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The Effect of Awareness Level on Digital Game Addiction

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Abstract

Digital gaming is the key activity that young people prefer, especially to fulfill several responsibilities that are given to players with technology today and to give them an advantage over those who are competing against them. In this study, mindfulness of digital game addiction of secondary school students was investigated according to their gender, age group, grade level, high school type, education status of the mother, daily technology exposure time, and regular physical activity status. 456 female and 329 male secondary school students who study in the Pursaklar district of Ankara province participated in the study, during the 2020–2021 academic period. As the data collection tools "Personal Information Form" and "Mindfulness of Digital Game Addiction Scale (MDGAS)" that was developed by Tekkurşun-Demir and Cicioğlu (2020) were used. t-test and one-way ANOVA multi-comparison tests were used in the analysis of data from secondary school students participating in the study. Research found significant differences in gender, class level, and daily technology exposure time of secondary school students, while a significant difference was not detected concerning age group, high school type, education status of the mother, and regular physical activity status variables. It was determined that the levels of awareness, internal awareness levels, and external awareness of secondary school students' digital gaming dependency are at a moderate level.

Keywords: secondary school students, digital game, mindfulness, technology

1. Introduction

A game is an activity that has its specific set of rules and is intentionally and deliberately performed in different environments with individuals' own will and desire, and their effort to reach a goal, and by exhibiting differences from their daily life to reveal feelings such as stress and happiness (L'Abate, 2009). It is all activities that individuals participate in within the framework of certain rules or regardless of them (i.e. improvisationally). While a game was a face-to-face activity in the past, with the development of technology, digital games have become widely used at home, at work, and in internet cafes with technological devices such as mobile phones, tablets, and computers.

A digital game is based on players' effort in the game to reach a goal by fulfilling the given responsibilities and outclassing the opponents (Adams and Dormans, 2012; Adams, 2014). It provides collective, content-rich, and mutual experiences. Its software is procured by technological developments, and it provides various visual activities to people who use this software in game format (Çetin, 2013). Digital games are virtual activities that lead the person to a world of imagination, enables them to perform physical movements in a technological environment that cannot be done in their real life, allows them to strive to be superior to their competitors and to gain success in a virtual environment through trophies, medals, points, status, etc. and to be liked by other people (Tekkurşun-Demir and Hazar, 2018).

Addiction is known as an object's or person's involuntary inability to perform a behaviour, or their inability to self-control (Egger and Rauterberg, 1996). Individuals might have an addiction not only to a physical substance, but also to technology, and games, etc. (Kim and Kim, 2002). Excessive use of games technologically through the internet both online or offline and immersing oneself in them might negatively affect one's life and stress them for no reason (Kwon, Lee, Won, et al., 2013).

Mindfulness is a cognitive and physical concept that emerged from the investigation of short-term focus and persons' mental experiences. In the mindfulness process, the person intellectually engages in various physical movements (Kabat-Zinn, 2005). It is benefiting from one's experiences and mentally turning the clock back and accepting the past (Siegel ve ark., 2009). Mindfulness is the order where the person focuses on the present time without any expectations (Ford, 2016).

Digital games are implementations that are made to bring many people together regardless of their distance through technology to reach a common goal and to relax them mentally. Today, problems experienced in interpersonal interactions are leading people to be more dependent on technology. Especially adolescents' addiction to technological games is increasing day by day. The most important reasons for this are gaining superiority over each other, increasing their popularity in the virtual environment with the games, and making money as their level increases in the game. This study aims to examine secondary school students' mindfulness of digital game addiction in terms of gender, age group, grade level, high school type, education status of the mother, daily technology exposure time, and regular physical activity status.

2. Method

In this section, information about the research design, participants, data collection instrumentation, and data analysis are given.

2.1 Research Model

In this study, the survey model -which is conducted either with the population or with the sample and which aims to determine the change and relationship between variables to reach a general judgment was used. (Karasar, 2017)

2.2 The Study Group

Data were collected from 785 volunteer secondary school students studying in the Pursaklar district of Ankara province in the 2020-2021 academic year.

Demographic information of the participants

Demographic characteristics of the participants are given in Table 1.

