

Section 7. Psychology

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DIAGNOSTIC QUESTIONNAIRE FOR DETERMINATION OF THE SIGNS OF COMPUTER ADDICTION AND ITS IMPACT ON HEALTH

Abstract:

Computer addiction is referred to a kind of social epidemic. Expansion of influence of the media environment on various human activities poses the need for development of new diagnostic methods of behavioral disorders in this kind of dependence. The study of commercial products created for the purpose of entertainment with the use of information and communication technology (ICT) has acquired a particular importance.

This article presents a questionnaire developed for the diagnosis of a computer addiction, which consists of two parts: the first helps to reveal the degree of such dependence, while the second identifies the disorders in the emotional sphere and mental health.

The development of the questionnaire during three years has been based on the results of our own research and other studies published in peer-reviewed journals. 720 students of technical specialties from two universities of Minsk have been interviewed within this period using a continuous method, which testifies to the sufficient representativeness of sampling. As a result a diagnostic questionnaire for determination of the stages of development and severity of computer addiction has been created. For the purpose of comparative analysis with the test by K. Young, simultaneous survey was held in 105 students (78 males (74.3%)) of technical specialties in one of the universities of Minsk city. The average age of the subjects is 19.7 years (± 1.5).

The presented questionnaire makes it possible to reveal computer addiction via responses to 7 questions, as well as to diagnose the following symptoms: compulsive urge, abstinence syndrome, sleep disorders due to adverse emotions caused by dreams, and psychopathological phenomenon of autonomous virtual image. An application for an invention "Method for Diagnosing the Human Mental State (Options)" # a 20140678 was published by us on August 30, 2015, authors Mezianaya K. N., Yashin K. D., and Karaneuski K. M.

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Currently, there is a lack of research tools to study computer addiction, which has been ranked as a social epidemic [1, 96–97]. The rapid expansion of the market for products created on ICT basis has a significant impact on their consumers. In the last decade,

computer games and video films have become widespread. However, the specific impact of these products on the user is not sufficiently taken into account in the existing diagnostic tests. One of the first questionnaires created by K. Young in 1996 to identify addiction

on the Internet is widely used to date in various modifications. Using a test developed in Russia in 2005 by Nikitina and Yegorov, the scientists conduct research in the CIS countries [1, 134–136].

Currently, the scientists prefer to investigate the effects on the person's personality of various gadgets: tablets, smartphones, laptops, etc. [2, 85–92]. However, all the specified technical means only provide access to the virtual space. The study of the complex influence of the virtual world on human health is a priority task of research of this type of non-chemical dependence.

The questionnaire developed by us is a tool for screening the threat of forming a dependent form of behavior in the persons using a computer media environment for the purpose of entertainment. The questionnaire has been developed for three years. During this period, five pollings were conducted among students who were trained in technical specialties at two universities in Minsk city. The total number of respondents was 660 people. The results of our research are published in a number of scientific journals [3, 50–55; 4, 130–13]. We published an application for the invention "Method for Diagnosing the Human Mental State (Options)" on August 30, 2015. No. 20140678, authors: Mezyanaya K. N., Yashin K. D., and Karaneuski K. M. [5; 6].

Purpose of the study: to create a new way to diagnose computer addiction and the consequences of its impact on health.

Materials and methods

The questionnaire consists of two parts (Appendix 1). Part 1 includes 13 questions that allow us to identify the stages of the development of computer addiction. Part 2 includes 14 questions that identify disorders in the emotional and mental health. In Part 1, the first four items do not have a scoring and are used for qualitative analysis of the sample. In the range of services provided by the computer media environment, according to the existing classification, six types are distinguished: 1) computer games; 2) social networks and dating; 3) Internet surfing; 4) films, television series and video reels; 5) cybersex; 6) exchange trading and gambling [1, 96–97]. Respondents are allowed to indicate several activities. Evaluation of results is carried out on a three-point scale, depending on the number of virtual world types used: 1–2 types (1 point), 3–4 types

(2 points), 5–6 types (3 points). Items 5–12 allow quantifying the degree of dependence, as well as identifying deviations in the mental health of the ICT user.

