

Psychopathological symptoms in individuals at risk of Internet addiction in the context of selected demographic factors

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Abstract

Introduction. Researchers who study the problems of Internet addiction point out that this dependence is often co-morbid with symptoms of a variety of pathological disorders, including anxiety, depressive, somatization, and obsessive-compulsive disorders. The goal of this study was to compare the severity of psychopathological symptoms in individuals at risk of Internet addiction (according to Young's criteria) and those not at risk of developing this addiction with respect to gender and place of residence (urban vs. rural).

Materials and method. The study included a group of 692 respondents (485 females and 207 males). The average age of the participants was 20.8 years. 56.06% of them lived in urban areas and 43.94% in rural areas. The following instruments were used: a sociodemographic questionnaire designed by the authors, Young's 20-item Internet Addiction Test (IAT, Polish translation by Majchrzak and Ogińska-Bulik), and the "O" Symptom Checklist (Kwestionariusz Objawowy "O", in Polish) by Aleksandrowicz.

Results. Individuals at risk of Internet addiction showed significantly more severe pathological symptoms than the individuals who were not at risk of this addiction. There were differences in the severity of psychopathological symptoms between people at risk of Internet dependence living in urban and rural areas.

Conclusions. Individuals at risk of Internet addiction were found to be characterized by a significantly higher severity of obsessive-compulsive, conversion, anxiety, and depressive symptoms. Persons at risk of Internet addiction who lived in rural areas had significantly more severe psychopathological symptoms, mainly obsessive-compulsive, hypochondriac and phobic, compared to their urban peers.

Key words

psychopathological symptoms, Internet addiction, anxiety, depression, obsessive-compulsive disorder, gender, rural, urban

INTRODUCTION

The literature offers numerous reports on the co-morbidity of Internet addiction and risk of Internet addiction with anxiety, depressive, somatization, and obsessive-compulsive disorders [1–13]. Yen et al. [14] believe that 3 scenarios are possible:

- 1) psychopathological symptoms may lead to the development of Internet addiction or perpetuate existing addiction;
- 2) Internet addiction may lead to psychopathological symptoms;
- 3) psychopathological symptoms and Internet addiction may reinforce one another.

Xiuqin et al. [1] report that young people who are dependent on the Internet, compared to their non-dependent peers, have increased symptoms of depression, anxiety and obsessive-compulsive disorder. Chele et al. [12] have demonstrated that 25% of Internet dependent adolescents struggle with some level of depression, 16% have symptoms of social phobia, 12% suffer from anxiety disorder, 6% show obsessive-compulsive

symptoms and another 6% – symptoms of an eating disorder. Bernardi and Pallanti [13] have found that addiction to the Internet is co-morbid with anxiety disorders (15%), social phobia (15%), dysthymia (7%), obsessive-compulsive disorder (7%) and traits of avoidant personality disorder (7%) and borderline personality disorder (14%).

Yang et al. [3] and Yen et al. [14] have observed that adolescents addicted to the Internet are more likely than their non-addicted peers to suffer from somatization, obsessive-compulsive, anxiety and depressive disorders and exhibit social phobia and hostility. Yang [2] has shown that 13% of Internet dependent adolescents are diagnosed with obsessive-compulsive disorder, 9% have somatization disorder and 8.7% suffer from anxiety disorder.

In the opinion of Alavi et al. [15] and Alizadeh-Sahraee et al. [16], Internet addiction co-occurs with increased symptoms of depression, anxiety, somatization disorder and phobia. According to Dong et al. [17], obsessive-compulsive disorder precedes the emergence of Internet dependence in adolescents, while depression, anxiety and hostility are some of the consequences of this dependence.

Numerous researchers [15, 18–26] describe relationships between the severity of symptoms of addiction to the Internet and to video games in adolescents, on the one hand, and

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symptoms of anxiety and depression, on the other. Yen et al. [14] have demonstrated in a study of 3,662 adolescents that the likelihood of joining the group of Internet addicts is increased by higher social anxiety and depression.

Zboralski et al. [5] found that the higher the severity of anxiety in the adolescents surveyed with the Spielberger State-Trait Anxiety Inventory (STAI), the more severe were their symptoms of Internet addiction. Liu and Kuo [27], Harman et al. [28] and Shepherd and Edelman [29] suggest that Internet dependent adolescents show more severe symptoms of social phobia than non-addicted individuals.

