

# Problematic Internet use among young adults

## Problematyczne używanie Internetu wśród młodych dorosłych

ANDRZEJ CUDO, NATALIA KOPIŚ, DARIUSZ ZAPAŁA

Katedra Psychologii Eksperymentalnej, Katolicki Uniwersytet Lubelski Jana Pawła II

**Wprowadzenie.** Rozwój nowoczesnych technologii, a przede wszystkim Internetu przyczynił się do wielu zmian społecznych. Część z nich ma wymiar pozytywny, ale oprócz nich obserwowane są zachowania destrukcyjne związane z korzystaniem z tego medium.

**Cel.** Scharakteryzowanie problematycznego używania Internetu w grupie młodych dorosłych oraz wskazanie czynników z nim powiązanych.

**Materiały i metody.** W badaniach wzięło udział 675 studentów lubelskich uczelni wyższych w wieku 19-30 lat. Wykorzystano Test Problematycznego Używania Internetu (TPUI22) oraz autorską metryczkę zawierającą pytania dotyczące m.in. ilości godzin poświęconych w ciągu tygodnia na korzystanie z Internetu, portali społecznościowych oraz gier komputerowych.

**Wyniki.** Na podstawie przeprowadzonych analiz stwierdzono, że 8,1% studentek i 14,9% studentów, znalazło się w grupie przejawiającej wysokie problematyczne używanie Internetu. Ponadto zaobserwowano, że związek między dysfunkcyjnym korzystaniem z sieci a czasem spędzonym na portalach społecznościowych był silniejszy w grupie kobiet niż w grupie mężczyzn. Mężczyźni spędzali statystycznie więcej czasu w ciągu tygodnia na graniu w gry komputerowe. Wykazano również dodatni związek między problematycznym korzystaniem z Internetu, a czasem poświęcanym na korzystanie z sieci, portali społecznościowych oraz gier komputerowych.

**Wnioski.** Uzyskane wyniki badań powinny być wykorzystane w dyskusjach nad kształtowaniem oddziaływań profilaktycznych mających na celu naukę funkcjonalnego korzystania z sieci wśród młodych dorosłych. Ponadto w działaniach profilaktycznych, terapii oraz kolejnych badaniach należałoby uwzględnić odmienną rolę czynników warunkujących problematyczne używanie Internetu przez kobiety i mężczyzn.

**Słowa kluczowe:** *problematyczne używanie Internetu, młodzi dorośli, korzystanie z Internetu*

**Introduction.** Development of advanced technologies, most importantly the Internet, has contributed to many social changes. Some of these are positive, however we also can observe destructive behaviors connected with its use.

**Aim.** To characterize problematic Internet use in a group of young adults and indicate factors associated with it.

**Material & method.** The study was carried out in a group of 675 students of the universities in Lublin, ranging in age from 19 to 30 years. It applied Problematic Internet Use Test (Polish: Test Problematycznego Używania Internetu – TPUI22) and a short questionnaire related to such issues as the weekly number of hours spent online, in social media and playing computer games.

**Results.** Based on the analyses it was found that 8.1% of the young females and 14.9% of the young males displayed a highly problematic Internet use. Furthermore it was observed that, in comparison to the males, the group of the female students revealed a stronger link between dysfunctional Internet use and time spent on social media. The males spent statistically more time per week playing computer games. It was also shown there was a positive correlation between problematic Internet use and time spent online, on social media and playing computer games.

**Conclusion.** The findings should be used in discussions focusing on development of preventive measures designed to teach young adults to use the Internet in a functional manner. Moreover, prevention, therapy and further research should take into account the fact that problematic Internet use among females and males is determined by different factors.

**Key words:** *problematic Internet use, young adults, Internet use*

© Hygeia Public Health 2018, 53(2): 165-170

www.h-ph.pl

Nadesłano: 09.11.2017

Zakwalifikowano do druku: 10.04.2018

**Adres do korespondencji / Address for correspondence**

mgr Andrzej Cudo

Katedra Psychologii Eksperymentalnej

Katolicki Uniwersytet Lubelski Jana Pawła II

ul. Al. Racławickie 14, 20-950 Lublin

tel. 663 81 78 05, e-mail: andre.cudo@gmail.com

### Introduction

Developments in advanced technologies, including the Internet, have facilitated access to information, electronic services and to remote means of communication. Internet users can take advantage of numerous applications which aid them in activities of daily living. Indeed, fewer and fewer people can imagine life without online communication. However, besides the

positive changes which can be observed, there is more and more evidence of problems and harmful effects possibly resulting from dysfunctional and compulsive use of the Internet [1-4].

