

Relationship of Problematic Internet Use and Positive Orientation Indicators in Adolescents*

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This paper investigates a model connecting problematic Internet use (PIU) and positive orientation (i.e., life satisfaction, self-esteem, and optimism as its indicators) in an adolescent population. The sample included 1263 adolescents (59.5% girls; $M_{age} = 16.85$ [$SD = 1.01$] years), attending four grammar schools and six vocational schools in Vojvodina, Serbia. The following scales were used: the Problematic Internet use, Satisfaction with life, Optimism and Pessimism, and Rosenberg Self Esteem scale. The tested model indicates that the extracted variables are good predictors of PIU, with 20% of the total variance explained. Pessimism was the main individual variable to explain the PIU variance. Future research should investigate the effects of situational contexts on the connection between mental health factors and PIU.

Key words: adolescents, positive orientation, pessimism, problematic Internet use.

Highlights:

- Aim was to examine the model linking problematic Internet use (PIU) with positive orientation indicators.
- The tested model suggests that positive orientation and pessimism have a direct effect on PIU.
- Pessimism was the most effective predictor of PIU.

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The more Internet is becoming an intrinsic part of everyday life, the greater are the debates about its potential influence on human behaviour. One such dispute has arisen over the positive/negative impact of the Internet on social interactions (Cheng & Li, 2014; Kuss et al., 2014; Lee, 2009), while the other has arisen over the possibility that the overuse of Internet services might affect the development of creativity, imagination, and sensory development (e.g., Cerniglia et al., 2017). An important issue that has also caused disagreements is the occurrence of *problematic Internet use*.

Problematic Internet use (PIU)⁶ will be used herein as the most acceptable term for a wide range of addictive and compulsive behaviours manifested via the Internet. In general PIU is characterised as “being overly concerned about online activities, driven by an uncontrollable motivation to perform the behavior, and devoting so much time and effort to it that it impairs other important life areas” (Andreassen et al., 2016, p. 252). Similar criteria are applied to the gambling disorder and video gaming, and they are classified under the three main characteristics: a) impaired control over activity, occurrence of tolerance, and withdrawal symptoms; b) increasing priority given to activity over other activities, and c) continuation of activity despite the negative consequences or unsuccessful attempts at controlling the behaviour (e.g., Andreassen et al., 2016; Kuss et al., 2014).

Despite a number of clinical cases whose symptoms correspond to these criteria, there remain numerous dilemmas with regard to its classification into official diagnostic manuals. There has been doubt that functional impairment due to PIU has not been conclusively proven yet, and that Internet use should be viewed as a coping mechanism rather than a unique disorder. Such analysis of video gaming may be found in van Rooij et al. (2018) and Rumpf et al. (2018). Regardless of the existing dilemmas, what is indisputable is that Internet use can become problematic/dysfunctional if online activities become compulsive or interfere with normal daily activities (professional and social relations and duties) and if a person can no longer control their own use (Caplan, 2002; Kim & Davis, 2009; Widyanto & Griffiths, 2006).

PIU in Adolescents

The said issues may be one of the reasons why the data on the prevalence of “Internet addiction” or “Internet use disorder” in Europe range from 1% to 11% in adolescents (Kuss et al., 2014; Durkee et al., 2012). Adolescents are at the highest risk in the context of developing PIU or performing a certain form of online risky behaviours (Lam, 2014; Hinić, 2014). This population has less capacity to exert self-control and is more prone to take different online risks and misuse online contents and activities (Lau & Yuen, 2013). In the literature of adolescent populations, the most frequently cited problems of PIU are as

6 Due to the problem of defining the phenomenon, as well as the fact that different terms are used (Internet addiction, Internet use disorder, excessive Internet use, dysfunctional Internet use, etc), we will use the original terms of the authors when citing their studies.

follows: loss of Internet use control, distress, withdrawal symptoms, conflicts with caregivers about Internet use, negative feelings derived from Internet inaccessibility, poor school achievement, social isolation, and fatigue (Cerniglia et al., 2017; Munno et al., 2017).

