PHONE USE IN LEISURE TIME IN UNIVERSITY STUDENTS: THE RELATIONSHIP BETWEEN NOMOPHOBIA AND DIGITAL GAME ADDICTION

Nazlı Deniz ÖZ
Asst. Prof.Dr., Selcuk University, Konya, Turkey, nazlidenizyilmaz@gmail.com
ORCID: 0000-0001-9187-8596

Murat ERDOĞDU
Prof.Dr., Selcuk University, Konya, Turkey, muraterdogdu06@gmail.com
ORCID: 0000-0002-5324-2236

ABSTRACT

The aim of this study is to examine the relationship between digital game addiction, which is considered by many institutions as one of the biggest dangers of the future, and nomophobia, which is considered as mobile phone deprivation, on university students who are representatives of the Z generation. For this purpose, 445 (N female: 173, N male: 242) students studying in various faculties, selected by convenience sampling method in the 2022-2023 academic year, participated in the study on a voluntary basis. The "Digital Game Addiction Scale" developed by Hazar and Hazar and the "Nomophobia Scale" adapted into Turkish by Yildirim et al. were used in the study. The assumptions of the study were examined and it was determined that the data were normally distributed. Thus, independent samples t test was used for pairwise comparisons, and one-way anova test was used for comparisons of three or more group. The chi-square test was used to examine the levels of digital game addiction according to the variables, and Pearson correlation test was used to reveal the relationship between digital game addiction and nomophobia levels. As a result of the study, significance was found according to the variables of gender, age and grade. It was determined that the levels of nomophobia were higher in female participants, and the levels of nomophobia and digital game addiction increased as the age and grade decreased. In addition, a moderate positive relationship was found between digital game addiction and nomophobic behaviors. Generational habits continue to change depending on technological developments. It is supported by this study and other studies that smartphone use and digital game addiction levels in Generation Z are above the medium level. Therefore, it is necessary to evaluate the process effectively, to take measures by authorized actors and to raise awareness at educational levels.

Keywords: Digital game, Nomophobia, Addiction, Recreation.

INTRODUCTION

The role of electronic devices that combine technology and internet in our lives continues to expand. The benefits of the technological products we obtain every day facilitate our communication, interaction and accessibility to various areas of life. It is a fact that giving up the comfort of our life, which has become easier with technological products, or thinking that they are limited is now a cause for concern. Smartphones are the most accessible of technological tools and and are available to every individual. Only with a smart phone, we can now make single or multiple calls, reach the lives of many people through social media and share our lives, do research, write, draw, etc. We have access to facilities. Smartphones have become a serious continuation tool of our daily life, with or without awareness. Therefore, it can be said that mobile phones have an effect that changes individual, group and community behaviors, habits, personality and relationships (King et al, 2013; Erdem et al, 2016). It is essential to conduct research on our dependence on smartphones owned by every individual from 7 to 70 and used by each of us with different purposes and intensities to provide self-control with a cause-effect relationship and to examine whether deprivation occurs in line with our purposes.

It is possible to say that as technological developments are offered to society and their accessibility increases, our dependency increases in direct proportion. According to 2015 data, the overall penetration rate of mobile phone subscriptions was 96.8% in the world, 102.6% in developed countries and 91.8% in developing countries. The penetration rate of mobile broadband internet subscription, which is mostly used with smartphones, was 37.2% in the world, 81.8% in developed countries and 27.9% in developing countries. These numbers, based on July 2022 data, reveals that approximately 5 billion people use smartphones (Access 2023a).

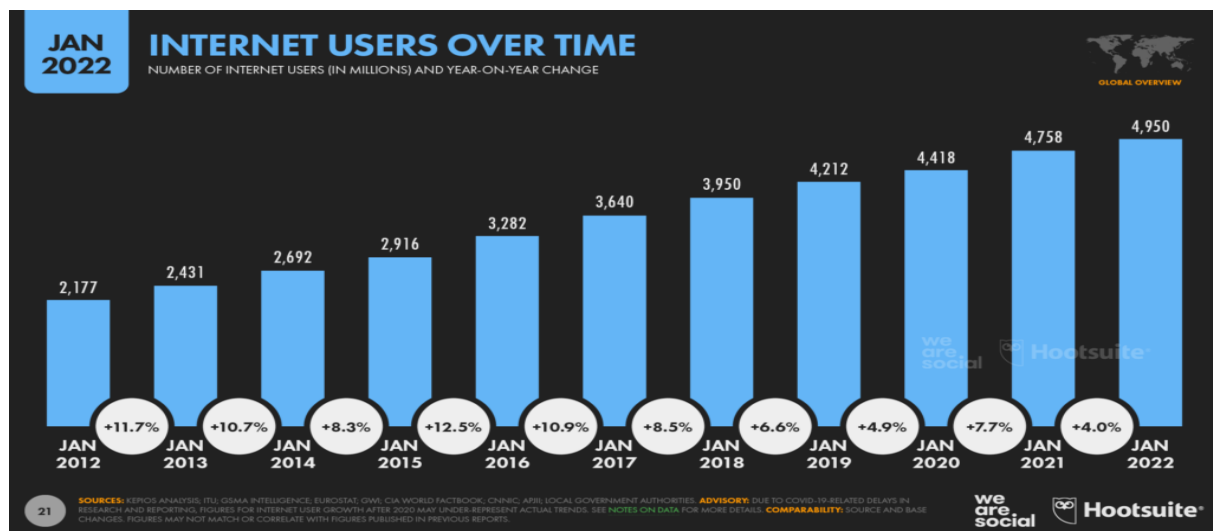

Figure.1 Internet users by year (We are social 2022 July Report)

According to the "We are Social" research report in July, the number one choice for accessing the Internet is smartphones. Accordingly, 59.72 percent of devices connected to the internet are smartphones, 37.98 percent are computers and 2.27 percent are tablets. In this context, the share of smartphones in internet access is

undeniably high. Thanks to the internet, which is one of the most important pillars of digitalization, the chance of individuals to instantly access the channels to receive and share news has accelerated with mobile devices – smart phones (Access 2023b). It is predicted that smartphones, which are intensively used as a means of socialization and leisure time utilization, may have many positive effects as well as negative effects. Factors such as prolonged screen time, uncontrolled use and access to false information create many psychological, physiological and social "digital diseases". The anxiety and fear of being deprived of smartphones, where we are most active and have the easiest access, has entered the literature as "nomophobia" with the abbreviation of "no-mobile phone phobia".