The results cited in the literature [4, 30–37] show that young people addicted to the Internet have significantly increased symptoms of depression, compared to non-addicted individuals. Similar conclusions have been formulated by Lam et al. [9], who reported that young people aged 13–18 years, dependent on the Internet, showed a significantly higher severity of depressive symptoms than their non-addicted peers. Tsitsika et al. [38] found that depression is 4 times more common in young people addicted to the Internet than in non-addicts.

Leung [39] points out that adolescents with severe depressive symptoms are more likely to escape into virtual reality than non-addicted youths. According to Jang et al. [10], both depression and obsessive-compulsive symptoms increase the risk of Internet addiction; similarly, Yen et al. [4] believe that increased depression is a risk factor for Internet addiction. According to Huang et al. [40], 25% of people addicted to the Internet are diagnosed with depression, which is the strongest predictor of the development of Internet addiction. Ko et al. [41] mention the following factors which predispose young people to developing Internet addiction in boys and girls: depression, social phobia and hostility alone in the former, and hostility alone in the latter. Desai et al. [42] believe that depression is a risk factor for Internet addiction in both boys and girls. Results obtained by Bakken et al. [43] indicate that people who are dependent on the Internet or are at risk of developing the dependency more often report depression, suicidal thoughts, anxiety and obsessive-compulsive disturbances than people who are not addicted to the Internet.

The presented study investigates the question whether gender and place of residence have an impact on the development of psychopathological symptoms in individuals at risk and not at risk of Internet addiction, and what that impact might be. To the best of the authors' knowledge, this problem had not been studied previously.

OBJECTIVE

The aim of this study was to compare the severity of psychopathological symptoms in individuals at risk of Internet addiction (according to Young's criteria) and those not at risk of developing this addiction. For the analyses, the participants were divided into groups according to gender and place of residence.

MATERIALS AND METHOD

A group of 692 respondents (485 females and 207 males) aged 18–25 years was studied. The average age of the participants

was 20.8 years. 56.06% of the individuals taking part in the study were urban dwellers and 43.94% resided in rural areas. Among the young adults who lived in urban areas 31.63% were males and 68.37% were females. In the group of rural respondents, 31.04% were males and 68.96% were females.

The following research methods were used in this study:

1. A sociodemographic questionnaire designed by the authors.
2. Young's 20-item Internet Addiction Test (IAT), Polish translation by Majchrzak and Ogińska-Bulik [44].
3. The "O" Symptom Checklist designed by Aleksandrowicz.

The latter is a derivative/modification of SCL-90-R. The Checklist is made up of scales corresponding to the following 14 types of disorders: dysthymic disorder, phobic anxiety disorder, other anxiety disorders, obsessive-compulsive disorder, hypochondriacal disorder, neurasthenia, depersonalisation-derealisation, inorganic sleep disorders and sexual dysfunctions. Scale 10 describes avoidant and dependent personality traits, while scale 11 describes a personality with elements of impulsive-type emotional instability (borderline) and histrionic traits [45–47].

In order to compare the variables determined on the interval scale (severity of pathological symptoms), a Student's *t* test was used. Relationships between the severity of psychopathological symptoms and the selected socio-demographic variables were calculated on the basis of the point-biserial correlation coefficient. A *p* value of 0.05 was deemed statistically significant. STATISTICA version 10.0 (StatSoft, PL) was used to prepare the database and perform the statistical analyses.

RESULTS

In the first stage of the study, Internet addiction was assessed using Young's IAT. Of the 692 participants, 273 were found to be at risk of Internet addiction, with an IAT score of over 40 points, and 419, who scored less than 40 points on the IAT scale, and were not at risk of developing the addiction (control group). In the at-risk group, there were 181 females and 92 males, and in the control group there were 304 females and 115 males. Table 1 shows a Student's *t*-test comparison of scores on the "O" Symptom Checklist scales obtained by the participants at risk of Internet addiction, and those not at risk.

Persons at risk of Internet addiction, both considered as a whole group and segregated by gender, obtained significantly higher scores on all scales of the "O" Symptom Checklist, compared to the control group. Young people at risk of Internet addiction were characterized by a significantly higher severity of symptoms of obsessive-compulsive, conversion and anxiety disorders, autonomic dysfunctions of the heart and the cardiovascular system, somatization and hypochondriacal disorders, neurasthenia, and dysthymia. The at-risk participants showed higher levels of impulsivity and had more pronounced avoidant and dependent personality traits. Table 2 shows the results of Student's *t*-test which compares the severity of psychopathological symptoms between individuals (males and females) at risk of Internet addiction – urban and rural inhabitants.