Findings suggest that pleasure and reward (i.e., gratification) and escapism (i.e., coping motive) are the most significant motives associated with PIU (Kim & Haridakis, 2009). According to the *cognitive-behavioral model of pathological Internet use* (Davis, 2001), a ruminative cognitive style, low self-worth, a depressogenic cognitive style (i.e., a tendency to draw negative inferences about oneself in response to stressful events), low self-esteem, and social anxiety can lead to PIU. Underlying psychopathology does not itself result in PIU, but it should be present when PIU symptoms occur (Davis, 2001). Namely, the basis for the development of PIU is created when some form of psychopathology is accompanied by dysfunctional online behaviours, such as dysfunctional relationships and the use of the Internet as a way of escaping from psychological problems (Caplan, 2002).

Positive Orientation

Contrary to the negative cognitive styles and traits abovementioned, life satisfaction, self-esteem and optimism appear to have a substantial positive correlation with various indicators of psychological well-being (Carver & Scheier 2002; Diener et al., 2002). Optimistic attitudes towards the future, good coping strategies, high self-esteem, and good capacity of resilience are considered to be protective factors in various risky behaviours of adolescents, such as alcohol abuse (Richa et al., 2012) and teen depression (Ames et al., 2015). Moreover, a low level of the mentioned parameters (for instance pessimistic attitude or lower self-esteem) predicts greater psychosocial problems (Ehrenberg et al., 2008; Taylor et al., 2000) and represents potential risk factors for the development of further psychological problems and distress.

Since life satisfaction, self-esteem, and optimism significantly correlate with one another (Diener & Diener, 1995; Schimmack & Diener, 2003), they can be found in the literature under the umbrella term of *positive orientation*, defined as an individual propensity to positively evaluate different life domains, including oneself, one's future and past experiences (Caprara & Steca, 2005). Although early reports on correlation between psychological well-being, self-esteem, and Internet use were heterogeneous, some recent findings have shown that lower positive orientation may be related to PIU and Facebook use (Błachnio et al., 2016).

A meta-analysis of studies within this topic pointed to *mainly* a "small detrimental effect of increased Internet use on psychological well-being" (Huang, 2010, p. 244). More recent studies found a negative correlation between *life satisfaction* (i.e., cognitive component of psychological well-being) and compulsive Internet use (Meerkerk et al., 2010), as well as between

life satisfaction and the time spent online (Stepanikova et al., 2010). In addition, one study found that about 13% of the PIU variance could be explained by positive and negative affect, life satisfaction and self-esteem (Senol-Durak & Durak, 2011). The prevalence of PIU has been inversely associated with life satisfaction and indicators of the quality of environmental conditions (Cheng & Li 2014).

With further development of online social networks, research on such online behaviours has intensified recently (Błachnio et al., 2016; Satici & Uysal, 2015; Griffiths et al., 2014), with initial results showing life satisfaction, subjective vitality and happiness to be significant negative predictors of problematic Facebook use. In a more recent meta-analysis, a positive correlation of problematic Facebook use was found with depression, anxiety, and psychological distress, and a negative one with well-being and life satisfaction (Marino et al., 2018).

Self-esteem is defined as one's overall sense of personal worth, a positive or negative orientation towards oneself (Diener & Diener 1995; Schmitt & Allik, 2005). Self-esteem has frequently been related to Internet use and PIU, and, similarly to life satisfaction, it was mainly shown to be a predictive variable for PIU (Kim & Davis, 2009; Senol-Durak & Durak, 2011). Mesch (2006) reported low and mainly negative correlations between self-esteem and frequency of social/non-social Internet use in adolescents. Wilson, Fornasier, and White (2010) showed that self-esteem factors significantly predicted the level of social network sites use, but failed to explain a large amount of its variance. The Editorial of a thematic issue of the journal *Cyber Psychology and Behavior*, dedicated to the role of self-esteem in the development of PIU, presented the results of studies conducted in different parts of the world (i.e., the Great Britain, Taiwan, China, Turkey, and Iran) and found connections between low self-esteem and PIU (Wiederhold, 2016). Studies also indicate that individuals who start to use the Internet at younger ages exhibit an increased risk for general "Internet addiction", and that the age of engaging into gaming and global self-esteem are directly linked to Internet gaming disorder (Beard et al., 2017).