To analyze the time devoted to entertainment in the virtual world, a time period of 7 days (168 hours) is applied, which is divided into three intervals: from 1 to 24 hours, from 25 to 39 hours, 40 or more hours per week. The intervals are evaluated on a three-point scale: the minimum score is 1 — for the minimal amount of time. The number of hours spent at the computer during the day is also analyzed in three intervals using the same assessment. To identify the behavioral disorders and symptoms characteristic of this type of dependence, three issues are included, which formulate the problems of excessive use of the Internet, according to the results of a three-factor analysis conducted by Hungarian scientists [6, 657–664]. These are obsession (a kind of neurosis), social dysfunction (neglect) and control disorder. [7, 557; 8, F48]. Evaluation of the results of answers to each of the three questions of the questionnaire is assessed on a three-point scale: never — 1 point, sometimes — 2 points, often — 3 points. The result is the total number of points on seven questions (5, 8–13). The evaluation of the scoring ranges is set out in the instructions (Appendix 2). In order to test the questionnaire, 105 students of technical specialties studied at one of the universities of Minsk were interviewed using the method of continuous survey, which indicates a sufficient representativeness of the sample: males — 78 (74.3%), females — 27 (25.7%). All students received informed consent. An anonymous survey was conducted in the first semester of the academic year (October 2015). The average age of the subjects was 19.7 (± 1.5) years. The average record of use of the Internet and computer games is 10.5 years.

For comparative analysis, a poll was conducted simultaneously using the test of Internet addiction diagnostics by K. Young [9, 133–134];

Statistics

In order to analyze the stability of the data obtained from this questionnaire, ten students were surveyed twice, randomly selected, at intervals of 30 days. The Mann-Whitney criterion was determined for two independent samples (Table 1).

Table 1. – Retest reliability coefficients and indicators of the dynamics of the computer addiction evaluation in subjects for a period of 30 days.

Index	Aggregate Rank 1	Aggregate Rank 2	Mann-Whitney U-criterion	σ mean square deviation	N1 first sampling size	N2 second sampling size
Values	55	55	42	10	10	10

With significance level of $p < 0.05$.

The differences in the attribute level among the compared groups are statistically insignificant, which makes it possible to draw a conclusion about sufficient retest reliability of the questionnaire.

The data obtained during this research was processed by the standard Microsoft Office Excel 2010 application and STATISTICA package version 10.0.

Results

The results of testing on the questionnaire by K. Young showed that in the study group 99 people (94.3%) belong to ordinary Internet

users and 6 people (5.7%) have problems associated with excessive devotion to Internet. Persons who suffer from Internet addiction are not identified. This allows us to conclude that this questionnaire, which was created in 1996 with subsequent modifications and is focused on diagnosing Internet addiction in social networks, does not reflect the problems of users of computer games and video films that have widely spread over the last 10 years in our population.

A survey of students using the questionnaire developed by us established that 27 people had computer addiction (25.7%) with

the range of 14 points and higher. The risk of developing computer addiction was found in 53 people (50.5%) having the range of 11–13 points.

The clinical picture of the withdrawal syndrome during the period of abstinence from the use of an addictive agent is determined

by questions of the questionnaire, reflecting the corresponding symptoms: anxiety, low spirits, depression, superficial sleep with nightmarish dreams, negative attitude towards one's duties and surrounding people [8, F 48; 10, 87–111]. Table 2 shows the distribution of issues characterizing this syndrome in the questionnaire.

Table 2. – Diagnostics of withdrawal symptoms

Symptom	Part 1	Part 2
	Question No	Question No
Depression (low spirits), anguish, irritability when it is impossible to return to Internet or to a computer game and disappearance of these feelings after returning to the computer.	11	
The people around you say that you spend too much time at the computer.	12	
They say to themselves in a dream: "I just dream it!"		5
Awakening from fear and anxiety.		7
Awakening from unpleasant dreams.		6

To evaluate the results, it is suggested to consider as the basic one the answer about subjective sensations during the period of the user's abstinence from the agent of addiction (part 1, question 11). Positive answers to 3 of 5 questions indicated in Table 3 may indicate the presence of abstinence syndrome in the subject. Positive answer to question 11, part 1 is obligatory for that. The results of the survey showed that an abstinence syndrome has been formed in 21 persons (20%).

