

DOI: 10.5281/zenodo.4296337
CZU 159.9-053.6:794



THE IMPACT OF VIDEO GAMES ON USER BEHAVIOR

Victor Sontea¹, ORCID ID: 0000-0002-0372-8799

Konstantin Karaneuski^{2*}, Kira Mezianaya³, ORCID ID: 0000-0002-5914-7176

Konstantin Yashin², ORCID ID: 0000-0002-5723-7389

¹Technical University Of Moldova, 168, Stefan cel Mare Bd., MD-2004, Chisinau, Republic of Moldova

²Belarusian State University of Informatics and Radioelectronics 4 Petrusya Brovki Street, 220013,
Minsk, Belarus

³Centre for Children's Correctional and Development Training and Rehabilitation, 79 Winners Avenue,
Minsk, Belarus

*Corresponding author: Konstantin Karaneuski, kostja_2007@mail.ru

Received: 10. 17. 2020

Accepted: 11. 23. 2020

Abstract. Video games are a popular entertainment in many countries, however, among video game users, experts identify people with addictions. This article presents the results of our studies of factors affecting the nature of actions within the game framework and the mental state of adolescents. On the basis of source data and our own clinical research, we have created and applied a diagnostic questionnaire to identify preferences in the choice of genres, plots and characters of computer games. One hundred and forty teenagers were examined, seventy males and seventy females. It has been established that the use of inanimate objects as the main character is directly related to the user's desire for destructive actions within the game framework ($p < 0.05$). The influence of the act of self-destruction of a computer game hero on the psychological state of a user is studied. The relationship between the high level of personal anxiety and the sign "acceptability of self-destruction in the game" ($p < 0.05$) was established. It is concluded that restricting the use by children of role-playing computer games with inanimate objects or the self-destruction of heroes, as well as online games for the purpose of entertainment, will help to prevent the formation of negative trends in the mentality of adolescents.

Keywords: *Computers, Children, Gambling, Anxiety disorders.*

Rezumat. Jocurile video sunt un divertisment popular în multe țări, deși printre utilizatorii de jocuri video experții identifică persoane cu dependențe. Acest articol inserează rezultatele studiilor privind factorii care afectează natura acțiunilor în cadrul jocului și starea mentală a adolescenților. Pe baza datelor sursă și ale cercetărilor clinice proprii, am creat și am aplicat un chestionar de diagnostic pentru a identifica preferințele în alegerea genurilor, a comploturilor și a personajelor jocurilor pe computer. Au fost examinați o sută patruzeci de adolescenți, șaptezeci de bărbați și șaptezeci de femei. S-a stabilit că utilizarea obiectelor neînsuflețite ca personaj principal este direct legată de dorința utilizatorului de acțiuni distructive în cadrul jocului ($p < 0,05$). Este studiată influența actului de

autodistrugere a unui erou al jocului pe computer asupra stării psihologice a unui utilizator. A fost stabilită relația dintre nivelul ridicat de anxietate personală și semnul „acceptabilitatea autodistrugerii în joc” ($p < 0,05$). Se concluzionează că restricționarea utilizării de către copii a jocurilor de rol pe computer cu obiecte neînsuflețite sau autodistrugerea eroilor, precum și a jocurilor online în scop de divertisment, va ajuta la prevenirea formării unor tendințe negative în mentalitatea adolescenților.

Cuvinte-cheie: *calculatoare, copii, jocuri de noroc, tulburări de anxietate.*

Introduction

Currently, addiction to Internet and video games are referred to as social epidemics. Studies conducted in different countries show that from 6% to 33% of people using the Internet and computer games for the purpose of entertainment are computer addicted [1, 2, 3]. For children and teenagers, entertainment and leisure time spent in the virtual space are becoming increasingly popular. This is facilitated by the availability of computers and the simplified use of programs. According to research data, the number of Internet users in adolescence in many countries is close to 100% [4, 5]. All this contributes to the development of addiction to virtual spaces as a new habitat. In this regard, the study of the problem of child and adolescent dependence is given special attention.