Table 1. Frequency and Percentage Distribution of Participants by their Demographic Information

Characteristics	Categories	*f*	%
Gender	Female	456	58.1
	Male	329	41.9
Age group	Adolescence	101	12.9
	Middle Adolescence	643	81.9
	Late Adolescence	41	5.2
Grade level	9	336	42.8
	10	255	32.5
	11	154	19.6
	12	40	5.1
High school type	Anatolian High School	576	73.4
	Others	209	26.6
Education status of the mother	Primary Education	263	33.5
	High School	357	45.5
	Bachelor's and above	165	21.0
Daily technology exposure time	4 hours or less	319	40.6
	Over 4 hours	466	59.4
Regular physical activity status	Yes	375	47.8
	No	410	52.2
Total		785	100

Demographic characteristics of the 785 students who participated in the study are given in Table 1. Of those students, 456 were female (58.1%) and 329 were male (41.9%). Whereas 101 of them (12.9%) were in adolescence (14 years old), 643 (81.9%) were in middle adolescence (15-17 years old), and 41 (5.2%) were in late adolescence (18-19 years old). Grade level wise, 336 of them (42.8%) were in 9th grade, 255 (32.5%) were in 10th grade, 154 (19.6%) were in 11th grade, and 40 (5.1%) were in 12th grade. While 576 participants (73.4%) were studying at Anatolian high schools, 209 (26.6%) were studying at imam-hatip high schools, science high schools, and other high schools. The mothers of 263 (33.5%) students were primary school graduates, 357 (45.5%) were high school graduates, and 165 (%21) were bachelor's degree or above graduates.

The secondary school students who participated in the study were asked for how long they are exposed to technology in a day. The answers showed that 319 of the students (%40, 6) used technology 4 hours or less, and 466 of them (%59, 4) over 4 hours. They were also asked whether they are having regular physical activity. 375 of the students (%47, 8) stated that they regularly engage in physical activity, and 410 (%52, 2) stated that they do not regularly engage in physical activity.

2.3 Data Collection Tools

Data were gathered through the “Mindfulness of Digital Game Addiction Scale (MDGAS)” that was developed by Tekkurşun-Demir and Cicioğlu (2020).

Mindfulness of Digital Game Addiction Scale (MDGAS); Whereas Items 1-5 of the scale constitute the Intrinsic Mindfulness (IM) subscale, Items 6-12 of the scale constitute the Extrinsic Mindfulness (EM) subscale. IM is the level of understanding one’s inner voice towards digital game addiction and being aware of the emotions caused by it. EM, on the other hand, is the level of understanding and awareness of the effect of an individual’s digital game addiction on their relationship with the environment such as with friends, at work, and school. MDGAS measures an individual’s level of knowledge regarding digital games, and understanding and awareness of their intrinsic and extrinsic effects.

2.4 Data Analysis

All the data collected from 822 secondary school students were meticulously examined, erroneous and outlier data were cleaned, and analyses were made on the remaining 785. Total Mindfulness of Digital Game Addiction Scale scores and descriptive statistics on whether they are normally distributed or not is examined for each independent variable. Based on the Kurtosis coefficients, it was determined that all subcategories of all independent variables were normally distributed both in the total score of the scale and in the scores of its subscales. Therefore, parametric tests were used in all analyses. In the analysis of the data, Pearson correlation test, Independent Samples t-test (for the comparison between the groups), one-way analysis of variance (ANOVA), arithmetic mean ($\bar{x}$), standard deviation (SD), percentage (%), and frequency (*f*) were used.

3. Results

How is the digital game addiction mindfulness of secondary school students?

According to the analyses, the digital game addiction mindfulness of secondary school students is shown in Table 2.

Table 2. Descriptive Statistics of Mindfulness of Digital Game Addiction of Secondary School Students

	N	Minimum	Maximum	$\bar{X}$	SD
Intrinsic Mindfulness	785	5.00	25.00	15.65	5.01
Extrinsic Mindfulness	785	7.00	35.00	24.42	6.33
Total	785	15.00	60.00	40.07	10.49

As seen in the table, the highest score from the Intrinsic Mindfulness subscale of the Mindfulness of Digital Game Addiction Scale is 25, and the lowest score is 5. The average score of the participants is 15.65, and the calculated standard deviation is 5.01. The highest score obtained from the Extrinsic Mindfulness subscale is 35 and the lowest is 7. The mean score of this subscale is 24.42, and the standard deviation of it is 6.03. When the whole scale is examined, the highest score obtained is 60 and the lowest is 15. The average score obtained is 40.07 and the standard deviation calculated is 10.49 for the entire scale.