Obsessive disorder (part 2, question 8) was detected in 32 persons (30.5%). To identify compulsive disorders, the questionnaire includes three questions: two about irresistible attraction to computer activities: 1) inability to turn off the computer without assistance (part 1, question 10); 2) inability to prohibit or permanently distract the user from being in the virtual world (part 1, question 13); 3) obsessive desire to commit in real life what he did in the process of computer game (Part 2, answer 13). Respondents, as a rule, resist such thoughts. As a result of the survey it was found that in 27 persons (25.7%) there were symptoms of irresistible attraction, while an obsessive desire to commit in real life what he did during the game was revealed in 31 persons (29.5%). The presence of both obsessive and compulsive disorder was established in 9 persons (8.6%) — (part 2, questions 8, 13). The questionnaire expands the ability to identify the symptoms of disorders, which will improve the diagnosis of obsessive-compulsive disorders in users of the virtual world.

In the second part of the questionnaire, the influence of images of the virtual world on mental health is analyzed: the structure of dreams, sleep disorders and the psychopathological phenomenon of an autonomous virtual image. Analysis of the dream plots allows us to identify changes in the psychology of the user, which appear under the influence of video materials of the computer media environment (part 2, questions 1–4) [Freud]. Another important symptom of a mental health disorder is sleep disturbances (part 2, questions 5–7) [11, 130–133]. This facilitates early diagnosis of the formation of anxiety disorders [12, 1–63; 13, 1093–1102].

Other symptoms of mental disorder are identified by questions 9–14 (part 2). As a result of the survey it was found that 4 persons (3.8%) see virtual images in the surrounding space for several tens of minutes after turning off the computer. Of these, three students see these images only in the dark. One of the respondents sees an image from a computer game and hears his voice and commands for several hours after turning off the computer, considering his experiences as dreaming: "like in a dream." 14 persons (13.3%) of the respondents indicated that they "feel the influence of the image from the game on themselves" (part 2, question 11). Such disorders are based on an autonomous virtual image in the form of a hallucinoid or induced hallucination, the analysis of which was carried out in a previously published article [3, 50–55; 7, 557].

Conclusion

The developed diagnostic questionnaire is aimed at people aged 18 years and older who use the media environment for entertainment purposes. The questionnaire makes it possible to conduct, on the basis of temporal parameters, data on psychological state of the user and social consequences of being in the virtual world, screening diagnostics of computer addiction, to determine the degree of its intensity, and to identify the risk group using a limited number of questions.

The questionnaire helps to reveal the symptoms of mental health disorders in users of, primarily, computer games. For the first time the influence is analyzed of the virtual world's plots on the unconscious processes manifested in dreams, the symptoms of mental health disorder in users are revealed, first of all, under the influence of computer games. The questionnaire provides the key to early diagnosis of insomnia — an important symptom of formation of anxiety disorders, which will contribute to the development of treatment and prevention programs in the early stages of computer addiction formation.

References:

1. Egorov A.Ju. Non-chemical Dependencies. St.-Pet. Rech, – 2007. – 190 p.
2. Demerci K., Akgunul M., Akpınar A. Relationship of smart phone use severity with sleep quality, depression, and anxiety in university students // Journ. of Behav. Addic. – 2015. – V. 4. – P. 85–92.