The main part of the studies in this problem is devoted to the search for the causes and mechanisms of its development. English scientists are exploring the mechanisms of addiction formation to computer games depending on the nature of the use of the game program [6, 7]. In China the influence of the family environment, the impact of the social environment and gender distribution are being studied in order to establish risk factors for addiction development [8, 9, 10].

Scientists have already recognized that due to the fact that Internet has become available from any technical device, it is advisable to study the addiction to Internet, especially to video games in real time, which have gained a multi-million audience. For example, the number of online users of the game Warcraft III on all platforms, according to the developer's company, reached twelve million people in October 2010.

The mechanisms of addiction formation depending on the game genre and the choice of hero behaviour style are studied to a lesser extent. In the available sources no analysis has been found regarding children using games, or of the choice of game hero by the criterion of animateness / inanimateness. Scientists established long before the advent of computer games that the identification of a child with inanimate objects, mechanical devices, vehicles, etc. is noted in children with a late manifestation of a perceived self. In this case, the child's emotional sphere changes for the worse: they are inclined to ignore the other person's nature, they do not realize the importance of emotional life, and they do not criticize their destructive actions performed during the game [11, 12, 13].

As it is known, activity in the gaming environment contributes to self-affirmation. The desire to lead, to manage processes and people in the game world corresponds to the age-related needs of socialization and self-determination of a teenager. At the same time, in many computer games of the slasher and horror genres widely used by teenagers, mass destruction of characters in a human form is demonstrated. In such scenes, as a rule, no emotional reactions of the slain are reflected—these are mechanical actions of the game characters. It should be noted that the research on the impact of the destructive behaviour in the computer game world on a child's mentality has been insufficient.

As it is known, gamers identify themselves with the game hero in the gameplay. Along with the destruction of various characters and objects, there is such a phenomenon in games as the hero's self-destruction. The impact of the act of self-destruction on the user's psyche has not yet attracted the attention of scientists, or the possibility of formation in children of the phenomenon of a prolonged playful reincarnation described by T. P. Simson, Russian psychiatrist [14].

Our study investigated the effect of role-playing games on adolescents, as well as the relationship between online games, the self-destruction phenomenon and anxiety disorders among users.

Research objective: To study the factors contributing to the formation of disorders in the behaviour and emotional state of the adolescents is using computer video games.

Subject of the study: the emotional-volitional sphere of adolescents using role-playing computer games.

Materials and methods

The study involved one hundred and forty adolescents from the pupils of two secondary schools in the city of Minsk, of which there were seventy males (50%) and seventy females (50%). The average age was 16.1 (\pm 1.9) years. Of these there were: secondary school students (grade eight)—97 persons; high school students (grade eleven)—43 persons. The survey was conducted anonymously, after obtaining an informed consent, in the second half of the school year (April). The survey was conducted by continuous method of interviewing. Based on the analysis of scientific sources and their own research the authors, K.N. Mezianaya, K.D. Yashin, and K.M. Karaneuski, created and applied the questionnaire "Method of screening diagnostics of video game dependence and its mental health effects" in order to study the nature of using computer games in the adolescent environment [15]. The questionnaire included questions about the loss of time control, social dysfunction, priority interests in the computer game world, possible sleep disorders in the computer addiction state, etc. Spielberger–Hanin anxiety self-assessment test was used to determine the personality anxiety [16].

Statistical analysis of the data obtained was carried out in order to check the hypothesis of homogeneity of data distribution using the χ^2 contingency tables of the Pearson criterion. Differences were considered statistically significant at $p < 0.05$. The coefficient of contingency ϕ , based on χ^2 statistics, can be considered as a measure of correlation between the signs A and B, with values of close to 0 showing weak association and those close to 1 strong association. The data obtained in the course of this study were processed with the standard Microsoft Office Excel 2010 application and STATISTICA 10.0 package.

Results

The analysis showed that secondary school students had been using Internet for 5.5 years, and video games for 4.5 years; high school students had been using Internet for 6.8 years, and video games for 6 years. This indicated that the attraction to games among secondary school students began at the age of 9.5 years, which is two years earlier than that of children in grade eleven.