When the average scores acquired from the scale and the cut-off points of the scale are examined (Tekkurşun-Demir & Cicioğlu, 2020), it was seen that intrinsic mindfulness (between 11-16), extrinsic mindfulness (between 17-25) and total mindfulness (between 29-44) score of secondary school students regarding their digital game addiction is moderate.

Does the mindfulness of digital game addiction of secondary school students differ by their gender?

According to the analyses made, the differentiation of the digital game addiction mindfulness of secondary school students, both in total and in two subscales (i.e. intrinsic and extrinsic) is given in Table 3.

As given in Table 3, when the intrinsic mindfulness scores of the participants regarding digital game addiction are examined, it is seen that there is a significant difference between the scores of female students ($\bar{X}$=13.74) and the male students ($\bar{X}$=17.03) in favour of males, $t_{(783)}$= -9.59, p=.00<.05. Similarly, there is a significant difference between the extrinsic mindfulness scores of female students ($\bar{X}$=21.74) and male students ($\bar{X}$=26.35) in favour of male students, $t_{(783)}$= -10.79, p=.00<.05. Lastly, the mindfulness of digital game addiction scores of female students ($\bar{X}$=35.48) and male students ($\bar{X}$=43.38) significantly differed in favour of male students, $t_{(783)}$= -11.21, p=.00<.05.

Table 3. Independent Samples t-test Results of the Difference in Mindfulness of Digital Game Addiction of Secondary School Students by their Gender

	Gender	N	$\bar{X}$	S	t	sd	p
Intrinsic Mindfulness	Female	329	13.74	5.14	-9.59	783	.00*
	Male	456	17.03	4.43			
Extrinsic Mindfulness	Female	329	21.74	6.53	-10.79	783	.00*
	Male	456	26.35	5.43			
Mindfulness of Digital Game Addiction	Female	329	35.48	10.72	-11.21	783	.00*
	Male	456	43.38	8.98			

*p<.05

According to the findings, the mindfulness of digital game addiction of secondary school students differs significantly in favour of male students according to the average scores obtained from the two subscales and the total scale. In other words, male students' intrinsic mindfulness, extrinsic mindfulness, and total mindfulness of digital game addiction are higher than female students.

Does the mindfulness of digital game addiction of secondary school students differ by their age group?

According to the analyses, the differentiation of secondary school students' mindfulness of digital game addiction both in total and in two subscales (i.e. intrinsic and extrinsic) is given in Table 4.

Table 4. One-Way ANOVA Results of the Difference in Mindfulness of Digital Game Addiction of Secondary School Students by Age Groups

	Age Group*	N	$\bar{X}$	S	Sum of Squares	Mean Square	F (782/2)	p
Intrinsic Mindfulness	Adolescence	101	15.98	5.05	31.02	15.51	.618	.539
	Middle Adolescence	643	15.65	5.01	19628.43	25.10		
	Late Adolescence	41	14.95	4.89	19659.45			
Extrinsic Mindfulness	Adolescence	101	24.64	6.65	5.98	2.99	.074	.928
	Middle Adolescence	643	24.38	6.27	31446.81	40.21		
	Late Adolescence	41	24.39	6.72	31452.79			
Mindfulness of Digital Game Addiction	Adolescence	101	40.62	40.62	53.71	26.85	.243	.784
	Middle Adolescence	643	40.03	40.03	86276.30	110.33		
	Late Adolescence	41	39.34	39.34	96330.01			

*Adolescence: 14 years old; Middle Adolescence: 15-17 years old; Late Adolescence: 18-19 years old

As given in Table 4, there is no significant difference between students' Intrinsic Mindfulness subscale scores by the age group, $f_{(782/2)}$=.618, p=.539>.05. Similarly, there is no significant difference between students' Extrinsic Mindfulness subscale scores by the age group, $f_{(782/2)}$=.928, p=.074>.05. The total scores on the scale do not significantly differ by students' age group either, $f_{(782/2)}$=.243, p=.784>.05.

According to the findings, secondary school students' mindfulness of digital game addiction does not differ according to age groups, both in general and in two subscales (i.e. intrinsic and extrinsic).

Does the mindfulness of digital game addiction of secondary school students differ by their grade level?

Based on the analyses made, the differentiation of secondary school students' mindfulness of digital game addiction both in two subscales (i.e. intrinsic and extrinsic) and in total is shown in Table 5.