3. Yashin K. D., Meziyanaya K. N., Zalivaka S. S., Karaneuski K. M. The influence of virtual world on the personality of students. *Information Technologies*, 10, – 2013. – 50–55.
4. Davidovsky A. G., Meziyanaya K. N., Yashin K. D., Karaneuski K. M., Dik S. K. Influence of computer games on the sleep quality and the nature of dreams in students // *European science review*. – 2015. – No. 5–6. – P. 130–133.
5. Official Journal of the RB. – 2015. – No. 4. – P. 6. URL: <http://belgopatent.org, by/database/index.php?pref=inv&lng=ru&pa>.
6. Koronczi B., Urbán R., Kökönyei, Paksi B., Kun B., Arnold A. Confirmation of the Three-Factor Model of Problematic Internet Use on Off-Line Adolescent and Adult Samples // *Journ. Cyberpsychol Behav Soc. Netw.* – 2011. – V. 14. – P. 657–664.
7. *Great Medical Encyclopaedia*. – M.: Sov. Enc., – 1976, – 560 p.
8. *International Classification of Diseases, 10th Edition. Mental and behavioural disorders. Clinical descriptions and diagnostic instructions*.
9. Young K. S.: *How to Recognize the Signs of Internet Addiction and a Winning Strategy for Recovery*. New York, Publisher Wiley. – 1998. – 256 p.
10. Juryeva L. N., Bolbot T. *Computer Addiction: Formation, Diagnosis, Correction and Prevention*. Dnepropetrovsk, Porogi, – 2006, – 196 p.
11. Freud S. *The Interpretation of Dreams*. URL.: <http://poetry.rapgenius.com>
12. Strygin K. M., Yumatov E. A., Levin Ya. I. Interrelation of personal features and characteristics of human nocturnal sleep // *Topical somnology problems – Moscow*. – 2011. – 63.
13. Kaess M., Durkee T., Brunner R. Pathological Internet use among European adolescents psychopathology and self-destructive behaviours // *Journ. Eur. Child Adolesc Psychiatry*. – 2014. – V. 23. – P. 1093–1102.

ANNEX 1

QUESTIONNAIRE

Part 1

1. Your gender:
 - a) o male
 - b) o female
2. Your age (full years) _____
3. Duration of your use of the virtual world (computer games and Internet) _____
4. Accommodation conditions:
 - a) o in the family/with relatives
 - b) o in the hostel
 - c) o in a rented apartment/room
5. In the virtual world you use (indicate options):
 - a) computer games
 - b) social networks and dates
 - c) Internet surfing
 - d) movies, television series, video reels
 - e) cybersex
 - f) exchange trades, gambling (including cards)
6. Have you ever played computer games?
 - a) o played
 - b) o did not play
7. Have you abandoned computer games for the last 2 years or more?
 - a) o yes
 - b) o no
8. The total number of hours spent in the virtual world during the day:
 - a) o 0–3 hours.
 - b) o 4–7 hours.
 - c) o 8 hours or more
9. The total number of hours spent in the virtual world during the week:

- a) 1–24 hours.
b) 25–39 hours.
c) 40 hours or more
10. Has it ever happened that you could not leave Internet or game without outside help?
a) often
b) sometimes
c) never
11. Have you experienced depression (low spirits), a feeling of anguish, irritability, if you could not return to the Internet or to a computer game, but these feelings disappeared after returning to the computer?
a) often
b) sometimes
c) never
12. Do people around you say that you spend too much time at the computer?
a) often
b) sometimes
c) never
13. If you are completely involved in the process of a game or Internet activity, can someone stop you from doing this for a long time or forbid it?
a) yes
b) no
c) not sure

Part 2

1. In dreams you had to see:
a) sexually coloured plots
b) Plots in which people worship you, and you control and command
c) none of the above
2. You could see in your dreams:
a) punishment of yourself
b) punishment of others
c) none of the above
3. In your dreams you happened to:
a) continue the game
b) experience a sense of fixation (impossibility to move)
c) none of the above
4. You could see in your dreams:
a) dead human bodies
b) bloodied, dismembered bodies
c) none of the above
5. Have you ever said to yourself in a dream: «I just dream it!»?
a) often
b) sometimes
c) never
6. Have you awakened from unpleasant dreams?
a) often
b) sometimes
c) never
7. Have you ever woken up from fear and anxiety?
a) often
b) sometimes

- c) o never
8. Do you have in your mind (head) an image of the virtual world after the end of the game or exit from the Internet?
- a) o often
b) o sometimes
c) o never
9. If you saw the image (s) of the virtual world (or its graphics) after the end of the game or exit from Internet, then indicate the options:
- a) it sits, stands, moves (*underline*)
b) appears only in the dark
c) none of the above
10. This image may do the following:
- a) talk to you, to others, argue, explain, prove
b) command
c) none of the above
11. Have you ever felt that the virtual image influences you?
- a) o often
b) o sometimes
c) o never
12. Have you ever felt that the image from the game controls you?
- a) o often
b) o sometimes
c) o never
13. Have you experienced a compulsive craving to repeat in real life what you did in the game?
- a) o often
b) o sometimes
c) o never
14. How long do you see this (these) image (s) and/or experience the above feelings?
- a) o days
b) o hours/minutes (*underline*)
c) o never

Processing Results

Table 1. – Processing the results of the answers on the first part of the questionnaire.

