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Research Article

The relationship between problematic online game usage, depression, and life satisfaction among university students

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Abstract

Background/purpose – In this study, the relationship between problematic online game usage, and depression and life satisfaction levels of university students was examined.

Materials/methods – The research was conducted according to the relational screening model, with a sample consisting of 401 university students. The research data were obtained using the Beck Depression Inventory, the Problematic Online Game Use Scale, the Contentment with Life Assessment Scale, and a Personal Information Form prepared by the researchers. The data obtained were analyzed using Pearson Correlation Analysis, Independent Sample *t*-test, and One-Way Analysis of Variance (ANOVA).

Results – The results of the study show that the relationship between students' use of problematic online games and their depression levels to be moderately positive, and revealed a low-level, negative relationship between life satisfaction levels. In addition, students' problematic online game use, depression, and life satisfaction levels were analyzed according to the variables of gender and grade level, and statistically significant differences were found to exist between them.

Conclusion – The study's results revealed that as the use of problematic online games increased, the university students' depression levels increased in parallel, and that the depression levels of female students were higher than for their male counterparts. Lastly, it was observed that as the university students' use of problematic online games increased, their life satisfaction levels decreased.

Keywords – Problematic online game usage, depression, life satisfaction, university students

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1. Introduction

The Internet, computers, and information technology, which have become omnipresent throughout almost every stage of human life, had limited prevalence up until 30 or 40 years ago. With the rapid development of technology and the proliferation of the Internet, information technology has become an indispensable element of everyday life. The many positive effects of technology, such as facilitating life, providing early treatment opportunities in terms of health, and meeting increased needs for communication and entertainment, have made people's lives considerably easier. However, technology has had both positive and negative impacts, although most negative impacts do not constitute a major obstacle for many users of today's technology.

There are many needs that individuals can meet with the aid of technology. Especially with the widespread use of the Internet, individuals can meet needs such as access to information, communication, as well as shopping and entertainment via the Internet (Demir & Kumcağız, 2019). One such need is that of entertainment, which has been met in different ways through the application of technological innovation. In this context, some individuals prefer to watch amusing videos, whilst others may prefer to read articles that include an element of entertaining content. Of course, it is possible to provide many more examples; however, the point that needs to be emphasized in terms of the scope of the current research is that of play, which has an important role in meeting our entertainment needs. In addition to being a form of relaxation, play is an activity that facilitates the social adaptation of an individual, allows them to interact with their environment, and helps them to realize their abilities through varied experiences (Özyeşer-Cinel, 2006). Just 20 years ago, playing was largely seen as an activity performed with physical toys, either on the streets or within the home. However, due to the development of technology, street-based activities have largely been replaced with virtual activities performed at Internet cafes, and involve the use of mobile technologies such as smartphones or tablet computer, as well as personal computers and laptops (Yeşilyurt, 2014). These virtual activities are generally referred to as digital games. One type of digital gaming which has proven popular today are online games. These games are played using an Internet-connected device (e.g., personal computer, smartphone, etc.), and have evolved into multiuser online games played together or mutually by individual players (Ercansungur, 2018).

2. Literature review

When the literature is examined, it can be seen that online games are preferred not only because they meet our entertainment needs, but for other reasons too (Duran, 2019; Topal, 2016). Some of these reasons can be listed as a sense of curiosity developed by an individual towards certain games, the sense of achievement, as well as the need to socialize and pass time. When individuals achieve success in these online games, the pleasure they feel draws them further into the gaming world. In addition, recent studies have revealed that individuals prefer online games played on the Internet due to factors such as lack of social support, loneliness, and avoidance behavior in the real world (Melodia et al., 2020; Tham et al., 2020). Individuals who initially decrease their stress level and achieve a sense of success from playing a game online, may then continue the act of playing the game(s) continuously in order to experience the same pleasure on a repeat basis. However, this may lead to problems in their future related to excessive, repetitive use of online games (Can-Bilgin, 2015). When the use of online games becomes excessive, it can also result in psychological,

social, and physical problems. In a study conducted by Chiu et al. (2004), the researchers found that gaming addiction causes many problems such as violence in players, learning disorders, decreased academic achievement, health problems due to restricted or limited movement, visual disturbances, weakness in social relations, and decreased emotions and desire. In addition, Dieris-Hirche et al. (2020) found that individuals with problematic levels of online game usage had low levels of life energy and procrastination behaviors. As can be seen, the inability to control the use of online games can cause many cognitive, academic, physical, and social problems in the lives of individuals.

