Rahman Institute of Higher Education

Journal of Modern Psychology

Research Paper: Predicting Self-efficacy, Creativity, and Social Skills based on the Components of Addiction to Online Game

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Citation: Sadeghnia Salakgani, Z., Maleki Pirbazari, M., Ashournejad, F. (2022). Predicting Self-efficacy, Creativity, and Social Skills Based on the Components of Addiction to Online Game. *Journal of Modern Psychology, 1(4)*, 30-43. https://doi.org/ 10.22034/JMP.2022.322677.1022

https://doi.org/10.22034/JMP.2022.322677.1022

Article info:

Received date:
02 Nov 2021
Accepted date:
21 Jan 2022

Keywords:
Addiction to online games, Creativity, Self-efficacy, Social skills

Abstract

The present study was conducted to investigate the relationship between addiction to online games and self-efficacy, creativity, as well as social skills. The population of the present study included all female students of high schools in Rudsar who were studying in the academic year 2020-2021out of which, 150 students were selected using convenience sampling. The data collection tools included an online gaming addiction inventory, student efficacy scale (MJSES), Creativity Questionnaire (CT) and The Matson Evaluation of Social Skills with Youngsters (MESSY). .In this study, Pearson's correlation coefficient and multiple regression, as well as SPSS-22 software used to analyze the data. The results of the analysis revealed that the components of addiction to online games (academic and occupational performance problems and social and mood problems) could predict 48.8% of the variance of self-efficacy, 43.3% of the variance of creativity, and 27.4% of the variance of students' social skills ($p<0.05$). Therefore, the results of this study showed the importance of paying attention to addiction to online games in students; besides, its prevention can be related to higher self-efficacy, creativity and social skills, positive psychological variables.

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1. Introduction:

Online games are types of internet games that have gained popularity due to an increase in familiarity of people with the internet, especially the young, the increase in internet speed, and the availability of high-speed and wireless connections (Kuss et al., 2013). Addiction to online games refers to excessive and compulsive use of video games that causes emotional and social difficulties, despite these problems, the user is unable to control this excessive use (Li & Wang, 2013). As a result, the addicted person is also mentally occupied and wants to play even if access to the game is not available (Griffiths, 2009).

Online games are played by more than 700 million people worldwide. Moreover, the World Health Organization has announced that it will recognize online gaming disorder as a disease since experts agree that these games can be addictive. As defined by the World Health Organization, this type of addiction is a behavior pattern related to digital or video games characterized by a lack of willpower and a high preference for gaming compared to other activities, so much so that the game takes precedence over other interests of the person (Wallenius et al., 2009).

As defined by the definition of addiction to online games, it can be affected by several variables, especially in the lives of students who are most likely to be the type of audience for these games. Self-efficacy is one of the most important variables in the life of the students. According to Bandura's (1986) beliefs regarding self-efficacy, views affect people's thinking patterns and emotional reactions; as a result of these effects, self-efficacy beliefs are, therefore, strong predictors of performance level; Based on these reasons, Bandura (1986) discusses that self-efficacy beliefs play a key role in people's lives. People with a high score in self-efficacy focus their attention on the task and show more effort, but people with low scores are anxious about dealing with activities resulting in experiencing difficulty in finding solutions (Bandura, 1986). He also suggests that self-efficacy is a constructive ability by which human cognitive, social, emotional, and behavioral skills are effectively organized to achieve different goals. Moreover, knowledge, skills, and previous achievements of people do not predict their future performance rather, a person's belief about his abilities to perform actions affects how he performs them in a particular way; that is to say, the effort of a person to perform an action, persistence in continuing it, and on creating appropriate motivations are all affected by his or her beliefs (Bandura & Pastroly, 1998 as cited in Hasheminejad & Man zari Tavakoli, 2013).

