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The relationship between digital game addiction, cyberloafing, and psychological well-being in primary school students

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ABSTRACT

Aims: Today, with the advances in technology, the use of devices such as computers, digital game consoles, phones, and tablets has also increased. However, with the widespread use of internet access, digital platforms have started to be used frequently in interpersonal interaction and relations. The use of digital games and the internet, where the user age is in a wide range, has decreased to very young ages, and the time spent by individuals in games and on the internet has gradually increased. In this context, the duration of stay in the digital environment can be seen as an important criterion in terms of addiction. Spending excessive time in the digital environment can cause individuals to be adversely affected by psychosocial aspects. The purpose of our study is to reveal the reasons for the complex and multifaceted relationship between cyberloafing, digital game addiction, and well-being, and to discuss potential solutions.

Methods: This study was designed as a cross-sectional study. The study group was formed of 1330 students in the second stage of primary education in grades, 5, 6, 7, and 8, in state schools. The sample Group consisted of 614 females and 716 males in almost the same age group. The game addiction scale, perceived cyberloafing scale, and psychological well-being scale were applied to students. The necessary permission to conduct the study was obtained from, then the data were collected in face-to-face interviews on a voluntary basis. The data obtained in this study were analyzed statistically using SPSS vn. 23 and AMOS 23 software.

Results: The Gaming Addiction Scale score was determined to be mean 42.09 for the whole group, 36.96 for females, and 46.96 for males. The Cyberloafing Scale score was determined to be a mean of 24.01 for the whole group, 21.94 for females, and 25.79 for males. The Psychological Well-Being Scale score was found to be a mean of 30.60 for the whole group, 32.02 for females and, 29.39 for males. A positive correlation was observed between gaming addiction and, cyberloafing, (p=0.00) and both of these conditions were determined to be negatively correlated with psychological well-being. (p=0.00)

Conclusion: Activities to support students' psychological well-being can help prevent vicious cycles between cyberloafing, game addiction, and psychological well-being by contributing to controlling cyberloafing and game addiction tendencies.

Keywords: Cyberloafing, digital game addiction, psychological well-being

INTRODUCTION

The longer time spent by people on the internet and using information technology for both entertainment and work purposes has also led to a series of negative effects. Intense and frequent use contributes to the development or progression of various negative behaviors and psychological problems. Cyberloafing and digital game addiction are the primary of these negative effects.[1] Especially during the COVID-19 pandemic when people had to stay at home, there was an increase in cyberloafing because of the social isolation and uncertainties experienced in that period, and online games became a form of entertainment and a means of passing the time.[2,3] Both during the pandemic and afterward, it was noticed that cyberloafing was the leading negative effect of prolonged screen time and more time spent on internet-based applications. Cyberloafing can be defined in the most general form as unproductive, unplanned internet browsing for personal aims during inappropriate periods such as at work or during lessons, and it was understood to have shown an increase during the COVID-19 pandemic. These activities that can be evaluated as cyberloafing include more frequent visits to news and discussion sites or social media platforms, frequent checking of e-mail, downloading more files, playing online games, and doing online shopping, and

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these are undertaken at times when an individual has responsibilities such as in working or lesson hours.[4] The repetitive nature of these digital activities leading to neglect of responsibilities naturally gives rise to different problems. Studies related to cyberloafing have shown that it is associated with low academic performance, loss of concentration, wasting time, low learning motivation, low levels of well-being, short attention span, and low memory retention.[5,6]

Digital gaming addiction is a type of behavior addiction that is characterized by overuse and compulsive use of games and manifests with negative effects.[7] These effects, which occur together with risks such as low academic success, communication problems within the family, and problems in peer relationships, are negatively reflected in the lifestyles of children and adolescents in particular.[8,9] When recent studies are examined, digital gaming addiction can be seen to create a risk for cardiovascular health problems including behaviors such as a sedentary lifestyle, poor nutrition, lack of exercise, smoking, and increasing stress levels, and at the same time has a negative effect on mental health, academic performance and success, physical socialization, sleep regularity and quality, communication skills, physical health, and self-respect.[10,11]