Smartphone use is the maintenance of a behavioral habit. In today's conditions, a large part of the world population uses smartphones. This use can be considered useful with acceptable measures in the natural flow. However, "the extreme dimension of a behavior that can be considered normal" defines behavioral addiction. Smartphone usage rates and hours are increasing day by day. It is certain that the increase will be continuous, especially with the fact that the new generation is born into technology (Öz and Arı, 2023). This increase leads to the assumption that the increase in usage rates rather than the number of devices and the increase in the tendency to spend time on social media, digital games, etc. or to use smartphones in leisure time, which can be considered as "digital idleness", may constitute a risk factor.

Smartphones make our daily lives easier in many ways. However, the increasing number of applications connected to the developed devices increases our smartphone usage rates. We can now talk to the people we want anywhere and anytime through smartphones, follow what is going on in everyone's life thanks to social media, participate in synchronous-asynchronous exercises, shop, watch movies and TV series, read books, and do our work with web-based applications. All these are possibilities of instant access. On the other hand, the deprivation of this phenomenon that penetrates so much into our lives has started to scare users. Therefore, researches have revealed the necessity to distinguish between smartphone addiction and nomophobia. Nomophobia is defined as obsessive behaviours towards an object, such as constantly checking the phone for messages and calls, feeling nervous, anxious and worried in places where the access is limited, wanting the phone to be with you all the time, leaving it on all the time (Bragazzi and Pente 2014). Smartphone addiction, on the other hand, should be considered more contextually as "abuse and addiction". The loss of time perception while using a smartphone, the desire to use the same application or more than one application continuously, the tendency to disconnect from daily life and develop cyber relations-behaviors express smartphone addiction (Kwon et al. 2013).

Excessive smartphone use also indirectly increases the dependency on the applications connected to it. Digital diseases such as social media addiction, watching-listening addiction, and digital game addiction have emerged recently and are being shown as among the most important problems of the future by preventive and regulatory agency actors (Access 2023c). The Diagnostic and Statistical Manual of Mental Disorders-5 [DSM-5], published in May 2013 by the American Psychiatric Association, addressed a behavioral addiction for the first time and

defined "gambling addiction" under the heading of "Non-Substance-Related Disorder". This made it easier to take steps for smartphone addiction, making it a candidate for inclusion in the same category.

As a result of the intensity of smartphone use, the current agenda is the risks of digital game addiction. Especially, the behavior of playing digital games is seen intensely in children and young people (Yılmaz 2022). The number of game applications increasing day by day is also fueling the increase in the number of people playing games. It is observed that 75% of children aged 12-15 in Turkey have smart phones, and 43% of these children have nomophobic tendencies (Access 2023d). In a study conducted with 537 university students in Turkey, the nomophobia scale developed by Yildirim and Correra (2015) was translated into Turkish and used, and the prevalence of nomophobia among university students was measured for the first time in Turkey. As a result, it was reported that 42.6% of young adults have nomophobia and their biggest fear is not being able to communicate and access to information.

Canatar and Bilge (2023) emphasized that smartphone addiction causes many antisocial behaviors, and the level of nomophobia in adults aged 18 and over increases. They stated that this increase is a factor affecting interpersonal communication. In the study of Koçoğlu et al. (2022), in which they investigated the metaphorical perceptions of university students towards the concept of nomophobia, it was observed that the themes of loneliness, fear and anxiety (Elhai et al., 2017) were concentrated. These themes are also expressed as elements that feed digital game addiction (Öz & Üstün, 2022). Achangwa et al (2023) stated in a systematic review of nomophobia studies that these behaviors are a factor that causes psychological and mental health problems in university students. Lopez Fernandez et al. (2018) stated that playing games increases the level of nomophobia in their research on mobile games and problematic phone use.

Digital gaming is one of the factors that increase excessive phone usage. An individual may have a tendency to increase the rate of phone usage in his/her leisure time by playing digital games through his phone, which can be accessed anywhere at any time. This trend is higher for university students who represent the z generation who grew up with technology. The prediction obtained from the studies is that it will rise even more with the new generation. In this respect, it is thought that the studies that create foresight and reveal the levels will allow preventive initiatives at the regional or national level.

It can be said that there is a positive relationship between smartphone use and level of gaming. The increasing level of use, the rate of gaming and its rising trend in adolescents and young people have many consequences. The relationship between nomophobia and digital game addiction, as two dimensions of technological addiction, which is thought to harm individuals' academic success, social relations, environmental sensitivity and sense of responsibility, can be considered as behaviors that feed each other negatively. In this context, the questions aimed to be answered through this research are as follows;

- Do nomophobia and digital game addiction vary according to gender, age and class variables?
- What are the digital game addiction levels among university students? Does it differ by gender?

• Is there a relationship between nomophobia behaviors and digital game addiction among university students?

METHOD

Research Model

In the study, in order to make a general judgment about the population in a population consisting of many elements, the relational survey model, which aims to determine the existence or degree of coexistence between two or more variables within the general survey model performed on the whole population or a sample to be taken from it, will be used (Karasar 2011)

The instant survey approach and relational survey model, which are included in the general survey model, were used in this study conducted to determine the levels of nomophobia and digital game addiction of university students. This study, with a cross-sectional characteristic, aimed to develop predictions for the future by obtaining features specific to the time it was scanned with the single survey model. The relational survey model is used to predict the levels of mutual influence between the data obtained by the survey. Instant survey approaches aim to describe the existing situation as it is within the specified time period (Karasar, 2011).