The problems caused by high levels of online game usage can negatively affect the life satisfaction of individuals. The life satisfaction of an individual who is in a physiologically, psychologically, or sociologically unfavorable situation can also be affected and decreased in situations of excessive online gaming. The opposite is also possible as well. Some individuals who play online games may actually find relief in distancing themselves from the stressful situations they endure in the real everyday world (Griffiths, 2005). This shows that the use of online games can also positively affect players' life satisfaction. In summary, life satisfaction levels can be affected through the playing of online games.

Life satisfaction refers to an individual's state of being happy with their living conditions, enjoying life in general, and having a positive attitude towards life (Akın & Yalnız, 2015). Here, the state of "being happy with living conditions" can be expressed as being related to the good mood of an individual from a holistic perspective. However, deterioration within any of the psychological, physiological, or social aspects of an individual may cause other areas to also become negatively affected. For example, an individual who plays too many violent computer games may exhibit aggressive tendencies. Such problems can result in distress in the social relations of the individual, and thereby reduce their life satisfaction level. Decreased life satisfaction can then create a negative emotional state for the individual. If this negative emotional state continues, a mental disorder termed depression may occur.

While there are many definitions for depression, it may be generally defined as a person having a depressed mood, looking at life from a pessimistic perspective, and not enjoying life as much as they had previously (Taycan et al., 2006). Just as a decrease in life satisfaction can cause depression, depression can also cause a decrease in life satisfaction. In other words, these two problems can be both a cause and as a result of each other. It has been observed that negative situations that develop due to the use of online games such as having problems in social relationships, emotional deprivation, and decreased appetite are similar to the type of problems brought on by depression. The concept of life satisfaction, which can be affected by depression and can also affect depression, may similarly result in negative outcomes. These similarities are striking. At this point of the research, it is thought that the use of online games is a concept that affects and can be influenced by the concepts of life satisfaction and depression.

In the research conducted by Rigby and Ryan (2016), it was determined that the pleasure obtained from online gaming places individuals in a good mood, even if just for a short time (as cited in Yıldırım, 2019). However, individuals who constantly crave wanting to be in this state may also increase their use of online games. As the use of online games increases, individuals may start to consider that the only source of such a good mood is therefore through game-playing (Yıldırım, 2019). As a result, when individuals return to their real lives, their life satisfaction may be negatively affected. On the other hand, individuals

with low levels of life satisfaction or depressive tendencies may see online games as their only source of well-being. This may cause an uncontrolled increase in their usage of online games.

It is thought that the findings obtained within the scope of the current study may help to guide academic researchers and field practitioners, and thus the study may contribute to the field and to the literature. Within the scope of these purposes, answers to the following research questions are sought in the study:

- Is there a statistically significant relationship between university students' levels of problematic online game usage and their levels of depression and life satisfaction?
- Do the problematic online game usage levels of university students differ statistically and significantly according to their gender?
- Do university students' depression levels differ statistically and significantly according to their gender?
- Do university students' life satisfaction levels differ statistically and significantly according to their gender?
- Do university students' levels of problematic online game use differ statistically and significantly according to their grade level?
- Do university students' depression levels differ statistically and significantly according to their grade level?
- Do university students' life satisfaction levels differ statistically and significantly according to their grade level?

3. Methodology

In this study, it was aimed to examine the relationship between problematic online game use, depression, and life satisfaction among university students. For this purpose, the relational scanning model was employed in the research.