In other words, self-efficacy refers to someone's belief about his ability to perform certain behavior that will lead to certain results (Ister, 2020). Chung et al.'s (2020) study reveal that the more people are addicted to online games, the lower their self-efficacy will be. Self-efficacy and addiction to online games have not been studied a lot. Several studies have examined types of self-efficacy and internet addiction. For example, Odasi (2011, 2013) explains in her study that there is a negative relationship between Internet addiction and academic self-efficacy. Additionally, Hamidi et al.'s (2018) study highlight a negative relationship between internet addiction and self-efficacy in student-athletes. Correspondingly, a negative relationship between Internet addiction and social self-efficacy was seen in Rahmati

and Keramati's (2017) study. Keshavarz et al.'s (2016) study demonstrate that users with Internet addiction have lower self-efficacy than non-users.

Another variable related to students is the concept of creativity in them, which can be influenced by students' addiction to online games. Creativity is one of the fundamental and productive characteristics of human beings, which has an effective role in the growth and development of the individual and human civilization, and is the foundation of inventions and scientific and artistic achievements. Creativity has been defined in various ways, each of which expresses a special point of view (Soleimani et al., 2017). From a psychological point of view, creativity means to create something from another thing in a unique way. Psychologically, creativity means creating something out of something else in a unique way. Creativity is the use of mental abilities to create a new thought or concept (Rahmani Zahed et al., 2018). To date, few studies have been undertaken to investigate the relationship between online game addiction and creativity.

On the other hand, the findings of Fallah Tafti et al.'s (2020) study expressed that there is no significant relationship between extreme interest in computer games and the emergence of creativity and entrepreneurial intention. However, studies indicate the connection between internet addiction and creativity. For example, Darab and Bani Bostan (2018) conduct a study aiming at investigating the relationship between Internet addiction and creativity of female students. The findings reveal a significant relationship between Internet addiction and creativity.

According to the definition of addiction to online games, one of the variables that can influence the students is their social skills. Social skills and objective behaviors are definable and specific, which lead to positive social consequences in social situations. Inadequacies related to social outcomes include lack of sensitivity towards others and poor perception of social situations, which ultimately lead to unacceptable behavior patterns and make social acceptance difficult (Parsi et al., 2018). The subject of students' social skills is a part of their socialization, and socialization is a process in which norms, skills, motivations, perceptions and behavior are formed.

Social skills can be defined as skills necessary to adapt to social needs and maintain satisfactory interpersonal relationships, which enables a person to have favorable relationships with others and avoid unreasonable social reactions (Nazari & Vesal, 2016). Besides, deficits in social skills are associated with a wide range of psychological disorders and problems such as depression, apathy, negative self-concept, anxiety, personality disorders and even severe mental illnesses (Viscosi-Lova & Prasko, 2012). Buran and Harre (2000) in their study in New Zealand conclude that the more time young people spend on the Internet, the less time they spend in their social environment. Moreover, Zamani et al. (2010) suggest in their research that there is a statistically significant difference between the social skills of students who are addicted to computer games and normal students in general. Accordingly, Hamidi et al. (2018) and Raiisi et al.'s (2021) research show a negative relationship between Internet addiction and social skills. Mohammadi et

al.'s study (2016) reveal that there is a negative relationship between social health and playing computer games. In addition, Almalki and Aldajani's research (2021) show there is a negative relationship between video game addiction and social connection.

Besides, considering the widespread use of virtual space at the time of the current research, which coincided with the epidemic outbreak of COVID-19, and on the other hand, due to the high prevalence of addiction to online games among students, it seems necessary to predict the harms related to it. The background of the research has shown the relationship between the variables of self-efficacy, creativity and social skills of students with their addiction to the Internet, but there are not many researches about the addiction to online games in the background of the research and there is a research gap in this field. Therefore, this research aims to predict students' self-efficacy, creativity, and social skills based on the components of online game addiction.

2. Method:

2.1. Research design

The current research design is correlational. Furthermore, the statistical population of the current research is all-female students studying in the second secondary level of Rudsar in the academic year 2019-2020. Additionally, regarding the number of samples, it can be said that according to Green's rule (1991), the minimum sample volume is K+104 participants, where K is the number of previous variables. Since the predictor variable of the current research, that is, addiction to online games, has two components, namely social and mood problems as well as academic and occupational problems; as K=2 and N=104+2=106, the required sample size was 106 participants. Considering the fact that some of the questionnaires might be distorted, from the population, 150 participants were selected using convenience sampling method.