Population , Sample and Data Collection

The population of the study consists of higher education students studying at universities within the borders of Selcuk University of Turkey and playing digital games. Inclusion criteria for the study were determined as a) volunteering, b) using a smart phone, c) playing at least one digital or mobile game. When the population of 50,540 students enrolled in the Selçuk University central campus in the 2022-2023 academic year was determined, it was calculated to reach 381 undergraduate students with a 95% confidence interval and a 5% margin of error. The data were collected between the dates of 15-30 December 2022 by means of face-to-face survey method on campus during breaks, socialization areas and free time of university students. The sample group consisted of a total of 445 volunteer participants, 173 female and 272 male, studying in various faculties and departments of Selçuk University in the 2022-2023 academic year, who were selected by convenience sampling method.

This study was approved by Selcuk University, Faculty of Sport Sciences, Non-Interventional Clinical Research Ethics Committee with the decision numbered E.418805-166 dated 06.12.2022.

Data Collection Tools

Personel Information Form: The form created by the researchers included gender, age and class variables. The form was formed by determining the variables that could make a significant difference as a result of examining the related studies. In addition, this section includes an informed consent form.

*Nomophobia Scale***:** Nomophobia Scale developed by Yildirim and Correira (2015) and adapted into Turkish by Yildirim et al. (2015) was used to measure nomophobia scores of individuals. The scale consists of 20 items and four sub-dimensions. The sub-dimensions are: (i) Not being able to be online, (ii) Losing communication, (iii) Device Deprivation, (iv) Not being able to Access to information. The validity and reliability of the scale were found to be at a satisfactory level. The data in the scale will be taken as 5-point Likert (1. Strongly Disagree, 5. Strongly Agree). Within the scope of this study, the reliability coefficient of the scale was calculated as .938.

*Digital Game Addiction Scale***:** A 5-point Likert-type self-report method was used to evaluate the statements in the scale, which was adapted by Hazar and Hazar (Hazar and Hazar 2019) (1= Strongly Disagree, 5= Strongly Agree). The lowest score that can be obtained from the scale is "21" and the highest score is "105". The grading of the scale scoring is "1-21 points: Normal group, 22-42 points: Low risk group, 43-63 points: Risky group, 64-84 points: Dependent group and 85-105 points: Highly dependent group". In Hazar and Hazar's (2019) study, Cronbach's alpha coefficient was found to be 0.95. In this study, the reliability coefficient of the scale was calculated as .955

Data analysis

 SPSS 25.0 statistical package program was used to evaluate the data and to find calculated values. The data were summarized by giving percentages, mean and standard deviations. After checking that the data were normally distributed (±1.95) (George and Mallery, 2010) , independent group t test was used for pairwise cluster comparisons, and One-Way Analysis of Variance (ANOVA-Scheffe) was used for more than two cluster comparisons. Chi-square test was applied to evaluate the cut-off scores of digital game addiction according to gender. Pearson correlation test was used to reveal the relationship between two dependent variables. Effect sizes were calculated as cohen's d for pairwise comparisons, and partial $n2$ for comparisons with three or more categories. Calculations were made with the GPower 3.1 program. The significance level was taken as 0.05 in the study.

FINDINGS

Table.1 Descriptive Findings Related to Demographic Characteristics of Participants

		N	%
Gender	**Female**	173	38,9
	Male	272	61,1
Age	**<21 years old**	243	54,6
	>22 years old	202	45,4
Grade	**1**	95	21,3
	2	101	22,7
	3	137	30,8
	>4	112	25,2

The participant characteristics of the university students who participated in the study are given in Table 1. According to the table, 38.9% (173) of the participants were female, 61.1% (272) were male, 54.6% (243) were

21 years of age or younger, and 45.4% (202) were 22 years of age or older. 21.3% (95) of the participants were in the 1st grade, 22.7% (101) in the 2nd grade, 30.8% (137) in the 3rd grade and 25.2% (112) in the 4th grade and above.

Table.2 Examination of the Nomophobia Scale by Demographic Variables

	Nomophobia Scale			
	Not Being Able To Be Online	**Losing Communication**	**Device Deprivation**	**Not Being Able to Access to information**
Variable	**Mean±SD**	**Mean ±SD**	**Mean ±SD**	**Mean ±SD**
Female	3.21±1.59	4.02±1.56	3.60±1.59	4.10±1.64
Male	3.02±1.58	3.57±1.47	3.15±1.37	3.81±1.52
t/ES	1.270/0.12	**3.008**/0.29**	**3,073**/0.30**	1,864/0.18
<21 years old	3.23±1.67	3.71±1.59	3.34±1.52	3.95±1.64
>22 years old	2.92±1.47	3.79±1.43	3.30±1.41	3.89±1.50
t/ES	**2.072*/0.19**	-0.536/0.05	0.265/0.02	0.405/0.03
1st grade	3.26±1.60	3.83±1.45	3.61±1.44	4.02±1.57
2nd grade	2.90±1.67	3.91±1.55	3.37±1.50	3.98±1.70
3rd grade	3.03±1.73	3.53±1.45	3.26±1.60	3.81±1.48
4th grade	3.09±1.52	3.69±1.55	3.19±1.44	3.88±1.56
F/ES	0.763/0.009	0.810/0.01	1.986/0.003	0.294/0.009

*:p<0.05, **:p<0.01 ES: cohen's D for t test, partial n² for F test

Table 2 shows the evaluation of nomophobia subscales according to participant characteristics. While no statistical significance was found in the nomophobia scale sub-dimensions of not being online (t=1.270;p>0.05) and not being able to access to information (t=1.864;p>0.05) according to the gender variable, statistically significant findings were obtained in favor of female students in the sub-dimensions of losing communication (t=3.008;p<0.01) and device deprivation (t=3.073;p<0.01).