Persons at risk of Internet addiction who live in rural areas has significantly more severe psychopathological symptoms,

Table 1. Comparison of severity of psychopathological symptoms in individuals at risk and those not at risk of Internet addiction

"O" Symptom Checklist Scales	Entire group				t	p
	Not at risk of addiction		At risk of addiction			
	M	SD	M	SD		
Phobic disorder	0.50	0.72	1.02	1.18	-7.27	0.001
Anxiety disorder	1.21	1.18	1.92	1.56	-6.76	0.001
Obsessive-compulsive disorder	0.82	0.97	1.58	1.39	-8.47	0.001
Conversions and dissociations	0.59	0.77	1.16	1.30	-7.22	0.001
Autonomic dysfunctions of heart and cardiovascular system	1.16	1.10	1.81	1.51	-5.99	0.001
Somatization disorder	0.73	0.76	1.21	1.21	-5.91	0.001
Hypochondriacal disorder	0.67	1.10	1.33	1.56	-6.54	0.001
Neurasthenia	1.58	1.27	2.35	1.60	-6.96	0.001
Depersonalisation-derealisation syndrome	1.01	1.13	1.68	1.50	-6.12	0.001
Personality disorder: avoidance and dependence	1.22	1.31	2.11	1.67	-7.23	0.001
Personality disorder: impulsivity and histrionism	1.21	1.28	1.92	1.69	-5.78	0.001
Inorganic sleep disorder	1.41	1.60	1.91	1.73	-3.61	0.001
Sexual dysfunction	0.38	0.79	0.86	1.23	-5.80	0.001
Dysthymia	1.41	1.29	2.20	1.61	-7.10	0.001
Global score	123.13	92.29	189.63	159.19	-4.54	0.001
"O" Symptom Checklist Scales	Men				t	p
	Not at risk of Internet addiction		At risk of Internet addiction			
	M	SD	M	SD		
Phobic disorder	0.38	0.59	0.71	1.03	-2.96	0.003
Anxiety disorder	0.75	0.88	1.45	1.38	-4.44	0.001
Obsessive-compulsive disorder	0.78	1.00	1.38	1.34	-3.71	0.001
Conversions and dissociations	0.42	0.55	0.90	1.14	-3.99	0.001
Autonomic dysfunctions of heart and cardiovascular system	0.70	0.77	1.35	1.32	-4.12	0.001
Somatization disorder	0.56	0.56	0.90	1.05	-2.80	0.006
Hypochondriacal disorder	0.57	0.99	0.98	1.43	-2.41	0.017
Neurasthenia	1.18	1.05	1.88	1.41	-4.07	0.001
Depersonalisation-derealisation syndrome	0.73	0.98	1.30	1.34	-3.31	0.001
Personality disorder: avoidance and dependence	0.79	0.98	1.69	1.48	-4.84	0.001
Personality disorder: impulsivity and histrionism	0.79	1.05	1.24	1.45	-2.36	0.020
Inorganic sleep disorder	1.05	1.33	1.45	1.46	-1.89	0.060
Sexual dysfunction	0.44	0.91	0.65	0.98	-1.54	0.126
Dysthymia	0.96	1.11	1.86	1.47	-5.05	0.001
Global score	89.00	67.16	130.37	104.62	-2.13	0.036
"O" Symptom Checklist Scales	Women				t	P
	Not at risk of Internet addiction		At risk of Internet addiction			
	M	SD	M	SD		
Phobic disorder	0.54	0.76	1.18	1.22	-7.07	0.001
Anxiety disorder	1.38	1.24	2.15	1.60	-5.93	0.001
Obsessive-compulsive disorder	0.84	0.96	1.69	1.41	-7.85	0.001
Conversions and dissociations	0.65	0.83	1.28	1.36	-6.39	0.001
Autonomic dysfunctions of heart and cardiovascular system	1.35	1.16	2.03	1.55	-5.01	0.001
Somatization disorder	0.80	0.82	1.36	1.25	-5.43	0.001
Hypochondriacal disorder	0.71	1.14	1.51	1.60	-6.45	0.001
Neurasthenia	1.74	1.31	2.58	1.64	-6.26	0.001
Depersonalisation-derealisation syndrome	1.13	1.17	1.85	1.55	-5.39	0.001
Personality disorder: avoidance and dependence	1.39	1.39	2.31	1.72	-5.93	0.001
Personality disorder: impulsivity and histrionism	1.38	1.33	2.24	1.70	-5.73	0.001
Inorganic sleep disorder	1.56	1.68	2.13	1.81	-3.27	0.001
Sexual dysfunction	0.35	0.74	0.96	1.32	-5.93	0.001
Dysthymia	1.58	1.31	2.37	1.66	-5.77	0.001
Global score	133.65	96.55	219.26	173.49	-4.65	0.001