2.2. Research tools

Online Gaming Addiction Inventory

This questionnaire was created by Whang and Chang (2002) through making changes to Yang's Internet Addiction Questionnaire (1996), with twenty items which was scored based on a five-point Likert scale (rarely = 1, occasionally = 2, frequently = 3, often = 4, always = 5). A person's score in addiction to online games is obtained from the sum of the scores of all items. The range of scores obtained from this questionnaire is between 20-100 and the higher score indicates a greater desire to play online games. Scores between 20-49 represent average online game users who sometimes spend a lot of time playing. However, in the use of the collision control game; Scores between 50-79 specify people who sometimes have problems playing the game; Scores between 80-100 indicate people whose excessive use of the game has caused serious problems in their lives. Whang and Chang (2002) reported a Cronbach's alpha coefficient of 0.9 for this tool. In Iran, Zandi Payam et al. (2016) standardized this questionnaire. In their research, Cronbach's alpha coefficient was 0.95 for this questionnaire. In order to verify construct validity, factor analysis using principal component analysis with varimax rotation suggested two social factors, namely mood problems and problems in academic and occupational performance, respectively. These two

factors explained 57% of the total variance. The results of the independent samples t-test showed that there was a significant difference in the average scores of the online game addiction questionnaire between the two groups of people addicted and non-addicted to online games. Moreover, in order to check the convergent validity, in their research, online gaming addiction questionnaire and Young's Internet addiction questionnaire were administered simultaneously, and the correlation coefficient was 0.7; finally, the research indicated the good psychometric properties of this questionnaire.

The value of Cronbach's alpha coefficient in this research in the online game addiction questionnaire was estimated at 0.812

Student Efficacy Scale (MJSES): This questionnaire was created by Jinks and Morgan (1999), and this tool has 30 questions and 3 subscales: talent, effort and context. Scoring is on a 4-point Likert scale. That is, totally agree gets a score of 4 and totally disagree gets a score of 1. Some questions are reversely scored. In their research, the reliability coefficient of the whole test was 0.83 and for the subscales of talent the coefficient was 0.78, texture was 0.70 and effort was 0.66.

In this study, the Cronbach coefficient of self-efficacy was estimated at 857.

Creativity Questionnaire (CT): This questionnaire was created by Abedi (1993) based on Torrance's creativity theory. This test has 60 questions with three options, which consists of four sub-tests: fluidity, development, initiative, flexibility. The scoring of this test is in the form of a three-point Likert scale, in which the first option has zero points, the second option has one point, and the third option has two points. Higher scores indicate more creativity. In the study of Daemi and Moghimi Barfoaroosh (2004), the test-retest reliability coefficient was obtained in the following subscales of fluidity as 0.023, extension as0.444, initiative as 0.614, and flexibility as 0.595.

In this study, Cronbach's alpha coefficient was 0.893

The Matson Evaluation of Social Skills with Youngsters (MESSY)

This questionnaire was created by Matson et al. (1983) to measure the social skills of people aged 4 to 18 years. This questionnaire has 56 questions and 5 subscales of appropriate social skills, antisocial behavior, aggressiveness, impulsiveness, superiority, high self-confidence, and relationship with peers. The scoring method was based on a 5-point Likert scale (1, completely disagree; 2, disagree; 3, I have no opinion; 4, agree; 5, completely agree). Higher scores indicate more social skills. In Shamsi Houjqan et al.'s research (2020), the reliability for appropriate social skills, antisocial behavior, aggression/impulsive behavior, high self-confidence, relationship with peers and for the entire questionnaire were 0.89, 0.70, 83. 0, 0.79, 0.73 and 0.90 were obtained.