Table 5. One-Way ANOVA Results of the Difference in Mindfulness of Digital Game Addiction of Secondary School Students by Grade Level

	Grade Level	N	$\bar{X}$	S	Sum of Squares	Mean Square	F (782/2)	p	Post Hoc (LSD)
Intrinsic Mindfulness	9	336	15.50	5.02	50.63	16.88	.672	.569	---
	10	255	15.69	5.01					
	11	154	16.08	4.94	19608.82	25.11			
	12	40	15.08	5.20	19659.45				
Extrinsic Mindfulness	9	336	24.01	6.59	412.82	137.61	3.462	.016*	11>9 11>10
	10	255	24.16	6.27					
	11	154	25.88	5.24	31039.97	39.74			
	12	40	23.90	7.71	31452.79				
Mindfulness of Digital Game Addiction	9	336	39.50	10.83	718.93	239.64	2.186	.088	11>9 11>10
	10	255	39.85	10.47					
	11	154	41.96	9.21	85611.08				
	12	40	38.98	11.85	96330.01	109.62			

*p<.05

When the differences in subscales of the mindfulness of digital game addiction according to the grade levels of the secondary school students are examined, it was seen that there is no significant difference between the Intrinsic Mindfulness scores of students based on their grade level, $f_{(781/3)}$=.672, p=.596>.05, as shown in Table 5. Hence, there is no significant difference between the intrinsic mindfulness of students of different grades. In the Extrinsic

Mindfulness subscale, on the other hand, there is a significant difference between students' mindfulness by their grade level, $f_{(781/3)}$=3.462, p=.016<.05. Therefore, students' extrinsic mindfulness of digital game addiction differs significantly according to their grade levels. The results of the detailed analysis (LSD test) showed that the extrinsic mindfulness of 11th-grade students ($\bar{X}$=25.88) is higher than that of 9th ($\bar{X}$ =24.01) and 10th-grade students ($\bar{X}$ =24.16). Whether the total scale scores of secondary school students differ according to their grade levels was also examined. It was seen that whereas there is no significant difference in the total score from the Mindfulness of Digital Game Addiction Scale between grade levels ($f_{(781/3)}$=2.186, p=.088>.05), the detailed analysis (LSD test) showed the mindfulness of digital game addiction of 11th-grade students ($\bar{X}$ =41.96) was higher than of 9th ($\bar{X}$ =39.50) and 10th-grade students ($\bar{X}$ =39.85).

Does the mindfulness of digital game addiction of secondary school students differ by their high school types?

According to the analyses made, the differentiation status of secondary school students' mindfulness of digital game addiction in two subscales (i.e. intrinsic and extrinsic) and in the entire scale by the high school type they study at are given in Table 6.

Table 6. Independent Samples t-test Results of the Difference in Mindfulness of Digital Game Addiction of Secondary School Students by their High School Type

	High School Type	N	$\bar{X}$	S	t	sd	P
Intrinsic Mindfulness	Anatolian high school	576	15.68	494	.272	783	.786
	Others	209	15.57	5.20			
Extrinsic Mindfulness	Anatolian high school	576	24.53	6.38	.842	783	.400
	Others	209	24.10	6.22			
Mindfulness of Digital Game Addiction	Anatolian high school	576	40.22	10.48	.638	783	.524
	Others	209	39.67	10.55			

*Others: imam-hatip high school, science high school, vocational high school

It is seen in Table 6 that, in the Intrinsic Mindfulness subscale, there is no significant difference between students' intrinsic mindfulness scores of digital game addiction according to the types of high schools they are studying, $t_{(783)}$=.272, p=.786>.05. Similarly, in the Extrinsic Mindfulness subscale, it is seen that there is no significant difference between the extrinsic mindfulness of the students by the high schools they attend, $t_{(783)}$=.842, p=.400>.05. And the mindfulness of digital game addiction of secondary school students in general shows that, the mindfulness scores regarding digital game addiction do not significantly differ

according to the types of high schools they study at, $t_{(783)}$=.638, p=.524>.05.

The findings reveal that mindfulness of digital game addiction of secondary school students does not differ according to the type of high school they attend, both in total and two subscales (i.e. intrinsic and extrinsic) of mindfulness.

Does the mindfulness of digital game addiction of secondary school students differ by the education status of their mother?

In line with the analyses made, the differentiation status of secondary school students' mindfulness of digital game addiction both in total and in two subscales (i.e. intrinsic and extrinsic) according to their mother's education status is given in Table 7.