3.1. Study group

The population of the research consists of 31,560 undergraduate students studying within the different faculties of Ondokuz Mayıs University (Turkey), during the fall semester of the 2019-2020 academic year. The sample size of the study was determined using the Minitab 16 software. Allowing for the potential of data loss, it was planned to reach approximately 416 students. As such, 420 students from the undergraduate faculties of Ondokuz Mayıs University who played online games and who volunteered to participate in the current study completed the required measurement tools of the research. At the end of the study, it was determined that data from 19 of the students were missing and these were subsequently excluded from the study; resulting in a sample of 401. Of the respondents, 43.1% are female and 56.9% are male, with 24.9% of the students studying in the 1st grade of their undergraduate degree, with 27.9% in the 2nd grade, 16.2% in the 3rd grade, and 30.9% of the students in their 4th grade.

3.2. Instruments

The data of the study were collected using the "Beck Depression Inventory" (BDI), the "Problematic Online Game Use Scale," the "Contentment with Life Assessment Scale," and a Personal Information Form that was prepared by the researchers. Details of each scale employed in the study are as follows:

Beck Depression Inventory (BDI): The BDI was initially developed by Beck et al. (1961), with validity and reliability of the inventory later conducted by Hisli (1989). The inventory consists of 21 items and is of a self-evaluation type. The scoring of each item is listed from 0 to 3, with a total score range from 0 to 63 points. Scores between 0 and 10 points indicate *mild depression*, scores between 11 and 20 indicate *moderate depression*, and scores of 21 or above indicate *severe depression*. The purpose of the inventory is not to diagnose depression, but to count the level of depression symptoms. It was found that 17 points or more was considered as the cutoff point in the determination of depression (Hisli, 1989). The Cronbach alpha internal consistency coefficient of the inventory calculated for the current study was .89.

Problematic Online Game Use Scale (POGUS): The POGUS was developed by Kim and Kim (2010), with validity and reliability studies later conducted by Akın et al. (2015) in the adaptation of the scale to the Turkish context. The scale consists of 20 items and is graded as a 5-point, Likert-type instrument. The scale has five dimensions: "euphoria," "health problems," "conflict," "loss of control," and "preference for virtual relationships." There are no reverse-scored items in the scale. While all of the items together provide a general score, each dimension also presents its own score. High scores indicate a high level of problematic online game use. The highest overall score obtainable from the scale is 100, and the lowest is 20. Cronbach's alpha internal consistency reliability coefficients of the scale were found to be .92, .74, .87, .88, and .84 for anger, health problems, conflict, loss of control, and preference for virtual relationships dimensions, respectively, and was found to be .94 for the whole scale (Akın et al., 2015). The Cronbach alpha internal consistency coefficient of the scale calculated for the current study was determined as .92.

Contentment With Life Assessment Scale (CLAS): The CLAS was developed by Lavellee et al. (2007), and later adapted to the Turkish context by Akın and Yalnız (2015). The scale consists of five items and is graded as a 7-point, Likert-type instrument. Item 3 and Item 4 are both reverse coded in the scale. High scores indicate a high level of life satisfaction. The highest score that can be obtained from the scale is 35, whilst the lowest is 5. The Cronbach's alpha internal consistency reliability coefficient of the scale was calculated as .73 (Akın & Yalnız, 2015), whilst in the current study it was determined as .78.

Personal Information Form: In a personal information form prepared by the researchers of the current study, data pertaining to the age, gender, and grade level of the respondents was collected.

3.3. Data collection

To conduct the study, written permission was first obtained from the Ondokuz Mayıs University Social and Human Research Ethics Committee (Decision number: 2019-269) and also from the relevant department at the University's rectorship. The measurement tools of the research were applied to the voluntary participants individually or in groups, after having obtained the necessary permission and having informed the students about the research according to the easily accessible sampling method. Each application took approximately 20 minutes.

3.4. Data analysis

The data collected within the scope of the research was analyzed using IBM's SPSS 22.0 statistical package program. Prior to commencing the data analysis, skewness and kurtosis

values were examined in order to evaluate whether or not the normality assumption, which is one of the preliminary hypothetical criteria for independent samples, was achieved. According to George and Mallery (2010), skewness and kurtosis values between -2 and +2 indicate that data is distributed normally. As a result of examining the skewness and kurtosis values in the current study, it was seen that the total scores of the Beck Depression Inventory, Problematic Online Game Use Scale, and the Contentment with Life Assessment Scale ranged from -2 to +2. In addition, no missing values were found in the dataset.

