

Methods of Researching Degree of Keeness on Computer Games of Younger Adolescents

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Abstract

The life of a human being, prone to dependence on a computer game, becomes different from habitual everyday life and is subjected fully to a new super value.

Dependence on computer games is widely spread in the world and, in the past decades, in Russia. This problem has become particularly relevant in modern times of developed communications. With the advent of computers, computer games have become accessible in every house. The broadest variety of forms and kinds of computer games, meant for different categories of population with different interests, attract attention of an increasing number of people. Children and teenagers are subjected to the influence of computer games to a greater degree.

Diagnostics of the degree of keeness on computer games is an important task of psychodiagnostic work carried out with teenagers. Relevance of the research of the problem of computer game dependence determines the necessity of development of experimental and psychological methodology, allowing one to assess quickly and effectively the degree of keeness on computer games in early adolescence.

Keywords: teenager, early adolescence, game, computer, dependence, questionnaire, computer game dependence.

INTRODUCTION

The rhythm of modern life is accompanied by frequent mood swings; at that, people treat these states differently and react to them differently. Some of them are ready to resist difficulties of life, to take on responsibility for the events and to make decisions; others are quite fond of even short-term and insignificant fluctuations of mood and psychophysical tonus. They choose addiction as a way to recover psychological comfort, striving for artificial change of mental state, experiencing subjectively pleasant emotions. Thus, an illusion of problem solution is created. A similar way of struggling against reality is consolidated in behaviour of a human being and becomes a stable strategy of interaction with reality.

At present, different technical devices are intertwined closely with practically all fields of life activity of a modern human being. Among them, a leading position belongs to computer technologies. Computers take part practically in all fields of human life activity. Cognitive, labour, communicative (creative, recreational, etc.) life of a human being is connected with them. Development of computer technologies, namely computer games, exerts great influence over the worldview of modern teenagers [1, 2, 3, 4, 5]. The structure of children's leisure changes substantially. Constant renewal and improvement of computer games entails the growth of the number of consumers of this product. In increasing frequency, psychologists have to face the problem of increased interest in computer games, which attract by bright realistic plots, graphics, accompanying sound [1, 6, 7].

Computer game dependence represents a new form of dependence, qualitatively different from other nonchemical forms of dependences by exposure to boundless opportunities of the virtual world, formation mechanisms, as well as by peculiarities of proceeding of developmental age at different stages [1, 8].

On the one hand, computer games contribute to development and transformation of human activity owing to appearance of new skills, operations and ways of execution of actions, new purposeful, motivational and notional structures, new forms of mediation and new kinds of activity [6]. On the other hand, in case of pathologic preoccupation with computer games, a significant number of negative consequences are noted – technostresses, computerphobia, narrowing of the circle of interests, uncommunicativeness and autism [1, 9, 10].

A multitude of research studies (O.N. Arestova, L.N. Babanin, Iu.D. Babaeva, A.E. Voiskunskii, S.A. Shapkin, M.

Cole, et al.) are devoted to the study of peculiarities of interaction of children and teenagers with computers. However, in the authors' opinion, a question about psychological factors of formation of computer game dependence at different stages of ontogenesis, in particular in adolescence, did not receive proper attention.

Despite the commonality of base psychological characteristics of the overall juvenile period, each stage of adolescence has its psychological peculiarities. In the authors' opinion, the relevance of research of the problem of computer game dependence at the stage of early adolescence as an initial stage of the overall juvenile period of development is becoming increasingly apparent.

When becoming adult, a younger adolescent familiarizes oneself with different aspects of human relationships. One is in constant search for friends and companies, in which one would be able to experience a feeling of belonging to a group. All these relationships are an important part of personality identification. Dissatisfaction of this need can lead to an "escape" of a younger adolescent to the virtual world, where one can find digital characters for "communication" according to one's interests, values and inclinations.

