

## The Influence of Digital Technologies on Modern Youth's Physical and Mental Health

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### Abstract

The article explores the relationship between screen time and physical and mental health of young people, such as visual impairment, sleeplessness, eating disorders, as well as Internet addiction, loneliness, and depression. The article contains the results of the survey, conducted in November-December 2019 in Russia (Saratov region) among university students aged 18-22 (n=386) to identify the connection between virtual communication in social networks and the youth's mental health. The main research method was a survey. The questionnaire consisted of 25 questions, which were divided into four blocks: 1) the amount of screen time daily; 2) subjective attitude towards virtual friendship and communication; 3) characteristics of individuals, communicating with online; 4) the attitude to online communication as a way to overcome loneliness. As a result, on-line activity of young people does not lead to the development of sociability, building real friendships or romantic relationships, it takes a lot of time, enhancing the feeling of loneliness and provoking the emergence of depression. The author highlights the problem areas that impede the effective solution of these problems: the ambiguity of the experts' opinions regarding the impact of digital technology on the development of modern teenagers and youth; the conflict of interests between providers, business structures, advertisers and minor users; poor Internet literacy of parents and educators compared with modern teenagers and youth that hinders the development of adequate technologies for early detection, prevention and providing assistance to minors who could become real or potential victims of cybercrime.

**Keywords:** Youth, Social Network, Physical Health, Mental Health, Digital Media.

### 1. Introduction

The modern generation of children and youth perceives information technology as an integral part of their lives, which allows communicating not only in real but also in virtual space, regardless of the time and location of the communicators, their age, gender, social status, using mobile devices with the Internet connection.

Today, digital devices are used for business, information, education, entertainment, interpersonal communication in social networks (Vkontakte, Odnoklassniki, Instagram, Facebook, Twitter, etc.). For example, when Facebook was started in 2004, 4/5 of 13-16-year-olds in the UK became its users (Livingstone et al., 2011). Nowadays, Facebook has about 1.6 billion active users all over the world, where 34.5 % (or 552 million) of them are young people aged 18-29. In 2018 Instagram platform accounted for 55 % of youth at the age of 18-24 (Instagram, 2019). The most popular platforms in Russia are YouTube, Vkontakte (19 million subscribers, a quarter of them are minors), and such messengers, as WhatsApp and Viber (All popular statistics, 2019).

According to the survey "EU Kids Online", 93.4 % of children and adolescents in Bulgaria used the Internet daily, 4.3 % – 1 or 2 times a week, 0.7 % – 1 or 2 times a month, 1.2 % – even rarer (Online experience of children, 2016). The main purposes of using online resources were: preparing homework, study – 85 %; leisure (playing video games, watching video clips, etc.) – 83%; communication (sending messages, posts, images) – 62%; using file-sharing sites – 16% or blogging – 11%. About a third of young people were interested in downloading movies, music, visiting online stores, reading news or communicating with family members and friends in a case of separate location. In Russia, almost a half of adolescents aged 14-16 (44 %) spent from 1 to 3 hours per day chatting in a social network, while others less than an hour (16 %), 3-5 hours (21 %), 5-8 hours (11 %), 8-12 hours (5%) and more than 12 hours (3%) (The role of social networks, 2014).

## **2. Main Part**

### **2.1 Factors, Influencing the Youth's Physical Health**

Today, the impact of digital devices on the sensory, musculoskeletal, cardiovascular systems, as well as on the mental health of children and adolescents is not well understood. At the same time, recent studies of Russian (Khukhlaeva, 2003; Arzhanykh et al., 2014; Bulycheva and Setko, 2019) and foreign scientists (Oshima, 2012; French et al., 2013; Parent et al., 2016; Cheung et al., 2017; Hou et al., 2017) allow us to establish a relationship between screen time and youth's physical and mental health functioning.

Sleep is one of the most important vital needs that have a direct impact on human development. During sleep, the hormone melatonin is produced, which is involved in the regulation of immunity, which is able to prevent cancer. According to B.A. Parent, M.A. Weasley-Sanders, R. Forehand, sleep disorders associated with excessive screen time have a strong positive correlation with the social, psychological and communication problems of an individual, both in the present and in the future (Parent et al., 2014).

Saying on-line for hours is considered to affect physical activity, the quality of sleep, which leads to obesity, increasing passive leisure. Children and youth from higher socioeconomic status had a number of expensive, powerful devices with unlimited Internet access, while teens from low-income families more often reported watching TV programs at night (Cheung et al., 2017). Sleep disturbance leads to drowsiness, apathy, distracted attention, fatigue, decreased of mental activity and poor school performance (Parent et al., 2014; Cheung et al., 2017).