In this research, Cronbach's alpha coefficient for social skills is estimated at 0.844

2.3. Data collection

First, the questions of the 4 questionnaires were made online. Then permission was obtained from the education department of Rudsar to go to schools. Afterward three-second of secondary girls' schools in Rudsar were approached, and with the

cooperation of the principals of those schools, the link of the questionnaire was placed in the WhatsApp groups of the second secondary girls' students of those schools. At the beginning of the questionnaire, the optionality of answering to the questions and the confidentiality of the information were mentioned and the time required to complete the questionnaire was sufficiently explained. Among all, 162 people completed the questionnaires, out of which 12 questionnaires were distorted and 150 questionnaires were included in the statistical analysis. Pearson's correlation coefficient test and multiple regression were used for the statistical analysis of the data. The statistical software used in this research was SPSS-22.

4. Results

The age of most of the participants in the research was 17 years (27.33%) and the least frequent ones were 19 years olds (9.33%). 42 participants (28%) were in the first grade, 56 (37.33%) in the second grade, 43 (28.67%) in the third grade, and 9 (6%) did not specify the educational level . Table 1 shows the descriptive indices of the research variables.

Table 1

Central indices, dispersion and distribution of the research variables

Component	Mean	Standard Deviation	Variance	Skewness	Kurtosis
		Social skills			
Appropriate Social Skills	3.91	0.772	0.596	-1.187	-0.988
Antisocial behaviors	1.88	1.049	1.100	1.082	-0.117
Aggressiveness and Impulsive Behavior	2.11	0.954	0.910	0.877	-0.452
Superiority	2.66	0.877	0.770	0.213	-0.527
Relationship with Peers	2.74	0.735	0.541	0.440	-0.250
Social Skills	2.80	0.585	0.342	0.972	0.764
		Addiction to Online Game			
Social and Mood Problems	1.97	0.826	0.683	0.860	0.179
Academic and Occupational Problems	2.22	0.720	0.518	0.973	0.552
Addiction to Online Game	2.10	0.743	0.552	0.929	0.489
		Self_efficacy			
Talent	2.99	0.499	0.249	-0.550	-0.524
Context	2.77	0.448	0.200	-0.499	-0.460
Effort	2.80	0.521	0.271	-0.762	-1.228
Self_efficacy	2.87	0.430	0.185	-0.612	-0.380
		Creativity			
Fluidity	1.25	0.342	0.117	-0.425	-0.308
Flexibility	1.26	0.420	0.176	-0.574	-0.410
Initiative	1.17	0.410	0.168	-0.360	-0.314
Development of Details	1.31	0.425	0.181	-0.710	-0.239
Creativity	1.25	0.359	0.129	-0.624	-0.388

The normality of the research variables was checked using the Kolmogorov-Smirnov test and all indicators had a normal distribution.

Table 2 illustrates the correlation matrix of the research variables.

Table 2

The Correlation Matrix of the Research Variables

Variables	Self_Efficacy	Creativity	Social Skills	Addiction to Online Game	Social and Mood Problems	Academic and Occupational Problems
Self_Efficacy	1					
Creativity	0.633**	1				
Social Skills	0.469**	0.434**	1			
Addiction to Online Game	-0.644**	-0.658**	-0.523**	1		
Social and Mood Problems	-0.670**	-0.637**	-0.503**	0.966**	1	
Academic and Occupational Problems	-0.633**	-0.626**	-0.503**	0.955**	0.846**	1

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in table 2, addiction to online games and its components have a negative correlation with self-efficacy, creativity, and, social skills (P≤0.05).

To predict students' self-efficacy based on the components of game addiction, multiple regression test was used, and its results are tabulated in table 3.