	Questions						
Points	5*	8	9	10	11	12	13
1	1–2	A	a	A	a	A	a
2	3–4	B	b	B	b	B	b
3	5–6	C	c	C	c	C	c

* numerical score by the number of marked points

Table 2. – Processing the results of the answers on the second part of the questionnaire.

	Questions					
Points	1	2	3	4	5	6
1	c	C	C	C	C	c
2	a or b	a or b	a or b	a or b	a or b	a or b
3	a+b	a+b	a+b	a+b	A	a

INSTRUCTIONS FOR EVALUATING TEST RESULTS

Part 1

Questionnaire for determining the degree of involvement in the computer virtual world

7–10 points. There were no signs of the formation of computer dependence. Priority of interests of the real world remains.

Recommendation: observe the time limit for entertainment in the virtual world: 15 hours a week.

11–13 points. The result of testing revealed the signs of pathological involvement: withdrawal and tolerance syndromes: feeling of well-being increasingly depends on a long stay in the virtual world. The degree of involvement in entertainment available through computer acquires the features of dependence. This leads to the substitution of the interests of real life by the events of the computer virtual world, which has a devastating effect on mental and physical health.

Recommendation: if the time spent on entertainment in the virtual space is close to 30 hours a week, it should be reduced to 15 hours.

14 to 17 points. The result of the questionnaire indicates a computer dependency. Entertainment in the computer virtual world has a devastating effect on mental and physical health, which leads to illness.

Recommendation: limit the number of forms used to one of those listed in the questionnaire. If the time of using the computer is 30 or more hours per week, then it should be reduced to 15 hours and scenarios showing violence should be avoided. Consult a psychologist and/or a psychotherapist.

18 or more points. The results of the questionnaire indicate that a severe form of computer addiction has been formed. Changes in physical and mental health are pathological in nature with a high probability of irreversibility in the future. The destructive impact of the computer virtual world on personality and the mental state is accompanied with a reduced ability to properly assess and adequately respond to the events in real life.

Recommendation: refuse to use the computer and consult a psychotherapist.

Part 2

The degree of influence of the computer virtual world on the user's emotional state and mental health.

13–14 points. No specific disorders in the state of health.

15–17 points. The result of testing indicates the tendency to satisfy the ideas of one's own greatness and interests of a sexual nature in the virtual world. This distorts the perception of the surrounding world and damages the interests of real life. The prerequisites for a permanent return to the virtual world are created.

Recommendation: limit the time of using the computer and refuse to play aggressive games.

18–22 points. The plots of the virtual world acquire a dominant position over the events of real life. The user is captivated and simultaneously enslaved by the ability to meet any of his/her desires in computer games and other video content. This creates the prerequisites for the formation of anxiety disorders and depression. The appearance of dreams with dead and bloody bodies is a sign of a serious mental health disorder.

Recommendation: consult a psychologist and a psychotherapist.

23–28 points. The impact of the virtual world has caused pathological mental changes, which are becoming persistent. The presence of anxiety during sleep and in dreams testifies to the perception of the threat, the source of which is the plots and events of the virtual world. The image of this world (simulacrum) has a significant impact on your mental health.

Recommendation: abandon aggressive plots in computer games and videos. Consult a therapist for the treatment of anxiety neurosis.

29 or more points. Interaction with images of the virtual world has acquired an intimate nature, which caused painful (pathological) changes in your health with a high probability of irreversibility. Formation of disorders of mental function is possible in the form of paranoia and hallucinations. Realization of real relationships in the ordinary surrounding life will become impossible.

Recommendation: Avoid using the computer for entertainment and consult a psychiatrist.