Table 2. Comparison of severity of psychopathological symptoms in adolescents at risk of Internet addiction living in urban and rural areas

"O" Symptom Checklist Scales	Persons at risk of Internet addiction				t	p
	Urban		Rural			
	M	SD	M	SD		
Phobic disorder	0.86	1.12	1.24	1.20	-2.70	0.007
Anxiety disorder	1.79	1.51	2.09	1.59	-1.61	0.109
Obsessive-compulsive disorder	1.38	1.32	1.85	1.43	-2.75	0.006
Conversions and dissociations	0.99	1.27	1.37	1.31	-2.39	0.017
Autonomic dysfunctions of heart and cardiovascular system	1.60	1.53	2.09	1.42	-2.48	0.014
Somatization disorder	1.06	1.12	1.41	1.29	-2.24	0.026
Hypochondriacal disorder	1.14	1.41	1.59	1.72	-2.40	0.017
Neurasthenia	2.29	1.62	2.42	1.58	-0.65	0.519
Depersonalisation-derealisation syndrome	1.54	1.51	1.85	1.45	-1.59	0.113
Personality disorder: avoidance and dependence	1.94	1.68	2.32	1.64	-1.74	0.084
Personality disorder: impulsivity and histrionism	1.75	1.67	2.16	1.68	-1.87	0.062
Inorganic sleep disorder	1.68	1.73	2.23	1.67	-2.44	0.015
Sexual dysfunction	0.83	1.18	0.91	1.29	-0.48	0.629
Dysthymia	2.07	1.68	2.39	1.52	-1.61	0.109
Global score	160.39	140.47	243.87	173.58	-2.82	0.006
"O" Symptom Checklist Scales	Men at risk of Internet addiction				t	P
	Urban		Rural			
	M	SD	M	SD		
Phobic disorder	0.52	0.75	0.97	1.25	-2.14	0.035
Anxiety disorder	1.24	1.22	1.76	1.50	-1.82	0.072
Obsessive-compulsive disorder	1.13	1.15	1.72	1.51	-2.13	0.036
Conversions and dissociations	0.66	0.84	1.22	1.38	-2.38	0.019
Autonomic dysfunctions of heart and cardiovascular system	1.03	1.11	1.77	1.45	-2.52	0.014
Somatization disorder	0.68	0.81	1.16	1.26	-1.99	0.050
Hypochondriacal disorder	0.75	1.16	1.26	1.68	-1.73	0.088
Neurasthenia	1.82	1.39	1.98	1.46	-0.52	0.606
Depersonalisation-derealisation syndrome	1.08	1.13	1.61	1.52	-1.77	0.080
Personality disorder: avoidance and dependence	1.51	1.48	1.91	1.48	-1.18	0.242
Personality disorder: impulsivity and histrionism	1.11	1.40	1.43	1.51	-0.96	0.343
Inorganic sleep disorder	1.03	1.21	1.99	1.57	-3.02	0.003
Sexual dysfunction	0.46	0.75	0.90	1.17	-2.01	0.048
Dysthymia	1.70	1.50	2.08	1.43	-1.24	0.220
Global score	120.45	107.47	161.10	93.56	-1.07	0.291
"O" Symptom Checklist Scales	Women at risk of Internet addiction				t	P
	Urban		Rural			
	M	SD	M	SD		
Phobic disorder	1.01	1.22	1.40	1.15	-2.09	0.038
Anxiety disorder	2.04	1.57	2.29	1.62	-1.02	0.310
Obsessive-compulsive disorder	1.50	1.38	1.92	1.39	-1.98	0.049
Conversions and dissociations	1.15	1.40	1.46	1.26	-1.52	0.130
Autonomic dysfunctions of heart and cardiovascular system	1.85	1.62	2.26	1.39	-1.68	0.095
Somatization disorder	1.22	1.20	1.54	1.30	-1.65	0.101
Hypochondriacal disorder	1.31	1.48	1.78	1.72	-1.94	0.054
Neurasthenia	2.51	1.69	2.67	1.60	-0.66	0.512
Depersonalisation-derealisation syndrome	1.74	1.61	1.98	1.41	-0.98	0.329
Personality disorder: avoidance and dependence	2.13	1.73	2.54	1.69	-1.51	0.132
Personality disorder: impulsivity and histrionism	2.02	1.71	2.55	1.64	-1.98	0.049
Inorganic sleep disorder	1.96	1.84	2.36	1.72	-1.39	0.167
Sexual dysfunction	0.98	1.30	0.91	1.36	0.36	0.719
Dysthymia	2.24	1.73	2.57	1.55	-1.29	0.200
Global score	183.75	152.73	273.43	186.89	-2.32	0.023

