

RESEARCH ARTICLE

Personality Traits, Self-Esteem, Life Satisfaction and Problematic Social Media Use Among Young Adults

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The aim of this study was to examine the relationship between personality traits, self-esteem, life satisfaction, and problematic social media use (PSMU) among young adults. The research was conducted among 616 young adults (70.3% females, 22.8±3.8 years). The measures used were the Bergen Social Media Addiction Scale, Self-Liking/Self-Competence Scale, Personal Wellbeing Index, International Personality Item Pool short version, and Social Media Use scale. 94% of participants used social media for more than an hour on average daily. The estimated prevalence of PSMU was 1.6%. PSMU was positively correlated with gender and neuroticism, and negatively with age, extraversion, conscientiousness, intellect, self-liking, self-competence, and life satisfaction. Younger age, female gender, higher neuroticism, and lower personal well-being were significant predictors of PSMU.

Keywords: problematic social media use, personality traits, self-esteem, self-liking, self-confidence

The rapid development of technology has enabled the growth of social media networks. Carr and Hayes (2015, p. 50) define social media as "Internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others." There are currently more than 4.6 billion social media users around the world (Kemp, 2022). There is also an abundance of popular social networking sites, like Facebook, Instagram, TikTok, and Twitter. Facebook seems to be the most widely

used social media, utilized by approximately 30% of the world's population (Dixon, 2023), while TikTok is especially popular among adolescents (Vogels et al., 2022). The advancements in technology and the wide availability of social media networks on different platforms (e.g., smartphones or computers) contributed to the overall time spent using social media (Andreassen & Pallesen, 2014). Typical users spend, on average, two and a half hours per day on social media (Kemp, 2022). This can have positive effects, like facilitating social interactions, obtaining information, and providing opportunities to share ideas with large audiences (Siddiqui & Singh, 2016), but there are also negative sides, one of which is problematic social media use.

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Problematic Social Media Use

Until today, there is no consensus regarding the definition of problematic social media use (PSMU)

due to conceptual confusion (Bányai et al., 2017), lack of consistency underlying the broader concept of PSMU (Casale & Banchi, 2020), and inconsistencies in empirical studies (Chang et al., 2022). However, researchers have characterized PSMU by using components that are relevant to all addictions (Bányai et al., 2017) and/or by using criteria parallel to the DSM-5 pathological gambling and substance abuse criteria (American Psychiatric Association, 2013). Researchers have characterized PSMU as a behavioural addiction, defined by the core factors of behavioural addictions (Andreassen & Pallesen, 2014; Chamberlain et al., 2016): inability to control the use, functional impairment, and continuing involvement in the behaviour despite its negative impacts on other social activities or interpersonal relationships, and overall well-being. Furthermore, one can experience negative feelings and psychological symptoms such as anxiety and irritability when social media use is restricted, and relapse after prolonged abstinence (Dell'Osso et al., 2021). Previous research has linked PSMU with mental health issues (e.g., Malaeb et al., 2021; Meshi & Ellithorpe, 2021) and lower well-being (e.g., Boer et al., 2020; Twenge et al., 2018).

The research on the prevalence of PSMU is still scarce. Results vary depending on the study sample, definitions, and measures of PSMU used, but also the social media network examined. Furthermore, the year of publication of the study is important since social media use is on the constant rise (Shannon et al., 2022), mostly because of the widespread use of smartphones (Vogels et al., 2022). Most studies are conducted on convenient samples and are considering specific social networks, like Facebook or Instagram. For example, the prevalence of problematic Facebook use varies between 2% and 10% among adolescents and young adults worldwide (Marino et al., 2018). Studies conducted on a nationally representative sample also point to a wide range of results. For example, Reer et al. (2020) found the prevalence of PSMU to be 2.6%, Luo et al. (2021) 3.5%, Banyai et al. (2017) 4.5%, Mérelle et al. (2017) 9.1%, and Shensa et al. (2017) 14%. These studies suggest that PSMU affects a significant proportion of people. More research is needed to determine the

extent of the problem in various populations, as well as the underlying factors of PSMU. We are not aware of any previous studies on the prevalence of PSMU in Croatia.

