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EXPLORING THE RELATIONSHIP BETWEEN PERSONALITY, LONELINESS, SELF-ESTEEM AND INTERNET ADDICTION

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Abstract

Internet addiction is the inability to control one's Internet usage that results in serious impairment of various aspects of life. There is a direct relationship between poor social support, social-emotional loneliness and internet addiction. Recent research showed that Internet addiction is related to mental health state and that personality traits may affect internet users' behaviours significantly. The present research aims to explore the relationship of personality traits, loneliness, and self-esteem with internet addiction. More specifically, we aim to test the mediating role of loneliness in the relationship between self-esteem, personality traits, time spent on Internet and Internet addiction. The sample consisted of 227 high-school students. Results showed that conscientiousness and neuroticism were significantly related with internet addiction. Personality traits could be considered both protective and risk factors of problematic Internet use. A positive correlation between loneliness and internet addiction and a negative association between self-esteem and internet addiction were also found. Students who spend more time on Internet, are less conscientiousness and feels lonelier, are more exposed to the risk of addiction. Internet addiction measures could be used to identify students at risk of becoming Internet addicted. Identifying risk and protective factors could be an essential aspect of intervention programs aiming to reduce the prevalence of internet addiction among adolescents.

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Keywords: Addiction risk, internet addiction, loneliness, personality, self-esteem.

1. Introduction

Internet use has rapidly increased in each age group due to numerous facilities, but despite its advantages it can also lead to problematic internet use or internet addiction. Internet addiction is the inability to control one's internet usage that results in serious impairment of various aspects of life. At younger ages, there is a direct relationship between poor social support, social-emotional loneliness and internet addiction. Recent research showed that Internet addiction is related to mental health state and that personality traits may affect internet users' behaviours significantly. 2. Background of the study.

2. Problem Statement

Addiction has been traditionally associated with substance addiction, through the repetitive and excessive use of specific stimulants (e.g. alcohol, cocaine, hallucinogens) (DSM-5, 2013). Individuals can be addicted to excessive behaviours towards work, food, shopping, sex, Internet. Internet addiction refers to the inability of a person to control his/her use of the Internet, leading to noticeable sorrow and functional impairment (Young, 1998) being also called Compulsive Internet Use (CIU), Problematic Internet Use (PIU), or iDisorder. As a recent and increasingly recognized disorder, Internet addiction has received growing attention worldwide, being the subject of numerous debates (Laconi, Rodgers, & Chabrol, 2014). Internet addiction is considered a risky disorder very common among the young, and most often accompanied by other psychiatric disorders (Öztürk, Bektas, Ayar, Oztornacı, & Yagci, 2015). Adolescents are more exposed to the risk of addiction because the time spent on the Internet is the highest for them in comparison with any other age group.

As expected, the interest in Internet addiction has led to the development of scales assessing this disorder. The Internet Addiction Test (IAT - Young, 1998) seems to be the most frequently used scale for Internet Addiction, being validated in more than 28 studies in 17 different languages (Laconi et al., 2014). Recent research showed that Internet use explains 29.2% of the variance of Internet addiction and the associations between IAT with somatic health problems and number of hours slept are weak and comparable to those of Internet use, but the association with wellbeing is higher (Baggio, Iglesias, Berchtold, & Suris, 2016).

Internet addiction was associated with the Big Five personality traits (Cao & Su, 2006; Kayis et al., 2016; Mehroof & Griffiths, 2010; Öztürk et al., 2015), several studies showing that traits such as Consciousness and Openness could be protective factors, while Neuroticism could have a negative impact on the risk of addiction. Loneliness was also positively associated with Internet addiction (Ang, Chan, & Lee, 2018; Bardi & Brady, 2010) and lower self-esteem has been found to correlate significantly with Internet addiction (Yang & Tung, 2007).

3. Research Questions

The following research questions were formulated:

Are there associations between the personality traits, loneliness and the risk of Internet addiction?

Are there gender and academic specialization differences concerning Internet addiction and Loneliness?