It should be emphasized that in Poland 61% of households with children had access to the Internet in 2008, and by 2016 the rate increased to 98% [5]. Furthermore, problematic Internet use in a sample of

young adults was identified in 6.3% of the male and in 4.3% of the female subjects [6]. Similar findings were also acquired by another study involving the Polish population [7]. Moreover, Poprawa [8] conducted a study among individuals aged 9-65 years, and reported that in the group of subjects up to 24 years of age 13.06% of the individuals were in the risk group for problematic Internet use and 2.08% showed compulsive Internet use. In the group of subjects over 24 years of age those using the Internet in risky ways accounted for 12.79%, while dysfunctional Internet use was shown by 1.96% of the subjects. In the group of adolescents the symptoms of Internet addiction were observed at the rate of 1.3% while 12% of these subjects were in the risk group [9].

In the literature we can encounter a number of terms pertaining to dysfunctional use of the Internet, such as Internet addiction, problematic Internet use, pathological Internet use, compulsive Internet use, webaholism, netoholism, etc. [10, 11]. This multitude of phrases results from the fact that various researchers approach the phenomenon in different ways [12]. It is possible to distinguish three approaches to problematic Internet use, where they are treated as: 1. behavior classified in the spectrum of obsessive-compulsive disorder or impulse control disorder; 2. behavior similar to those observed in addiction to psychoactive substances; 3. behavior associated with resource deficits connected with social relations and their development [13]. Yet, so far no systematic and uniform criteria related to Internet addiction have been defined and included in international classifications. Currently Internet Gaming Disorder is the only related problem listed in the DSM-V published by the American Psychiatric Association. Yet, rather than recognize it as a separate nosological entity the manual classifies the problem in Section III, as a condition for further study [14].

Kimberly Young [15] defined Internet addiction as impaired control of habitual behaviors, which does not involve intoxication yet significantly and visibly damages the individual's functioning in all domains of life (personal, social, family, career). Beard and Wolf [16] and Augustynek [17] also developed this addiction criteria.

Davis [18] proposed a distinction between generalized and specific pathological Internet use. The former is mainly associated with lack of social support, feeling of isolation and loneliness. The term relates to individuals who use the Internet in multidimensional ways. Such individuals spend long hours in front of the computer chatting via instant messaging sites or they keep checking their virtual mailbox. In this case Internet use fits in with the person's unrealistic picture of the world and is expected to turn their at-

tention away from currently experienced problems or emotions. Importantly, the user does not have a clearly specified objective for using the Internet. On the other hand the latter type is linked with a specific area of online activity (e.g. gambling, pornography, etc.). It is observed in individuals previously displaying disturbing pathological behaviors – dependency on specific features of the Internet, such as cybersex, overuse of pornography related sites or online gaming. Such individuals satisfy their needs in the virtual world, yet this is of secondary nature. The ideas proposed by Davis [18] were developed by Brand, Young and Laier [19] who designed models of functional Internet use as well as generalized and specific Internet addiction. In the case of the former model the authors emphasize that the Internet is only a tool enabling the user to satisfy their needs and achieve their goals. The way of spending time online and the contents sought for are subordinate to the person's plans and objectives. In their discussion of generalized Internet addiction they argue, just like Davis [18], that users mainly display a need to connect with the web and to spend time online. The subject matter is of lesser importance and activity of such individuals is scattered all over the Internet.