including obsessive-compulsive, conversion, autonomic, somatization, hypochondriac and phobic symptoms, compared to their urban peers. Rural dwellers at risk of addiction to the Internet were more impulsive than “at-risk” urban residents.

Males at risk of Internet addiction who live in rural areas were more likely to complain of symptoms of phobia, obsessive-compulsive disorder, autonomic dysfunctions, and somatization disorder, as well as symptoms of inorganic sleep disorder and sexual dysfunctions, compared to urban males.

Females living in rural areas at risk of Internet addiction were significantly more likely than their peers living in urban areas to experience severe neurotic disorders, mainly phobias and obsessive-compulsive and hypochondriac disorders. At-risk females living in rural areas were significantly more impulsive than those living in urban areas.

DISCUSSION

The results obtained in the presented study indicate that individuals who meet Young’s criteria for risk of Internet addiction, compared to those who do not meet those criteria, have significantly higher pathological scores, mainly with regard to symptoms of obsessive-compulsive, conversion and anxiety disorders, autonomic dysfunctions of the heart and the cardiovascular system, somatization (somatic symptom) and hypochondriac disorders, neurasthenia and depression. Differences in the severity of these psychopathological symptoms occurred both in the groups of females and males.

The results obtained are consistent with the findings that pathological Internet use is co-morbid with increased symptoms of anxiety disorder [48, 49], depression [12] and obsessive-compulsive disorder [1, 13]. Yang et al. [2, 3] and Yen et al. [14] have observed the presence of somatization disorders in adolescents addicted to the Internet. Relationships between Internet addiction and increased symptoms of depression, anxiety, phobias and somatization disorders have also been described by Alavi et al. [15] and Alizadeh-Sahraee et al. [16]. While some authors believe that symptoms of obsessive-compulsive disorder are predictors of Internet addiction in adolescents, and anxiety and depression are some of its consequences [17], others consider depression [4, 8, 40–42, 50–52] and obsessive-compulsive disorder [10] to be risk factors for the development of the addiction. Tsitsika et al. [38] have pointed out that depression is 4 times more common in young people addicted to the Internet than in their non-addicted peers.

In the presented study, it was also found that individuals at risk of Internet addiction are more impulsive and have more pronounced traits of avoidant and dependent personality. A similar observation has been made by Armstrong et al. [53], who believe that impulsivity and low self-esteem are the strongest predictors of the development of Internet addiction in adolescents. Canan et al. [54] and Yeon [55] emphasize that individuals addicted to the Internet are submissive and have traits of avoidant personality disorder. Bernardi and Pallanti [13] have also described avoidant personality traits in people addicted to the Internet.

To summarize the results of the current study, psychopathological symptoms can be both a cause and an effect of the abnormal behaviour related to young people’s online activity and can also sustain such behaviour. According

to Yen et al. [14], psychopathological symptoms and Internet addiction can exacerbate each other via a feedback loop, with a role played by gender and place of residence, as shown by the results obtained in the presented study. Awareness of the existence of all these relationships can be of assistance to practitioners who treat people addicted to the Internet and those at risk of addiction.

CONCLUSIONS

1. Individuals at risk of Internet addiction are characterized by a significantly higher severity of pathological symptoms, chiefly obsessive-compulsive, conversion, anxiety, and depressive symptoms.
2. Persons at risk of Internet addiction who live in rural areas have significantly more severe symptoms of neurotic disorders, mainly obsessive-compulsive, hypochondriac and phobic symptoms, compared to their urban peers.

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