Optimism and pessimism are regarded as general expectations of positive or negative outcomes of present and future actions, as well as optimistic or pessimistic interpretations of preceding events, which represent relatively separate and stable personality dimensions (Scheier & Carver, 1992). Relations between optimism/pessimism and different aspects of psychophysical health and psychological well-being have already been reported (Scheier & Carver, 1992; Chang et al., 1997; Taylor et al., 2000; Augusto-Landa et al., 2011). However, optimism and pessimism have rarely been associated with Internet use. Even when this association was made, it only included subcategories of Big-Five dimensions and usually referred to general Internet use (Landers & Lounsbury, 2006). In a study with a university student sample, optimism showed a low

negative correlation with global Internet use (Orosova et al., 2014). Upon closer inspection of similar studies (cf. Mark & Ganzach, 2014), pessimism was also connected with increased Internet use via the Neuroticism construct, especially with certain forms of online social interaction.

In accordance with the stated findings, as well as the cognitive-behavioural model of PIU (Davis, 2001), whereby negative cognitive styles and states predict PIU, we assume that positive orientation, i.e., its indicators, will be negative predictors of PIU. Since this is a correlational study, we have set up following aims to examine a model linking PIU and positive orientation and to test the association of sociodemographic variables with PIU and positive orientation indicators in an adolescent sample through structural equation modeling (SEM).

Method

Procedure and Sample

The study was conducted during 2016/2017 as part of the project entitled *Research into young people's mental health in the Autonomous Province of Vojvodina – state of affairs and perspectives* (Zotović & Beara, 2016). The research was carried out by the “Know How Centre” in Novi Sad and was supported by the *Vojvodina Provincial Secretariat for Sports and Youth, Serbia*, according to the guidelines of Ethical Committee, University of Novi Sad. At first, we used stratified sampling and included ten secondary schools (four grammar and six vocational schools) in the territory of Bačka, Banat and Srem, and ensured that both cities/bigger towns (Novi Sad, Subotica, Sombor, Kikinda, S. Mitrovica) and smaller towns/villages (Novi Kneževac, Srpska Crnja) were included. Apart from Novi Sad, being the largest city in the Province and its capital, other towns/villages were selected randomly.

Heads of schools, teachers and students were informed about the study aims and methods. Upon obtaining informed consent forms, a research coordinator randomly chose two classes from the register of second, third and fourth grade classes in a school (students from 16 to 18 years old). The study was conducted by coordinators during classes with no teachers present. The students anonymously filled the instruments, after which the sealed envelopes were sent to the researchers to further ensure anonymity. All procedures performed in the study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Out of the total of 1295 participants, a certain number of questionnaires were not fully completed, thus the final sample consisted of 1263 adolescents (40.5% boys, 59.5% girls), with an average age of $M = 16.85$, $SD = 1.01$. The sample included 45% of grammar school students and 55% of vocational school students. Slightly over half of the participants (59%) stated that they use the Internet less than five hours a week, 21.9% that they use it from five to ten hours, 8.4% from ten to fifteen hours, whereas 10.7% stated that they use it for more than fifteen hours⁷. Other important demographic data have been presented in Table 1.

7 More detailed information on Internet use behaviour, such as preferable contents, parental control and relation to school achievement are presented elsewhere (Zotović, Beara, & Erdeš-Kavečan, 2017; Zotović & Beara, 2016).