Table 7. One-Way ANOVA Results of the Difference in Mindfulness of Digital Game Addiction of Secondary School Students by the Education Status of Their Mother

	Education Status of the Mother	N	$\bar{X}$	S	Sum of Squares	Mean Square	F (782/2)	P
Intrinsic Mindfulness	Primary education	263	16.03	5.09	58.94	29.47	1.176	.309
	High school	357	15.52	4.83	19600.50	25.07		
	Bachelor and above	165	15.35	5.24	19659.45			
Extrinsic Mindfulness	Primary education	263	25.06	6.21	196.87	98.43	2.463	.086
	High school	357	23.92	6.47	31255.92	39.97		
	Bachelor and above	165	24.47	6.17	31452.79			
Mindfulness of Digital Game Addiction	Primary education	263	41.09	10.41	425.28	212.64	1.936	.145
	High school	357	39.44	10.40	85904.72	109.85		
	Bachelor and above	165	39.82	10.76	86330.01			

Looking at Table 7, it is seen that there is no significant difference between the students' intrinsic mindfulness scores of digital game addiction according to their mother's educational status in the Intrinsic Mindfulness subscale, $f_{(782/2)}$=1.176, p=.309>.05. Similarly, in the Extrinsic Mindfulness subscale, there is no significant difference between students' extrinsic mindfulness of digital game addiction according to their mother's educational status, $f_{(782/2)}$=2.463, p=.086>.05. The mindfulness of digital game addiction of secondary school students in general also shows that the total mindfulness scores of students do not show a significant difference according to their mother's education status, $f_{(782/2)}$=1.936, p=.145>.05.

The findings unveiled that, secondary school students' mindfulness of digital game addiction does not differ according to their mother's education status, both in general and in two subscales (i.e. intrinsic and extrinsic).

Does the mindfulness of digital game addiction of secondary school students differ by their daily technology exposure time?

Based on the analyses made, the differentiation status of secondary school students' mindfulness of digital game addiction both in general and in two dimensions (i.e. intrinsic and extrinsic) mindfulness according to their daily technology exposure time is shown in Table 8.

Table 8. Independent Samples t-test Results of the Difference in Mindfulness of Digital Game Addiction of Secondary School Students by Their Daily Technology Exposure Time

	Daily Technology Exposure Time	N	$\bar{X}$	S	t	sd	p
Intrinsic Mindfulness	4 hours or less	319	16.57	4.67	4.271	783	.000*
	Over 4 hours	466	15.03	5.14			
Extrinsic Mindfulness	4 hours or less	319	25.39	5.82	3.585	783	.000*
	Over 4 hours	466	23.75	6.59			
Mindfulness of Digital Game Addiction	4 hours or less	319	41.96	9.71	4.208	783	.000*
	Over 4 hours	466	38.78	10.82			

*p<.000

As given in Table 8, when the intrinsic mindfulness scores of secondary school students regarding digital game addiction are examined, there discovered a significant difference between the intrinsic mindfulness scores of students who are exposed to technology for 4 hours or less a day ($\bar{X}$ =16.57) and who are exposed to it more than 4 hours ($\bar{X}$ =15.03), $t_{(783)}$= 4.271, p=.00<.05, in favour of the first group. Similarly, when the extrinsic mindfulness of the students regarding digital game addiction are examined, a significant difference between the extrinsic mindfulness scores of those who are exposed to technology for 4 hours or less a day ($\bar{X}$ =25.39) and less than 4 hours ($\bar{X}$ =23.75) was observed $t_{(783)}$= 3.585, p=.00<.05, in favour of the first group (i.e. those who are exposed to technology for 4 hours or less). Finally, when the total mindfulness of digital game addiction scores of secondary school students was examined, a significant difference between those who are exposed to technology for 4 hours or less a day ($\bar{X}$ =41.96) and less than 4 hours ($\bar{X}$ =38.78) was observed, $t_{(783)}$= 4.208, p=.00<.05, again, in favour of the first group.

Therefore, the mindfulness of digital game addiction of secondary school students differs significantly in favour of those who are exposed to technology for 4 hours or less, according to the average scores obtained from both the two subscales and the total of the scale. In other words, the students who are exposed to technology for 4 hours or less in a day have higher intrinsic mindfulness, extrinsic mindfulness, and total mindfulness of digital game addiction compared to those who are exposed for less than 4 hours a day.