Over many decades, adolescence has been attracting close attention of psychologists. Historically, developers of the first theories of adolescence were represented by such scientists as S. Hall, S. Freud, K. Levin, J. Piaget, L.S. Vygotskii. Stressing the importance of juvenile age in the general process of development of a human being as a personality, L.S. Vygotskii noted overabundance of "ideological constructions", existing in psychology, and shortage of "fixed facts" [11]. By now, the researchers have obtained a lot of facts about peculiarities of teenagers, about specifics of their ideals, interests, moral ideas, activity motives and many other questions, which has created a necessary base for multidisciplinary study of this important stage of psychological development at a new scientific level [4, 11, 12, 13, 14].

Interests of a younger adolescent differ by greater stability as compared to interests of young school-age children. Some interests are kept up throughout entire juvenile age, becoming deeper and enriching themselves with content, and subsequently persisting for life. At this age, interests transform into hobbies, which can preoccupy younger adolescents to the detriment of other kinds of activity [11, 12].

In this study of younger adolescents, the authors rest upon provisions of the national psychological school, founded by L.S. Vygotskii, A.N. Leontev, on problems of psyche development in ontogenesis, personality formation [11], evolved creatively in works by V.V. Davydov, A.V. Petrovskii, D.B. Elkonin and other scientists [13].

The main purpose of studies conducted by the authors was orientation not only to the study of separate important questions of psychological development of a younger adolescent, but also to building a frame of reference, provisions including a review of main, cardinal moments of the process of ontogenetic development, a key phase of which is represented by adolescence.

K. Young, an American professor of Pittsburgh University, is a main theoretic of the problem of computer psychological dependence. In his works, the author studies dependence on the Internet [15].

In 1996, to determine a degree of keenness on the Internet, the author devised a short test, which consisted of eight questions with dichotomous choice of variants of answers. In the author's opinion, a patient is regarded dependent if one responds positively to five or more questions. At present, the test contains 20 questions, the answers to which are scored according to a five-point scale. On the basis of the devised test, according to the number of the scored points, K. Young identifies three groups of people: dependent, borderline, healthy.

METHODS

At present, Russian researchers use the following instruments of diagnostics of computer dependence: K. Young's questionnaire [15], performed and adapted in 2000 by V.A. Loskutova [16]; a questionnaire by E.V. Belovol and I.V. Kolotilova, developed in 2011 for assessment of the degree of keenness of teenagers aged 13-15 on role computer games [17]; a "child's" variant of the methodology of assessment of Internet addiction, proposed in 2009 by S.A. Kotova, meant for junior school age [9]; "Method of screening diagnostics of computer dependence" [18] adapted in 2006 by L.M. Iureva and T.Iu. Bolbot and others.

However, among existing instruments of diagnostics of computer dependence, there is no methodology allowing one to determine a level of computer game dependence of younger adolescents. Therefore, based on the methodology proposed by psychologist K. Young, the authors have developed a test procedure allowing one to assess with a known probability the quantitative intensity of keenness on computer games of children at this stage of development. The created methodology has been verified by the number of formal criteria, proving its quality and effectiveness [19, 20].

Test questionnaire of degree of younger adolescents' keenness on computer games

The research methodology allows determining relatively rapidly and effectively the level of younger adolescents' keenness on computer games.

General characteristic

When compiling the questionnaire aimed at revealing the degree of younger adolescents' keenness on computer games, the authors used the following indicators of game behaviour as a model of a leading kind of activity: an emotional attitude to a computer game; self-control in a computer game; goal orientation to a computer game; a parental attitude to a computer game; giving preference to virtual communication over real communication.

In the course of compiling the questionnaire by the method of interviewing younger adolescents by means of observation on their real behaviour, a representative list of questions, reflecting the content of components of game behaviour, was revealed. As a result of the carried-out work, 32

statements were made up, which were presented to experts for determining content validity.

Expert assessment included two stages: holding one internal seminar with experts from 12 comprehensive and higher educational institutions of Nizhniy Novgorod region devoted to discussion of the questionnaire (1st stage); receiving experts' opinions on the questionnaire from specialists of 25 comprehensive and higher educational institutions of Nizhniy Novgorod region (2nd stage).

As a result of the carried-out research procedure, some changes were introduced in the initial variant of the questionnaire: 11 questions were removed from the initial version, 1 new question was added:

"Did it happen that you spent the money, allotted for other purposes, on computer games?"

