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Relationship Between Clinical Disorders and Personality Traits with Addiction to Computer Games in High School Students

Akbar RezaeiFard[1]✉ | Maryam Roozergar[2] | Effat Eftekhari[3]

1. Assistant Professor of Educational Psychology, Shahid Beheshti Farhangian University of Euclid, Euclid, Iran, akbar.rezaeifard5528@gmail.com
2. Master of Psychology, Arsanjan Islamic Azad University, Arsanjan, Iran
3. Master of Philosophy of Education, Kerman Shahid Bahonar University, Kerman, Iran

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ABSTRACT

Objective: The purpose of the present study was to investigate the relationship between clinical disorders and personality traits by emphasizing on computer games in high school students of Marvdasht city.

Methods: This research is practical in terms of its purpose and descriptive of the correlational type based on the method of data collection. The statistical population of this research included all students of the second level secondary schools of Morvdasht city in 2018-2019, and 100 people were selected as the sample size using staged cluster sampling method. To collect data, SCL-90-R test, McCree and Costa (1985) personality traits questionnaire and computer game addiction questionnaire were used. In addition to descriptive methods, Pearson's correlation coefficient, Pearson's correlation and step-by-step regression analysis were used for data analysis.

Results: The results showed that there is a positive and significant relationship between clinical disorders and students' addiction to computer games. Also, there is a negative and significant relationship between all the components of personality traits with the criterion variable of students' addiction to computer games. After performing multiple regression, the obtained R2 value showed that 88% of the total variance of students' dependence on computer games was explained by the variables included in the model. According to the beta values of physical complaints (Beta=0.504), anxiety (Beta=0.337), neuroticism (Beta=0.220), and agreeableness (Beta=0.063) as the strongest variables for predicting students' dependence on computer games.

Conclusions: The findings support the role of personality traits in students' dependence on computer games.

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Introduction

Due to the intricate nature of society, the rise and progress of novel technologies and the subsequent alteration in human lifestyle are continually increasing. When discussing the virtual realm, individuals often associate it with a computer connected to the Internet. However, this merely represents a minuscule portion of the virtual space. Presently, computer games dominate the majority of people's leisure time, particularly children, teenagers, and young adults. These games are utilized by children and adolescents for amusement, entertainment, education, cognitive stimulation, and self-expression (De Hessel et al., 2021). By incorporating interactive, multimedia elements and constructing simulated and virtual environments, these games effortlessly captivate and engage their audience. Consequently, the computer games industry holds a distinct position among the information technology sectors, with a continuous growth in audience size, sales, and profitability (Vesa, Hemari, Hervinen and Warmlink, 2017). The rapid pace of game software development is such that we witness the introduction of increasingly advanced graphic qualities and content in newer games. The pervasiveness and impact of computer games in contemporary society reinforce the notion that video and computer games transport us into the realm of cyberspace. The emergence of this novel phenomenon has given rise to a wave of concerns. The combination of abundant production, easy accessibility to various computer games, captivating visual and auditory elements, high levels of imagination, thematic diversity, and exhilarating capabilities contribute to the popularity of these games, particularly among the younger age groups (Abadipour, 2018). For instance, Funk's study revealed that approximately 90% of boys and 75% of girls engage in computer games regularly, while Sherry and Lucas estimated that boys spend 11 hours per week and girls spend 4.25 hours per week playing computer games (Taqvi Jolodar, Poursharifi, Nazari and Shahrokhi, 2016).

In general, computer games possess a dual nature. On one hand, they serve a useful purpose by providing users with unique opportunities for interaction in the virtual realm, encompassing all aspects of social life. Conversely, excessive and addictive use of these games, particularly in the online realm, can pose a threat to users, leading to their increasing isolation and experience of social alienation (Mirgol, Mohseni, Alisofi and Sheikh Veysi, 2018).