When analyzing the relationships between the data, Pearson Correlation analysis, one of the simple linear correlation methods, was applied since it meets the normality assumption. Whether the problematic online game use, depression, and life satisfaction levels differed in terms of the gender variable was tested with the Independent Sample *t*-test. A one-way analysis of variance (ANOVA) was used when analyzing whether the collected data showed any significant difference compared to the other variables. Levene test analysis was used to determine whether or not the data in the study met the homogeneity condition, which is one of the assumptions of One-Way Analysis of Variance (ANOVA). Tukey HSD analysis was then used to determine how data that showed a significant difference in the One-Way Analysis of Variance (ANOVA) differed. In the analyses conducted, the confidence level of the results was established as 95%, and statistical significance was accepted according to $p < .05$.

4. Results

The findings obtained according to the analysis conducted in the current research are presented in this section.

Table 1. Pearson product-moment correlation analysis of relationship between problematic online game usage, depression, and life satisfaction

Variables	1	2	3
Problematic online game usage (1)	1		
Depression (2)	.30[**]	1	
Life satisfaction (3)	-.18[**]	-.52[**]	1

As can be seen in Table 1, as a result of the Pearson Correlation Analysis performed to determine the relationship between the scores obtained from the Problematic Online Game Use Scale and the scores of the Beck Depression Inventory, a statistically and moderately significant positive correlation was found to exist between the scores at the level of $p < .01$ ($r = .30$; $p < .01$). In addition, as a result of the Pearson Correlation Analysis conducted to determine the relationship between the scores obtained from the Problematic Online Game Use Scale and the scores of the Contentment With Life Assessment Scale, a statistically low-level negative relationship was found to exist between the scores at the level of $p < .01$ ($r = -.18$; $p < .01$). In addition to these findings, a moderately significant negative correlation was found to exist between the scores obtained from the Beck Depression Inventory and those from the Contentment With Life Assessment Scale, statistically at the level of $p < .01$ ($r = -.52$; $p < .01$).

Table 2. Independent *t*-test to determine differentiation in problematic online game usage levels according to gender

	Gender	n	x̄	SD	t	p
Problematic online game usage	Female	173	2.09	.88	-4.92	.00[*]
	Male	228	2.50	.79		

As seen in Table 2, it was determined that a significant difference existed between the male (x̄ = 2.50) and female (x̄ = 2.09) university students' problematic online game use average scores (*t* = -4.92, *p* < .05). According to this difference, the online game usage levels of the male students were found to be significantly higher than their female counterparts.

Table 3. Independent *t*-test to determine differentiation in depression levels according to gender

	Gender	n	x̄	SD	t	p
Depression	Female	173	.67	.44	2.61	.00* (.009)
	Male	228	.55	.47		

As can be seen in Table 3, a significant difference was found to exist between the depression score averages of the female university students (x̄ = .67) and male students (x̄ = .55) (*t* = 2.61, *p* < .05). According to this difference, the female students' depression levels were found to be significantly higher than the male students.

Table 4. Independent *t*-test to determine differentiation in life satisfaction levels according to gender

	Gender	n	x̄	SD	t	p
Life satisfaction	Female	173	4.27	1.37	-1.41	.16
	Male	228	4.46	1.30		

As can be seen in Table 4, no significant difference was found to exist between the average life satisfaction of the female university students (x̄ = 4.27) and the male students (x̄ = 4.46) (*t* = -1.41, *p* > .05). As a result, no statistically significant difference was found to exist between the life satisfaction levels of the female and male university students' life satisfaction levels.

Table 5. One-way analysis of variance (ANOVA) to determine differentiation of problematic online game usage levels according to grade

n, x̄, SD values				ANOVA Results					
Group	n	x̄	SD	Variance Sources	SS	df	MS	F	p
1st Grade	100	2.10	.81	Between Groups	30.05	3	10.02	15.07	.00
2nd Grade	112	2.08	.75	Within Groups	263.74	397	.66		
3rd Grade	65	2.34	.78	Total	293.79	400			
4th Grade	124	2.71	.89						
Total	401	2.32	.86						

As can be seen in Table 5, from the ANOVA analysis, the problematic online game usage of the university students differed with statistical significance according to grade level (*F* = 15.07; *p* < .05). According to the results of Tukey HSD analysis conducted to assess the between-groups difference, the fourth-grade students' usage was found to be significantly higher than the other grades.