4. Purpose of the Study

The current study explores the association between Romanian adolescents' Internet use and risk of addiction and the Big Five personality traits, self-esteem and loneliness. More specifically, we aim to test the mediating role of loneliness in the relationship between self-esteem, personality traits, time spent on Internet and Internet addiction. We also aim to highlight the existence of gender and academic specialization differences concerning Internet addiction and Loneliness.

5. Research Methods

5.1. Study design

This study used a cross-sectional, correlational design to examine the association between personality traits, self-esteem, loneliness, use of internet and internet addiction among Romanian high-school students.

5.2. Sample

The sample consisted of 227 high-school students: 118 boys and 108 girls, with a mean age of 16 years ($SD = 1.09$), from two different study programs, Science ($N = 102$) and Humanities ($N = 125$). The questionnaires were administered online, the participation being voluntary and unpaid. 225 students have a Smartphone with internet access and all of them had a PC or laptop connected to Internet at home.

5.3. Instruments

The following measures were used:

The Internet Addiction Test (Young, 1998) comprises 20 items rated in a five-point Likert scale (from 1 - not at all, to 5 - always) and it measures the extent of individual's problems due to the Internet use in daily routine, social life, productivity, sleeping patterns, and feelings. The Cronbach's Alpha coefficient is .82.

The International Personality Item Pool (IPIP – Rusu, Maricutoiu, Macsinga, Vîrgã, & Sava, 2012) consists of 50 items measuring the Big-Five personality factors (10 items per dimension): Extraversion (α = .80), Agreeableness (α = .73), Conscientiousness (α = .77), Emotional Stability (α = .82) and Openness to experience (α = .75), on a 5-point scale (1=very inaccurate to 5=very accurate).

The Loneliness Scale (Russell, Peplau, & Ferguson 1978) is s 20-item scale designed to measure one's subjective feelings of loneliness as well as feelings of social isolation. Participants rate each item as either O ("I often feel this way"), S ("I sometimes feel this way"), R ("I rarely feel this way"), N ("I never feel this way"). The Cronbach's Alpha coefficient is .90.

The Rosenberg Self Esteem Scale (Rosenberg, 1965) is a 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self. The scale is uni-dimensional. All items are answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree. The Cronbach's Alpha coefficient is .93.

A factual questionnaire measuring aspects regarding the use of Internet was also used. The questionnaire included questions such as: How many hours do you spend online at home/ online at school/ with for friends (face to face)/ with for friends on social networks?

6. Findings

Neuroticism and Conscientiousness were negatively related with internet addiction. The Pearson correlation coefficients were weak, but statistically significant. The other personality traits seemed to be unrelated with the Internet addiction (Table 01). A positive correlation between loneliness and Internet addiction and a negative association between self-esteem and Internet addiction were also found. As expected, low neurotic and high extraverted individuals had lower levels of Loneliness (the correlations being medium and negative). Loneliness correlated negatively also with Agreeableness, although the correlation is weak.

Table 01. Pearson correlation coefficients between Big Five personality traits and other variables

	Internet addiction	Self-esteem	Loneliness
Neuroticism	-.163*	-.002	-.475***
Extraversion	-.061	.251**	-.562***
Openness	-.059	.096	.013
Agreeableness	-.041	.010	-.169*
Conscientiousness	-.203**	.154*	.103
Internet addiction	1	-.165*	.207**

Note: $N = 227$, *** $p < .001$, ** $p < .01$, * $p < .05$

Gender and academic specialization differences concerning Internet addiction and Loneliness were also tested. The independent t tests did not reveal gender differences for the Internet addiction, but significant differences were found for Loneliness, girls having higher levels of Loneliness compared to boys. Internet addiction did not show different levels for students from different specialisation, while Humanities students had significantly higher levels of Loneliness (Table 02).