Many people use social media extensively, and some of them are problematic, but the question remains: Which characteristics are prominent in people more susceptible to PSMU? Different approaches tried to explain this phenomenon, the most comprehensive being based on the biopsychosocial model of addiction (Griffiths, 2005), which suggests that addiction is a result of the combination of biological, social, and psychological factors (Cataldo et al., 2021); with the following symptoms: tolerance, salience, mood modification, withdrawal, conflict, and relapse (Griffiths, 2005). Cataldo et al. (2021) state that, in accordance with a biopsychosocial framework, PSMU involves a set of alterations which affect biological functions (i.e., circadian rhythm, neurotransmitters regulation), cognitive, psychological, and affective mechanisms (i.e., salience, attention, anxiety, mood fluctuation), and social aspects (i.e., popularity, social desirability, conflicts), resulting in a decreased perceived quality of life. Dailey et al. (2020) found that biological (age), social (gender, the intensity of use, social comparison, and need for social media), and psychological factors (stress, depression, conscientiousness, and empathic concern) explain over 50% of the variance in PSMU. Research has consistently shown that younger people and females seem to be more likely to engage in intensive social media use (Kircaburun et al., 2020a; Stănculescu & Griffiths, 2022; Zhang et al., 2022). Age was found to be negatively related to PSMU in many studies (e.g., Barbar et al., 2021; Islam et al., 2021; van Duin et al., 2021; Wartberg et al., 2020), suggesting that PSMU is more prevalent among youth. The relationship between PSMU and gender is not very clear. Some studies indicate that men may exhibit higher levels of problematic social media use (PSMU) (e.g., Alnjadat et al., 2019; Çam & Isbulan, 2021; van Duin et al., 2021), while others suggest that PSMU is more prevalent among women (e.g., Andreassen et al. 2017; Ma, 2022; Demircioğlu & Köse, 2021; Su et al., 2020). Therefore, this relationship needs to be further

explored.

Personality Traits and PSMU

Personality is theorized in different ways, resulting in the large number of personality theories and constructs. In this research, we focus on the widely accepted conventional approach to personality—the Big Five model, which consists of five personality structures —neuroticism, extraversion, intellect (openness to experience), agreeableness, and conscientiousness (McCrae & Costa, 2003). Previous studies examining personality and PSMU showed a positive correlation between neuroticism and PSMU (e.g., Gugushvili et al., 2022; Kavčić et al., 2019; Kircaburun et al., 2020a; Marino et al., 2016). Individuals with high trait neuroticism tend to be impulsive and perceive life negatively (McCrae & John, 1992), have low levels of perceived social support (Pocnet et al., 2016), and are likely to use the Internet to avoid loneliness (Abdellaoui et al., 2019). This can result in high engagement with social media (Kircaburun et al., 2020b), making them more vulnerable to PSMU. A negative correlation was found between conscientiousness and PSMU (e.g., Ahmed et al., 2022; Kavčić et al., 2019), and agreeableness and PSMU (Ahmed et al., 2022; Stead & Bibby, 2017). More conscientious individuals seem to be less likely to use the Internet for unproductive activities (Stodt et al., 2016), while high agreeableness was related to less intention to use social media (Alan & Kabadayi, 2016). The relationship between extraversion and PSMU (Randler et al., 2012; Blackwell et al., 2017) and intellect and PSMU is not so clear (Andreassen et al., 2013; Giotas & Kleftras, 2013; Kircaburun et al., 2020a; Randler et al., 2014; Stead & Bibby, 2017). Extraversion was in some studies found to be positively correlated with PSMU (Andreassen et al., 2012; Balcerowska et al., 2020; Blackwell et al., 2017), but other studies suggest the opposite (e.g., Erdle et al., 2009; Kircaburun et al., 2020a). Some findings indicate that more open people are attracted to online activities to seek out new experiences and satisfy their curiosity, which is conducive to Internet addiction (Rachubińska et al., 2021), while others suggest that low levels of openness predict

problematic Internet use (Alonso & Romero, 2020).