It is proved that some actions or events online just before bedtime (for example, playing video games, writing messages or watching horror movies) can enhance psycho-physiological arousal and lead to sleeplessness. In addition, the sending of advertisements, notifications, SMS-messages in chats and groups at night, accompanied by sound signals, cause unplanned awakenings, nightmares, and insomnia (Oshima et al., 2012).

Vision is one of the main senses when we use Internet resources, so it can be significantly damaged. If in 1999 the average screen time spent on-line by children and youth aged 8-18 was 6.21 hours per day, in 2009 it was 7.38 hours per day (Magee et al., 2014). Recent studies, conducted by French scientists (French et al., 2014) have shown an inverse correlation between staying outdoors and having myopia. As a result, children who spent less time outdoors were more often diagnosed with myopia, because the release of dopamine from the retina under the influence of daylight reduces the risk of developing the disease.

In addition, researchers have noted the harmful effects of electromagnetic radiation on the reproduction, leading to infertility (Adams et al., 2014); the occurrence of structural changes in the frontal lobe of the brain, which is responsible for the ability to critical thinking, solving complex problems, empathy, and social adaptation (Hou et al., 2017).

A sedentary lifestyle, long breaks between meals, unhealthy diets as well as overeating associated with immersion in virtual reality are often causes of obesity. According to the International Association for the Study of Obesity and the International Task Force on Obesity (IASO) and the International Obesity Task Force (IOTF), there are 40-50 million of obese children and adolescents in the world, who more often than others suffer from somatic and psychosomatic diseases, have a lower self-esteem, higher level of anxiety, depression compared with peers with normal weight (Atlantis and Ball, 2008).

A comparative study of two groups of Belgian teenagers of 5-12 grades showed the following results: first group included teens with high body mass index ( $n = 102$ ) and a control group with normal weight, similar in age and gender parameters ( $n = 102$ ), showed that the former were harassed twice as often compared to the latter in cyberspace (17.2 % and 7.8 %, respectively). In this case, obese youth were 2.5 times more likely to be the victim of cyber-bullying than non-

obese youth and can be attributed to the risk group for socio-psychological well-being (DeSmet et al., 2014). This fact is also confirmed by Russian scientists: obese youth had higher level of anxiety as well as negative emotional feelings and stress, leading to eating disorder and an excessive increase in the sympathetic tone of the autonomic nervous system (Bulicheva and Setko, 2019).

## **2.2 Factors, Influencing Youth's Mental Health**

Mental health is defined as the harmony of a person with himself/herself and with the environment - other people, nature, space (Khuhlaeva, 2003). Modern researchers from different fields of knowledge express concerns about the impact of digital technologies on the children and youth's mental health, leading to violation of behavioral, cognitive, emotional and volitional development, causing hyperactivity and attention deficit disorder.

According to British researchers, for the past decade the level of anxiety and depression among teenagers has increased by 10 %, which is partly caused by aggressive media propaganda. The annual study, made by the UK Department of Health, showed that 14-15 years old girls twice as likely as boys of the same age suffered from different kinds of psychopathology (37 % and 15 % respectively) (Department of Health, 2015).

Excessive consumption of virtual reality influences the personal identity. During the adolescent and youth periods, an individual has to go through some external and internal changes, get self-knowledge, an experience of interpersonal relationships with peers, including romantic or sexual. This process requires confidentiality, the internal individual work, while social networks, on the contrary, make a teenager be open and spread personal information through posts, comments, photos, which directly contradicts the process of forming personal identity at this stage.

The gender is most differentiated in the digital space: girls often use the Internet for communication, while boys for instrumental purposes, mainly for network or video games. In the study, conducted by Canadian scientists, 71 % of girls used social media for more than two hours daily, compared with 29 % of boys. This fact partly explains the gender imbalance in digital media (Sampasa-Kanyinga and Lewis, 2015).

In addition, visual self-presentation of one's own body on-line is more typical for girls. One of the reasons is the existence of social stereotypes about a woman as an object of sexual attraction, created and supported by fashion, advertising, media, which form and transmit certain standards of appearance, faces, figures, leading to early sexualization of adolescents, fears and complexes regarding physicality, eating disorders (anorexia or bulimia) and mental health.