Table 1
Demographic characteristics of the sample

Locality	%	Grade	%	Average overall marks	%	Economic status	%	Household members	%
village	32.5	II	44.5	satisfactory	1.0	poor	3.8	both parents	77.9
smaller town	11.2	III	9.3	good	13.8	medium	34.5	mother only	14.6
town	25.3	IV	46.2	very good	40.4	good	44.8	father only	4.3
city	31.0			excellent	44.8	excellent	16.8	other	3.2

With the aim of performing the planned statistical analyses (testing the initial model, and its further validation on the second subsample), we divided the sample into two subsamples, with an even number of participants according to sex ($\chi^2(1) = .001, p = .97$), age ($\chi^2(3) = 1.64, p = .65$), locality ($\chi^2(3) = 2.67, p = .44$), school type ($\chi^2(1) = 2.24, p = .15$), economic status ($\chi^2(4) = 1.16, p = .88$), overall marks ($\chi^2(3) = .64, p = .88$), and the average number of hours spent online ($t(1236) = -.13, p = .89$).

Instruments

The following instruments were used in the study:

Satisfaction with Life Scale (SWSL). The SWSL is a short five-item scale most frequently used as a measure of global life satisfaction (Diener et al., 1985; Rakić-Bajić, 2016). It generally assesses the cognitive component of subjective well-being. The participants provide their answers on a seven-point Likert scale. The total score is the sum of item scores, whereby higher scores speak in favour of a greater level of subjective life satisfaction. The scale had satisfactory psychometric properties in the original sample (Diener et al., 1985), with the internal consistency $\alpha = .87$ and test–retest correlation $r = .82$.

Apart from the global life satisfaction, according to a bottom-up model of subjective well-being, satisfaction with specific domains of life should also be explored (Feist et al., 1995), which is the reason why our questionnaire had additional items dealing with specific aspects of life significant to adolescents, such as satisfaction with health, physical appearance, school, or friends (e.g., “How satisfied are you with your physical appearance?”).

Rosenberg Self Esteem Scale (RSE). The RSE is an instrument for assessing self-worth and people’s general feelings towards themselves (Rosenberg, 1965). Nowadays, it is one of the most frequently used instruments for the assessment of global self-evaluation of self-esteem as a one-dimensional construct, adapted into different cultures and populations (Schmitt & Allik, 2005). It consists of ten items, five of which positively oriented (e.g., “I feel that I’m a person of worth, at least on an equal plane with others”), and five negatively oriented (e.g., “I certainly feel useless at times”). The items are answered on a four-point scale, ranging from 1 = *strongly disagree* to 4 = *strongly agree*. High scores represent indicators of a high level of self-esteem. Studies in Serbia and abroad conducted on a great number of diverse samples confirmed good validity and reality of the scale with Cronbach’s alphas ranging from $\alpha = .81$ to $.84$ (Lacković-Grgin, 1994; Jovanović, 2010).

Optimism and Pessimism Scale (OP). The OP scale measures general tendencies towards expectations of positive or negative outcomes of one’s activities, and its Croatian version (Penezić, 2002) was used in this study. The OP scale consists of fourteen items (six of which assess optimism and eight pessimism), with five-point scales, ranging from 1 = *I completely disagree* to 5 = *I completely agree*. The total score of these two subscales is a sum of scores on certain items (from 6 to 30 points for optimism, and from 8 to 40 points for pessimism). The data gathered on the adult Croatian population have shown that the scales have

high reliability coefficients, for pessimism $\alpha = .83$, optimism $\alpha = .78$ (Penezić, 2002). The scores on the optimism scale were reported to be in a high positive correlation with scores on self-esteem and life satisfaction scales in younger participants – aged 18–25 (Chang et al., 1997).