Does the mindfulness of digital game addiction of secondary school students differ by their regular physical activity status?

In Table 9 below, the differentiation status of secondary school students' mindfulness of digital

game addiction according to their regular physical activity status both in two dimensions of (i.e. intrinsic and extrinsic) and total mindfulness is given based on the findings.

Table 9. Independent Samples t-test Results of the Difference in Mindfulness of Digital Game Addiction of Secondary School Students by their Regular Physical Activity Status

	Regular Physical Activity Status	N	$\bar{X}$	S	t	sd	p
Intrinsic Mindfulness	Yes	375	15.53	5.13	-.692	783	.489
	No	410	15.77	4.89			
Extrinsic Mindfulness	Yes	375	23.95	6.78	-1.958	783	.051
	No	410	24.84	5.88			
Mindfulness of Digital Game Addiction	Yes	375	39.48	11.05	-1.511	783	.131
	No	410	40.61	9.94			

When Table 9 is examined, it is seen that there is no significant difference between students' intrinsic mindfulness scores according to their regular physical activity status in the Intrinsic Mindfulness subscale, $t_{(783)}$=-.692, p=.489>.05. Equivalently, in the Extrinsic Mindfulness subscale, it is seen that there is no significant difference between the extrinsic mindfulness of students according to their regular physical activity status, $t_{(783)}$=-1.958, p=.051>.05. Also when the mindfulness of secondary school students about digital game addiction, in general, do not significantly differ according to regular physical status, $t_{(783)}$=-1.511, p=.131>.05.

The findings show that secondary school students' mindfulness of digital game addiction does not change according to their regular physical activity status both in two subscales of (i.e. intrinsic and extrinsic) and total mindfulness.

4. Discussion

The study showed that the mindfulness of digital game addiction of secondary school students significantly differs according to their gender, class level, and daily technology exposure time, and does not differ according to their age group, high school type they attend, education status of their mother, and their regular physical activity status.

In this study, when the mindfulness of digital game addiction of secondary school students was examined according to the gender variable, it was seen that male students have higher scores than female students in intrinsic mindfulness, extrinsic mindfulness, and in the total scale. The reasons for this outcome include the presence of more digital game types appealing to male students, them using digital games and technologies more consciously, female students' mindfulness of playing digital games, gender differences, and the limited number of digital games for female students. Parallel to this study, Can and Tekkurşun Demir (2020) in the

gender variables of their study of digital game addiction and mindfulness of athletes and e-sports players found that the digital game addiction scores of male e-sport players were higher than that of female e-sports players. Güvendi, Tekkurşun Demir and Keskin (2019) in their digital game addiction study for secondary school students, concluded that male students had higher digital game addiction scores than female students. Additionally, Choi and Tsai (2007) showed that male high school students in Taiwan, compared to female students, scored higher in computer game playing habits. Though Godinho et al. (2014), in their study on adolescents' time spent in front of the television and playing digital games, could not find a statistically significant difference in the amount of time spent in terms of gender, found that male adolescents spend significantly more time playing digital games compared to female adolescents. And Van Rooij et al. (2014) in their study on the emergence of problematic video games and their psychosocial effects in adolescents revealed that compared to their female peers, male students spend more time in online games and they play games that are harmful to their development.

The previous literature includes studies with similar results to the study at hand. This study will surely contribute to future research as well.

When the mindfulness of digital game addiction of secondary school students is examined according to the age group variable, no statistically significant difference in terms of the scores on the whole scale and its subscales was observed. However, Can and Tekkurşun Demir (2020) in their study of digital game addiction and mindfulness of athletes and e-sports players spotted a significant moderate positive relationship between the age of the athletes and their digital game addiction scores, and a significant moderate negative relationship in their digital game mindfulness. Also, Gumusgul (2018) stated a significant difference between smartphone addiction and age in his study on the relationship between university students' physical activity, participation in recreational sports, and educational success and their smartphone addiction.

The literature examined indicated both similar and different results compared to the current study. This can be explained by the fact that it was applied with different samples at different times.

The mindfulness of digital game addiction of secondary school students was analysed based on the grade level variable. Even though there was no significant difference in the Intrinsic Mindfulness subscale according to the grade level, it was seen that the mindfulness of 11th-grade students of digital game addiction was higher than 9th-grade and 10th-grade students in their Extrinsic Mindfulness subscale scores and total scale scores. It is speculated that this was caused by 9th and 10th-grade students being at the beginning of the secondary education process and having fewer exams and future anxieties than 11th-grade students.