## **3. Data and Methodology**

### **3.1 Methods and Materials**

The main purpose of the research was exploring the connection between virtual communication in social networks and the youth's mental health. The empirical study was conducted in November-December 2019 on the basis of Balashov Institute of Saratov State University (Russia) on the principles of confidentiality and voluntary participation. The sample consisted of 386 students aged 18-22 (girls – 250, boys – 136). The researcher gave a five-minute introduction before the survey, after that participants filled out a questionnaire independently, which took on average fifteen or twenty minutes.

The main research method was a survey. Firstly, the whole sample included 450 respondents, but during the operational stage 64 questionnaires were excluded because they did not match the criteria of the research. There were four blocks of questions: 1) the amount of screen time daily; 2) subjective attitude towards virtual friendship and communication; 3) characteristics of individuals, communicating with online; 4) the attitude to online communication as a way to

overcome loneliness. Processing the results of the study was carried out by using SPSS Statistics v. 22.0.

### 3.2 Results and Discussion

The survey involved students from the 1st to 4th year of study in all areas of training. At the time of the survey, 59.6 % of respondents had from 100 to 300 or more friends online, with 35-65 of them they were personally acquainted, but the rest were unfamiliar people in real life.

The participants used virtual communication for the following purposes: “take time” – 51.0 %, “express my opinion” – 7.1 %, “show the best aspects of my life” – 10.6 %, “find a job/fulfill oneself” – 7.8 %, “to cope with loneliness” – 23.6 %.

A quarter of students noted that anonymity made it possible to play roles that were not available in real life, while 73.1 % agreed that virtual friends should not always be trusted. According to the survey, it was not necessary to get acquainted with a virtual friend in person, such communication served for social and psychological support, help, advice, leisure or opportunity to speak out. In a case of different interests or undesirability of continuing communication, the partner could safely delete or block it.

Regarding the screen time, 84.0 % of respondents chose the answer “more than two hours per day” and “during the day always”. An inverse correlation had been established between having friends of both sexes in real life and the beginning of online communication: young people who had real friends and romantic relationships later created an account on social networks, compared to those who started communicating on the network before adolescence.

Young men showed higher level of loneliness than girls (74.4 % and 65.3 %, respectively); 84.5 % of respondents believed that on-line communication helped temporarily cope with loneliness. The behavior of young people in social networks predominantly repeated the same patterns in real life. The virtual communication did not fulfill the expected compensatory function and intensified loneliness. Trying to overcome the feeling of loneliness, expand their social circle, compensated loneliness, and strengthen the status, young people intensified their communication in social networks: they made posts and photos, changed status, put likes, wrote messages, sent cards and gave gifts.

According to the respondents, this took a lot of time and tires (82.1 % of boys and 67.0 % of girls respectively). In this regard, to overcome the feeling of loneliness, psychological support for youths during the formation of personality is necessary, aimed at creating harmonious interpersonal relationships, a positive attitude towards oneself, adults and peers.

Thus, the on-line activity of young people did not lead to the development of sociability, building real friendships or romantic relationships, it took a lot of time, increasing the feeling of loneliness and provoking the emergence of depression (70.7 % are girls, 48.2 % are boys). Among other things, 74.4 % of respondents said that in the Internet communication there were a lot of falsehood, exaggeration, and fake information.

### 4. Conclusion

In the modern world, the visual channel of consumption and transmission of information predominates. It is facilitated by the rapid development of digital media as well as the annual increase in the number of messengers and social networks' users, a significant proportion of which are young people aged 14-29.

Uncontrolled consumption of digital media from an unprecedented resource can be a source of danger to physical and mental health. It can provoke Internet addiction, interpersonal conflicts, inability to work in a team and lack of cooperation (that's why emotional intelligence, teambuilding and soft skills are the most popular personality growth courses).

Currently, there are several problem areas that impede the reduction of risk factors for the physical and mental health of adolescents and youth as the main consumers of media content. Firstly, the lack and fragmentation of scientific research does not allow proving the harmful effects of digital technology on the human development process. Secondly, the inadequate access to Internet resources in the digital age can also be regarded as a child's disadvantage in terms of social inequality.

Thirdly, gaps in legislation, conflict of interests between providers, businesses, and advertisers pursuing their own commercial goals often create situations of high social risk related to youth's access to undesirable media content, for example, calls for extremism, aggression, suicide, etc.

Fourthly, poor Internet literacy of parents and educators compared with modern teenagers and youth prevents the development of adequate technologies for early detection, prevention and assistance to minors who become real or potential victims of cybercrime, which requires additional interdisciplinary research.

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