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Within this context, Green Atal has highlighted the disillusioning impact of computer games, ultimately resulting in the decline of individuals. According to his perspective, this demise does not manifest in reality and is unrelated to the physical suffering endured by Bat-Watan. These types of deaths are electronic in nature, occurring unrealistically on computer screens at home. Anderson and Dale have also demonstrated a strong correlation between violent video games and aggressive behavior, as well as delinquency. The findings of their study suggest that exposure to violent video games leads to an increase in aggressive behavior in the short term (e.g. experimentally-induced violence) and in the long term (e.g. delinquency) (Ganji & Shafai Moghadam, 2011).

A review of studies conducted since 1990 indicates that clinical disorders result in more severe substance dependence outcomes, higher levels of residual symptoms, and poorer treatment response (Riznow & Ann, 2019). Clinical disorders represent a significant and crucial public health concern worldwide. These disorders impose a substantial personal, social, and economic burden and impact various aspects of an individual's life. The global prevalence of these disorders stands at 13.4%, with an annual prevalence of 23.6% in Iran (Razavi, et al., 2017). One in every five individuals (17.6%) experiences one of these clinical disorders during their lifetime.

Among the most common clinical disorders are anxiety and depression, which are three times more prevalent in women than men (Salahi Ashlaghi, 2015). Furthermore, women who are more addicted to computer games or the Internet exhibit a higher prevalence of these disorders (Bard & Wolff, 2016).

On the other hand, some argue that there exists a relationship between an individual's personality traits and their dependence on these types of games (Rostami et al. 2015). In this regard, one of the approaches gaining interest in the field of personality psychology is Costa and McCree's five-factor model, which has been extensively researched. These five core personality factors namely neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness (are formed (Tibik, 2015; Hajivand et al., 2015).

Neuroticism pertains to an individual's inclination to encounter feelings of unease, stress, sympathy, antagonism, impulsiveness, despondency, and diminished self-worth. Extraversion refers to an individual's inclination to display positive, audacious, energetic, and amicable characteristics. Flexibility signifies an individual's inclination toward curiosity, appreciation of art,

[DOI: 10.22034/6.1.78]

artistic skills, adaptability, sagacity, and intellect. Agreeableness is linked to an individual's inclination to exhibit forgiveness, kindness, generosity, empathy, sympathy, and altruism, while being responsible is associated with an individual's inclination to possess orderliness, efficiency, reliability, dependability, self-discipline, progressiveness, logic, and composure (Costa & McCurdy, 1992; as cited in Chalme, 2018).

Numerous studies have examined the psychological, physical, and social consequences of Internet usage and computer games. For instance, Montage et al. (2021) concluded in their study titled "Internet Use and Personality Disorders" that excessive Internet usage has an impact on antisocial behaviors, such as sexual behavior. Barr and Otterbring (2021) acknowledged in their research that there is a significant correlation between personality traits and attitudes and habits related to screen-based gaming. Jungen (2019) demonstrated that individuals with Type A personalities exhibited a higher prevalence of personality disorders, while men addicted to computer games displayed a higher prevalence of Cluster C personality disorders compared to non-addicted men. Furthermore, participants with addiction to both computer and video games exhibited a higher frequency of personality disorders compared to those with addiction solely to computer games.

Overall, addiction to computer games exhibited a significant association with personality disorders. Moreover, the findings indicated a significant increase in the use of computer games over the past decade. Bossavit and Parsons (2018) also highlighted the connection between excessive computer game usage and clinical disorders, particularly depression. They concluded that individuals addicted to computer games experienced higher levels of loneliness and depression and utilized this technology more for entertainment and leisure purposes. Granero, Signorelli, Aimami, and Gómez-Peña (2014) concluded in their study on addiction to video games and its relationship with clinical, psychological, and personality disorders among Korean adolescents that 16% of the participants were addicted to video games and 38% of them exhibited high levels of clinical, psychological, and personality disorders. Additionally, the results indicate that individuals with a greater prevalence of clinical, psychological, and personality disorders tend to have a stronger desire to play video games.