## Aim

Research reviews have suggested there may be differences between men and women in the intensity of problematic Internet use [6, 20]. However, previous research results are inconclusive [6, 21]. Furthermore, it is expected that problematic Internet use will be associated with different contents sought online by the two groups. Based on the above the following research questions were specified:

1. What is the prevalence of problematic Internet use among university students?
2. Are there any sex-related differences in the intensity of problematic Internet use?
3. Are there differences between men and women in the amount of time spent online, using websites or computer games?
4. Is there any correlation between amount of time online and the extent of problematic Internet use?
5. Are there any differences between men and women in terms of correlation between problematic Internet use and weekly amount of time spent:  
a. online? b. using social media? c. playing computer games?

## Material and method

The study was carried out in a group of 675 students of the universities in Lublin, yet due to incomplete data the scores of 6 subjects were removed from further analyses. The subjects' age ranged from 19 to

30 years ( $20.75 \pm 1.97$ ). The study group comprised 528 women (78.9%) and 141 men (21.1%). In terms of place of origin there were four groups, i.e. individuals from rural areas (32.7%), from towns with population up to 30.000 (16.6%), towns with population up to 70.000 (13.3%) and cities with population of more than 70.000 (37.4%). On average the subjects used the Internet for  $36.94 \pm 24.18$  hours per week. Mean weekly amount of time spent using websites was  $24.03 \pm 22.93$  hours. On the other hand on the average the students spent  $2.88 \pm 7.85$  hours per week playing computer games.

#### Methods:

1. Problematic Internet Use Test (Polish: *Test Problematycznego Używania Internetu – TPUI22*) is a Polish version of Kimberly Young's Internet Addiction Test (IAT), adapted by Ryszard Poprawa [8]. It consists of 22 items. Subjects provide answers on a 6-point scale specifying how often they perform certain activities or experience certain feelings in connection with Internet use. The possible score is in the range from 0 to 110, and the scores over 49 points reflect stronger compulsive engagement in the Internet and greater number of existing symptoms of Problematic Internet Use, which correspond with diagnostic criteria for Internet Addiction proposed by Young [15]. The method presents very good psychometric properties. The Cronbach' alpha equals 0.935. The discriminatory power of the items is in the range from 0.40 to 0.70. The split-half reliability equals 0.95 with correlation between the halves amounting to 0.91 [8].
2. A short questionnaire related to demographics as well as a number of hours spent online, using social networking websites and playing computer games per week. Additionally, the subjects were asked to provide names of the most frequently used websites.

## Results

In order to describe prevalence of problematic Internet use in the group of students the acquired findings were examined taking into account the norms defined for the Polish population [8]. They were also compared to the data reported by other studies which applied the Problematic Internet Use Test [8]. Detailed statistics are presented in Table I.

The scores were examined with Pearson's  $\chi^2$  test for statistical significance of sex-related differences in the level of problematic Internet use. Symptoms of Internet addiction and their intensity were assessed using norms developed by Ryszard Poprawa [8]. The analyses showed no differences related to problematic Internet use between the male and the female subjects ( $\chi^2_{(df=4)}=6.32$ ;  $p=0.117$ ). Yet, based on estimation of adjusted standardized residuals a difference between the women and the men was found in highly problematic Internet use ( $z=2.4$ ;  $p<0.001$ ). Detailed results are shown in Table II.

No statistically significant differences were found between the groups of various origins in terms of place of residence and the levels of problematic Internet use ( $\chi^2_{(df=12)}=8.05$ ;  $p=0.781$ ).

Furthermore, correlations between problematic Internet use and weekly amount of time spent on the Internet, using websites and computer games were examined with the Spearman's rho (Table III).

In order to verify whether or not women differed from men in the weekly amount of time spent using the Internet, social networking services, and computer games, further analyses were conducted with the use of Student's t-test. Due to lack of homogeneity of variances in the case of the weekly hours spent playing computer games the analyses applied Cochran-Cox t-test. Based on the calculations it was shown that the men spend more time playing computer games than the women. No sex-related differences were identified in the amount of time spent visiting websites or using the Internet (Table IV).