According to the age variable, no significant difference was found in the sub-dimensions of losing communication (t=-0.536;p>0.05), device deprivation (t=0.265;p>0.05) and not being able to access to information (t=0.405;p<0.05), while statistically significant findings were obtained in favor of participating students aged 21 and under in the sub-dimension of not being able to be online (t=2.072;p<0.05).

No statistically significant difference was found according to the grade variable although the averages were higher in lower grades in the sub-dimensions of not being able to be online (F=0.763;p>0.05), losing communication (F=0.810;p>0.05), device deprivation (F=1.986;p>0.05) and not being able to access to information (F=0.294;p>0.05).

Table.3 Examination of the Digital Game Addiction Scale by Demographic Variables

	Digital Game Addiction Scale			
	Overfocusing and procrastination	**Conflict and deprivation**	**Mood change and being lost in thought**	**DGAS TOTAL**
Variable	**Mean±SD**	**Mean±SD**	**Mean±SD**	**Mean±SD**
Female	18.15±8.75	9.39±4.91	9.54±4.33	37.09±16.59
Male	23.75±10.93	12.25±6.16	10.36±4.48	46.37±20.29
t/ES	**-5.683**/0.55**	**-5.413**/0.50**	-1.884/0.18	**-5.265**/0.49**
<21 years old	22.27±10.93	11.58±6.08	10.45±4.79	44.30±20.47

>22 years old	20.74±9.91	10.61±5.57	9.54±3.92	40.90±18.03
t/ES	1.532/0.14	1.732/0.16	**2.195*/0.20**	1.842/0.17
1st grade	22.17±10.47	11.40±5.98	10.33±4.61	43.91±19.74
2nd grade	22.37±11.36	11.93±6.50	10.57±4.94	44.88±21.51
3rd grade	21.49±10.57	11.08±5.71	9.82±4.30	42.40±19.15
4th grade	20.44±9.60	10.27±5.30	9.58±3.92	40.31±17.48
F/ES	0.734/0.005	1.487/0.01	1.122/0.008	1.118/0.008

*:p<0.05, **:p<0.01 ES: cohen's D for t test, partial n^2 for F test

Table 3 presents the comparison of digital game addiction scale and its sub-dimensions according to demographic variables. While there was no statistically significant difference in the sub-dimensions of mood change and being lost in thought (t=-1.884;p>0.05) according to gender, statistically significant findings were found in favor of male participants in the sub-dimensions of overfocusing and procrastination (t=-5.683;p<0.01), conflict and deprivation (t=-5.413;p<0.01) and the total score of the Digital game addiction scale (t=-5.265;p<0.01).

While no statistically significant differences were found in the total score of the Digital Game Addiction Scale (t=1.842;p>0.05), and in the sub-dimensions of overfocusing and procrastination (t=1.532;p>0.05), conflict and deprivation (t=1.732;p>0.05) according to age, significant results were obtained in favor of the participating students aged 21 and under in the sub-dimension of mood change and being lost in thought (t=2.195;p<0.05).

No statistically significant differences were found in the sub-dimensions of overfocusing and procrastination (F=0.734;p>0.05), conflict and deprivation (F=1.487;p>0.05), mood change and being lost in thought (F=1.122;p>0.05) and the total score of the digital game addiction scale (F=1.118;p>0.05) according to grade variable.

Table.4 Evaluation of Digital Game Addiction Cut-off Scores by Gender

		Gender		Total
		Female	Male	
Digital Game Addiction Cutoff Scores	Normal	13(%2,9)	8(%1,8)	21(%4,7)
	Low-Risk	109(%24,5)	132(%29,7)	241(%54,2)
	Risky	36(%8,1)	71(%16,0)	107(%24,0)
	Dependent	12(%2,7)	50(%11,2)	62(%13,9)
	Highly Dependent	3(%0,7)	11(%2,5)	14(%3,1)
Total		173(%38,9)	272(%61,1)	445(%100,0)
Pearson Chi-Sqaure: 21.747,df:4;p<0.01				

In Table 4, the relationship between digital game addiction scale cut-off scores and gender was tested with the chi-square test. According to the table, male students have a higher risk of digital game addiction than female students. There is a statistically significant relationship between gender and digital game addiction (p<0.01)

Table.5 Evaluation of the Relationship between the Digital Game Addiction Scale and its Sub-Dimensions and Nomophobia Scale Sub-Dimensions

		Digital Game Addiction Scale			
		Overfocusing and procrastination	Conflict and deprivation	Mood change and being lost in thought	DGAS total
Not being able to be online	r	0.305**	0.338**	0.799**	0.449**
Losing Communication	r	0.209**	0.209**	0.511**	0.293**
Device Deprivation	r	0.252**	0.262**	0.548**	0.340**
Not being able to Access to information	r	0.124**	0.116*	0.340**	0.180**

*:p<0.05, **:p<0.01

Table 5 shows the relationship between digital game addiction scale and nomophobia scale. According to the table;

A moderate positive relationship was found between Nomophobia Scale not being able to be online sub-dimension and Digital Game Addiction Scale over-focusing and procrastination (r=0.305;p<0.01), conflict and deprivation (r=0.338;p<0.01) and Digital Game Addiction total score (r=0.449;p<0.01), while a high positive relationship was found between mood change and being lost in thought sub-dimension (r=0.799;p<0.01),

A low level positive relationship was found between Nomophobia Scale losing communication sub-dimension and Digital Game Addiction Scale over-focusing and procrastination (r=0.209;p<0.01), conflict and deprivation (r=0.209;p<0.01) and Digital Game Addiction total score (r=0.293;p<0.01), while medium level positive relationship was found between mood change and being lost in thought (r=0.511;p<0.01) sub-dimension.

