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The prevalence of computer and Internet addiction among pupils

Rozpowszechnienie uzależnienia od komputera i Internetu

Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Data Interpretation
- E** Manuscript Preparation
- F** Literature Search
- G** Funds Collection

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Summary

Introduction:

Media have an influence on the human psyche similar to the addictive actions of psychoactive substances or gambling. Computer overuse is claimed to be a cause of psychiatric disturbances such as computer and Internet addiction. It has not yet been recognized as a disease, but it evokes increasing controversy and results in mental disorders commonly defined as computer and Internet addiction.

Material/Methods:

This study was based on a diagnostic survey in which 120 subjects participated. The participants were pupils of three kinds of schools: primary, middle, and secondary school (high school). Information for this study was obtained from a questionnaire prepared by the authors as well as the State-Trait Anxiety Inventory (STAI) and the Psychological Inventory of Aggression Syndrome (IPSA-II).

Results:

The results confirmed that every fourth pupil was addicted to the Internet. Internet addiction was very common among the youngest users of computers and the Internet, especially those who had no brothers and sisters or came from families with some kind of problems. Moreover, more frequent use of the computer and the Internet was connected with higher levels of aggression and anxiety.

Discussion:

Because computer and Internet addiction already constitute a real danger, it is worth considering preventive activities to treat this phenomenon. It is also necessary to make the youth and their parents aware of the dangers of uncontrolled Internet use and pay attention to behavior connected with Internet addiction.

Key words:

computer and Internet addiction • aggression • anxiety

Streszczenie

Wstęp:

Wpływ mediów na psychikę człowieka może wyrażać się powstaniem nowych uzależnień, które przypominają uzależnienia od środków psychoaktywnych czy hazardu. Uzależnienie od komputera i Internetu nie zostało jak dotąd oficjalnie uznane za oddzielne jednostki chorobowe, ale budzi coraz więcej kontrowersji i jest zjawiskiem przyczyniającym się do powstawania zaburzeń psychicznych, nazywanych potocznie komputeroholizmem, siecioholizmem, internetoholizmem.

Materiał/Metody:

Badania zostały przeprowadzone metodą sondażu diagnostycznego z udziałem 120 uczniów z trzech łódzkich szkół: podstawowej, gimnazjum i liceum. W celu zebrania danych potrzebnych do badań wykorzystano kwestionariusz w wykonaniu własnym autorów, Inwentarz Stanu i Cechy Lęku (STAI) oraz Inwentarz Psychologiczny Syndromu Agresji (IPSA-II).



Wyniki: Przeprowadzone badania wskazują, iż problem siecioholizmu istnieje i w różnym stopniu dotyczy co czwartego ankietowanego. W internetową pułapkę najczęściej wpadają młodszy użytkownicy komputera i Internetu, pochodzący z rodzin niepełnych i nieposiadający rodzeństwa. Częstsze używanie komputera wśród badanych uczniów wiązało się z wyższym poziomem lęku i agresji.

Dyskusja: Wobec realnego zagrożenia uzależnieniem od komputera i Internetu, należy zastanowić się nad działaniami profilaktycznymi w zakresie zapobiegania temu zjawisku. Konieczne jest uświadczenie młodzieży i jej rodzicom zagrożeń, jakie wynikają z niekontrolowanego użytkownika Internetu i zwrócić ich uwagę na zachowania związane z interntoholizmem.

Key words: uzależnienie od komputera i Internetu • agresja • lęk

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INTRODUCTION

Addiction is a behavioral disturbance characterized by a strong need to consume specific substances or do something repeatedly. Using some substances or doing the same thing very often results in different behaviors, which is why we can talk about addiction, which is more serious, or about abuse, which is less serious. Repeated consumption of specific substances or the performance of the same kind of action may have their origin in physiology, psychology, or social factors, which is why three kinds of addiction can be distinguished: physiological, mental, and social [9].