Table I. Research results of problematic Internet use study using TPUI22

Tabela 1. Zestawienie wyników w zakresie problematycznego używania Internetu przy użyciu TPUI22

Problematic Internet use /Problematyczne używanie Internetu (TPUI 22)	Present study /Obecne badanie	[6]	[20]	[22]	[23]	[24]	[8]	[8]
very low /bardzo niskie	3,0%	1,9%		2,2%	2,2%		2,5%	2,6%
low /niskie	20,2%	23,3%	16,8%	12,3%	18,1%	15,5%	13,8%	14,4%
average /przeciętne	66,5%	69,9%	51,9%	74,4%	73,4%	46,9%	68,5%	68,2%
high /wysokie	9,6%	4,9%	31,3%	10,7%	5,9%	29,0%	13,1%	12,8%
very high /bardzo wysokie	0,7%			0,4%	0,4%	8,6%	2,1%	2,0%
Participants' numer /Ilość osób badanych	N=669	N=800	N=536	N=505	N=270	N=303	N=2596	N=1329
Age (in years) /Wiek (w latach)	19-30	17-30	18-26	16-19	16-19	15-20	9-24	24-65

The Spearman's rho was applied to examine correlations between compulsive Internet use and time spent online, using social media or computer games. Analyses were also conducted to verify differences in these coefficients between the female and the male subjects [25, 26]. It was observed that the women differed from the men, in terms of the strength of correlation between problematic Internet use and weekly hours spent using social networking services ( $z=2.18$ ;  $p=0.027$ ). In the case of the female subjects the re-

lationship between these variables is stronger than in the male subjects. Detailed findings are presented in Table IV.

An additional analysis focused on the subjects' use of Facebook. In a question related to this type of websites 89.8% of the university students named Facebook as the social networking service which they were using. Yet no statistically significant difference was found between the females and the males in terms of Facebook use ( $\chi^2_{(df=1)}=1.32$ ;  $p=0.250$ ).

Table II. Frequencies and percentage of men and women with a certain level of problematic Internet use

Tabela II. Częstości i odsetki kobiet i mężczyzn o określonym poziomie problematycznego korzystania z Internetu

Problematic Internet use /Problematyczne używanie Internetu	Sex /Płeć			
	Women /Kobiety		Men /Mężczyźni	
	N	%	N	%
very low /bardzo niskie	15	2,8	5	3,5
low /niskie	107	20,3	28	19,9
average /przeciętne	359	68,0	86	61,0
high /wysokie	43	8,1	21	14,9
very high /bardzo wysokie	4	0,8	1	0,7
Total /Ogółem	528	100,0	141	100,0

$\chi^2_{(df=4)}=6.32$ ;  $p=0.177$

Table III. The correlation coefficients between analyzed variables

Tabela III. Współczynniki korelacji pomiędzy analizowanymi zmiennymi

Variables /Zmienne	[1]	[2]	[3]
[1] Number of hours – Internet /Ilość godzin Internet			
[2] Number of hours – social networks /Ilość godzin portale	rho 0.70 p< 0.001		
[3] Number of hours – games /Ilość godzin gry	rho 0.13 p< 0.001	-0.01 0.829	
[4] Problematic Internet use /Problematyczne używanie Internetu	rho 0.28 p< 0.001	0.28 0.001	0.17 0.001

Table IV. Average time spent weekly by men and women using Internet, social portals and computer games and rho-Spearman correlation coefficients between problematic Internet use and number of hours of using Internet, social networks and computer games

Tabela IV. Średni czas spędzany przez kobiety i mężczyzn w ciągu tygodnia na korzystaniu z Internetu, portali internetowych oraz gier komputerowych oraz współczynniki korelacji rho-Spearmana pomiędzy problematycznym używaniem Internetu, a ilością godzin korzystania z Internetu, portali społecznościowych oraz gier komputerowych

Hours number /Ilość godzin	Differences between variables				t	p<
	Women /Kobiety		Men /Mężczyźni			
	M	SD	M	SD		
Internet	36.69	24.74	37.84	21.99	-0.50	0.616
social networks /portale	24.62	22.56	21.79	24.24	1.30	0.194
games /gry	1.78	6.24	7.00	11.23	-7.29	0.001
Hours number /Ilość godzin	Differences between rho-Spearman correlation coefficients				z	p<
	Women /Kobiety		Men /Mężczyźni			
	rho	p<	rho	p<		
Internet	0.30	0.001	0.21	0.013	1.01	0.314
social networks /portale	0.33	0.001	0.13	0.120	2.18	0.027
games /gry	0.17	0.001	0.23	0.005	-0.65	0.513