Table 6. One-way analysis of variance (ANOVA) to determine differentiation of depression levels according to grade

Group	n	x̄	SD	Variance Sources	SS	df	MS	F	p
		n, x̄, SD values			**ANOVA Results**				
1st Grade	100	.58	.42	Between Groups	1.05	3	.35	1.72	.16
2nd Grade	112	.59	.48	Within Groups	80.31	397	.20		
3rd Grade	65	.54	.36	Total	81.36	400			
4th Grade	124	.68	.49						
Total	401	.61	.45						

As can be seen in Table 6, the ANOVA analysis demonstrated that the depression levels of the university students did differ with statistical significance according to their grade (*F* = 1.72; *p* > .05).

Table 7. One-way analysis of variance (ANOVA) to determine differentiation of life satisfaction levels according to grade

Group	n	x̄	SD	Variance Sources	SS	df	MS	F	p
		n, x̄, SD values			**ANOVA Results**				
1st Grade	100	4.50	1.30	Between Groups	17.17	3	5.72	3.28	.02
2nd Grade	112	4.5	1.33	Within Groups	692.28	397	1.74		
3rd Grade	65	4.47	1.37	Total	709.45	400			
4th Grade	124	4.07	1.31						
Total	401	4.38	1.33						

As can be seen in Table 7, the ANOVA analysis determined that the life satisfaction levels of the university students differed with statistical significance according to their grade level (*F* = 3.28; *p* < .05). According to the Tukey HSD analysis that assessed the difference between the groups, the life satisfaction levels of the second-grade students were found to be significantly higher than those of the fourth-grade students.

5. Discussion, Conclusion and Suggestions

According to the findings obtained from the study, a moderately positive and significant relationship was found to exist between problematic online game use and depression. According to this relationship, as the university students' use of problematic online games increased, their level of depression was also found to have increased. According to the results of the study, it is thought that a mutual relationship may exist between problematic online game use and depression in individuals. In other words, an individual may choose to play online games because they are prone to depression and are trying to escape from the negativities of real life. For this reason, online games can help the individual to relax, avoid negativity and obtain satisfaction from playing the game. Thus, certain individuals may see online games as a form of escapism. On the other hand, an individual who cannot control their use of online games may exhibit symptoms such as decreased enjoyment of other activities, quick-rising anger, and an unwillingness to carry out daily tasks. This may indicate that the individual is prone to depression. In short, online gaming can also become a trigger for depression.

Upon examining the literature, other studies in Turkey have yielded similar findings (Baş, 2018; Demir & Kutlu, 2016; Karaman Yaşar, 2019; Karakose & Kocabas, 2006; Mustafaoğlu & Yaşacı, 2018; Odabaşı, 2016; Yılmaz & Karaoğlan Yılmaz, 2018). However, these studies

focused on the concept of online game addiction and Internet addiction rather than problematic online game use. Since problematic online game use may lead to addiction in the future, studies on addiction are thought to parallel this research. Similarly, some studies have shown that problematic gaming behavior is positively associated with high levels of depression (Mentzoni et al., 2011; Starcevic et al., 2011; Wei et al., 2012). Contrary to the findings of the current study, some other studies have indicated that online gaming is not associated with depression (Colwell, 2007; Ryan et al., 2006; Sağlam, 2019; Snodgrass et al., 2011).