One hundred and nine persons played computer games with different frequencies and durations of sessions (77.9% of the total number of respondents). One hundred and eight persons were keen on watching movies and videos (77.1%). Fourteen persons engaged

in online gambling. A gender analysis showed that 95.7% of males and 60% of females played computer games.

It was established that fifty-two persons (37.1%) had sessions from three to five hours long, while twenty persons played for five hours or more (14.3%), which is a risk factor for the formation of computer addiction. Twenty-seven persons played daily (19.3%) and thirty-six persons (25.7%) played three to five times a week, which also increases the risk of developing computer addiction. A high level of personal anxiety on the Spielberger–Hanin anxiety self-assessment scale was revealed in forty-one persons (29%), and situational anxiety in nineteen persons (13.5%).

Role-playing games, mostly in the first person, are used by 76% of teenagers. Players can choose different characters as a hero of a computer game. The analysis of the choice of the game hero was conducted using the principle of animateness/inanimateness. It was established that inanimate objects—transformers, robots and tanks—as the main character were preferred by eighty-three persons (59.3%). Of these, forty-six persons (32.9%) chose transformers and thirty-seven persons (26.4%) chose tanks. Seventeen persons engaged in destructive actions (12.1%), twenty-six persons preferred submission and suppression (18.6%). Twenty-eight respondents chose to protect some characters by suppressing others (20%). Eighty-eight persons (62.9%) preferred reconciliation with rivals, of which ten persons reached the goal through submission. Twenty-five high school students (17.85%) chose only inanimate characters as the game hero.

The choice of an inanimate object as the hero leads to the construction of action-style play, taking into account the properties of the selected game character. In this case, the child chooses the most primitive actions to achieve the goals in the game. Due to the lack of moralities and emotional components in the characters and the spread of violence in some game genres, an aggressive style of behaviour is formed. Gamers do not show criticism towards their destructive actions during the game, and they ignore the presumed physical and emotional suffering of the virtual victims of their actions. The hypothesis put forward by us was confirmed in the course of the study (Table 1).

Table 1

The relationship between the destructive actions in a computer game and the use of inanimate objects

	Use of inanimate objects in the game		
	Pearson Chi-square	Phi for 2 x 2 tables	p value
Destructive actions in a computer game	3.42	0.24	<0.05

The analysis of priority interests in a computer game showed that schoolchildren are attracted to leading roles in games, acting in different worlds. Among high school adolescents the desire to control people around them (“rule themselves”) is higher by 7% in comparison with secondary school. As it follows from the obtained data, forty-three persons (30.7% of respondents) strived to stimulate their emotional state, which is an indirect sign of a lack of emotional sensations in the real world.

It was established that forty-two teenagers (30%) avoided cruel game genres, while forty-five persons (32.2%) preferred cruel and bloody plots. Figure 1 shows the distribution of sensations that adolescents experience in using such genres of video games.