Problematic Internet use scale (PIU). The PIU scale is an instrument that measures one's inability to control Internet use, preoccupation with it, as well as potential social consequences of such behaviour (Hinić, 2012). It consists of eighteen items to which participants express their level of agreement, with values ranging from 1 = *not at all* to 5 = *completely*. The scale showed good internal consistency ($\alpha = .94$), as well as good discriminative ability with 89.6% of the participants correctly classified in the original sample (Hinić, 2012). The participants were not classified into categories according to the score on this scale because the scale was not accompanied by a complete clinical (diagnostic) interview. A higher score on the scale was rather interpreted as an indicator of a greater tendency to problematic Internet use.

All scales showed good internal consistency in the present study (cf. Table 2).

Statistical Analyses

Descriptive analysis, the normality of distribution and reliability analyses were performed in the SPSS version 21. Differences in scores were computed with independent *t*-test and one-way analysis of variance (ANOVA), while the Pearson's coefficient was used for estimating correlations. The relations between extracted predictors (observed) variables and PIU were tested through SEM in Amos 18. For the purposes of model fitting, the following coefficients were used: comparative fit index (CFI) $> .95$, goodness-of-fit (GFI) $> .95$, a root mean-square error of approximation (RMSEA) and standard root mean-square residual (SRMR). Cutoff levels for RMSEA and SRMR were $< .06$ for "good fit", and $< .08$ for "acceptable fit" (Hu & Bentler, 1999).

Results

The scores on life satisfaction, self-esteem and optimism scales tended to cluster towards the upper end of the scales, while PIU and pessimism clustered towards lower (cf. Table 2). Due to the sample size and the fact that such distributions may be expected according to the characteristics and the type of the scales used in this study, we used parametric methods thereof.

Table 2
Descriptive statistics

	<i>Min–Max</i>	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>Shapiro-Wilk</i>	α
Life satisfaction	5–35	24.05	6.331	-.48	-.21	.97**	.84
PIU	18–83	35.06	12.116	.86	.57	.94**	.89
Self-esteem	11–50	40.08	6.701	-.87	.92	.95**	.82
Optimism	6–30	22.39	4.674	-.82	.86	.95**	.81
Pessimism	8–40	20.61	7.246	.18	-.58	.98**	.87

Note. ** $p < .01$; α = Cronbach's alpha.

Average overall marks, financial situation, satisfaction with school, physical appearance, health and the relationship, were weakly or moderately correlated with the main variables (Table 3). The number of hours spent online was in a moderate positive correlation with PIU.

Table 3

Demographic variables correlations with positive orientation indicators and PIU

	Self-esteem	Life satisfaction	Optimism	Pessimism	PIU
Number of hours online	-.04	-.06*	-.02	.03	.34**
Financial situation	.16**	.41**	.11**	-.07*	-.04
Average overall mark	.07*	.07*	.05	-.10**	-.04
Satisfaction with school	.14**	.20**	.12**	-.12**	-.16**
Satisfaction with health	.24**	.27**	.16**	-.21**	-.17**
Satisfaction with appearance	.46**	.37**	.21**	-.24**	-.17**
Satisfaction with the relationship	.15**	.18**	.03	-.14**	-.10*

Note. * $p < .05$; ** $p < .01$.

PIU and Correlations with Positive Orientation Indicators

We have calculated the intercorrelation matrix between the positive orientation indicators and PIU (Table 4). Out of the selected variables, only *pessimism* and *self-esteem* had moderate correlations with PIU.

Table 4

Intercorrelations matrix of PIU and Positive Orientation Indicators (Pearson Correlations)

	Optimism	Pessimism	Life satisfaction	PIU
Self-esteem	.39 **	-.49**	.48**	-.30**
Optimism		-.37**	.38**	-.11**
Pessimism	-.37**		-.31**	.33**
Life satisfaction	.38**	-.31**		-.29**

Note. ** $p < .01$.