## Discussion

Based on the conducted study it can be determined that 8.1% of the female and 14.9% of the male students were in a group showing symptoms of highly problematic Internet use. On the other hand 61.0% of the females and 68.0% of the males were in a group presenting average level of this type of compulsive behavior. These findings correspond with other studies conducted among students [6, 7, 20]. It should be emphasized that in accordance with conclusions reported by Aouil i Siedlaczek [27] a greater variability in the level of compulsive Internet use in relation to the level of education was observed among women than among men. Furthermore, like in earlier studies [20] it was shown that male students were more likely to overuse the Internet than female students.

In addition, it was observed there was a correlation between problematic Internet use and amount of time spent using the Internet, computer games and social media. Earlier research suggests that players showing symptoms of overusing computer games account for 33.5% of those using the Internet in dysfunctional ways. In the group of those using the Internet in functional ways the rate was 3.9% [28]. Furthermore the correlation between dysfunctional Internet use and time spent

using social media was stronger in the group of female subjects than in the group of male students. With regard to this factor, a study by Thompson and Lougheed [29] carried out in a group of 268 students showed that, compared to the male subjects, the female students were more likely to spend greater amount of time on Facebook than they intended, felt more connected to friends from the social networking site than to those in their daily life and felt more dependent on the medium. Moreover, Haferkamp, et al. [30] showed that women mostly used social media to compare themselves with other people while men more often used such media to find friends. Therefore it can be assumed that the stronger relation between problematic Internet use and amount of time devoted to social media observed among female subjects may be linked for instance to a different kind of motivation they feel for using such media [31].

Furthermore, the results of this study showed that problematic Internet use is not in fact a homogeneous phenomenon. According to the Interaction of Person-Affect-Cognition-Execution (I-PACE) model for specific Internet use addiction [32], the Internet addiction is primarily related to the use of certain web content, not just to being online. The use of certain Internet applications may lead to users receiving more gratification from them. The more time a user spends on a specific application, the more this can lead to an increase in cue reactivity and craving in response to the stimulus of the application. This effect may be related to both Pavlovian and instrumental conditioning processes [32]. Therefore, the differences between men and women who play computer games as well as the use of social networks may result from the difference in gratification that each group receives. Muscanell and Guadagno [33] demonstrated that women with low agreeableness used the instant messaging features of Facebook and MySpace more often than women who were highly agreeable. They also showed that men who were less open played more games on Facebook and MySpace compared to men who were highly open. Their findings also indicate that women and men differ in terms of their use of certain functions of the web application. Their results may indicate that men and women also differ from each other in the use of

certain Internet applications. In addition, Kimbrough et al [34] showed that men used text messaging, social media, and online video calls less frequently than women. It should also be noted that there are gender differences in self-presentation in these networks. Men publish photos that accentuate status and risk taking, whereas women publish photos that emphasize familial relations and emotional expression [35]. This may indicate that men and women use different means to self-present and achieve gratification. Taken together, different elements of Internet applications can lead to differences in forms of gratification in women and men. This is consistent with the results of this study, indicating that men spend more time playing computer games than women. Also, in the case of women, there is a stronger relationship between problematic Internet use and the time spent using social networks than in men. However, further research is needed to better describe the differences between men and women in the field of problematic Internet use.

## Conclusion

The present findings correspond with those reported by earlier studies focusing on problematic Internet use [6, 8, 36-39]. They contribute to better understanding of the phenomenon and suggest new research areas which should be explored to gain more insight into this type of addiction. Most importantly they point to interrelatedness of problematic Internet use and amount of time spent on social media and playing computer games. Therefore, further research should focus not only on describing specific types of behavioral addictions connected with the Internet but also on their co-occurrence and relationship with substance addictions [40].

*Źródło finansowania:* The present study was part of a research project subsidized by the Gambling Problem Solving Fund managed by the Minister of Health. Agreement Number 4/HM/2016.