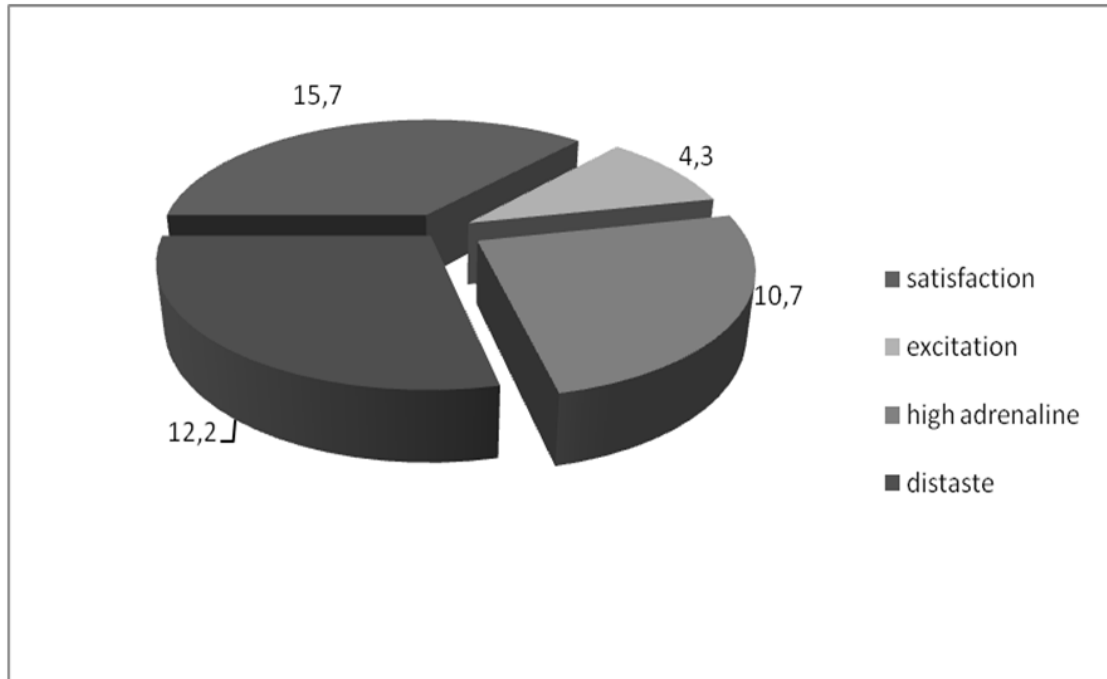


Figure 1. Distribution of respondents according to their feelings when using cruel game genres (%).

At the same time, fifty-three persons (37.8%) noted indifference to the scenes of violence, which is probably a sign of habituation and exhaustion of emotional reactions. It is worth emphasizing that seventeen persons (12.2%) continued to use such genres while maintaining equanimity. This may indicate the formation of addiction, which contributes to the increased production of neurotransmitters during the game [17]. Sixty persons (43%) of the surveyed teenagers readily used games with cruel plots.

Another example of character abuse is the phenomenon of self-destruction. In some video games, in case the game hero's actions are unsuccessful or burdensome for the team, the gamer may resort to the hero's self-destruction. In our study, it was established that forty-two teenagers (30%) consider this acceptable. The tendencies to the development of psychological disorders in individuals who are fond of self-destruction during the game were revealed (Table 2).

Table 2

The relationship between the signs: high level of personal anxiety and the acceptability of self-destruction in a computer game

	Acceptability of self-destruction in a computer game		
	Pearson Chi-square	Phi for 2 x 2 tables	p value
High level of personal anxiety	6.91	0,240,49	<0.05

This relationship indicates that users are aware of the negative side of such a decision but are forced to accept it in view of the current game situation. Negative emotional reactions arising from the death of the hero lead to the formation of internal anxiety [18].

Conclusion

The study suggests that the use of inanimate objects (vehicles, combat vehicles, etc.) in the game by adolescents, with the subsequent identification of themselves with them, contributes to the choice of the destructive actions of in the game world ($p < 0.05$).

A significant proportion of children (30.7%) are involved in games with cruel plots, and this can cause disorders in the emotional sphere, as evidenced by the relationship between high levels of personal anxiety and acceptability of self-destruction in a computer game implying cruel treatment of the hero the gamer identifies with ($p < 0.05$).

Discussion

In adolescence, many children use games to compensate for the lack of attention and support for their initiative in independent decision-making from their parents. Showing freedom of action in the gaming space, adolescents satisfy the need for self-expression and control, which contributes to the rapid formation of their addiction [19].

However, gaming activity in the virtual space is unable to fully meet the needs that have arisen in the real world and become the basis for the creative development of a self-sufficient person. The use of inanimate objects in a game with subsequent identification with them can pose a threat of formation of an autistic perception of reality [20].

Limiting children's use of games with heroes which are inanimate objects, as well as games with the possibility of the hero's self-destruction, will contribute to the normalization of their psychological state. On the basis of such studies, it is necessary to create programs for the prevention of behavioural and mental disorders arising from the excessive use of video games. Psychologists should check the products created for entertainment and leisure time in the virtual space.