A low level positive relationship was found between Nomophobia Scale device deprivation sub-dimension and Digital Game Addiction Scale overfocusing and procrastination (r=0.252;p<0.01), conflict and deprivation (r=0.262;p<0.01), while moderate positive relationship was found between Digital Game Addiction total score (r=0.340;p<0.01) and mood change and being lost in thought (r=0.548;p<0.01) sub-dimension.

A low level positive relationship was found between the Nomophobia Scale not being able to access to information sub-dimension and the Digital Game Addiction Scale over-focusing and procrastination (r=0.124;p<0.01), conflict and deprivation (r=0.116;p<0.05) and Digital Game Addiction total score (r=0.180;p<0.01), while a moderate positive relationship was found between the sub-dimension of mood change and being lost in thought (r=0.340;p<0.01).

CONCLUSION and DISCUSSION

The aim of this study is to examine the level of nomophobia, which is referred to as smartphone addiction, and digital game addiction levels and the relationship between them in university students. Nomophobia and digital game addiction are two different types of technological addiction that fuel each other. Although these activities with mobile phones, which are also evaluated under the context of digital recreation in the leisure literature,

represent an escape from routine when done in moderation, they can be considered as atypical recreation as they foster addiction when used intensively.

The levels of digital game addiction and smartphone addiction, which can be considered as new generation addictions, are increasing. The necessity for smartphones, which are owned and used by everyone regardless of generation, is evolving into constant use. The variety of applications developed, accessibility, the desire to be in constant communication, the fear of being away from current events and news are among the reasons that increase the usage. The term "nomophobia" emerged as a result of these deprivation feelings. While smartphones make digital presence possible in daily life, they have negative effects due to their problematic use, especially during the transition from adolescence to adulthood (Argumosa-Villar et al., 2017). Hong et al. (2012) reported a relationship between demographic characteristics and phone use. Similarly, in our study, it was concluded that nomophobia averages were high in favor of female students. In the study conducted on Turkish and Pakistani undergraduate students (Özdemir and Çakır, 2018), it was indicated that the prevalence and level of nomophobia were higher among female students, regardless of the country, and in the studies of Adnan and Gezgin (2016) and Tükel (2020), the level and prevalence of nomophobia were higher among female students, which supports our study. As a result of our study, nomophobia rates according to the variables are above average (Table.2). Nomophobia rates are higher among teenagers and young adults (Access 2023d). Many studies conducted with university students show that anxiety levels are higher in female students (Kula and Saraç, 2016, Deveci et al., 2011, Şahin, 2009, Aydın and Tiryaki 2017). Future anxiety, control tendencies, familial and social responsibilities may seem to be the reasons. Gender differences may be due to the fact that men believe that mobile phone technology increases their level of independence, whereas women use mobile phones more for communication and social networking or staying connected with friends and family (Dixit et al. 2010, Cheever et al. 2014).

In determining the nomophobia levels according to age, which is another result obtained in the study, it was observed that not being able to be online had a higher average at younger ages, and although the same dimension did not show significance according to the grade variable, the average was higher in lower grades. The growth of the new generation with technology, the increase in phone use and nomophobia rate as the age decreases is an expected situation. As can be supported by the studies, youth and young adults are more vulnerable to nomophobia (Daei et al., 2019, Özdemir et al., 2018, Cangöl and Söğüt, 2021). Although anyone of any age can be a smartphone user, those who adapt to smartphone use the most are individuals in the generations Y and Z (Choudhary, 2014). Naturally, the increase in the rate of smartphone use as the age decreases is reduced to the normal acceptance level (Kuyucu, 2017). This leads to the prediction that the level of nomophobia will increase for Generation Z and the next generation.

In the light of studies indicating that the level of nomophobia increases as the duration of smartphone use increases (Yildirim & Correia, 2015; Yildirim et al., 2016), one of the most common reasons for use among young

people is seen as digital game-based applications (Irmak & Erdoğan 2016, Lee et al., 2014, Leep et al, 2015, Yıldırım et al, 2015). When studies on young people and university students are examined, their leisure time tendencies mostly include passive smartphone-based activities such as playing video games, playing mobile games and browsing social media (Sevin and Şen 2019, Süzer, 2020, Gedik & Gezgin 2022). National and international data are also indicative in understanding the relationship between digital game addiction and phone use, especially among young people (Access 2023j, Access 2023i, Access 2023h, Access 2023g, Access 2023f). Considering the results of the study, the level of digital game addiction is higher in males, in line with the literature (Table.3). According to gender, the tendency of male participants to play games is higher than female participants. Most of the studies investigating the tendency to play games and its problematic use show that men tend to play games more than women (Çakır et al., 2011, Gentile, 2009, Greenberg et al., 2010). In the study conducted by Hoeft et al. (2008) neurobiologically in the perspective of leisure motivation, this may be associated with the fact that male players had greater activation (right nucleus accumbens, bilateral orbitofrontal cortex, right amygdala) and functional connectivity in the mesocorticolimbic reward system than females. When all participants were examined, almost 50% were found to be addicted at the risky level or above (Table.4). Another distinctive result is in favor of participants aged 21 and under in the mood change and being lost in thought dimension, which is considered on the basis of flow theory. Andone et al. (2016) concluded that young participants use the phone more for entertainment and social interaction and that this use becomes more need-oriented as they get older. Similarly, Arslan et al. (2015) concluded that game addiction levels of high school students were significantly higher than those of university students. Similar to the nomophobia rates that increase with age, the increasing preference for playing digital games is associated with the perception of virtual activation of the generation as a natural process.