The results of Talaian's (2017) research indicate that there was no significant variation in the severity of behavioral disorders based on age among the students studied. However, a significant correlation was observed between the type of game and the amount of time spent playing the game

[DOI: 10.22034/6.1.78]

with the severity of behavioral disorders in children. Students who showed an interest in violent and combat-oriented games exhibited higher levels of aggression, social incompatibility, and attention deficit disorder. Seidan and Tausli (2016) revealed in their research that personality traits account for 85% of the variations in Internet addiction.

The study conducted by Rostami et al. (2015) demonstrated a significant positive correlation between neuroticism and introversion personality traits and Internet addiction. In a similar vein, Masoud Nia and Pourrahimian (2015) found notable disparities in behavioral disorders among students with varying levels of computer game engagement. Specifically, these disparities encompassed general behavioral disorders as well as three specific forms, namely behavior disorder, restlessness, and distraction. The utilization of computer games emerges as a significant and influential factor in the development of behavioral disorders among male primary school students. Consequently, it is imperative for parents to monitor their children's computer game usage in order to mitigate the adverse effects and prevalence of such disorders.

Given the allure of computer games to children and adolescents and the consequential psychological, physical, and social impacts, psychologists and mental health experts have turned their attention to addressing these games. Consequently, the central issue under investigation revolves around the potential connection between clinical disorders, personality disorders, and dependence on computer games.

Materials and Methods

The present study is characterized as non-experimental research both in terms of its practical objective and the method employed for data collection. Furthermore, with regards to its implementation, it can be classified as descriptive-correlational. The target population for this research consisted of all the students enrolled in the second year of secondary school in Marvdasht city during the academic year 2018-2019. The sample size was determined using the staged cluster sampling method. Initially, five schools were randomly chosen from the pool of secondary schools in Marvdasht city. Subsequently, one class was selected from each of these schools, and a questionnaire was distributed to the students in these classes.

[DOI: 10.22034/6.1.78]

It is important to note that, given the exceptional circumstances imposed by the COVID-19 pandemic and the unavailability of face-to-face interactions with students, the questionnaire was distributed through virtual platforms. The data for this study was collected using Milon's Multiaxial Clinical Questionnaire 2 (MCMI-III), McCree and Costa's (1985) Personality Traits Questionnaire, and Ianturan's (2008) Computer Game Addiction Questionnaire. The collected data was analyzed using the SPSS-24 software at two levels: descriptive statistics and inferential statistics. Descriptive statistics involved the calculation of frequency, percentage, mean, and standard deviation, while inferential statistics employed Pearson's correlation coefficient and regression analysis.

Results

To use parametric statistical indices, the data must have a normal distribution. Kolmogorov-Smirnov test was used to determine population distribution (normality of data). P<0.05 was considered significant in the conducted tests. The results indicate the normality of data distribution. The presuppositions of the regression model were also examined by Durbin-Watson test to check the independence of errors, collinearity test and to check the normality of the errors, according to the availability of these pre-conditions, regression analysis was used.

Table 1. Demographic characteristics of the sample group

Variable	N	%
education		
Tenth	27	27
Eleventh	33	33
Twelfth	40	40
Gender		
Girl	50	50
Boy	50	50
Housing		
Have a private residence	128	64
Have a Rental residence	72	72
Variable	M	SD
Age	16.28	1.87

The average and standard deviation of the age of the sample group are 16.28 and 1.87. Other demographic information is given in Table 1.

[DOI: 10.22034/6.1.78]

Table 2 Descriptive statistics of variables of personality characteristics, clinical disorders and addiction to computer games with the assumption of normality