When the factors affecting the formation of gaming addiction are examined, it can be seen that just as for other types of addiction, reasons such as loneliness, isolation, exclusion, and trying to escape problems can lead people to behaviors that can form addiction. It has also been reported that gaming addiction could be a coping mechanism for individuals experiencing stress and anxiety.[12]

The majority of research that has dealt with gaming addiction and cyberloafing has been observed to have emphasized the negative effects of these two variables and to have focused on diseases in particular when evaluating mental health. However, as indicated by the World Health Organization (WHO), being healthy does not only mean the absence of any sign of disease or disability, but includes reaching a complete state of well-being in physical, mental, and social aspects. In this sense, a holistic health status, including mental health, should be aimed for.

The WHO emphasis on mental health well-being has become increasingly important with the efforts of positive psychology studies to focus on positive elements. In this context, "psychological well-being" is seen to be the leading concept reflecting complete well-being in mental health. This is because psychological well-being highlights more positive and strong aspects rather than negative characteristics. In other words, the person has life aims to overcome mental problems, can establish healthy communication with others, is conscious of the responsibilities related to their life, and obtains satisfaction by fulfilling these.[13] According to this perspective, psychological well-being is not limited to the state of happiness of the individual but is a concept that can also be associated with characteristics such as acquiring a specific place in society, being productive, and contributing to the meaning of life. When there is any type of addiction, the control mechanism of the individual is impaired, and as a result of this negative states develop such as withdrawal, decreased self-respect, pessimism, high levels of anxiety, low self-care, coping through avoidance, and psychological stress, leading to a decrease in the level of psychological well-being.14 Therefore, it has been emphasized that cyberloafing and gaming addiction are not just variables associated with academic success, but it is important that they are evaluated as a part of the psychological well-being of students.[15]

Although previous research has investigated the negative concepts of cyberloafing and digital gaming addiction, there is a limited number of studies related to psychological well-being, which have dealt with mental health as a whole. Most of the studies related to psychological well-being have been conducted on university students and workplace employees. Nevertheless, the extent of cyberloafing and digital gaming addiction in children and adolescents has been reported to be at extremely worrying rates.[16] From this starting point, this study aimed to expose the complex and multidirectional relationships between cyberloafing, digital gaming addiction, and psychological well-being, and to discuss recommendations for a solution. Our study examines the effects of cyberloafing and gaming addiction on the psychological well-being of individuals, rather than investigating whether the individuals participating in the study have any mental illnesses. The research hypotheses formulated within this framework are as follows:

Hypothesis 1: Cyberloafing behaviors directly predict the level of psychological well-being at a statistically significant level.
Hypothesis 2: Cyberloafing behaviors directly predict the level of game addiction at a statistically significant level.
Hypothesis 3: The level of game addiction directly predicts psychological well-being levels at a statistically significant level.

METHODS

The study was carried out with the permission of the Sakarya University Educational Researches and Publication Ethics Committee (Date: 20.09.2023, Decision No: 05). All procedures were carried out following the ethical rules and the principles of the Declaration of Helsinki.

Study Design and Participants

This study was conducted in a survey model. To reach a sample that reflects the research variables more within the literature, a purposive sampling method was used rather than randomly selecting participants. Because the rate of technology use in city and district centers is higher than in rural areas.[17] In this case, it was aimed to reach the largest four districts in terms of population in Sakarya province and chose one public and one private school from each district's center to collect data.

The study was conducted between 2018 and 2020. The study group was formed of 1587 students in the second stage of primary education in grades, 5, 6, 7, and 8, in state and private schools of Sakarya. 257 students did not participate in the study because permission could not be obtained from their families, and as a result, 1330 students constituted the sample of the study. 340 students were in 5th grade, 334 in 6th grade, 324 in 7th grade and 332 in 8th grade students, and the age range of the students was between 10-14 years old. The sample consisted of 750 students attending public schools and 580 students attending private schools.

Data Collection and Data Collection Tools

The data were collected face-to-face by the researchers going to the schools and filling out the scale forms using paper and pencil.