Addiction has a multifactorial etiology and multidimensional nature. Psychologists consider an addiction to be a disturbance of mental life or a disruption of behavior whose background is more social than physiological. The abuse of psychoactive substances is connected with genetic susceptibility; nevertheless, there is a connection linking personal features, social influence, and the use of psychoactive substances. An addiction has a background in biology, especially in genetics and mental vulnerability. All biological changes are interpreted by humans in a socio-cultural context [11,20].

The dynamic cultural, economic, and technological changes that took place during the 20th century resulted in information becoming of prime importance. During the last 20 years the computer has become familiar to everyone and is used in different parts of life. Computers are natural elements of intellectual work and are a source of social attitudes [6]. They take part in the delivery of skills, knowledge, and social abilities. The computer is involved in education in the development of thinking and skills, shortening cognitive processes, and economizing educational effort. Nevertheless, using a computer requires a lot of time and results in decreased involvement in the family, housework, professional and school duties, and limits social and family contacts. It is also believed that aggres-

sion and destructive behavior can be a result of fascination with violent computers games [13].

The Internet is a global network linking millions of people in the world and it enables users to exchange information; moreover, it is an unlimited source of data, accessible at any time and place [6].

This network creates huge possibilities and provides many profits. The Internet has become a professional and educational tool. It provides unlimited access to information, makes inter-personal communication easier, allows the development of interests, and is a source of entertainment [17]. However, it also poses some new, unknown threats. Easy and uncontrolled access to information and anonymity endanger the moral development of children and youth. Moreover, the Internet can create negative emotions, aggression, and susceptibility to unethical behavior and reduce direct contacts between people [19,20].

Nowadays, the negative biopsychosocial consequences of excessive Internet use are mostly discussed. The influence of the computer and the Internet on the human psyche may be expressed by the display of media addictions reminiscent of psychoactive drug use, gambling, and work addictions. Addictive use of the Internet has no official name and is not classified as a disorder. There are no clearly defined features to diagnose such a disturbance. The professional literature defines this addiction as a continuous need to visit websites, engage in on-line gaming, or use email and Internet communicators. Although computer abuse affects thousands of people, it has not yet been thoroughly studied [3].

MATERIAL AND METHODS

In this study, 120 pupils of primary, middle, and high schools in Lodz participated. There were 54 girls and 66 boys 13–18 years of age (17 girls and 23 boys were in 13 years of

Table 1. Final results of the IAQ analysis

Comparison of results	Primary School n=40		Middle School n=40		High School n=40		Total (%) N=120
	Girls	Boys	Girls	Boys	Girls	Boys	
Pupils abusing computer and the Internet	0	1	1	5	0	0	7 (5.8%)
Pupils in danger of the problem	6	4	2	7	2	2	23 (19.2%)

age, 17 girls and 23 boys in 16 years of age, 20 girls and 20 boys in 18 years of age; mean age: 15.67±2.06). To explore the problem of computer and Internet abuse, the following research instruments were employed:

1. *The Internet Addiction Questionnaire (IAQ)* with 45 questions, developed by the authors, aimed to gain socio-demographic information about the way of using computers and the Internet by the pupils participating in the study. The key of the answer of IAQ is based on answers given by the respondents. It allowed dividing the group into three categories: those demonstrating pathological features of computer and Internet usage, those not demonstrating them, and endangered individuals.
2. *The Spielberger State-Trait Anxiety Inventory (STAI)* [18] aims to study the anxiety experienced by an individual in a state of fear, understood as a relatively permanent feature of the personality. This test consists of two parts, with instructions for both of them and 20 statements related to the subjective feeling of the person. The construction of the STAI is based on the separation of anxiety as a state. One of these describes anxiety as a short-term emotional condition that changes under the influence of different dangerous threats. Another describes anxiety as an acquired behavioral disposition that makes a human susceptible to perceiving objectively safe situations as as threatening and then reacting to such situations with some kind of anxiety [18].
3. *The Psychological Inventory of Aggression Syndrome (IPSA-II, Inwentarz Psychologiczny Syndromu Agresji)* by Z. Gaś [7] serves to measure the level of aggression, i.e. the set of experiences, attitudes and behaviors, the aim or result of which is to harm another person or themselves. The inventory comprises 11 aspects (factors) of aggression, these being susceptibility to take revenge, auto-destructive tendencies, aggression control disturbances, instrumental aggression, transferred aggression, indirect aggression, hostility to themselves, physical aggression to people around, and reactive aggression. Moreover, this questionnaire enables calculating a general aggression indicator in which all the responses are taken into account [7].