On the grounds of theoretical assumptions and studies outlined in the Introduction, we tested an initial structural model according to which positive orientation and pessimism were hypothesised to predict PIU directly⁸. Based on the theoretical framework adopted in this paper, whereby optimism and pessimism are treated as separate personality dimensions (Scheier & Carver, 1992), the covariation of pessimism with optimism and positive orientation was also included in the model. Finally, with the aim of investigating a potential indirect effect of other tested variables according to the obtained correlations with the main predictor variables and criterion variable (Table 3), the relations between satisfaction with appearance and self-esteem, and satisfaction with appearance and life satisfaction, were included in the initial model (Figure 1). The reason for this was the fact that satisfaction with appearance was the only variable with a moderate correlation with some of the predictor variables, along with a correlation with the criterion variable PIU.

8 Because certain measures were skewed, ML estimation with robust standard errors was used to account for potential multivariate nonnormality, as recommended in such cases (Curran et al., 1996; West et al., 1995).

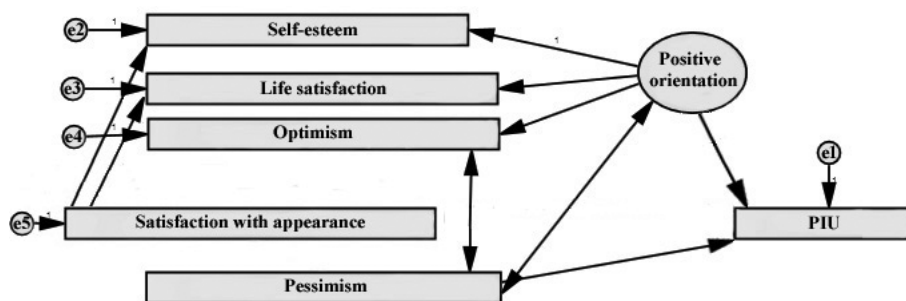


Figure 1. The initial model of PIU prediction through Positive orientation indicators.

Table 5
Model fit indices

	χ^2	df	p	GFI	CFI	RMSEA	SRMR
initial model	24.80	5	.00	.96	.89	.15	.09
modified model	9.23	3	.03	.99	.99	.06	.02
final model	13.80	3	.00	.99	.98	.08	.02

Note. GFI = goodness of fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standard root mean-square residual.

As presented in Table 5, most of fit indices are satisfactory; thus, the model may be said to fit the data adequately. In line with the significance of regression weights and modification indices values, the model was partly modified to include residual covariances of optimism with life satisfaction and satisfaction with appearance. Likewise, the link between pessimism and satisfaction with appearance was also incorporated into the model. This *modified model* with good fit indices shows that positive orientation (PO) and pessimism produced a direct effect on PIU, and explained 11% of the total variance (Table 5 & Figure 2).

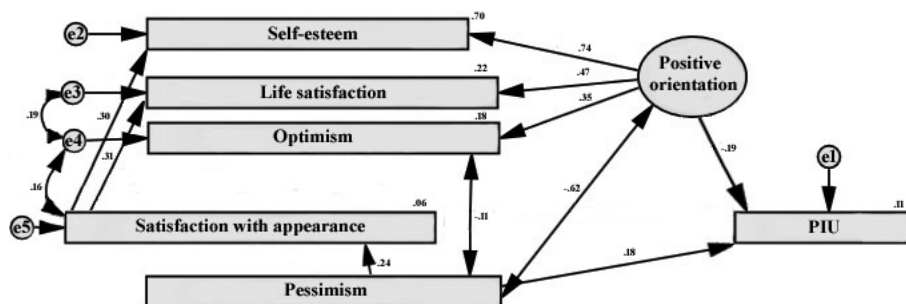


Figure 2. Modified model of PIU prediction through Positive orientation indicators.

In the subsequent step, we tested whether the obtained model may be confirmed in the second half of the sample. The results indicated that this model explained 20% of the total variance, with no additional changes in the relations between the variables included (Table 5; Figure 3).