The necessary permission to conduct the study was obtained, then the data were collected in face-to-face interviews on a voluntary basis. Three measurement tools were used in the study; the Perceived Cyberloafing Scale, the Psychological Well-Being Scale, and the Gaming Addiction Scale. The details of the scales are given below.

The Perceived Cyberloafing Scale

This scale was developed by Blanchard and Henle (2008)[18], and reliability and validity studies of the scale in Turkish were made by Kalayci and Altun (2010).[19] Scale consists of 13 items with 5-point Likert-type responses. The scale examines internet use in 3 sub-categories of "personal tasks", "following the news", and "socializing". This scale allows individuals to determine how often and in what way they use the internet outside the area they are responsible for during work or education.

The Psychological Well-being Scales

This scale was developed by Diener et al. (2010)[20] and the reliability and validity studies of the Turkish version were conducted by Telef (2013).[21] The 8-item scale describes important elements of human functioning, from positive relationships to feelings of competence, and having a meaningful and purposeful life.

The Gaming Addiction Scale

The Gaming Addiction Scale for Children was developed by Horzum et al. (2008).[22] The scale consists of 21 items and has been determined to be representative and differentiating as a whole. Gaming addiction is examined in the 4 sub-groups of Self-control, Reward/reinforcement, Problems, and Involvement with statements such as "I cannot resist playing videogames even if it negatively affects my life", "In videogames, defeating my enemies/leaping up a level gives me pleasure", "Playing videogames prevents me from fulfilling my responsibilities", and "I always talk about videogames with my friends", respectively

Data analysis

The data obtained on a voluntary basis in this study were analyzed statistically using SPSS vn. 23 and AMOS 23 software. In the evaluation of differences between groups, the Student's t-test was applied to continuous variables and the Pearson chi-square analysis to discrete variables. Continuous variables were stated as mean±standard deviation values and categorical variables as numbers and percentages. Relationships between variables were examined with Pearson correlation analysis. The mediating effect of gaming addiction on the relationship between cyberloafing and psychological well-being with the direct effect of cyberloafing behaviors on gaming addiction and psychological well-being was examined using a structural regression technique. A value of $p<0.05$ was accepted as statistically significant. "Structural regression technique" refers to a statistical method or approach used to analyze the relationships between variables in a structural equation modeling framework. It's a technique used to investigate and understand the causal relationships between variables in a complex system. It allows researchers to assess the direct and indirect effects of variables on each other, helping to model and understand complex systems. In our study, we aimed to contribute to a better understanding of the relationship between data by using this technique.

RESULTS

The study sample group consisted of 614 females and 716 males in almost the same age group. The average age of the sample group was found to be 12.29±1.31, with women having an average age of 12.28±1.29, and men having an average age of 12.30±1.34. There was no statistically significant difference between men and women in terms of age. The sociodemographic and clinical data of the study group are shown in **Table 1**. The Gaming Addiction Scale score was determined to be a mean of 42.09 for the whole group, 36.96 for females, and 46.96 for males. The Cyberloafing Scale score was determined to be a

mean of 24.01 for the whole group, 21.94 for females, and 25.79 for males. The levels of gaming addiction and cyberloafing were found to be significantly higher in the male participants than in the females.

Table 1. Clinical and sociodemographic characteristics of the sample group

Gender (n=1330)		Game addiction (mean±SD)	Cyberloafing (mean±SD)	Psychological well-being (mean±SD)
Female n (%)	Male n (%)			
614 (46.2)	716 (53.8)	42.09±14.65	24.01±9.42	30.60±5.76

SD: standard deviation

The Psychological Well-Being Scale score was found to be a mean of 30.60 for the whole group, 32.02 for females, and 29.39 for males. This score was determined to be significantly higher for females than males (**Table 2**). A positive correlation was observed between gaming addiction and cyberloafing, and both of these conditions were determined to be negatively correlated with psychological well-being (**Table 3**).