The literature examined showed no studies with neither similar nor different results to this study. For this reason, it is believed that the study will contribute to future studies.

The mindfulness of digital game addiction of secondary school students is examined according to the high school type variable and no statistically significant difference both on the whole scale and its subscales was found. It is believed that this is related to students' mindfulness of

digital game addiction being unrelated to the high school they attend but their individual mindfulness.

The previous literature did not present a study with similar or different results to the study at hand. Hence, this study will contribute to future studies.

When the mindfulness of digital game addiction of secondary school students was examined according to the education status of their mother, no statistically significant difference between the groups was spotted both in the total scale and its two subscales. This might be related to mothers' lack of knowledge about digital game addiction and mindfulness. Similarly, Hazar et al. (2017) in their study on digital game addiction found no statistically significant difference in mother's and father's education status.

The previous literature examined showed studies with similar results to this one and showed none with different results.

The mindfulness of digital game addiction of secondary school students was analysed according to the daily technology exposure and it was concluded that the students who use technology for 4 hours or less have higher scores on intrinsic mindfulness, extrinsic mindfulness and total scale than students who use it more than 4 hours. It can be deduced that students' exposure to technology for a longer time has a negative effect on their digital mindfulness due to reasons such as trying to show themselves in digital games and trying to do activities in a digital environment that they cannot perform in real life. In their study of digital game addiction and mindfulness of athletes and e-sports players, Can and Tekkurşun Demir (2020) spotted that as the time they spend playing digital games increases, athletes' addiction increases and mindfulness decreases. Altunkürek and Özçoban (2020) in their study on the relationship between internet addictions and healthy lifestyle behaviours of secondary school students found that there is a statistically significant difference between students' average daily internet use on days they do not study and their goals. In their study on digital game addiction, Hazar et al. (2017) detected that the addiction scores of students who play digital games for 1 hour are significantly lower than those who play for 2, 3, and 4 hours. Festl et al. (2016), in their study on the use of computer games for youth and adults, found that people's intense use of technology is directly proportional to the negativities between their personality and social lives.

Studies with similar results to this one were found in the literature.

The examination of mindfulness of digital game addiction of secondary school students according to the variable of regular physical activity status showed that there is no statistically significant difference in terms of the scores they got from the scale and its subscales. This shows that students have effective time management, and can correctly determine the time they allocate to physical activities and digital games. Hazar et al. (2017) in their study on secondary school students' digital game addiction and physical activity levels found that there is a significant difference in technological addiction and that those who regularly exercise have a lower score on digital game addiction.

Studies with different results than this one were spotted in the literature. The reason for this

difference is believed to be related to the fact that the studies were applied in different periods and to different samples.

In this study, it was confirmed that the mindfulness levels, intrinsic mindfulness levels, and extrinsic mindfulness levels of secondary school students towards digital game addiction were at moderate levels. Frölich, Lehmkuhl, and Döpfner (2009) concluded in their study of computer games and addictive behaviours in adolescents that it is necessary to receive support from professional health institutions for the adaptation of adolescents with technology (digital) addiction to life.

5. Conclusion

When the research results are examined; Van Rooijv.d. (2014) study reported that psycho-social functioning of online games decreased and grades decreased, Ghuman&Griffiths (2012) reported that online games provided social efficiency amongst players by creating a unity among players, Joinerv.d. (2011) Festl, Scharkov, and Quandt (2013) reported that digital game addiction is not widespread among adolescents and adults in Germany, and that it affects the social life of individuals when it is prominent, Suryawanshiv.d. (2021), reported that playing games has negative effects on medical students, it is necessary to raise awareness about digital games among teachers, students and parents, and Areshtanabv.d. (2021), it is seen in various studies that the results stating that cooperation with the family should be ensured in order to prepare a safe online environment for the solution of the problems of school-age students.

Consequently, it was discovered that the mindfulness of digital game addiction scores of secondary school students is at a moderate level due to reasons such as students being greatly affected by technological developments, digital games becoming a market as in all areas of life, enhancement of the time spent at home during the pandemic, and negative effects of the pandemic on the socialisation of students. This study was conducted in a short period and the data was collected once. For this reason, it is foreseen to conduct studies that can reveal the mindfulness of digital game addiction according to the independent variables of the research in the longer term.

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