The questions were partially reformulated to make them simpler for participants' perception.

The questionnaire consists of five scales, each of which contains questions implying six gradations of answers: "never", "rarely", "sometimes", "often", "very often", "constantly". Introduction of 6 gradations of answers allows establishing more precisely a degree of younger adolescents' attitude to computer games. When processing the results, each answer of the respondent was given from 1 to 6 points in accordance with these six gradations. As a result of assessing the answers of the respondent, a psychologist obtains points on the main five scales. The scored points of each scale of the questionnaire are summed. The obtained results determine quantitative indicators, the values of which are substituted into a formula for calculation of the degree of keenness on computer games. The research can be carried out in both individual and collective forms.

Indicators of the questionnaire are organised in accordance with the principles of the system of activity regulation.

1. A scale of an emotional attitude to computer games. A high indicator on this scale justifies a high level of emotional self-expression of the child. The game is a means of discharge of psychoemotional tension, a means of compensation of dissatisfied needs of a personality (need for communication, parental care, etc.), feeling of enthusiasm when working with a computer.

2. A scale of self-control in a computer game. A high indicator is evidence of unwillingness to distract from the game on a computer, irritation in case of forced distraction; inability to plan the ending of a session of a game on a computer; working on a computer over a long period of time to the detriment of one's own health.

3. A scale of goal orientation to a computer game. High indicators testify to constant striving for achieving increasingly higher results in a computer game; a computer game acts as a means of sensual enjoyment acting as an end in itself.

4. A scale of parental attitude to a computer game. High indicators show negative attitude of parents to extremely frequent children's sessions of playing computer games.

5. A scale of giving preference to virtual communication in a computer game over real communication. High indicators attest to the fact that a computer game acts as a means of communication, a means of self-affirmation when an idea about the prestigiousness of computer games is connected with a corresponding status in a community, discussion of results of computer games.

Methodology content

Each respondent must be provided with an individual text of the questionnaire and an answer sheet. The answer sheet represents a numbering of questions, corresponding to the text of the questionnaire with 6 gradations of answers.

Instructions: The test proposed to You contains 22 questions with six variants of answers: “never”, “rarely”, “sometimes”, “often”, “very often”, “constantly”. In the answer sheet, put the sign “+” in front of a corresponding number of the question in a corresponding column of answers. Express your opinion sincerely.

The content of the questionnaire

1. Do you play computer games?
2. Do parents forbid you to play computer games because you spend too much time on them?
3. Do you postpone doing your homework in order to play on a computer?
4. Do you feel irritated if for some reasons you have to stop playing computer games?
5. Do you feel upset if during the day you cannot play on a computer?
6. Do you think about obtained results in a computer game?
7. Do you plan to increase the level of your results in the game?
8. Did it happen that you stayed up late playing computer games?
9. Do you feel craving for computer games?
10. Do you reject socializing with friends for the sake of playing on a computer?
11. Did it happen that you spent money, meant for other purposes, on computer games?
12. Have you ever played on a computer more than 5 hours a day?
13. Do you prefer computer games to reading an interesting book or watching a film?
14. Do you play computer games with your friends?
15. Do you notice how time flies while you are playing a computer game?
16. How often would you play computer games if you had such opportunity?
17. Did it happen that you concealed from your parents that you had played on a computer?
18. Do you use a computer game to escape problems or a bad mood?
19. Do you discuss the results of playing computer games with friends?
20. Do you get angry when somebody distracts you from playing a computer game?
21. Did it happen that you got tired because you had been playing on a computer for a long time?
22. Do you long for spending all your free time playing on a computer?

Analysis of results

When analysing the results of the research, it is necessary to use a key, which is compared with the answers of the respondent. Each answer of the respondent is given from 1 to 6 points in accordance with six proposed gradations of answers:

- ✓ “never” - 1 point;
- ✓ “rarely” - 2 points;
- ✓ “sometimes” - 3 points;
- ✓ “often” - 4 points;
- ✓ “very often” - 5 points;
- ✓ “constantly” - 6 points.