Table 2. Comparison of game addiction, cyberloafing, and psychological well-being by gender

	Female (n=614)	Male (n=716)	Statistics	
			t	p
Game addiction (mean±SD)	36.96±12.96	46.49±14.59	-12.49	0.00*
Cyberloafing (mean±SD)	21.94±8.69	25.79±9.66	-7.5	0.00*
Psychological well-being (mean±SD)	32.02±5.43	29.39±5.77	8.51	0.00*

t: Student t-test, *: p < 0.05, SD: standard deviation

Table 3. Evaluation of the relationship between game addiction, cyberloafing, and psychological well-being

	Game Addiction	Cyberloafing	Psychological Well-Being
Game Addiction	-	r=0.38 p=0.00*	r=-0.27 p=0.00*
Cyberloafing	r =0.38 p=0.00*	-	r=-0.17 p=0.00*
Psychological Well-Being	r=-0.27 p=0.00*	r=-0.17 p=0.00*	-

r: Pearson correlation value, *: p < 0.05

The independent variable of cyberloafing was determined to have a direct effect on the dependent variable of gaming addiction (β=0,444, p<0,001), and a direct effect on the dependent variable of psychological well-being (β=-0.114, p<0.05) and an indirect effect together with the intermediate variable of gaming addiction (β=-0.117, p<0.05, VAF=50.43%). In the test model, the independent variable of gaming addiction was seen to have a direct significant effect on the dependent variable of psychological well-being (β=-0.264, p<0.001). The Variance Accounting Formula (VAF) values calculated for cyberloafing were found to be 50.43% (20% ≤ VAF ≤ 80%). This result showed that gaming addiction has a partial mediating role in the relationship between cyberloafing and psychological well-being (**Table 4**).

DISCUSSION

This study examined the effects of cyberloafing behaviors and gaming addiction on psychological well-being in pre-adolescent students in the second stage of primary education.

The first direct effect that can be dealt with in the models examined is the effect of cyberloafing behaviors on psychological well-being. The study results showed that cyberloafing behavior plays an explanatory role in psychological well-being, thereby demonstrating that with an increase in the level of cyberloafing, the psychological well-being levels of the students decreased. In this context, the results obtained in this study were seen to be consistent with the findings and explanations in the literature.[23] When the current study findings and the explanations in publications in this field are evaluated as a whole, it can be said that students with low motivation in school, who are bored and seeking entertainment exhibit cyberloafing behaviors in the form of preferring to play digital games.

Inappropriate use of technology can cause higher levels of depression, increased stress, and a decrease in psychological well-being.[24] It has been suggested in some studies that the lack of motivation, low performance, and low academic success observed in these individuals could be associated with the misuse of technology.[13] This is reflected in the reciprocal vicious circle between cyberloafing and academic success. Moreover, these negative effects are not limited to learning environments and academic success but also decrease the levels of psychological well-being of students. Based on the results

Table 4. Effects of variables on each other

Relationship	Effect	Path Coefficient (β)	Critical Ratio (t)	VAF	p
Cyberloafing-Game Addiction	Total effect/direct effect	0.444	14.288	-	***
Cyberloafing-Psychological Well-Being	Total effect	-0.232	-3.059	50.43%	*
Game Addiction-Psychological Well-Being	Total effect/direct effect	-0.264	-6.910	-	***
Cyberloafing-Game Addiction-Psychological Well-Being	Indirect (with the intermediator)	-0.117	2.638	50.43% (partial mediator)	*
Cyberloafing -> Psychological Well-Being	Direct effect	-0.114	2.638	-	*

***: p<0.001, **: p<0.01, *: p<0.05; Variance Account For (VAF): indirect effect/ total effect 100

of a recent study of students in 2023 that examined the relationships between the positive and negative effects of cyberloafing, it was emphasized that cyberloafing is not a variable only related to academic success, but it should be evaluated as a part of the psychological well-being of students.[25]

One of the results of the current study was that cyberloafing behavior effects the level of gaming addiction. The results showed that cyberloafing behavior has an explanatory role on gaming addiction, as it was seen that with an increase in the level of cyberloafing of the students there was an increase in the level of gaming addiction. In a recent study that examined the mutually predictive relationships between cyberloafing and online gaming addiction, it was determined that cyberloafing was a predictor of gaming addiction and gaming addiction was a predictor of cyberloafing.[26] Just as this reciprocal relationship was indicated by the correlation values in the current study, it was also seen that both conditions triggered each other. Similarly, in another study, it was determined that an increase in smartphone cyberloafing in a classroom environment caused an increase in smartphone addiction.[27]