To summarize, the results of previous research showed that PSMU has a positive relationship with neuroticism and a negative with agreeableness and conscientiousness, while there is an inconclusiveness in the previous research findings on the relationship of PSMU with extraversion/introversion and intellect. The inconclusive nature of the previous findings in the relationship between personality traits and PSMU could be attributed to the fact that some studies have focused on specific social networks, with Facebook being the most frequently examined (e.g., Andreassen et al., 2012, 2013; Marino et al., 2016), while others have studied multiple platforms (e.g., Ahmed et al., 2022; Giotas & Kleftras, 2013; Stead & Bibby, 2017). In this research, we aim to further explore the relationship between PSMU and Big Five personality traits to add to the existing literature in this field using an inclusive approach, i.e., focusing on social networks in general and not on specific social media networks.

Self-Esteem and Problematic Social Media Use

Self-esteem is defined as a positive or negative attitude towards oneself (Rosenberg, 1965), and is a combination of self-liking (self-worth and self-value) and self-competence (seeing oneself successful, competent, and skilful in achieving goals; Kircaburun & Griffiths, 2018). Previous studies have found a negative correlation between PSMU and self-esteem in general (Andreassen et al., 2017; Bányaí et al., 2017; Malik & Khan, 2015), as well as with self-confidence and self-liking (Kircaburun et al., 2018, 2020b). Individuals with lower self-esteem use social media for overcoming/avoiding problems, expressing themselves and creating social capital (Błachnio et al., 2013, 2016), while for those with higher self-esteem, being popular and active on social media is not of high importance (Błachnio et al., 2016; Dredge et al., 2014). Individuals with lower self-liking are less comfortable in social situations (Tafarodi & Swan, 1995), experience more anxiety in friendship attachments, and higher levels of depression (Wilson, 2010), all of which are positively related to PSMU (Andreassen et al., 2016; Kircaburun & Griffiths, 2018).

These findings point out the importance of self-esteem in the explanation of PSMU. In this research we aim to further explore the role of self-esteem in the explanation of PSMU.

Life Satisfaction and Problematic Social Media Use

Life satisfaction is considered to be a component of well-being (Diener et al., 2002), which is defined as a combination of feeling good and functioning well, experiencing positive emotions and positive relationships, having a sense of purpose and control over life, and development of own potential (Huppert, 2009). Previous research has shown that lower life satisfaction is either directly related to PSMU (e.g., Boer et al., 2020; Kabasakal, 2015; Longstreet & Brooks, 2017) or this relationship is mediated through self-esteem (Chasanah et al., 2020; Hawi & Samaha, 2016) and loneliness (Marttila et al., 2021). Short-term abstinence from social media and self-monitoring has been discovered to positively influence users' life satisfaction (Zhou et al., 2021; Turel et al., 2018). However, in a similar abstinence study, Stieger and Lewertz (2018) found increased boredom, decreased positive affect, craving and relapse effects. Therefore, the relationship between life satisfaction and PSMU needs to be further studied. The current study will add to the existing body of knowledge by incorporating additional variables that may provide a deeper explanation for this connection.

Present Study

PSMU presents an emerging problem in modern society, especially affecting young people and females (Alonzo et al., 2021; Kircaburun et al., 2019; Stănculescu & Griffiths, 2022). Since the results of previous research on the relevant underlying factors of PSMU are scarce and inconclusive, they remain to be empirically explored. Previous studies point out the importance of age, gender, and dispositional factors (e.g., personality traits, self-esteem, life satisfaction) in the development of PSMU (Andreassen & Pallesen, 2014; Boer et al., 2020; Kircaburun et al., 2020a), but they have been mostly investigated in separate studies. Thus, it is important

to further explore how these constructs altogether contribute to the explanation of PSMU. Furthermore, previous research regarding these factors mostly analysed specific social networks, such as Facebook or Instagram, or the internet as a whole (Błachnio et al., 2019; Lachmann et al., 2013), while the present extends to explore the problematic use of social media networks in general. Therefore, the aim of this study is to examine the relationship of PSMU and personality traits, self-esteem (more specifically, self-liking and self-competence), life satisfaction, age and gender among young adults. Furthermore, we wanted to explore the frequency of social media use, as well as the prevalence of PSMU in our sample. Based on the results of previous studies, we expect high engagement in social media use among young adults in our sample. Furthermore, we expect that younger age, female gender, high neuroticism and low agreeableness, conscientiousness, self-esteem and life satisfaction will be related to PSMU.