The findings obtained from our study indicate that there are low and moderate positive relationships between nomophobia and digital game addiction. It can be said that this relationship, which is considered as an expected result of the study, is consistent with the literature (Gezgin et al., 2018, Çelik & Ulusoy, 2019). While nomophobia refers to a state of deprivation (Elhai et al., 2016), digital game addiction is the inability to remain deprived caused by problematic game playing behavior (Király et al., 2014). In the context of digital addiction, smartphones and digital games whose accessibility has increased with technological tools create situations that lead to many physical, social and psychological problems that cause the individual to use his/her leisure time problematically. Naturally, it can be said that the intensity of digital game playing behavior will increase the level of nomophobia, as it makes it easier to do it through smartphones that are accessible everywhere at any time (Gezgin et al., 2018). According to the Deloitte Global Mobile User Survey Report (Access 2023e), the increase in the number of individuals who prefer to play games on their smartphones (55%) is emblematic of the relationship between nomophobia and game addictions (Çırak & Tuzgöl Dost, 2022).

CONCLUSION and SUGGESTIONS

In conclusion, our study and the literature show that the level of nomophobia among young people is gradually increasing and the level of digital game playing is also increasing. It is predicted that the rate of spending leisure time with smartphone-based applications will gradually increase. On the other hand, it is also thought that the tendency to play digital games in their leisure time will increase. Global health measures draw attention to increasing obesity, diseases related to inactivity and mental problems caused by asociality. Among the measures to be taken, solutions for the use of smartphones, which have become indispensable in daily life, should be on the agenda. In addition, young people who tend to play digital games in their leisure time, adolescents and children who are expected to continue this trend should be encouraged to participate in active life. Studies related to participation in recreational exercise in leisure time show that nomophobia and game addiction decrease as the participation rate increases (Pereira et al., 2020, Akın 2018, Fazla et al., 2019). In the light of this information, it is essential to raise awareness of families about nomophobia and digital game addiction. Awareness activities in educational institutions will be effective in raising awareness in children, adolescents and youth in the developmental age. It is thought that designing these studies with the contribution of recreation professionals in the perspective of leisure time utilization will increase the level of impact. This study is limited only to the voluntary self-evaluations of individuals who play digital games and study at various faculties in Selçuk University campus. The evaluation of the study with young people in different regions, according to whether they are educated or uneducated, with the variables of whether they have recreational awareness or not will increase the scope of the study. In addition, it is recommended to question the motivations of individuals who tend to use smartphones and digital games in leisure time and barriers to participation in active recreational activities with in-depth interviews.

ETHICAL TEXT

This study was approved by Selcuk University, Faculty of Sport Sciences, Non-Interventional Clinical Research Ethics Committee with the decision numbered E.418805-166 dated 06.12.2022.

"In this article, the journal writing rules, publication principles, research and publication ethics, and journal ethical rules were followed. The responsibility belongs to the author (s) for any violations that may arise regarding the article. "

Author(s) Contribution Rate: The contribution rate of the first author is 60%, the contribution rate of the second author is 40% in this study.

REFERENCES

Access2023a: https://wearesocial.com/us/blog/2022/01/digital-2022-another-year-of-bumper-growth-2/

Access2023b: https://www.marketingturkiye.com.tr/haberler/we-are-social-internet/#:~:text=Yakla%C5%9F%C4%B1k%205%20milyar%20insan%2C%20ak%C4%B1ll%C4%B1,de%205%2C03%20milyara%20ula%C5%9Ft%C4%B1.

Access2023c: https://www.yesilay.org.tr/tr/bagimlilik/teknoloji-bagimliligi

Access2023d: https://data.tuik.gov.tr/Bulten/Index?p=Cocuklarda-Bilisim-Teknolojileri-Kullanim-Arastirmasi-2021-41132

Access2023e: https://www2.deloitte.com/lb/en/pages/technology-media-and-telecommunications/articles/global-mobile-consumer-survey-2019.html

Access2023f: https://www.who.int/standards/classifications/frequently-asked-questions/gaming-disorder

Access2023g: https://gamequitters.com/video-game-addiction-statistics/

Access2023h: https://www.btk.gov.tr/haberler/btk-2o2o-dijital-oyunlar-raporunu-yayinladi

Access2023i: https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Cocuk-2021-45633

Access2023j: https://data.tuik.gov.tr/Bulten/Index?p=Cocuklarda-Bilisim-Teknolojileri-Kullanim-Arastirmasi-2021-41132

Achangwa, C., Ryu, H.S., Lee, J.K. & Jang, J.-D. (2023). Adverse Effects of Smartphone Addiction among University Students in South Korea: A Systematic Review. Healthcare. 11, 14. https://doi.org/10.3390/healthcare11010014

Adnan, M., & Gezgin, D. M. (2016). Modern yüzyılın yeni olgusu nomofobi ve üniversite öğrencileri arasında yaygınlık düzeyi. Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi, 49(1), 141-158. https://doi.org/10.1501/Egifak_0000001378

Akın, G. (2018). Erzincan Üniversitesi Öğrencilerinde Akıllı Telefon Bağımlılık Düzeyinin Belirlenmesi ve İlişkili Faktörlerin Değerlendirilmesi, Uzmanlık tezi, Erzincan Binali Yıldırım Üniversitesi, Erzincan.

Andone, I., Błaszkiewicz, K., Eibes, M., Trendafilov, B., Montag, C., & Markowetz, A. (2016, September). How age and gender affect smartphone usage. In Proceedings of the 2016 ACM international joint conference on pervasive and ubiquitous computing: adjunct (pp. 9-12). https://doi.org/10.1145/2968219.2971451

Argumosa-Villar, L., Boada-Grau, J., & Vigil-Colet, A. (2017). Exploratory investigation of theoretical predictors of nomophobia using the Mobile Phone Involvement Questionnaire (MPIQ). Journal of adolescence, 56, 127-135. https://doi.org/10.1016/j.adolescence.2017.02.003

Aslan, H., Başçıllar, M., & Karataş, K. (2022). Ergenlerde dijital oyun bağımlılığı ile sosyal beceriler arasındaki ilişki. Bağımlılık Dergisi, 23(3), 266-274. https://doi.org/10.51982/bagimli.1033761

Aydın, A., & Tiryaki, S. (2017). Üniversite öğrencilerinin kaygı düzeylerini etkileyen faktörleri belirlemeye yönelik bir çalışma (KTÜ örneği). Kastamonu Üniversitesi Orman Fakültesi Dergisi, 17(4), 715-722. https://doi.org/10.17475/kastorman.282559