Another effect examined in the model formed with structural regression analysis was the direct effect of the relationship between gaming addiction and psychological well-being. The study results showed that gaming addiction had an explanatory role in psychological well-being. These results and the negative relationships between the variables demonstrated that an increase in the level of gaming addiction of the students was negatively reflected in psychological well-being. When previous studies are examined, it is noticeable that they have generally focused on negative effects and negative mental health, and very few studies have been conducted related to gaming addiction and psychological well-being.[28,29] School success is the main negative effect examined and it has been reported that playing video games has a negative effect on school success and can lead to hostile behaviors and problems in the family and social life.[30]

Studies conducted on the overuse of the internet, including online gaming, have shown that uncontrolled or compulsive use is negatively correlated with psychological problems and psychopaths such as depression, anxiety, and emotional eating.[30] Another study examined the direct relationship between the duration of playing games and psychological well-being and reported that an increase in the use of digital games created a decreasing effect on the level of psychological well-being, and digital users were more vulnerable to negative, social, psychological, and physical outcomes.[28]

The research hypothesis was formed from the starting point of the examination of inhibiting factors and sources of strength on the path to psychological well-being, and one of the findings related to this was the mediating effect of gaming addiction on the relationship between cyberloafing and psychological well-being. These findings showed that gaming addiction increased the negative effects of cyberloafing in the process of reaching psychological well-being. Therefore, gaming addiction can be evaluated as having a function of supporting poor well-being and strengthening the negative effect of cyberloafing on psychological well-being.

The results of this study also revealed that male students showed statistically significantly higher game addiction and cyberloafing than female students and that female students' psychological well-being scale scores were higher than those of male students. However, our study did not investigate familial, social, economic, and other related factors that could have shed light on the reasons for this situation. It does not seem possible for game addiction or cyberloafing alone to produce these results. This should be considered an important limitation of our study. To completely understand the reasons behind these findings, further studies are needed to assess genetic, social, and cultural factors, as well as the economic framework.

Another limitation of our study is that the answers given by the participants regarding cyberloafing behaviors and game addiction were evaluated based on the student's perceptions. In addition, since our study was designed to uncover a cross-sectional situation, mental status was assessed solely using the psychological well-being scale. Future studies can provide more accurate data by including observations of the participants' families, teachers, and mental health professionals, as well as different evaluation tools in the study.

CONCLUSION

As a result, our study presented cross-sectional data on psychological well-being, cyberloafing, and game addiction in a large sample group. Considering the limited number of studies conducted on children and young people in particular that have focused on psychological well-being fully reflecting positive mental health, it can be said that a sufficient explanation has not yet been reached of the reciprocal effects between cyberloafing, gaming addiction, and psychological well-being. The increasing rates of cyberloafing and gaming addiction together with the negative effects these bring for children and pre-adolescents, who are at an especially sensitive stage of development, show that this situation has reached a worrying level for parents and teachers.

Therefore, it can be thought that the results of this study will be helpful in the process of designing interventions to increase the awareness of families and educators. By contributing to the control of tendencies for cyberloafing and gaming addiction, activities to support the psychological well-being of students may help prevent the vicious circle between cyberloafing, gaming addiction, and psychological well-being.

Low motivation, social isolation, and psychological problems such as wishing to escape from problems, the use of avoidance coping strategies, thrill-seeking, and loneliness in children direct them towards cyberloafing behaviors and lay the ground for gaming addiction. Thus, pre-existing problems increase cyberloafing and gaming addiction and by further decreasing psychological well-being, contribute to maintaining the vicious cycle.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of the Sakarya University Educational Researches and Publication Ethics Committee (Date: 20.09.2023, Decision No: 05).

Informed Consent: Written informed consent was obtained from the patient participating in this study.

Referee Evaluation Process: Externally peer-reviewed.

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