Methods

Participants

The initial number of participants was 622. After removing from the analysis six of the participants who did not fit the age criteria (age range between 18 and 34), the sample in the present study consisted of 616 young adults, with a mean age of 22.8 years ($SD = 3.80$). 70.3% of participants identified as females, 29.4% as males, and 0.3% did not want to disclose their gender. At the time of data collection, 50.2% of the participants completed a four-year high school program, 30.1% undergraduate program and 18.3% graduate program. Most participants were university students (72.2%), 20.8% were employed, and 6.3% were unemployed.

Instruments

Bergen Social Media Addiction Scale (Andreassen et al., 2017). The Bergen Social Media Addiction Scale (BSMAS) is a modified version of the previously validated Bergen Facebook Addiction Scale (BFAS; Andreassen et al., 2012). For the purpose of this research, it was translated to Croatian using

backtranslation procedure. The word "Facebook" was replaced with the word "social media" in all items, with social media being defined as "Facebook, Twitter, Instagram, etc." The scale consists of six items (e.g., "You use social media in order to forget about personal problems"), rated on a 5-point Likert scale ranging from 1 (*very rarely*) to 5 (*very often*). The BSMAS uses six key addiction elements (salience, mood modification, tolerance, withdrawal, conflict, and relapse) to evaluate the experience of using social media within a timeframe of 12 months. A higher BSMAS score suggests a greater risk of PSMU. We conducted an exploratory factor analysis of BSMAS, which confirmed that a one-factor structure best fits the data with adequate factor loadings, the same as in the original study (Andreassen et al., 2017). Andreassen et al. (2017) reported a Cronbach's alpha of .88, while the Cronbach's alpha of BSMAS in the current study was .76. Different cut-off scores were proposed for identifying a person at high risk of PSMU: Bányaí et al. (2017) propose a low cut-off score of 19 (out of 30), based on empirical research; Luo et al. (2021) propose the cut-off score of 24; while Zarate et al. (2023) propose the cut-off score of 26. In this study, we used the cut-off score proposed by Luo et al. (2021) since the results showed that a cut-off score of 24 was clinically optimal as it has the highest overall diagnostic accuracy.

International Personality Item Pool (Milas, 2007).

The short version of the International Personality Item Pool (IPIP; Milas, 2007) questionnaire was used to measure Big Five personality traits (extraversion, agreeableness, conscientiousness, emotional stability, and intellect). It consists of 15 items (e.g., "I make friends easily") rated on a 5-point Likert scale ranging from 1 (*very inaccurate*) to 5 (*very accurate*). Three items correspond to each of the five personality traits. After specific items are recoded, the total result on the specific scale is calculated by adding up the responses. The higher result indicates a more apparent personality trait. Previous research confirmed the stability of the five-factor structure (Zheng et al., 2008). Reliability of the scales is somewhat reduced due to the small number of items, ranging from $\alpha = .62$ to $.78$ (Baldasaro et al., 2013). In

this study, Cronbach alpha coefficients ranged from 0.60 to .82 (extraversion .82, neuroticism .73, conscientiousness .75, agreeableness .68, intellect .60).

Self-Liking/Self-Competence Scale (Tafarodi & Swann, 1995).

The Self-Liking/Self Competence Scale (SLSC; Tafarodi & Swann, 1995) measures global self-esteem dimensions. In this research, the Croatian version of the scale was used (Budimlija, 2006). SLSC consists of 16 questions (eight measuring self-liking and eight measuring self-competence) that are answered on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Some items are: "I am highly effective at the things I do" and "I feel great about who I am". A higher result represents a higher level of self-liking/self-competence. In previous research reliability of the self-liking subscale was .89 and .78 for the self-competence subscale (Vandromme et al., 2007). In the present study, the reliability of the self-liking subscale was $\alpha = .91$, and of the self-competence subscale $\alpha = .84$.