Bragazzı, N.L. & Pente, G.D. (2014). A Proposal For Including Nomophobia İn The New DSM-V, Psychology Research And Behavior Management, 7: 155-160. https://doi.org/10.2147/PRBM.S41386

Canatar F. & Bilge, Y. (2023). "Attachment Styles, Sense of Identity and Interpersonal Problems as Predictors of Smartphone Addiction and Nomophobia", International Social Mentality and Researcher Thinkers Journal, (Issn:2630-631X) 9(70): 3165-3179. DOI: http://dx.doi.org/10.29228/smryj.69106

Cangöl, E., & Sögüt, S. (2021). The Relatıonshıp Between Smartphone Addıctıon, Psychologıcal Well-Beıng And Anxıety In Mıdwıfery Students Receıvıng Dıstance Educatıon. International Journal of Health Services Research and Policy, 6(3), 296-307. https://doi.org/10.33457/ijhsrp.988813

Cheever, N. A., Rosen, L. D., Carrier, L. M., & Chavez, A. (2014). Out of sight is not out of mind: The impact of restricting wireless mobile device use on anxiety levels among low, moderate and high users. Computers in Human Behavior, 37, 290-297. https://doi.org/10.1016/j.chb.2014.05.002

Choudhary, A. (2014). Smartphones and their impact on net income per employee for selected US firms. *Review of Business & Finance Studies*, *5*(2), 9-17.

Çakır, Ö., Ayas, T. & Horzum, M.B. (2011) Üniversite öğrencilerinin internet ve oyun bağımlılıklarının çeşitli değişkenlere göre incelenmesi. Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi 44:95-117. https://doi.org/10.1501/Egifak_0000001226

Çelik, S., & Ulusoy, B. (2019). Bilgisayar Oyunlarinin Ortaokul Öğrencilerinin Sosyal Yaşamina Etkisi. *The Journal of Social Science*, *3*(5), 46-60.

Çırak, M. & Tuzgöl Dost, M. (2022). Nomophobia in University Students: The Roles of Digital Addiction, Social Connectedness, and Life Satisfaction . Turkish Psychological Counseling and Guidance Journal , 12 (64) , 35-52 . https://doi.org/10.17066/tpdrd.1095905

Daei, A., Ashrafi-Rizi, H., & Soleymani, M. R. (2019). Nomophobia and health hazards: Smartphone use and addiction among university students. International journal of preventive medicine, 10. https://doi.org/10.4103/ijpvm.IJPVM_184_19

Deveci S.E., Çalmaz A. & Açık Y. (2012). Doğu Anadolu'da yeni açılan bir üniversitenin öğrencilerinde kaygı düzeylerinin sağlık, sosyal ve demografik faktörler ile ilişkisi. Dicle Tıp Dergisi, 39 (2), 189-196. https://doi.org/10.5798/diclemedj.0921.2012.02.0125

Dixit, S., Shukla, H., Bhagwat, A. K., Bindal, A., Goyal, A., Zaidi, A. K., & Shrivastava, A. (2010). A study to evaluate mobile phone dependence among students of a medical college and associated hospital of central India. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine, 35(2), 339. https://doi.org/10.4103/0970-0218.66878

Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. Journal of Affective Disorders, 207, 251-259. https://doi.org/10.1016/j.jad.2016.08.030

Elhai, J. D., Levine, J. C., Dvorak, R. D., & Hall, B. J. (2016). Fear of missing out, need for touch, anxiety and depression are related to problematic smartphone use. Computers in Human Behavior, 63, 509-516. https://doi.org/10.1016/j.chb.2016.05.079

Erdem, H., Kalkın, G., Türen, U., & Deniz, M. (2016). Üniversite Öğrencilerinde Mobil Telefon Yoksunluğu Korkusunun (Nomofobi) Akademik Başariya Etkisi. Süleyman Demirel Üniversitesi İktisadi Ve İdari Bilimler Fakültesi Dergisi, 21(3).

Fazla, S., Akcan, M., Sümer, O. N., & Gezgin, D. M. (2019). Lise Öğrencilerinin Okuma Alışkanlıkları İle Akıllı Telefon Bağımlılığı Arasındaki İlişkinin İncelenmesi, 7. Uluslararası Öğretim Teknolojileri ve Öğretmen Eğitimi Sempozyumu, Antalya.

Gentile, D.A. (2009) Pathological video game use among youth 8 to 18: A national study. Psychol Sci 20:594-602 https://doi.org/10.1111/j.1467-9280.2009.02340.x

George, D. & Mallery, M. (2010). SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update (10 aed.) Boston: Pearson.

Gezgin, D. M., Hamutoğlu, N., Samur, Y., & Yıldırım, S. (2018). A spreading addiction among young generation: An examination of smartphone addiction according to gender, academic success and mobile game playing variables. Educational Technology Theory and Practice, 8(2), 212-231. https://doi.org/10.17943/etku.397112

Greenberg, B. S., Sherry, J., Lachlan, K., Lucas, K., & Holmstrom, A. (2010). Orientations to video games among gender and age groups. Simulation & Gaming, 41(2), 238-259. https://doi.org/10.1177/1046878108319930

Hazar, Z., & Hazar, E. (2019). Üniversite öğrencileri için dijital oyun bağımlılığı ölçeği (Uyarlama çalışması). *Spor Bilimleri Araştırmaları Dergisi*, *4*(2), 308-322. https://doi.org/10.25307/jssr.652854

Hoeft F, Watson CL, Kesler SR ve ark. (2008) Gender differences in the mesocorticolimbic system during computer game-play. J Psychiatr Res 42:253-258. https://doi.org/10.1016/j.jpsychires.2007.11.010

Hong, F. Y., Chiu, S. I., & Huang, D. H. (2012). A model of the relationship between psychological characteristics, mobile phone addiction and use of mobile phones by Taiwanese university female students. Computers in human behavior, 28(6), 2152-2159. https://doi.org/10.1016/j.chb.2012.06.020

Irmak, A. Y., & Erdoğan, S. (2016). Ergen ve genç erişkinlerde dijital oyun bağımlılığı: Güncel bir bakış. Türk Psikiyatri Dergisi, 27(2), 128-137. https://doi.org/10.5080/u13407

Karasar, N. (2011). Bilimsel araştırma yöntemi,(11. baskı) Ankara. *Nobel Yayınevi*.