1. A scale of a level of emotional attitude to a computer game, a total indicator (Ie) – 5 items (question numbers: 4, 5, 13, 18, 20).

2. A scale of a self-control level in a computer game, a total indicator (Is) – 9 items (question numbers: 3, 8, 9, 11, 12, 15, 16, 21, 22).

3. A scale of a level of goal orientation to a computer game, a total indicator (Ig) – 3 items (question numbers: 1, 6, 7)

4. A scale of a level of parental attitude to the fact that children play computer games, a total indicator (Ip) – 2 items (question numbers: 2, 17).

5. A scale of younger adolescent’s preference for communication with characters of computer games over real communication, a total indicator (Ic) – 3 items (question numbers: 10, 14, 19).

During the research, a high degree of dependence of the scale of the level of goal orientation to a computer game (Ig) on the rest of the scales of the questionnaire was disclosed; at that, the value of the coefficient of multiple correlation was $R = 0,86$ ($p < 0,001$). Based on the obtained data, it is possible to conclude that a degree of keenness on computer games in many cases is determined by a level of goal orientation of a younger adolescent to a computer game.

As a result of the conducted analysis of the functional dependence (Icd) characterising the correlation between the scale of goal orientation to a computer game and other scales of the questionnaire, a regression model was built:

$$Icd = 0,21 * Ue + 0,43 * Us + 0,08 * Ur + 0,34 * Up + 0,3$$

($p < 0,001$)

To obtain a quantitative indicator of a level of younger adolescents’ keenness on computer games in accordance with the key, the number of points on each of the scales of the questionnaire is calculated. Then the obtained indicators are substituted in the equation of multiple regression.

RESULTS AND DISCUSSION

Based on the devised test, according to the indicators of indexes of the degree of interest in computer games, let us identify the following stages of involvement in a computer game:

I – natural level of keenness on computer games (from 6 to 11 points);

II – average level of keenness on computer games (from 12 to 21 points);

III – dependent on computer games (from 22 to 37 points).

Characteristics of levels:

1. Natural level.

A computer game is of entertaining nature not having negative consequences. Children control their play activity, play the game rarely and think seldom about it.

2. Average level.

The game is an important part of teenager’s life. One’s attention is focused on certain kinds of computer games, but at the same time, one does not lose control over frequency of game sessions and time expenditures on the game. A computer game acts as compensatory functions.

3. Dependent.

A computer game takes all the free time. A teenager thinks about a computer game, about the achieved results, aims to increase the level of these results.

This methodology underwent standard psychometric verification. The conducted studies showed that all the scales of the questionnaire had distributions that were close to normal one. Average, standard deviations and intercorrelation of the scales were obtained by the sampling of 304 schoolchildren: among them, there were 150 boys and 154 girls aged from 11 to 12 (5-6 forms).

By the research results, the following data were obtained:

I – natural level – 189 people (62%);

II – average level – 109 people (36%);

III - dependent – 6 people (2%);

To assess the developed methodology proving its quality and effectiveness, reliability and validity verification was organised.

Reliability verification of the obtained results (internal consistency) of the questionnaire was carried out using such indicators as Cronbach's alpha and averaging cross-correlation of scale points. Generalised results of the analysis are given in Table 1.

Test-retest reliability (stability) was revealed by the stability coefficient of the test using the method of test-retest carried out with a time interval of one month. Reliability was verified on the sampling of 304 people using two-sample Student t-criterion for dependent samples.

By the results of the research, it was revealed that differences between indicators of the test and those of the retest are insignificant; at that, the correlation coefficient between the first and the second measurements made 0,89, and the coefficient calculated by the Student formula was 1,65. Based on the obtained data, it is possible to conclude about the stability of the indicator of keenness on computer games.

Table 1. Reliability characteristics of questionnaire.

Indicators	Ie	Is	Ig	Ip	Ic
Stability	0,96	0,94	0,96	0,87	0,90
Internal consistency	0,87	0,94	0,90	0,37	0,69

The obtained results of verification of the developed methodology of reliability research testify to a possibility of using it not only in research, but also with psychodiagnostic purposes.