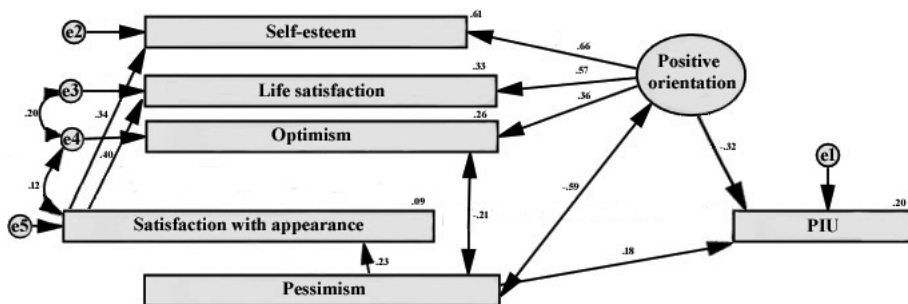


Figure 3. Final model of PIU prediction through Positive orientation indicators.

Discussion

According to the most recent data, the percentage of Serbian households using the Internet on a daily basis is 86% (Statistical Office of the Republic of Serbia, 2016), while in 2006 it was a quarter of the inhabitants (Statistical Office of the Republic of Serbia, 2006). Computers, Internet, and mobile phones are being more and more used, with the lower age limit of daily use being constantly reduced to yet younger and younger ages (Statistical Office of the Republic of Serbia, 2016). With regard to Internet use, children and adolescents in Serbia do not significantly differ from their peers in the European Union or Croatia (Popadić & Kuzmanović, 2013), which may imply a global tendency for changing the means of communication and forms of social interactions.

The proposed models suggest that positive orientation and pessimism exert a direct effect on levels of PIU, while the impact of satisfaction with appearance is indirect, through its effect on self-esteem and life satisfaction. In the final model, pessimism also reveals a direct effect on satisfaction with appearance. With regard to the chosen variables, the strongest correlation (although still moderate in intensity) was found between PIU and pessimism, which was singled out as the best individual predictor. Somewhat lower negative correlations were registered between PIU and the indicators of positive orientation.

Pessimists, in contrast to optimists, have higher expectation of negative outcomes and assign permanent and internal causes to negative events (Seligman, 2008). Furthermore, pessimism is positively related to depressive symptoms and hopelessness in adolescents (Piña-Watson & Abraido-Lanza, 2017), which is also connected with greater passivity, a low level of motivation and insecurity in behaviour (Chiesi et al., 2013). Since pessimism has a significant correlation

with self-acceptance and self-esteem, its contribution is reflected in a more negative attitude to oneself, reduced motivation for achieving the set goals and a more limited experience of one's competence (Rakić-Bajić, 2016). Individuals with high pessimism and low self-esteem are fairly likely to retreat into the comfort zone of communication and interaction that online communication and activities provide, particularly when they have to face potential disapprovals of their environment. Online interaction, in contrast to face-to-face communication, may be "asynchronous" and as such may be delayed for days (Hinić, 2014). This delay enables an individual to adjust their own online self-presentation, which leads to so-called *hyperpersonal effects*, such as an idealised impression of somebody (Walther, 2007). This is why people with social anxiety and fear of a negative social evaluation often use online communication to get a *greater sense of control* (Bernal-Ruiz et al., 2017). People with pessimistic views about the outcomes of their actions may as well regard the Internet itself as an environment where they have more control over their activities and consequently outcomes. The negative correlation between PIU and pessimism/self-esteem found in our study is hence expected.

Internet users tend to become more relaxed when they feel safety in online communication, so that they may express their opinions more easily than in reality (Suler, 2004). Outside online communication, one cannot so easily express their opinions for fear of criticism or social condemnation and rejection, and this is especially important for people with low self-esteem (Andreassen et al., 2017). In relation to this, there are findings implying that people with low self-esteem tend to use social networks in order to expand their social environment and compensate for their low self-esteem (Lee et al., 2012).

