ± 3.48		
	Lycee	240	15.69 ± 3.48		
	University	207	15.03 ± 3.38		
Affective	Uneducated	38	14.71 ± 3.36	1.401	.232
	Primary	241	15.44 ± 3.70		
	Secondary	185	15.99 ± 3.90		
	Lycee	240	15.83 ± 3.81		
	University	207	15.86 ± 3.59		
Behavioral	Uneducated	38	22.81 ± 7.37	.390	.816
	Primary	241	23.30 ± 7.42		
	Secondary	185	23.61 ± 7.28		
	Lycee	240	24.00 ± 7.35		
	University	207	23.53 ± 7.34		

Table 6 shows that there is no significant difference in all sub-dimensions of the digital gaming attitude scale according to the father's educational status variable.

Table 7: ANOVA Results of Digital Gaming Attitude Scale by Digital Game Playtime

Digital Gaming Attitude Scale	Digital Game Playtime	N	Mean ± SD	F	p
Cognitive	30-60 minutes	498	15.46 ± 3.23	.916	.432
	61-90 minutes	206	15.16 ± 3.48		
	91-120 minutes	86	15.84 ± 3.77		
	More than 121 minutes	121	15.32 ± 3.52		
Affective	30-60 minutes	498	15.76 ± 3.57	.079	.971
	61-90 minutes	206	15.63 ± 3.71		
	91-120 minutes	86	15.81 ± 4.04		
	More than 121 minutes	121	15.68 ± 4.25		
Behavioral	30-60 minutes	498	23.41 ± 7.41	.252	.860
	61-90 minutes	206	23.87 ± 7.14		
	91-120 minutes	86	23.90 ± 7.58		
	More than 121 minutes	121	23.53 ± 7.27		

Table 7 shows that there is no significant difference in all sub-dimensions of the digital gaming attitude scale according to the digital game playtime variable.

Table 8: ANOVA Results of Digital Gaming Attitude Scale by Time to Participate in Physical Activity

Digital Gaming Attitude Scale	Time to Participate in Physical Activity	N	Mean ± SD	F	p
Cognitive	30-60 minutes	295	15.29 ± 3.41	.187	.905
	61-90 minutes	227	15.48 ± 3.44		
	91-120 minutes	183	15.46 ± 3.51		
	More than 121 minutes	206	15.46 ± 3.17		
Affective	30-60 minutes	295	15.56 ± 3.65	1.588	.191
	61-90 minutes	227	16.19 ± 3.89		
	91-120 minutes	183	15.53 ± 3.82		
	More than 121 minutes	206	15.61 ± 3.61		
Behavioral	30-60 minutes	295	23.02 ± 7.40	1.183	.315
	61-90 minutes	227	23.90 ± 7.18		
	91-120 minutes	183	24.21 ± 7.12		
	More than 121 minutes	206	23.48 ± 7.62		

Table 8 shows that there is no significant difference in all sub-dimensions of the digital gaming attitude scale according to the time to participate in physical activity variable.

4. Discussion

Due to the rapid development of computer and internet technology in the last two decades, the widespread use of digital games, which are an important part of the culture industry, has also brought some risks. The high increase in the number of users, especially children and young people, attracted all the attention to the effects of digital games. Increasing scientific studies on this subject have focused on the short and long-term effects of digital games on individuals. In this context, in order to contribute to the literature, we examined the digital gaming attitudes of the faculty of sports sciences students in terms of different variables in our study. In this study, in the mean score analysis of the sub-dimensions of the digital gaming attitude scale, it was observed that the behavioral sub-dimension had the highest score (Table 1; 23.58 ± 7.34). This score shows that students make digital gameplay a behavior. In addition, when considered in terms of other sub-dimensions, it is seen that students have ambivalent feelings in terms of their digital game playing attitudes. As a result, it can be expressed that playing digital games is a behavioral situation for students. Lo, Wang, and Fang (2005) and Weinstein et al.

(2015) reported that children and adolescents try to reduce their social anxiety levels by playing computer-based games. The inconsistency between this result and the result of our study is thought to be due to the age groups of both studies. Therefore, it is considered normal that university students who are older differ in their digital gameplay attitudes. Based on this result, there are also various researches on digital game addiction and social anxiety (Karaca et al., 2016; Savcı & Aysan, 2017; Taş & Güneş, 2019).

Digital game playing attitude analysis by gender (Table 2), which is among the research questions of our study, showed that the mean score scores of male students were significantly higher than female students in all cognitive, affective, and behavioral sub-dimensions ($p < 0.001$). Accordingly, male students had higher attitudes to play digital games than female. Başdaş and Özbeyin (2020), Balıkçı (2018), Gökçe Arslan and Durakoğlu (2014), Taş and Güneş (2019), Bozkurt and Tamer (2020) found that male participants had the higher digital game playing attitudes and addictions compared to female. Although these results showed a high attitude of men to play digital games, it is known that female's interest in playing games in the digital environment has increased recently. When examined in terms of motivation to play digital games, Hazar (2019) found that the average scores of male and female participants were similar to each other. Yıldız and Tüzün (2011), on the other hand, found in their study that there was no gender difference in terms of gaming and computer use experiences. In the organization, which continued its activities as the federation of digital games of the period, 52% of the total number of digital players was reported as male and 48% as female according to 2012 data (Dinç, 2012). In addition, it is thought that the motivations of men to play digital games should be examined comprehensively.

In terms of the age variable handled in our study, no significant difference was found in the sub-dimension findings of students' digital gaming attitudes (Table 3). Although no significant difference was found in this variable, it was observed that the behavioral sub-dimension mean score of all age groups of the students was higher. Demir and Cicioğlu (2019) found similar results to our study, on the other hand, Bozkurt and Tamer (2020) reached a different result and found positive significant differences in the motivation to play digital games as the age got older. It is thought that the difference between the results of our study and other studies was due to the fact that the samples, including our study, were middle school, high school, and university students and that the advancing technology reached all age groups over time. In our study, a significant difference was observed in the cognitive sub-dimension of the digital game playing attitude scale according to the students' grade levels (Table 4; $p < 0.05$), while no significant difference was found in the affective and behavioral sub-dimensions. It was observed that the difference observed in the cognitive sub-dimension was between the 3rd and 2nd grades, and accordingly, the cognitive sub-dimension mean score of the 3rd-grade students was higher than the average score of the 2nd-grade students. For this situation, it is thought that the higher the grade level, the higher the cognitive sub-dimension, which can be defined as the mental element. In addition, there are researches in the literature (Bozkurt & Tamer, 2020; Demirel et al., 2019) that show a significant difference in digital game playing attitude in terms of class variables. In the study, no significant difference was found as a result of the analysis between other variables and the digital game playing attitude. In addition, although there was no statistical difference among cognitive, affective and behavioral sub-dimensions, some variables had score differences.

As a result, this study revealed that university students adopt digital game playing attitudes as a behavior. In addition, the study showed that males played more digital games than females, and 3rd-grade university students had higher digital gaming attitudes in grade variable.

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