RESULTS

The data show that the interviewed pupils mostly came from complete families (82.5%) and they had brothers or sisters in most cases (65.8%). The proportions of pupils from complete or broken families and having or not having siblings, were similar in every school, regardless of the kind.

Over 30% of the subjects claimed their first contact with the computer before 7 years of age, about 40% when they

were 7–10, about 25% when they were 10–14, and only 2 respondents marked the answer “over the age of 14”.

Nearly 90% of the pupils claimed to have had contact with alcohol at the age of 10–14. There was no significant difference between girls and boys in this regard or between the respondents from the particular kinds of schools. Over half of the participants had a history of cigarette smoking, which took place after the age of 14. Cigarette smoking was noted in the majority of the high school pupils and a definite minority of the primary school pupils, whereas the numbers middle school pupils of admitting or denying smoking were similar. Nearly 20% of the respondents admitted taking drugs, which in most cases took place after 14 years of age.

The responses showed that the young people used the computer as willingly (57%) as spending time with their peers (53%). However, some boys attending gymnasium indicated the computer as their favorite form of spending free time. The majority of the studied group used the computer every day (77.5%). Over half of the respondents spent 2–4 hours in front of the monitor, nearly 34% about an hour, and nearly 15% over 4 hours. This group was dominated by primary school pupils (boys and girls) and middle school pupils (mainly boys). Seventeen percent of the respondents stated that they spent too little time with the computer and 21% said too much; nearly 30% thought they devoted just the right amount of time to the computer. Nearly 60% admitted that their parents did not control the time they spent at the computer in any way.

The survey revealed that 80% of the total group had access to the Internet. No access was more often declared among primary school pupils. Regardless of this, over 50% of the respondents used the Internet outside their own home, most often at their friends'. Seven percent of the respondents (mostly in primary school) with computers at home admitted that their parents limited their use of the Internet. Of the 21% of the subjects with no Internet access at home, nearly one third used the Internet often, while the rest (mostly younger participants) rarely used it. Nearly 60% of the subjects used the Internet every day, over 20% a few times a week, and 15% only a few times a month. Over 40% of those polled stated they use the Internet more often now than some years ago, 38% did not note any difference in the frequency, 6% felt they used the Internet less often, and the rest could not explicitly answer this question.

The next step of the analysis was to distinguish those individuals whose behavior connected with computer and Internet use could be qualified as media addiction.



The data in Table 1 indicate addiction in 7 of the 120 participants (6%). Among them are 5 male and 1 female middle school pupils and one male primary school pupil. There were no high school pupils in the group of those abusing the Internet. Twenty-three of the 120 respondents were endangered by the problem (19%). Primary school pupils dominated here (10 pupils: 6 girls and 4 boys) together with middle school pupils (9 pupils: 2 girls and 7 boys) and a small group of high school students (4 pupils: 2 girls and 2 boys).

On the whole, excessive use of the computer and the Internet was a problem for about one fourth of the polled participants; the endangered and the addicted together amounted to 25% of the total. This problem seems to concern middle school pupils more than others. Taking the addicted and endangered young people together, female and male middle school pupils were in the majority (15), while the group of female and male primary school pupils was a little smaller (11 people). Female and male high school pupils seemed to be the least prone to addiction.

Taking gender into consideration it can be stated that pathological use of the computer and the Internet can constitute a problem more often for boys than for girls. Regardless of the type of school, the ratio of endangered and addicted girls to endangered and addicted boys was 11 to 19.

The next analyses aimed to study correlations between selected demographic indicators and problematic computer and Internet use. To do this, Pearson's correlation was performed for levels of significance of $p < 0.05$, < 0.01 , and 0.001 . The correlation coefficient (r) for the ages of the subjects and the results obtained in the IAQ was -0.162 , which indicates a weak but still existent negative correlation between age and the results with the IAQ. This was demonstrated by the earlier conclusion that the oldest group was the least in danger of addiction.