Table 2. Descriptive statistics of variables

Subject of variable study	Mean	SD	K-S	DF	P
Neurosis	38	7.3	0.158	100	0.20
Extroversion	27.8	6.7	0.140	100	0.200
Flexibility	27.7	7.8	0.193	100	0.199
Agreeableness	38.8	7.7	0.224	100	0.073
Conscientiousness	31.2	7.5	0.171	100	0.200
Somatization	0.990	0.64	0.160	100	0.200
Obsession-compulsion	1.54	0.70	0.188	100	0.200
Interpersonal sensitivity	1.35	0.75	0.152	100	0.200
Depression	1.30	0.77	0.181	100	0.200
Anxiety	1.04	0.71	0.229	100	0.061
Hostility	1.20	0.80	0.229	100	0.061
Phobia	0.72	0.64	0.269	100	0.011
Paranoid thoughts	1.36	0.64	0.232	100	0.054
Psychosis	1.60	0.78	0.238	100	0.043
Total psychotic disorders	1.16	0.59	0.239	100	0.043
Addiction to computer games	0.21	0.006	0.208	100	0.129

Table 2 shows the mean and standard deviation of the variables of personality traits, clinical disorders and addiction to computer games with the assumption of normality. This means that people's scores in personality traits, clinical disorders and addiction to computer games have a normal distribution.

The first research hypothesis: There is a relationship between clinical disorders and students' addiction to computer games.

Table 3. Correlation coefficients between clinical disorders and students' addiction to computer games

Variable	1	2	3	4	5	6	7	8	9
Somatization	1								
Obsession-compulsion	0.336	1							
Interpersonal sensitivity	0.374	0.289	1						
Depression	0.369	0.304	0.321	1					
Anxiety	0.379	0.341	0.288	0.355	1				
Hostility	0.374	0.396	0.396	0.204	0.362	1			
Phobia	0.474	0.287	0.384	0.497	0.392	0.341	1		
Paranoid thoughts	0.365	0.287	0.312	0.369	0.287	0.316	0.369	1	
Psychosis	0.336	0.301	0.289	0.214	0.287	0.296	0.369	0.289	
Computer dependence	0.338	0.302	0.301	0.321	0.291	0.223	0.377	0.288	0.335

[DOI: 10.22034/6.1.78]

As can be seen in table 3, the values of correlation coefficients between research variables and their sub-scales are given at p<0.001 levels and most of them are significant. According to the results of the table, there is a positive and significant relationship between clinical disorders and students' dependence on computer games.

The second research hypothesis: There is a relationship between personality traits and dependence on computer games.

Table 4. Correlation coefficients between personality traits and students' addiction to computer games

Variable	1	2	3	4	5	6
Neurosis	1					
Extroversion	0.239	1				
Flexibility	0.345	0.321	1			
Agreeableness	0.289	0.289	0.354	1		
Conscientiousness	0.396	0.316	0.298	0.389	1	
Computer dependence	-0.340	-0.216	-0.287	-0.331	-0.420	1

As can be seen in table 4, the values of correlation coefficients between research variables and their sub-scales are given at p<0.001 levels and most of them are significant. According to the results of the table, there is a negative and significant relationship between all the components of personality traits and students' dependence on computer games.

Table 5. Results of regression model

Variable	R	R^2	Adjusted R^2	SD	Durbin-Watson
Somatization	0.868	0.753	0.751	14.76	1.36
Anxiety	0.921	0.849	0.848	11.57	
Neurosis	0.937	0.879	0.878	10.38	
Agreeableness	0.939	0.882	0.881	10.25	
	Model	SS	DF	MS	F (P)
	Regression	288428.39	4	72197.07	151.45, p < 0.001
	Residual	38562.92	81	476.08	-
	Total	326991.32	85	-	-

As shown in table 5, after performing multiple regression, the R^2 value obtained showed that 87% of the total variance of students' dependence on computer games was explained by the variables included in the model. Analysis of variance on the same model also indicated the significance of the overall model: (P<0.001, F=151.45). The value of Durbin-Watson is equal to 1.36, which indicates the independence of the variables from each other.