Since the Internet enables anonymity, adolescents may use it for trying out different identities and new forms of behaviour, without fear of social condemnation and consequences (Hinić, 2014). This is particularly significant to adolescents who *compare themselves with others negatively* or are *dissatisfied* with their own *physical appearance*. For instance, body dissatisfaction was found to be a predictive factor for intensive use of new technology (Rodgers et al., 2013). In cyberspace, in which individuals feel safe or at least isolated from the public eye, people make up their mind more readily to do something that normally disturbs or attracts them (Hinić, 2014). This diminishing of personal responsibility, which cyberspace assumes, causes a series of psychological and behavioural effects: freeing oneself from conventional norms of social interaction, greater spontaneity in communication and representation in front of others (Golčevski, 2004).

Satisfaction with physical appearance in the current study has been significantly related to pessimism, life satisfaction and self-esteem, which is an example of just one factor that is important in adolescence and may be relevant to online behaviour as well. These results accord with those of Tiggemann (2005), who found that body satisfaction predicted declines in self-esteem on a sample of girls in late adolescence. Moreover, self-handicapping and defensive pessimism are negatively predicted by competence valuation and

physical self-concept (Ntoumanis et al., 2010). It is not thus surprising that adolescents who are *weight pessimists* are at the greatest risk of depressive symptoms (Frisco et al., 2010). However, they are also more likely to be more open to Internet communication where physical appearance does not necessarily play an important part.

This study has some limitations. The first limitation comes from the administration of self-evaluation instruments. Second, since this is a cross-sectional study, drawing conclusions in relation to causality was not possible. Third, there may be the influence of other variables, which were not included in the model, in particular psychopathology. Finally, although theoretical underpinings and expectations were considered to some extent, the proposed models in the study and the relationships between variables were predominantly based on the authors views of the problems, thus needing further explorations and replications.

Conclusion

The tested models suggest that positive orientation and pessimism exert a direct effect on PIU with 20% of the PIU variance explained. The current study suggests there are grounds for counselling, with regard to dissuading young people from the pessimistic explanatory style, teaching them about its drawbacks and situations in which it is better to be defensively pessimistic. However, the contribution of pessimistic and optimistic attributional styles in preserving mental health has been found to differ depending on the situational context (Seligman, 2006). Consequently, future research should investigate effects of different situational contexts and life circumstances on the connection between protective/risk factors and problematic Internet use.

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Povezanost problematične upotrebe Interneta i indikatora pozitivne orijentacije kod adolescenata

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U ovom radu se ispituje model koji povezuje problematičnu upotrebu Interneta (PUI) i pozitivnu orijentaciju (tj. njene indikatore: zadovoljstvo životom, samopoštovanje i optimizam) u populaciji adolescenata. Uzorak su činila 1263 adolescenta (59.5% devojaka; $M_{\text{starost}} = 16.85$ [$SD = 1.01$] godina), iz četiri gimnazije i šest srednjih stručnih škola u Vojvodini, Srbija. Korišćene su sledeće skale: Skala problematčne upotrebe Interneta, Skala zadovoljstva životom, Skala optimizma i pesimizma i Rozenbergova skala samopoštovanja. Ispitivani model ukazuje da su ekstrahovane varijable dobri prediktori problematične upotrebe Interneta i da objašnjavaju 20% ukupne varijanse. Pesimizam se pokazao najboljim pojedinačnim prediktorom problematične upotrebe interneta (sa najvišim parcijalnim doprinosom u objašnjenju varijanse problematične upotrebe Interneta u odnosu na druge prediktore u testiranom modelu, prim. prev.). U budućim istraživanjima treba ispitati efekte situacionog konteksta na povezanost faktora mentalnog zdravlja i problematične upotrebe Interneta.

Ključne reči: adolescenti, pozitivna orijentacija, pesimizam, problematična upotreba Interneta

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