Table 02. Gender and academic specialization differences concerning Internet addiction and Loneliness

Variables	Groups	*M*	*SD*	*t*	*df*	*p*	*D Cohen*
Internet addiction	Girls	1.50	.62	1.44	225	.149	.19
	Boys	1.62	.58				
Loneliness	Girls	1.23	.54	2.77	225	.006	.37
	Boys	1.05	.41				
Internet addiction	Humanities	1.52	.62	-.99	225	.322	.13
	Science	1.60	.59				
Loneliness	Humanities	1.22	.50	2.49	225	.013	.33
	Science	1.06	.45				

The Pearson correlation coefficients were also computed to highlight if Internet addiction, loneliness and self-esteem were associated with the time spent online or spent with friend. We found only two weak, but statistically significant coefficients, showing that students at risk of addiction spent more time online at

home and on social networks (Table 04). Self-esteem and Loneliness were unrelated to the time spent online. Gender and academic specialisation regarding the time spent online were also not significant.

Table 03. Pearson correlation coefficients between Big Five personality traits and other variables

How many hours do you spend…	Internet addiction	Self-esteem	Loneliness
online at home?	.288**	.004	-.019
online at school?	.072	.057	-.111
with for friends (face to face)?	-.121	.080	-.030
with for friends on social networks?	.178**	-.040	.009

Note: $N = 227$, ** $p < .01$.

Our study also revealed the mediating role of loneliness in the relationship between self-esteem, personality traits, time spent on Internet and Internet addiction (Figure 01). The associations between personality traits, Loneliness, Time spent on Internet and Internet addiction led us to a more complex model: we tested a mediation model, using Conscientiousness, Neuroticism, Self-esteem and Time on Internet as exogenous variables, Loneliness as mediator and Internet addiction as dependent variable. The model had good fit indices (Kline, 2011) (Table 04).

Table 04. Pearson correlation coefficients between Big Five personality traits and other variables

	χ2/df	CFI	TLI	AIC	RMSEA
Model	1.53	.974	.935	39.696	.044

Note: *CFI:* Comparative Fit Index, *TLI:* Tucker-Lewis Index, *AIC:* Akaike Information Criterion, *RMSEA:* Root Mean Square Error of Approximation.
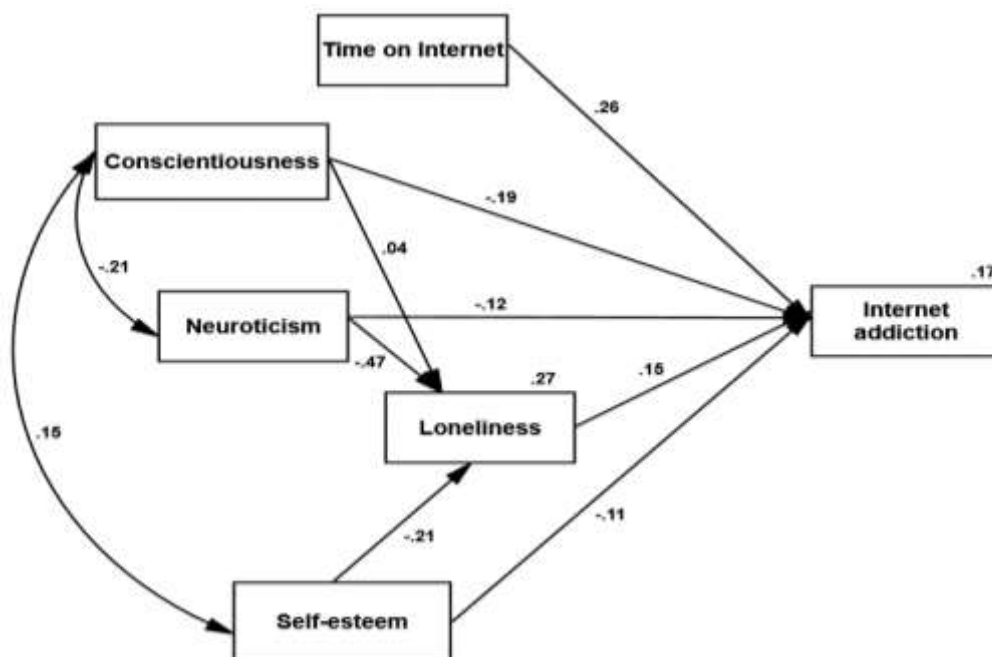

Figure 01. Path analysis for the prediction of Internet addiction

The path analysis showed that most of the direct effects were significant, while the indirect effects were not significant. Therefore, our last hypothesis was not fully confirmed (Table 05). Neuroticism had a strong negative effect on Loneliness, showing that high neurotic individuals tend to express more feelings of social isolation. The most powerful direct effects on Internet addiction was the positive effect of the Time spent on Internet at home. Conscientiousness had a negative effect and Loneliness had a positive direct effect. Thus, students who spend more time on Internet, are less conscientiousness and feels lonelier, are more exposed to the risk of addiction. The direct effect of Neuroticism on Internet addiction was not significant.