Personal Well-being Index. Personal Well-being Index (PWI; International Well-being Group, 2013) contains eight questions measuring life satisfaction (e.g., "How satisfied are you with your standard of living?"). Croatian version of the scale was used in this research (Kaliterna & Prizmic-Larsen, 2014). The questions are answered on an 11-point scale ranging from 0 (*not satisfied at all*) to 10 (*completely satisfied*). The higher result indicates greater life satisfaction. The user manual reports a single factorial structure and good internal reliability for the PWI across a varied range of samples and cultural groups (Cronbach α between .70 and .85; International Well-being Group, 2013). In our research, a single factorial structure was confirmed, and internal reliability was $\alpha = .87$.

Social Media Use. For the purpose of this research, we constructed a scale to measure participants' self-reported social media use. The social media use questionnaire was a self-devised questionnaire with the purpose of assessing participants' general frequency of use of social media and use of specific

platforms. We asked participants to estimate how much time, on average, they spent using social media daily during the last week on an 8-point scale (1 = *not at all* to 8 = *more than six hours*). They were also asked to estimate, using the same 8-point scale, how much time on average daily during the last week they spent using specific social media networks (e.g., Facebook, Instagram, Twitter, TikTok etc.) and messaging apps (WhatsApp, Viber, Discord, Zoom etc.). Additionally, participants were asked to estimate how their social media use patterns changed during the COVID-19 pandemic, using this question: "Please estimate how the frequency of social media use has changed for you during the COVID-19 pandemic", answered on a 10-point scale ranging from 1 (*I use it less*) to 10 (*I use it more*).

Sociodemographic Data. The data on age, gender, level of education and employment status were collected.

Procedure

Participants were mainly recruited using the snowball sampling technique. The questionnaire in Google Forms was distributed via social media (Facebook groups, group chats, subreddits, etc.) and available mailing lists over a period of three weeks. Before filling out the questionnaire, participants were informed about the purpose of the study, that their participation was anonymous and that they could quit the study at any time. All participants gave their informed consent to take part in the study. The research was conducted in accordance with the Psychological Chamber's Code of Ethics and received ethical approval from the Ethical Board of Ivo Pilar Institute of Social Sciences (Ref No:11-73/21-1623).

Results

Participants mostly reported extensive use of social media. 18.2% reported spending one to two hours on average daily using social media in a week prior to the research, 26% two to three hours, 20.1% for three to four hours, 15.1% for four to five hours, and 14% used social media for more than five hours on average daily. Only 5.9% of participants

reported using social media for less than an hour on average daily. Facebook and Instagram were the most popular social media sites among participants (almost 80% used Facebook and 85% Instagram in the week prior to the research). 73.4% of participants stated that their social media use increased during the COVID-19 pandemic.

Descriptive statistics of study variables are presented in Table 1. The mean score for PSMU, measured using BSMAS, was 12.7 ($SD = 4.5$). Based on the cut-off score of 24 out of 30, as proposed by Luo et al. (2021), 1.6% of respondents ($N = 10$) in our sample met the criteria for PSMU.

To determine which variables were related to PSMU, correlation analysis was performed between all the study variables (Table 2).

Table 1.

Descriptive statistics

	<i>M</i>	<i>SD</i>	Total range
PSMU	12.7	4.5	6-27
Extraversion	9.8	2.9	3-15
Neuroticism	9.3	2.8	3-15
Conscientiousness	10.7	2.8	3-15
Agreeableness	13.0	1.9	4-15
Intellect	11.1	2.1	5-15
Self-Liking	24.8	7.6	8-40
Self-Confidence	25.0	5.4	9-40
Personal Well-Being	50.6	11.7	9-70

Note. Descriptive statistics in measures of problematic social media use, personality traits, self-liking and self-confidence, and personal well-being.