[DOI: 10.22034/6.1.78]

Table 6. Step-by-step regression results on clinical disorders and personality traits and students' addiction to computer games

Unstandardized coefficients			Standardized coefficients				
Between variable	B	Std	Beta	t	P	Tolerance	VIF
Constant	76.67	8.27	-	9.50	0.001	-	-
Somatization	2.05	0.11	0.50	19.21	0.001	0.708	0.344
Anxiety	1.602	0.108	0.337	14.85	0.001	0.613	0.266
Neurosis	1.350	0.152	0.220	8.89	0.001	0.421	0.160
Agreeableness	0.839	0.260	0.063	5.22	0.001	0.166	0.058

To determine the effect of each of the components of clinical disorders and personality traits as predictor variables and students' dependence on computer games as a criterion variable, they were analyzed by stepwise multivariate regression analysis. The results of table 6 show that when the components of physical complaints were included in the model, the overall model explained 75% of the variance of the variable of students' addiction to computer games. According to table 6, the beta values of physical complaint (Beta=0.504), anxiety (Beta=0.337), neuroticism (Beta=0.220), and agreeableness (Beta=0.063) as significant variables for predicting students' dependence on computer games. Also, according to the results of table 6, which shows that the values of tolerance statistics for all predictor variables of the research are greater than 0.1 and the values of VIF factor are smaller than 10 for all of them. Therefore, according to the criteria of Klein's (2010) viewpoint, multiple collinearities was not observed in this research.

Discussion

The research findings indicate a significant and positive correlation between students' dependence on computer games and various clinical disorders. In other words, individuals with higher levels of clinical disorders are more likely to exhibit a greater dependence on computer games. These findings align with previous research conducted by Jongen (2019), Bossavit and Parsons (2018), Granro et al. (2014), Ekin and Iskandar (2011), Kuo et al. (2008), Talaian (2017), Shekari et al. (2017), Beigi et al. (2016), and Pourrezaian et al. (2015). The complex and multifaceted nature of addiction and its interaction with genetic, psychological, social, and environmental factors contribute to the chronic and recurrent nature of this disease. Due to their limited ability to communicate in the real world, individuals with addiction find solace and entertainment by

[DOI: 10.22034/6.1.78]

immersing themselves in virtual worlds and engaging in activities such as playing computer games.

When justifying the connection between borderline personality disorder and addiction to computer games, it is important to acknowledge the pervasive pattern of instability in interpersonal relationships, self-image, and emotions that characterizes this disorder. The presence of impulsive behaviors is also evident, typically beginning in early adulthood. The onset of this disorder is associated with various factors, including confusion and emotional states such as anxiety, anger, depression, and engagement in dangerous behaviors like self-harm and substance abuse. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the primary diagnostic criterion for borderline personality disorder is dysfunction, particularly in the realm of interpersonal functioning. Individuals with this disorder often experience conflicts in their behavioral, emotional, cognitive, and interpersonal domains, which can have detrimental effects on their personal, familial, and social lives. As a result of emotional dysregulation and a lack of alternative outlets, these individuals exhibit a strong interest in engaging in activities such as playing computer games for entertainment.

In justifying the component of the relationship between anxiety and addiction to computer games, it is imperative to emphasize that anxiety manifests in individuals when they experience prolonged or repeated stressful situations. Additionally, if the body's nervous system fails to reach a state of tension resistance and remains mobilized for an extended period of time, it becomes susceptible to physical and mental ailments, such as anxiety. Abnormal levels of certain hormones in the blood are observed in anxious individuals, making anything that disrupts the hormonal system potentially hazardous. Consequently, individuals turn to computer games as a leisure activity to escape from and alleviate anxiety. However, excessive use of this technology can lead to dependence.

In explaining the component of the relationship between the characteristic of negativity and addiction to computer games, it is crucial to note that neurologically, a specific part of the brain known as the "Amygdala" plays a significant role in negative individuals. The Amygdala, acting as a constant warning system, persistently searches for danger and negative news, thus fostering a state of fear. Some scholars argue that this predisposition is an inherent feature of the brain in this group of individuals, and it is comprehensible from an evolutionary standpoint as it forms the fundamental "fight or flight" mechanism. Through this mechanism, the brain utilizes its neurons

[DOI: 10.22034/6.1.78]

to confront all the negative information stored in memory. Furthermore, negative individuals are often plagued with worry and anxiety, hence seeking sources of relaxation, such as computer games, to escape from these emotions.