*Konflikt interesów:* Autorzy deklarują brak konfliktu interesów.

## Piśmiennictwo / References

1. Wojtkowiak M, Szumilas-Praszek W. Internet jako współczesne medium zagrożenia czy edukacji? Rola Internetu w ponowoczesnym społeczeństwie. *SiR* 2013, 4(37): 133-142.
2. Kuźmińska-Sołśnia B. Nowoczesne technologie informatyczne – możliwości i zagrożenia. *DI* 2014, 9: 72-81.
3. Voiskounsky AE. Internet addiction in the context of positive psychology. *Psychology in Russia: State of the Art* 2010, 3: 541-549.
4. Poprawa R. Problematyczne używanie Internetu – nowe wyzwania dla psychologii zdrowia. [w:] *Psychologia zdrowia – konteksty i pogranicza*. Górnik-Durose M, Mateusiak J (red). UŚ, Katowice 2011: 211-240.
5. Wójcik S. Zagrożenia dzieci i młodzieży w Internecie. *Dziecko Krzywdzone. Teoria, badania, praktyka* 2017, 16(1): 270-287.

6. Cudo A, Kopiś N, Stróżak P. Problematyczne używanie Internetu oraz problematyczne korzystanie z gier komputerowych wśród studentów kierunków społecznych i humanistycznych. *Hygeia Public Health* 2016, 51(4): 389-397.
7. Pawłowska B, Potembska E. Objawy zagrożenia i uzależnienia od Internetu mierzonego Kwestionariuszem do Badania Uzależnienia od Internetu autorstwa Pawłowskiej i Potembskiej u młodzieży polskiej w wieku od 13 do 24 lat. *Curr Probl Psychiatry* 2011, 12(4): 439-442.
8. Poprawa R. Test problematycznego używania Internetu. Adaptacja i ocena psychometryczna Internet Addiction Test K. Young. *Prz Psychol* 2011, 54(2): 193-216.
9. Makaruk K, Wójcik S. Nadużywanie Internetu przez młodzież. Wyniki badania EU NET ADB. Dziecko Krzywdzone. Teoria, Badania, Praktyka 2013, 12(1): 35-48.
10. Yellowlees PM, Marks S. Problematic Internet use or Internet addiction? *Comput Hum Behav* 2007, 23(3): 1447-1453.
11. Weinstein A, Dorani D, Elhadif R, et al. Internet addiction is associated with social anxiety in young adults. *Ann Clin Psychiatry* 2015, 27(1): 4-9.
12. Błachnio A, Przepiórka A, Rowiński T. Dysfunkcyjne korzystanie z Internetu – przegląd badań. *Psychol Społ* 2014, 4(31): 378-395.
13. Tokunaga RS, Rains SA. A review and meta-analysis examining conceptual and operational definitions of problematic Internet use. *Hum Commun Res* 2016, 42(2): 165-199.
14. American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders (5th ed). American Psychiatric Association, Arlington 2013.
15. Young KS. Internet addiction: the emergence of a new clinical disorder. *Cyberpsychol Behav* 1998, 1(3): 237-244.
16. Beard KW, Wolf EM. Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychol Behav* 2001, 4(3): 377-383.
17. Augustynek A. Uzależnienia komputerowe. Diagnoza, rozpowszechnienie, terapia. Difin, Warszawa 2010.
18. Davis RA. A cognitive-behavioral model of pathological Internet use. *Comput Hum Behav* 2001, 17(2): 187-195.
19. Brand M, Young KS, Laier C. Prefrontal control and internet addiction: a theoretical model and review of neuropsychological and neuroimaging findings. *Front Hum Neurosci* 2014, 8:375.
20. Barłóg MJ. Uzależnienie od Internetu i jego osobowościowe determinanty. *Hygeia Public Health* 2015, 50(1): 197-202.
21. Janocha A, Klimatskaya L. Internet Addiction Disorder in pupils and students of Krasnoyarsk (Russia) and Wrocław (Poland). *Hygeia Public Health* 2011, 46(4): 449-452.
22. Rębisz S, Sikora I, Smoleń-Rębisz K. Poczucie samotności a poziom uzależnienia od Internetu wśród adolescentów. *Edukacja-Technika-Informatyka* 2016, 7(1): 90-98.