Table 05. Direct and indirect effects for the path model (standardized coefficients)

Effects	Loneliness	Internet addiction		
	Direct	direct	indirect	total
Conscientiousness	.04	-.19*	.01	-.18*
Neuroticism (Emotional stability)	-.47***	-.12	-.07	-.19
Self-esteem	-.21**	-.11	-.03	-.14*
Time on internet	-	.26**	-	.26**
Loneliness		.15*	-	.15*

Note: $N = 227$, *** $p < .001$, ** $p < .01$, * $p < .05$

6.1. Discussions

Our study showed that personality traits are associated with the Internet addiction, the results being convergent with recent research which highlighted that personality traits stand out as one of the most important factors of risk addiction (Öztürk et al., 2015). However, literature on this field showed conflicting results. Research has shown that internet use is positively correlated with extraversion, conscientiousness, and agreeableness, while there are negative correlations between internet use and neuroticism and openness to experience. The high need for communication of extroverts could be the reason of their more extensive use of Internet, while introverts use the internet to reduce the anxiety of being rejected (Mehroof & Griffiths, 2010; Samarein et al., 2013). Other studies showed that openness to experience predicts Internet addiction: individuals who are open to experience are curious, creative, independent and open-minded and these variables lead them to use the internet more (Ozturk et al., 2015). Our study showed that Conscientiousness and Neuroticism are the personality traits more linked to Internet addiction. Neurotic individuals tend to use Internet in an unhealthy way and at dependence level, Neuroticism being positively related with problematic internet use, as an indicator of Internet addiction (Cao & Su, 2006; Hardie & Tee, 2007). Conscientiousness was negatively related with internet addiction, the result confirming previous studies which showed that conscientiousness could be a protective factor against internet addiction (Kayis et al., 2016). Time spent online is another significant predictor of Internet addiction, but further research is needed in order to identify specific uses of the Internet which generated addiction (Gamito et al., 2016).

Loneliness was associated and predicted Internet addiction, confirming previous results. Studies showed that Loneliness was positively associated with Internet addiction (Ang, Chan, & Lee, 2018; Bardi

& Brady, 2010). High loneliness is associated with compulsive use of Internet, withdrawal, tolerance, time-management problems, and interpersonal and health problems (Li & Chung, 2006).

Surprisingly, our study did not reveal gender differences regarding Internet addiction or time spent online. Previous studies showed that boys are more dependent since they can freely access the Internet and since they are more knowledgeable about modern technologies (Li et al., 2010; Zamani, 2010). Some studies reported that the negative effects of Internet addiction are more severe in females than in males (Ko et al., 2014) and that the motivations for using the Internet are different for boys and girls (Liang et al., 2016).

One of the limitations of this study refers to the use of self-report measures, therefore it is possible that not all participants responded honestly. The generalizability of the findings is also limited, because of the high homogeneity of the sample limited only to high-school students. The present study was cross-sectional, therefore causality claims should be used with caution; future longitudinal and experimental studies would lead to a better understanding of the relationships between personality, loneliness and Internet addiction.

7. Conclusion

Although the present research highlighted significant associations between personality traits, loneliness, self-esteem and Internet addiction, future research is needed to expand the exploration of the connections between these issues. Other factors associated with Internet addiction that are not considered in this research such as problematic Internet use, types of activities online, depression, anxiety, may also lead to interesting results.

Internet addiction measures could be used in order to identify students at risk of becoming Internet addicted. Identifying risk and protective factors could be an essential aspect of intervention programs aiming to reduce the prevalence of internet addiction among adolescents. The results of the present research offers teachers and school psychologists ideas about modalities efficient for young adolescents to overcome feelings of loneliness in regard to Internet addiction.

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