Table 3

The results of multiple regression analysis for predicting self-efficacy based on components of online game addiction

Predictor variable	B	SE	Beta	T	Sig	Tolerance	VIF
Fixed value	3.681	0.088		41.698	0.001		
Social and Mood Problems	-0.130	0.061	-0.250	-2.124	0.035	0.285	3.512
Academic and Occupational Problems	-0.252	0.070	-0.421	-3.572	0.001	0.285	3.512

R=0.647 R^2=0.418 F=52.867 P=<0.05

Based on table 3, the significance level of the components of addiction to online games was less than 0.05, which means that they were effective on students' self-efficacy. Moreover, due to the negative values of β, the components of online game addiction had a negative effect on students' self-efficacy. As seen in Table 3, 41.8% of the variance of self-efficacy was explained through the components of addiction to online games. According to the column of β coefficients, it is clear that the component of "academic and occupational performance problems" with a coefficient

of β=- as 0.421 ranked the first in terms of effectiveness, and the component of "social and mood problems" with a coefficient of β=-0.250 was the second in terms of effectiveness.

The results of the multiple regression test to predict the creativity variable are revealed in Table 4.

Table 4

The results of multiple regression analysis for predicting creativity based on components of online game addiction

Predictor variable	B	SE	Beta	T	Sig	Tolerance	VIF
Fixed value	1.910	0.073	1.910	26.221	0.001		
Social and Mood Problems	-0.165	0.051	-0.380	-3.260	0.001	0.285	3.512
Academic and Occupational Problems	-0.152	0.058	-0.305	-2.618	0.010	0.285	3.512

R=0.658 R^2=0.433 F=56.42 P=≤0.05

Table 4 illustrated that the significance level of the components of addiction to online games was less than 0.05, which means that the components of addiction to online games are effective on students' creativity. Furthermore, due to the negative β values, the components of online game addiction had a negative effect on students' creativity.

According to the column of β coefficients, it was clear that the component of "social and mood problems" with a coefficient of β = -0.380 ranked the first in terms of effectiveness, and the component of "academic and occupational performance problems" was the second in terms of effectiveness with a coefficient of β = -0.305. Besides, the components of online game addiction could predict 43.3% of the variance of creativity in students.

Table 5 shows the results of multiple variance analysis for predicting the variable of life skills.

Table 5

The results of multiple regression analysis for predicting social skills based on components of online game addiction

Predictor variable	B	SE	Beta	T	Sig	Tolerance	VIF
Fixed value	3.673			27.405	0.001		
Social and Mood Problems	-0.194		-0.274	-2.080	0.039	0.285	3.512
Academic and Occupational Problems	-0.041		-0.271	-2.057	0.041	0.285	3.512

R=0.523 R^2=0.274 F=27.742 P=≤0.05

The significance level of the components of addiction to online games was less than 0.05, which means that they were effective on the social skills of students (table 5). Additionally, due to the negative β values, the components of online game addiction had a negative effect on students' social skills. According to the column of β coefficients, it was clear that the component of "social and mood problems" with a coefficient of β = -0.274 ranked the first in terms of effectiveness, and the component of "academic and occupational performance problems" was the second in terms of effectiveness with a coefficient of β = -0.271. In addition, the results of table 5 indicated that 27.4% of the variance of the life skills variable was explained by the components of online game addiction.

4. Discussion

The present research was carried out with the title of predicting self-efficacy, creativity and social skills based on the components of addiction to online games. The results showed that there was a relationship between the components of addiction to online games and self-efficacy; moreover, the components of addiction to online games could predict self-efficacy in students. The results of the present research are in line with the researches in this field (Hamidi et al., 2018; Rahmati & Keramati, 2017; Keshavarz et al., 2016; Odaci, 2011, 2013; Chung et al, 2020). In the explanation of this finding, it could be said that nowadays, due to educational and academic issues, especially at the time of conducting the current research, when the COVID-19 epidemic broke out, students were more connected with virtual space, and the Internet and virtual space had become part of the educational needs of students. Furthermore, on the other hand, the participants of the present study were second secondary female students who, due to being in the teenage period, had less communication and closeness with their parents and were reluctant to be monitored by their parents. As a result, parental supervision over the use of virtual space could be reduced at this age. Students' excessive use of virtual space and its attractiveness and many capabilities of this space and with a variety of computer games and less parental supervision would provide a platform for students' addiction to computer games. Consequently, students would be more and more involved in this problem; additionally, one of the signs and consequences of addiction to online games could be a drop in social and academic performance of students. The lower the academic and professional performance of students, the lower self-confidence and self-efficacy they experience. On the other hand, the isolation caused by the addiction to online games causes a decrease in receiving social support from others, and this could be related to the decreased self-efficacy in students.