23. Cudo A, Dobosz M, Jarząbek-Cudo A, Basaj Ł. Problematic Internet use and intrapersonal and interpersonal attitudes in adolescents. *Post Psychiatr Neurol* 2016, 25(3): 159-178.
24. Chwaszcz J, Wiechetek M, Przybyłek A. Coping strategies and the risk of developing Internet addiction in young people – a study report. [in:] *Gambling and Internet addictions – epidemiology and treatment*. Lelonek-Kuleta B, Chwaszcz J (eds). Natanaelum Association Institute for Psychoprevention and Psychotherapy, Lublin 2016: 101-107.
25. Soper D. Significance of the Difference between Two Correlations Calculator (Software). <http://www.danielsoper.com/statcalc> (10.10.2017).
26. Fisher RA. On the "Probable Error" of a Coefficient of Correlation Deduced from a Small Sample. *Metron* 1921, 1: 3-32.
27. Aouil B, Siedlaczek J. Osobowościowe determinanty dysfunkcyjnego korzystania z Internetu wśród uczniów gimnazjum, liceum oraz studentów. [w:] *Internet w psychologii – psychologia w Internecie*. Aouil B, Czerwiński K, Wosik-Kawala D (red). Adam Marszałek, Toruń 2011: 101-142.
28. Wójcik S. Gry online – korzystanie i nadużywanie wśród młodzieży. Wyniki badania EU NET ADB. *Dziecko Krzywdzone Teoria Badania Praktyka* 2013, 12(1): 81-98.
29. Thompson SH, Loughheed E. Frazzled By Facebook? an Exploratory Study of Gender Differences in Social Network Communication Among Undergraduate Men and Women. *Coll Stud J* 2012, 46(1): 88-98.
30. Haferkamp N, Eimler SC, Papadakis AM, Kruck JV. Men are from Mars, women are from Venus? Examining gender differences in self-presentation on social networking sites. *Cyberpsychol Behav Soc Netw* 2012, 15(2): 91-98.
31. Kuss DJ, Griffiths MD. Online social networking and addiction – a review of the psychological literature. *Int J Environ Res Public Health* 2011, 8(9): 3528-3552.
32. Brand M, Young KS, Laier C, et al. Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: An Interaction of Person-Affect-Cognition-Execution (I-PACE) model. *Neurosci Biobehav Rev* 2016, 71: 252-266.
33. Muscanell NL, Guadagno RE. Make new friends or keep the old: Gender and personality differences in social networking use. *Comp Hum Behav* 2012, 28(1): 107-112.
34. Kimbrough AM, Guadagno RE, Muscanell NL, Dill J. Gender differences in mediated communication: Women connect more than do men. *Comp Hum Behav* 2013, 29(3): 896-900.
35. Tifferet S, Vilnai-Yavetz I. Gender differences in Facebook self-presentation: An international randomized study. *Comp Hum Behav* 2014, 35: 388-399.
36. Krajewska-Kułak E, Kułak W, Van Damme-Ostapowicz K i wsp. Uzależnienie od Internetu wśród studentów kierunku pielęgniarstwo. *Probl Hig Epidemiol* 2010, 91(1): 41-47.
37. Nicoli M, Formella Z. Internet addiction, smoke, drugs and alcohol: a research among German adolescents and young people. *Hygeia Public Health* 2014, 49(2): 299-306.
38. Marcinkowski JT, Bajek A, Galewska I. Aktywność studentów w Internecie – oceniana pod kątem uzależnienia od Internetu. *Hygeia Public Health* 2010, 45(2): 135-142.
39. Godala M, Borek J, Szatko F. Ryzyko uzależnienia od Internetu wśród młodzieży gimnazjalnej. *Probl Hig Epidemiol* 2013, 94(2): 226-232.
40. Motyka M, Marcinkowski JT. Rola czasu spędzanego w Internecie w liberalizacji postaw wobec środków psychoaktywnych wśród uczniów przemyskich szkół gimnazjalnych. *Probl Hig Epidemiol* 2014, 95(3): 737-743.