Table 2.
Correlations

	1	2	3	4	5	6	7	8	9	10	11
1. PSMU	1		.								
2. Extraversion	-.15**	1									
3. Neuroticism	.36**	-.31**	1								
4. Conscientiousness	-.08*	.06	-.04	1							
5. Agreeableness	-.050	.20**	-.04	.17**	1						
6. Intellect	-.17*	.22**	-.14**	.05	.14**	1					
7. Self-Liking	-.30*	.48**	-.48**	.15**	.11**	.22**	1				
8. Self-Confidence	-.28**	.47**	-.42**	.18**	.15**	.38**	.68**	1			
9. PWI	-.27**	.40**	-.36**	.17**	.22**	.21**	.65**	.57**	1		
10. Age	-.26**	-.02	-.09*	.03	.02	.17**	.10**	.14**	.04	1	
11. Gender [†]	.20**	-.01	.16**	.16**	.31**	-.08*	-.16**	-.08*	-.07*	-.08*	1

Note. Correlations between problematic social media use, personality traits, self-liking and self-confidence, and personal well-being
PSMU – problematic social media use, PWI – personal well-being index; * $p < .05$, ** $p < .01$, [†]1-male, 2-female

Intercorrelations displayed in Table 2 indicate statistically significant but weak negative association between PSMU and extraversion, conscientiousness, and intellect. Positive moderate correlation was found between PSMU and neuroticism. Results suggest that lower extraversion, conscientiousness and intellect, and higher neuroticism were associated with more PSMU. Self-liking and self-confidence were both negatively correlated with PSMU,

indicating that respondents with lower self-liking and self-confidence showed more PSMU. PWI was also negatively correlated with PSMU, indicating that lower personal well-being was associated with more likely PSMU. Younger and female participants were more likely to engage in PSMU (Table 2).

To determine whether personality traits, self-esteem, and personal well-being predict PSMU, a two-step multiple regression analysis was performed,

Table 3.*Hierarchical regression analyses*

Predictor	R^2	ΔR^2	F	β
1. step	.10		33.39**	
Age				-.24**
Gender [†]				.18**
2. step	.23	.13	17.84**	
Age				-.20**
Gender [†]				.15**
Extraversion				.01
Neuroticism				.24**
Conscientiousness				-.05
Agreeableness				-.04
Intellect				-.04
Self-liking				-.04
Self-confidence				-.03
PWI				-.10*

Note. Hierarchical regression analyses predicting problematic social media use
 PWI – personal well-being index; * $p < .05$, ** $p < .01$, [†]1-male, 2-female

with PSMU (result on BSMAS) being a criterion variable. After controlling for age and gender in the first step of the analysis, predictors entered in the second step of the analysis were IPIP-15 subscales, SLSC and PWI. The results are summarised in Table 3.

The first model indicated that age and gender explained 10% of the variance of PSMU. The addition of the IPIP subscales, self-liking, self-confidence and PWI scales resulted in an R^2 change that equalled .13, contributing to an overall prediction of 23% of the variance in PSMU. Individual standardised beta weights from the hierarchical multiple regression analyses indicated that age, gender, neuroticism and PWI predicted PSMU, with neuroticism being the strongest predictor ($\beta = .24$, $p < .001$). Results showed

that younger age, female gender, higher neuroticism, and lower personal well-being were significant predictors of PSMU.

Discussion

According to the participants' self-reports, daily social media usage was quite extensive, with 94.1% of participants using it for at least one hour per day. In the week prior to the research, 29.1% of participants used social media networks for more than four hours daily. Previous research suggests this is an expected result. For example, Chen et al. (2019) found that participants spent 5.1 hours daily on their smartphones, three of which were spent using social media networks. When estimating the risk of PSMU, 1.6% of participants or 10 respondents in our sample met the cut-off score on the BSMAS scale as proposed by Luo et al. (2021), meaning that they use social media in a maladaptive way, which is clinically significant. Luo et al. (2021) found that the prevalence of PSMU among Chinese adolescents was 3.5%, which is higher than in our sample. However, since our research is conducted on a convenient sample of youth, further research among representative samples is needed to determine the prevalence of PSMU among

young people.