The questions of ensuring constructive validity of the questionnaire scales were determined by the sampling of 146 respondents, among whom there were 74 boys and 72 girls. Evidences of constructive validity were obtained by the authors based on the aggregate of research results. At that, the connections of the questionnaire indicators with such individual and personality characteristics as predisposition to risk (PR-2) and volitional self-regulation were studied (A.V. Zverkov and E.V. Eidman).

Table 2 presents statistically reliable connections of the questionnaire scales with individual and personality characteristics obtained as a result of the above-mentioned studies.

Table 2. Initial statistical characteristics and intercorrelations of questionnaire scales.

Indicators	Icd	Ie	Is	Ig	Ip	Ic
Number of items	22	5	9	3	2	3
Average	58,740 13	11,950 66	22,608 55	11,875 00	4,0986 8	8,2072 4
Standard deviation	18,342 22	5,6720 79	7,5186 06	3,9095 59	1,7282 73	3,1528 41
Predisposition to risk	0,46	0,46	0,43	0,31	0,29	0,29
Volitional self-regulation				-0,17		-0,23
Icd	1	0,87	0,94	0,90	0,37	0,69
Ie		1	0,78	0,70	0,25	0,41
Is			1	0,80	0,25	0,56
Ig				1	0,30	0,68
Ip					1	0,17
Ic						1

Note: $p < 0,05$.

Analysis of connections of the questionnaire scales shows that the indicator of a level of keenness on computer games

correlates with the studied individual and personality indicators of the respondents.

As a rule, a younger adolescent, having a high indicator of predisposition to risk, has high indicators on all the questionnaire scales. The scales of goal orientation and preference for virtual communication over real communication correlate negatively with indicators of volitional self-regulation.

Aspiration for getting emotional self-expression is peculiar to psychological dependence. Emotions are a constituent of dependence. A teenager depends not on computer games, but on the gained emotions. And, first of all, not modality of an emotion (negative or positive), but its intensity is important. The stronger the emotion is, the stronger the dependence is.

A frequently voiced opinion is that keenness on computer games is of compensatory nature and represents a form of "escapism", an escape from reality to another – virtual – reality. Owing to the fact that an illusion of direct influence on game reality is created, for some players the latter becomes more attractive than the everyday world with its complexity and its formidable problems [5].

Computer games are based on arbitrary emotions and motor reactions. The more emotional the game is, the more attractive for a child it is.

The simplest form of computer game keenness for a younger adolescent consists in satisfaction of the need for game, when the game is a means of gaining emotional release. However, the need for game, being inherently a psychological characteristic, can be represented in a more complex form and can be for a younger adolescent as a means of psychological stress relief, a means of encouragement, a means of self-affirmation when an idea about prestigiousness of computer games is related to a corresponding status among peers.

CONCLUSIONS

In this paper, the authors have considered possibilities of studying the prevalence of computer game dependence in early adolescence with the use of questionnaire, created on the basis of the methodology of determining a degree of Internet dependence developed by K. Young.

The following levels of computer game dependence of younger adolescents have been identified and characterised: natural, compensatory, dependent.

In accordance with the scales of the questionnaire, assessment of emotional attitude of a younger adolescent to a computer game; one's level of self-control when playing a computer game; goal orientation to a computer game; parental attitude to a computer game; preferences for virtual communication over real communication has been made.

By the results of the assessment, it has been revealed that 61% of respondents (150 people) have a low level of computer dependence; 36% (89 people) – an average level, and 3% (7 people) – a high level of computer game dependence. Thus, one may speak of computer game dependence of teenagers starting with the average level. The general number of younger adolescents having various intensity of computer game dependence has made 39% (96 people).

ACKNOWLEDGEMENTS

The research was carried out with the support of the Ministry of Education and Science of the Russian Federation in the framework of performance of state works in the field of scientific activity (a base part of state task No. 25.5107.2017/BCh, 2017 — 2019). The project topic is "Assessment of prevalence of computer game dependence and research of a stressogenic degree of younger adolescents", supervisor E.N. Volkova, Doctor of Psychological Sciences.

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