In justifying the component of the relationship between the narcissistic trait and addiction to computer games, it is essential to consider that individuals with narcissistic personality traits consistently harbor a false sense of their own importance. They engage in fantasies about achieving great success and power, requiring more praise and admiration than others. Consequently, it can be logically inferred that individuals with narcissistic personality traits possess a strong desire to play games, striving for significant and immediate progress while aiming to reach higher levels. Since the virtual wealth and power within the game hold the same significance for them as real-world wealth and power, they exhibit a fervent desire to rapidly accumulate points in the game, leading to a substantially greater amount of time spent on online gaming compared to others.

In the justification of the correlation between dramatic elements and dependence on computer games, it must be noted that histrionics or dramatic personality disorder is categorized as one of the cluster B personality disorders. Individuals afflicted with this disorder exhibit highly exaggerated and occasionally uncontrollable expressions of their emotions and excitement. It is evident that instability and turbulence in relationships are characteristic of individuals with a theatrical personality. These individuals spare no effort in seeking attention and validation from others. If their endeavors prove futile, their world becomes dreary. Consequently, heartbreak, stress, and confusion permeate the lives of those with dramatic personality disorder. Furthermore, in such circumstances, histrionic personalities not only lose control but also succumb to anger and fury. These disorders and behavioral imbalances prompt them to engage in inappropriate behaviors such as computer game addiction.

Similarly, the connection between the dependent personality trait and addiction to computer games can be elucidated. Dependent personality disorder, akin to other personality disorders, is a mental illness characterized by rigid and repetitive behavioral patterns across various aspects of life. Individuals with this disorder rely on others to fulfill their physical and emotional needs. They constantly strive to please others, displaying passive, needy, and clingy behaviors while harboring a fear of separation. To alleviate these anxieties, they seek solace in various forms of entertainment, including computer games.

[DOI: 10.22034/6.1.78]

Lastly, the justification of the relationship between schizoid characteristics and addiction to computer games necessitates acknowledging that individuals with schizoid personality exhibit isolation, indifference, and seclusion, actively avoiding social interactions. In other words, they can be deemed antisocial and akin to individuals with an avoidant personality. Those with schizoid personality possess a profound penchant for isolation, prioritizing it over group dynamics and interpersonal bonds. Consequently, these characteristics predispose individuals to engage in computer games.

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In justifying the inverse correlation between agreeableness as a personality trait and addiction to computer games, it can be argued that this factor reveals an individual's relationship with oneself and others. Similar to extraversion, this factor emphasizes interpersonal tendencies. A person who possesses agreeableness is essentially altruistic, shows empathy towards others, and is eager to assist them, while also believing that others reciprocate the same kind of relationship. They also encounter fewer interpersonal conflicts and display less aggression. In general, the components of this factor include trust, honesty, altruism, acceptance, humility, and compassion, which are inversely related to individualism and computer games.

When explaining the connection between conscientiousness and computer games, it can be posited that adaptability and conscientiousness may stem from environmental rewards. This means that students who are compliant and conscientious receive more positive reinforcement from others, leading to a potentially higher level of subjective well-being. Conscientiousness, which represents a student's inclination towards being organized, efficient, reliable, self-disciplined, and goal-oriented, predicts a reduced dependence on computer games. Such students experience greater independence in their lives and decision-making processes. Independence refers to having an influence on life events and taking an active role in behaviors. Therefore, students with higher levels of conscientiousness and responsibility tend to act independently in their daily decision-making, disregarding external factors that pose challenges and constraints. On the other hand, students who possess a low conscientious personality trait struggle to make optimal decisions based on responsibility and duty, particularly when faced with external pressures.

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Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Yazd University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

The sole author contributed to the study conception and design, material preparation, data collection and analysis and contributed to the article and approved the submitted version.

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