The results of correlation analysis regarding the relationship between personality traits and PSMU indicate that lower extraversion (or higher introversion), lower conscientiousness and intellect and higher neuroticism were associated with higher PSMU (e.g., Gugushvili et al., 2022; Kircaburun et al., 2020a). Previous research was inconsistent regarding the relationship between PSMU and extraversion/introversion. The results of current research show that more introverted individuals experience more negative consequences of social media use. These results are consistent with Kircaburun et al. (2020a), who found that although extroverted individuals engage in social activities

more, those who are introverted are more likely to experience adverse outcomes. The question remains if the relationship between extraversion/introversion and PSMU is mediated by other factors, like higher loneliness (Cheng & Furnham, 2002) and lower self-esteem (Erdle et al., 2009), which should be further studied.

Neuroticism was positively correlated with PSMU, which is consistent with the results of previous research (e.g., Andreassen et al., 2012; Kavčić et al., 2019; Kircaburun et al., 2020a; Marino et al., 2016). Individuals who score high on neuroticism might be attracted to the interpersonal interaction aspect of social media use, which could be because of their desire to get feedback and consolation from others, but in a less personal way than offline (Bowden-Green et al., 2021). They may be anxious about face-to-face relationships, and online entertainment can be utilized to keep in contact with others regularly (Blackwell et al., 2017). They could also be prone to use online communication excessively to escape from their real life (Kircaburun et al., 2020b) and more inclined to use the Internet in a maladaptive way (Hamburger & Ben-Artzi, 2000).

A negative correlation was found between conscientiousness and PSMU, which is consistent with the results of previous research (Ahmed et al., 2022). However, the correlation found in this study was, although significant, very small ($-.08$), which may indicate that conscientiousness isn't a highly relevant factor to consider in relation to PSMU.

The correlation between intellect and PSMU was negative but weak, which is consistent with the results of some previous research (Durak & Senol-Durak, 2014; Przepiorka et al., 2021); however, in some other studies, no significant correlation was found (Randler et al., 2014; Stead & Bibby, 2017). Dalvi-Esfahani et al (2019) found that openness to experience is one of the most significant predictors of social media addiction. In their meta-analysis, Kayış et al. (2016) reported that the smallest effect size was found between openness to new experiences and internet addiction and stated that more intellectual individuals have a lesser tendency to experience PSMU. Still, further research is needed to investigate the role of intellect in PSMU.

Life satisfaction was negatively correlated with PSMU. Previous results of both correlational (Buda et al., 2021; Yesilyurt & Solpuk Turhan, 2020) and longitudinal (Andreassen, 2015) studies revealed that PSMU is related to decreased life satisfaction. Studies showed that individuals are less satisfied with their lives because of loneliness (Marttila et al., 2021), which is associated with PSMU, while others indicate that loneliness and self-esteem have a mediatory role between PSMU and life satisfaction (Chasanah et al., 2020; Hawi & Samaha, 2016). A negative correlation was also found between PSMU and self-liking and self-competence, which is consistent with the results of previous research (Andreassen et al., 2017; Bányai et al., 2017; Malik & Khan, 2015; Schivinski et al., 2020). It is possible that individuals with low self-esteem use social media as a tool for overcoming/avoiding problems, expressing themselves and creating social capital (Błachnio et al., 2013, 2016), changing their mood, making new acquaintances, lessening loneliness, and finding social support (Shaw & Grant, 2002), which may exacerbate their usage.

Younger and female participants obtained higher results on the PSMU scale, which is consistent with the results of previous research (e.g., Zarate et al., 2023; Wartberg et al, 2020). Younger women in high school and college were more likely to abuse social media (Kircaburun et al., 2019) and score higher on social and emotional impairment because of their PSMU (Victorin et al., 2020).