References

1. Kaess M., Durkee T., Brunner, R. et al. (2014). Pathological internet use among European adolescents: psychopathology and self-destructive behaviors. *European Child Adolescence Psychiatry*, 23, 1093–1102. <https://doi.org/10.1007/s00787-014-0562-7>
2. Zhang, M.W.B., et al. (2018). Prevalence of Internet Addiction in medical students: a meta-analysis, 42(1), 88-93. <https://doi.org/10.1007/s40596-017-0794-1>
3. Mezianaya, K.N. et al. (2014). Influence of computer games on students' health. *Psychiatry, Psychotherapy and Clinical Psychology*, 15(1), 51–60.
4. Young K. S. (2010). *Internet Addiction: A Handbook and Guide to Evaluation and Treatment*. New York: Publisher Wiley.
5. Soldatova G.V. et al. (2011). Caught by the Same Network: a Socio-psychological Study of the Ideas of Children and Adults about the Internet. Moscow.
6. Choi C., Hums M. A., Bum C.H. (2018). Impact of the Family Environment on Juvenile Mental Health: e-Sports Online Game Addiction and Delinquency. *International Journal Environmental Research Public Health*, 15, 2850.
7. Lim M.A., Lee J.Y., Jung H.Y. (2016). Changes of quality of life and cognitive function in individuals with Internet gaming disorder 6-month follow-up. *Medicine*, 95, 50-58.
8. Li A.Y., Lo B.C., Cheng C. (2018). It Is the Family Context That Matters: Concurrent and Predictive Effects of Aspects of Parent-Child Interaction on Video Gaming-Related Problems. *Cyberpsychology, Behavior, and Social Networking*, 21(6), 74–380. <http://dx.doi.org/10.1089/cyber.2017.0566>

9. Griffiths M. D., and Nuyens F. (2017). An Overview of Structural Characteristics in Problematic Video Game Playing. *Current Addiction Reports*, 4, 272–283. <https://doi.org/10.1007/s40429-017-0162-y>.
10. Westwood D., and Griffiths M.D. (2010). The role of structural characteristics in video game plays motivation: a Q-methodology study. *Cyberpsychology, Behavior, and Social Networking*, 13, 581 – 585.
11. Bardyshevskaya, M. K. (2010, February). *Psikhologicheskiy analiz igrovyykh perevoploshcheniy u detey s rasstroystvami autisticheskogo spektra // Yubileynaya konferentsiya 125 let Moskovskomu psikhologicheskomu obshchestvu* (Psychological analysis of gaming reincarnations in children with autism spectrum disorders // Jubilee Conference “125 years to the Moscow Psychological Society”). Moscow.
12. Kovalev, V. V. (1979). *Psichiatria detskogo vozrasta: Rukovodstvo dlja vracha* (Psychiatry of Childhood: The Manual for Doctors). Moscow: *Medicina*, (in Russian).
13. Chuprikov A. P., Hvorova A. M. (2013). *Disorders related to the range of autism: medical, psychological and pedagogical support*. (2nd ed.). Lviv: Ms.
14. Simson T.P., Model M.M., Halperin L.I. (1935). *Psychoneurology of Childhood*. Moscow–Leningrad: *Biomedgis*.
15. Mezianaya K.N., Yashin K.D., Karaneuski K.M. (2017). Diagnostic Questionnaire for Determination of the Signs of Computer Addiction and its Impact on Health. *Jour.European Science Review*, 5-6, 61-67.
16. Spielberger C.D. (1983). *State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
17. Weinstein A., and Michel L. (2010). Internet Addiction or Excessive Internet Use. *The American Journal of Drug and Alcohol Abuse*, 36(5), 277–283.
18. Chutko L.S. et al. (2011). *Kognitivnyye narusheniya u detey s trevozhno-fobicheskimi rasstroystvami* (Cognitive Impairment in Children with Anxiety and Phobic Disorders.) *Zh. Nevrol. Psikiatr. Im. S. S. Korsakova*. 3(2), 70-72.
19. Schneider L.A., King D.L., Delfabbro P. H. (2017). Family factors in adolescent problematic Internet gaming: A systematic review. *Journal of Behavioral Addictions*, 6(3), 321–333. <http://doi.org/10.1556/2006.6.2017.035>.
20. Mezianaya. Kira N. Virtual World. Creators, Residents, and Tourists / Kira. N Mezianaya, Konstantin M. Karaneuski, Konstantin D. Yashin. – CSP.: November, 2019. – 250p.