To study the next correlation between gender and IAQ results, the Yule dependency coefficient Q was used. This coefficient had a value of -0.224 , which indicates a weak correlation between male and the danger of computer and Internet abuse. The influence of family structure was studied in a similar way. The analysis revealed an average correlation between the studied features. The Yule dependency coefficient for excessive Internet and computer use and a complete and incomplete family was -0.365 ; however, the correlation between excessive computer and Internet usage and having siblings was $Q = -0.3$.

The next stage of the analysis was aimed at calculating the correlation between excessive computer and Internet usage and the tendency to addictive substance abuse. The linear correlation coefficient was $r = 0.084$, which indicates a slight positive dependency between the analyzed values.

The results obtained in the study with the aid of the State-Trait Anxiety Inventory in the group of pupils were average, ranging between 35–39 with respect to fear-condition and fear-feature. The differences between the pupils of the particular school types were insignificant. Based on the results of the fear-feature sheet of the STAI and of the Internet Addiction Questionnaire (IAQ), correlation

between excessive computer and Internet use and fear level as a personality feature was checked. The correlation coefficient was $r = 0.279$, which is evidence of an existing but weak positive dependency. Thus higher results in the IAQ study were accompanied by a higher level of fear as a feature in the STAI.

The total level of aggression according to the IPSA-II was higher in the primary and middle school male than in female pupils, while among high school students the results of the girls and boys were very similar. On the basis of the raw IPSA-II results and those of the IAQ, a relationship between the general aggression indicator and Internet and computer use was studied. In this case, r was 0.346 , which indicates an average positive correlation between these features. The conclusion is that higher results obtained in the IAQ study are connected with a higher level of the indicator of general aggression.

DISCUSSION

This study showed that the problem of excessive computer and Internet use concerns a fourth of the polled pupils, with nearly 6% revealing symptoms of addiction and over 19% in danger of addiction. A similar study was performed in 2002 by the Institute of Psychology of Łódź University on a group of over 2000 pupils 12–18 years old. They showed that nearly one out of ten pupils was in danger of addiction [21].

The problem of excessive computer and Internet use is increasing more rapidly every year and it can occur together with other kinds of addiction. Our study demonstrated that 90% of the surveyed pupils had had contact with alcohol, nearly 70% with cigarettes, and 25% admitted contact with drugs. The analysis did not show unambiguously if the tendency to take these psychoactive agents had any relationship with the problem of addictive computer and Internet use.

According to Korean scientists, the causes of Internet addiction do not have only habitual bases, but also demographic and socioeconomic [8]. The present study partly confirmed this by the finding that the correlation between computer and Internet usage and family structure was on an average level. The pupils who did not have siblings and who were from incomplete families were more in danger of addiction. Moreover, fear and aggression levels were higher in the subjects who obtained higher results in the Internet Addiction Questionnaire. An alternative opinion of the problem was presented by Australian scientists. They concluded that there is no significant relationship between the time spent in the Internet and anxiety attacks, depression, or fear of contact with other people [1].

The question of correlation between computer and Internet abuse and such variables as gender and age remains unsolved. Statistic analysis showed that Internet addiction is in some way connected with age and gender. The results suggest that this kind of addiction is more common among younger male users. Some studies presented in the literature confirm this relationship [10,15]. Opposite results were presented by Chinese scientists who collected data from a trial of nearly 700 people, suggesting that fema-

le users are more prone to a pathological need to use the Internet [12].

Summing up, it can be stated that the results presented in this study are for the most part in accordance with those of other authors on this subject. Some differences can result from the different conditions, instruments, and differences in the number and structure of the studied group. Another significant fact is that the present study concerns mainly the Internet and avoids computer abuse as the primary problem of which Internet addiction is an integral part. Computer and Internet abuse is a very complex problem, which is why it is difficult to state whether it is more accurate to treat the problem totally, i.e. as addiction to the computer and the Internet, or to consider its particular subtypes.

Although Internet addiction is a relatively new phenomenon, it has already become a subject of numerous studies.

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