According to another finding of the study, a low level of significant negative correlation was found to exist between problematic online game use and life satisfaction. According to this relationship, as the university students' use of problematic online games increased, their life satisfaction levels were shown to decrease. Based on the results of the study, it is thought that variables (e.g., accommodation needs, socialization needs, graduation anxiety, and job hunting, etc.) that form part of general student life at university, can negatively affect their life satisfaction levels, and may therefore direct students towards online gaming. On the other hand, it may be expected that problematic online games usage can also decrease their level of life satisfaction. Due to the problematic use of online games, university students can experience a disruption in their life tasks, and this disruption may reflect negatively on their life satisfaction levels. When the relevant literature was examined, some studies were found to have examined the relationship between problematic online game use and life satisfaction (Bargeron & Hormes, 2017; Batıgün & Kılıç, 2011; Chen et al., 2008; Gurp, 2017; Soydan, 2015; Sterling, 2017); however, these studies were mostly related to Internet usage and life satisfaction. However, the aforementioned studies are thought to support the current research since Internet usage and the use of online games share certain parallel features. Contrary to the findings of the current research, in a study conducted by Taşlıyan et al. (2018), a weak and positively significant relationship was found to exist between university students' Internet addiction and their life satisfaction levels. This finding showed that as Internet addiction increases, life satisfaction levels can also increase in students. According to Taşlıyan et al. (2018), the reason behind this finding is that Generation Y, i.e., those born between 1980 and 1999, grew up with the Internet and surrounded by computer-based technologies. Since Generation Y uses the Internet very well and sees it as an important communication tool in everyday life, it was stated by Taşlıyan et al. (2018) that the Internet can have a positive effect on life satisfaction.

According to another finding of the current study, the problematic online game usage of university students was found to have a significant difference in terms of the gender variable. According to this difference, the problematic online game usage levels of males were found to be significantly higher than females. The higher level of problematic online game use in male over female university students was explained in the literature according to the concept of cultural impact (Göymen & Ayas, 2019). Given the influence of Eastern culture in Turkey, it may be possible to say that males are raised in a more liberal environment because of the patriarchal understanding of society. Within this cultural freedom, males can more easily access facilities such as computers, the Internet, or online games. Therefore, it may be that males who have ease of access to online gaming may resultantly exhibit problematic online game usage simply as a result of playing more online games and from being unable to control this time. Another reason for the differential established in the current study between male and female students in the use of

problematic online games, according to the literature, is that males may experience feelings of competitiveness and aggression more intensely than females (as cited in Bekir, 2018). Since it is known that online games contain significant levels of competition and aggression, the research results are perhaps not surprising. When the relevant literature was studied, other studies in Turkey were also found to have supported this view (Ayık, 2008; Cakir et al., 2011; Göymen & Ayas, 2019; Onay et al., 2005; Çavuş et al., 2016; Karakose, Kocabas, Yesilyurt, 2014; Tüfekçi, 2007). In the study conducted by Bülbül et al. (2018), university students were divided into three groups as game addicts (addicts), those with a high tendency to be addicted (candidates), and conscious players (conscious). As a result of their research, it was determined that approximately two-thirds of the addicts group were male. When studies conducted outside of Turkey were examined, it was seen that results also parallel the Turkish research findings (Chou & Tsai, 2007; Griffiths & Davies, 2005; Ko et al., 2005; Li & Kirkup, 2007).

According to another finding of the current study, the depression levels of university students were found to differ significantly in terms of the gender variable. According to this difference, the depression levels of female students were found to be significantly higher than that of male students. The higher levels of depression found in female students is thought to be related to gender, genetic, and cultural factors, which are among the risk factors of depression. It is known that adult females are more prone to depression, both hormonally and emotionally, and it is considered that the current study's finding is in parallel with this. In addition, for female students living in Turkey, moving away from their families, having to take on more responsibility, and the financial difficulties as well as academic anxieties can increase stress-related factors related to depression. Although these stress factors are also seen as experienced by male students, they are not considered to be felt as intensely as they are among female students. In this case, it is assumed that male students raised within a patriarchal society are raised freer and with more responsibility. When the relevant literature was examined, studies on depression and female university students were found (Dilmen Bayar et al., 2020; Tuncel, 2018; Uzuner, 2018; Yağcı Şentürk & Okur, 2020). The findings of the current research are therefore in line with studies in the literature that have revealed depression levels in female students being higher than in male students. However, contrary to both these other studies and the current study, some research studies found no significant difference between male and female students' depression levels (Namlı Özkader, 2018; Üstün & Bayar, 2015).