In addition, the results showed that there was a relationship between the components of addiction to online games and creativity, and the components of addiction to online games predicted creativity in students. The current research is in line with the results of research related to this field (Darab & Bani Bostan, 2017, 2018). In explaining this finding, it can be said that students' addiction to online games could mean their dependence on the game and inability to control it, which causes disturbances in the natural cycle of life and academic, occupational, and social performance. Not having access to the Internet and online

games, students, addicted to online games, become mentally busy and want to play. These students are irritable, aggressive and anxious. Furthermore, when they are forced to stop playing online games, they show behavioral disorders. On the contrary, when we look at the definition of creativity, we see that addiction to online games is in contradiction with the components of creativity. To display creative behavior, the development and evolution of four skills are necessary. 1) the ability to think divergently and create very different solutions and consider a wide range of dimensions and different angles of a problem 2) to have extensive information and useful experience in the field of creativity, 3) the ability to communicate with others in order to exchange experiences and information and 4) the ability to analyze critically since the individuals, in the formation of creativity, comes to many solutions, which requires the power of judgment and accurate criticism to choose the correct solutions and discard other solutions (Jorfi & Manzari, 2020). Among other things, the only solution in his mind would be having access to online games. On the other hand, these students spend all their time playing and their level of knowledge and information acquisition decreases. Similarly, addiction to online games causes loneliness and fewer social relations among students; whereas, having strong social relations is important in the emergence of creativity. Therefore, it is possible to explain the negative impact of addiction to online games on creativity in students

Furthermore, the results revealed that there was a relationship between the components of online game addiction and the social skills of students. The results of this study are in line with the results of other studies in this field (Zamani et al., 2010; Raiisi et al.2021; Mohammadi et al., 2016; Almalki & Aldajani, 2021). In explaining this finding, it can be said that students who were addicted to online games spent most of their time behind the computer or on their mobile phones and in virtual space, and if they did not have access to the Internet, they would experience behavioral symptoms, and as a result, to relieve their anxiety and tension most of them got involved themselves in virtual space and games. Even their social interactions would take place only in virtual space and with virtual game competitors. Even students communicate with their classmates more in virtual space and through online games and talk to each other through games. This type of interaction in virtual space deprives students of the social skills necessary to live in real life. As a result, it can be seen that the students are together in a physical environment, but they do not have the skills to establish real interactions, and they sit together and interact with each other with phones and games. On the contrary, students addicted to online games could be inattentive, aggressive, moody and excuse-making, disorganized and self-centered, while having social skills means that people manage their social environment effectively. Social skills require characteristics such as social sensitivity, role-playing, social insight, social understanding, moral judgment, social relationships; however, addiction to online games conflict with their mood resulting in social and academic problems destroying the opportunity to develop the mentioned abilities in students.

5. Conclusion:

In this research, like other research there were limitations. The generalization of the results of the present study was limited to female students in the second year of high school in Rudsar. Moreover, the data collection tool was only a questionnaire.

The results of the present study illustrated that addiction to online games in students could cause academic, occupational, social, and emotional problems associated with them predicting lower self-efficacy, creativity, and social skills in students. Therefore, it is suggested that students' families be given more information about online games so that they know the rules and restrictions of using online games. It is important that to advise families with children and teenagers addicted to online games on how to behave toward children and teenagers and provide education and books on the advantages and disadvantages of online games to students so that they can respect limits of online gaming. Therefore, the addiction to it could be prevented through reading about this issue.

Acknowledgement

The researchers would like to express their gratitude to all the students of the second secondary girls' schools in Rodsar and their principals, assistants, and teachers who made the research possible by cooperating in the present study.

Conflict of interest

The Authors declare that there is no conflict of interest with any organization. Also, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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