Hierarchical regression analysis was used to explore the relationship between PSMU and personality traits, self-esteem, and life satisfaction. We controlled statistically for the influence of age and gender, variables that were consistently found in previous research to be related to PSMU. They were added in the first step of the hierarchical regression analysis. Age and gender were significant predictors of PSMU, indicating that lower age and female gender contributed to the explanation of PSMU. Results of previous studies are consistent with these findings (e.g., Kircaburun et al., 2019; Victorin et al., 2020). Further research should examine gender differences in the motives for social media use and the role of these motives in the explanation of PSMU.

It was found that women's social media use is motivated by the need to satisfy social needs (Fujimori et al., 2015) and respond to feelings of emptiness (Chae et al., 2018), which may increase the likelihood of PSMU. Males might be more prone to problematic use of other entertainment platforms, like video games (Dufour et al., 2017; Su et al., 2020).

After controlling for age and gender, the results of hierarchical regression analysis showed that significant predictors of PSMU were neuroticism and life satisfaction. Higher neuroticism and lower life satisfaction were significant predictors of PSMU. Neuroticism was the strongest predictor of PSMU, confirming the results of previous studies (e.g., Gugushvili et al., 2022; Kavčić et al., 2019; Marciano et al., 2022). The possible explanation for these findings could be that people who score high on neuroticism might be attracted to the interpersonal interaction aspect of social media use because of their desire to get feedback and consolation from others, but in a less personal way, as they may be anxious about face-to-face relationships (Blackwell et al., 2017). They could be more prone to use online communication excessively to escape from their real life (Kircaburun et al., 2020b) and as a coping mechanism for their negative emotions and anxiety (Giota & Kleftaras, 2013).

Lower life satisfaction was also a significant predictor of PSMU, suggesting that the less a person is satisfied with their life, the more their social media use is problematic. This finding is in accordance with the results of previous research (e.g., Longstreet & Brooks, 2017; Twenge & Martin, 2020); however, some studies (e.g., Marttila et al., 2021) indicate that PSMU decreased life satisfaction, but that this effect was indirect through loneliness. Further research should include possible mediators in the relationship between PSMU and personality traits, self-esteem, and life satisfaction.

Some limitations of this study should be considered. In this study, self-reports of time spent on social media were used, so the accuracy of the estimated time spent on social media cannot be confirmed. Participants could overestimate or underestimate their time spent using social media (Montag et al., 2015; Verbeij et al., 2021), so their self-

reports may be less accurate than objective measures such as applications which track the amount of time one spends using social networks. Therefore, in future research, objective measures should be used to measure average social media usage and avoid potential overestimates or underestimates. Furthermore, the high prevalence of Facebook and Instagram users in this research can also be partially explained by the method used for obtaining participants. Specifically, the link for this research was shared among many Facebook groups and Instagram stories but was not shared on other social media such as Twitter, Tumblr, TikTok and Pinterest. Even though other ways of reaching participants were used (i.e., e-mail lists and Reddit posts), it is likely that the questionnaire did not reach a significant number of people who use social media other than Facebook and Instagram frequently. Further studies could include more people using these social networks, and analysis could be done using time spent using a particular social network. Furthermore, the study was cross-sectional, meaning the cause-and-effect relationship cannot be established, but it can be postulated that some factors, like loneliness, fear of missing out, and motives for social media use could have a mediator role in the relationship between personality traits and PSMU, and between life satisfaction and PSMU (Jarrar et al., 2022; Marttila et al., 2021; Ruyandy & Kartasasmita, 2021) which should be verified by future research.

Conclusions

The results of this research point to the high engagement of young people on social networks. However, the use of social media in a maladaptive way was found among a minority of them. The results of this study suggest that young people, females, and individuals who score high on neuroticism and low on life satisfaction are more vulnerable to PSMU and may need to be targeted in prevention and intervention efforts aimed at reducing this problem. Although the limitations of this study hinder the possibility of generalising the obtained results, the study contributes to the under-researched topic of social media addiction. This study extends previous findings on the underlying factors of PSMU,

providing data which may add evidence for the possible subsequent creation of specific diagnostic criteria for PSMU.

Conflicts of Interest

The authors declare that they have no competing interests in publishing this article.

CRedit

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