In the current study, it was concluded that the life satisfaction levels of university students did not differ in terms of the gender variable. When the literature was reviewed, similar studies to the results of the current research were found (Akboğa & Gürgan, 2019; Fugl-Meyer et al., 2002; Özgür et al., 2010). However, contrary to the findings of these studies, others in the literature established that the level of life satisfaction among university students differs according to their gender (Altinkurt & Karakose, 2009; Bernd Lachmann et al., 2016; Gülaçtı & Çiftçi, 2018; Kartal et al., 2015).

According to another finding obtained from the current study, the problematic online game usage of university students showed a significant difference according to the students grade, or class level. According to this difference, the problematic online game usage levels of the 4th-grade university students were found to be significantly higher than those studying in their 1st-, 2nd-, or 3rd grades at the undergraduate level. The researchers in the current research suggest that the reason why the level of problematic online game usage of

fourth-grade students was found to be higher than the other grades may be their desire to escape from the pressures of their everyday life as a result of the stress and anxiety related to finding a job or entering postgraduate education after they graduate. In addition, because factors such as finding a partner, establishing their economic independence, and taking responsibility for themselves in life can increase anxiety levels among students, it may be predicted that the trend towards online gaming increases and that this may be a root cause of its problematic use. According to the research conducted by Çakır et al. (2011) at Ankara University, Turkey, the Internet and gaming addiction levels of university students were not shown to have a significant difference according to their grade level, whilst in another study, Odabaşı (2016) found online gaming addiction levels of first-grade university students were significantly higher than third-grade students. In a study by Kubey et al. (2001), the Internet usage levels of first-grade university students were found to be higher than those of other grades. It is thought that the problems of new university students not being able to communicate as easily with their fellow students may have an impact relevant to this finding (Çakır et al., 2011). As can be seen, the findings in the literature contradict the findings of the current study. However, factors such as cultural differences, job opportunities, and sample differences may have impacted on the contradiction found in the results of the current study compared to other research in the literature.

The depression levels of university students in the current study were not found to differ according to their grade level. This result shows that the differentiation of the students' grade level did not have a significant effect on the depression level of students. When reviewing the literature on this finding, it can be seen that other studies also support this finding (İskender et al., 2018; San et al., 2020; Yıldız, 2016). However, contrary to these studies, there is also relevant literature that indicates that depression levels among university students differs according to their grade level (Güzel & Ergün, 2020; Özdel et al., 2002). This situation, which contradicts with the findings of the current research, is thought to be related to differences in the samples.

According to another finding obtained from the current study, it was observed that the life satisfaction levels of university students differed according to their grade level. According to this difference, the life satisfaction level of the study's second-grade students was found to be significantly higher than those in their fourth grade. It is suggested that this difference was due to fourth-grade students experiencing feelings of anxiety about their future employment or starting postgraduate studies when compared to second-grade students; hence, their life satisfaction was shown to be lower. It is assumed that in Turkey, the KPSS exam (Public Service Personnel Selection Examination), which is a national exam required for transition to a professional life in public service, has an especially negative effect on the life satisfaction of fourth-grade university students due to the stress and intensity associated with the exam. In the literature, other studies supporting this finding were also found (Ergin et al., 2011). However, contrary to these studies, in a study conducted by Güler (2020), no relationship was found to exist between the level of education attained and the life satisfaction of students.

The current study offers certain recommendations for practitioners and other researchers in light of the results obtained from the research, which are as follows:

The sample of the current study consisted of university students with an average age of 21.51 years. Considering the high number of children and adolescents who use online games, it is recommended that this research is repeated for children and adolescents.

With the rapid ongoing developments in technology, it is inevitable that there are differences in the online gaming world; therefore, it is recommended to approach and examine these differences as part of a longitudinal study over a number of years according to the variables used in the current study.

In the current research, a significant relationship was found to exist between the scores of the Problematic Online Game Use Scale, Beck Depression Inventory, and Contentment with Life Assessment Scale. However, the relationship between euphoria, health problems, conflict, loss of control, and preference for virtual relationships, depression, and life satisfaction, which are dimensions of the Problematic Online Game Use Scale, were not examined, but would be recommended to be examined in future studies.

Notes

This study was produced from the Master's thesis prepared by the first author, and under the supervision of the second author.

Declarations

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