Kıng, A.L.S., Valença, A.M., Sılva, A.C., Baczynskı, T., Carvalho, M.R. Ve Nardı, A.E. (2013). "Nomophobia: Dependency On Virtual Environments Or Social Phobia?", Including Special Section Youth, Internet, And Wellbeing, 29: 140- 144. https://doi.org/10.1016/j.chb.2012.07.025

Király, O., Griffiths, M. D., Urbán, R., Farkas, J., Kökönyei, G., Elekes, Z., ... & Demetrovics, Z. (2014). Problematic internet use and problematic online gaming are not the same: Findings from a large nationally representative adolescent sample. Cyberpsychology, Behavior, and Social Networking, 17(12), 749-754. https://doi.org/10.1089/cyber.2014.0475

Koçoğlu, E., Biçer, R., & Yiğen, V. (2022). Metaphorical Connotations of Preservice Teachers on the Concept of Nomophobia. Education Quarterly Reviews, 5(4), 245-259. https://doi.org/10.31014/aior.1993.05.04.588

Kula K.Ş. & Saraç T. (2016). Üniversite öğrencilerinin gelecek kaygısı. Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,13 (33), 227-242

Kuyucu, M. (2017). Gençlerde akıllı telefon kullanımı ve akıllı telefon bağımlılığı sorunsalı:"Akıllı telefon (kolik)" üniversite gençliği. Global Media Journal TR Edition, 7(14), 328-359.

Kwon, M., Lee, JY., Won, WY., Park, JW., Min, JA. & Hahn C, et al. (2013). Development and validation of a smartphone addiction scale (SAS). 8(2):e56936. https://doi.org/10.1371/journal.pone.0056936

Lee, Y., Chang, C., Lin, Y., & Cheng, Z. (2014). The dark side of smartphone usage: Psychological traits, compulsive behavior and technostress. Computers in Human Behavior, 31, 373-383. https://doi.org/10.1016/j.chb.2013.10.047

Lepp, A., Li, J., & Barkley, J. (2015). Exploring the relationships between college students' cell phone use, personality and leisure. Computers in Human Behavior, 43, 210-219. https://doi.org/10.1016/j.chb.2014.11.006

Lopez-Fernandez, O., Männikkö, N., Kääriäinen, M., Griffiths, M. D., & Kuss, D. J. (2018). Mobile gaming and problematic smartphone use: A comparative study between Belgium and Finland. Journal of Behavioral Addictions, 7(1), 88-99. https://doi.org/10.1556/2006.6.2017.080

Öz, N.D., & Arı, A. (2023). Netflix in Leisure: A Qualitative Research On Users View. Journal of Education and Recreation Patterns, 4(1), 116-133. https://doi.org/10.53016/jerp.v4i1.122

Öz, N.D., & Üstün, F. (2022). Investigation of the relationship between university students' mobile gaming motivations and loneliness levels. Physical Education of Students, 26(4), 196-206. https://doi.org/10.15561/20755279.2022.0405

Özdemir, B., Çakır, Ö., & Hussain, I. (2018). Prevalence of Nomophobia among university students: A comparative study of Pakistani and Turkish undergraduate students. Eurasia Journal of Mathematics Science and Technology Education, 14(4). https://doi.org/10.29333/ejmste/84839

Pereira, F. S., Bevilacqua, G. G., Coimbra, D. R., & Andrade, A. (2020). Impact of problematic smartphone use on mental health of adolescent students: Association with mood, symptoms of depression, and physical activity. Cyberpsychology, Behavior, and Social Networking, 23(9), 619-626. https://doi.org/10.1089/cyber.2019.0257

Sevin, H. D.,& Şen, K. (2019). Öğretmenlerin Rekreasyon Aktivitelerine Katılım Düzeyleri ile Yaşam Mutluluğu ve İş Performansları Arasındaki İlişki, Dini Araştırmalar Dergisi, 22(55), 213-232. https://doi.org/10.15745/da.564201

Süzer, M. (2000). Üniversite Öğrencilerinin Boş Zamanlarını Değerlendirme Alışkanlıkları, Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 8(8), 123-133

Şahin C. (2009). Eğitim fakültesinde öğrenim gören öğrencilerin umutsuzluk düzeyleri. Selçuk üniversitesi. Ahmet Keleşoğlu Eğitim Fakültesi Dergisi, 27, 271-286.

Tukel, Y. (2020). Investigation of the relationship between smartphone addiction and leisure satisfaction of university students. International Journal of Technology in Education and Science (IJTES), 4(3), 218-226. https://doi.org/10.46328/ijtes.v4i3.108

Yılmaz, B. (2022). Ortaöğretim Öğrencilerinin Dijital Oyun Oynama Motivasyonları ve Oyun Oynama Davranışlarının Farklı Zamanlarda İncelenmesi. Bağımlılık Dergisi, 23(2), 121-129. https://doi.org/10.51982/bagimli.948872

Yildirim, C. & Correia A.P. (2015). Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. Computers in Human Behavior, 49, 130-137. https://doi.org/10.1016/j.chb.2015.02.059

Yildirim, C., Sumuer, E., Adnan, M., & Yildirim, S. (2016). A growing fear: Prevalence of nomophobia among Turkish college students. Information Development, 32(5), 1322-1331. https://doi.org/10.1177/0266666915599025