

PERSONAL CORRELATES OF PROBLEMATIC TYPES OF SOCIAL MEDIA AND MOBILE PHONE USE IN EMERGING ADULTS

Tina Kavčič
*Faculty of Education
University of Primorska
Slovenia*

Melita Puklek Levpušček
*Department of Psychology, Faculty of Arts
University of Ljubljana
Slovenia*

Maja Zupančič
*Department of Psychology, Faculty of Arts
University of Ljubljana
Slovenia*

Mojca Poredoš
*Department of Psychology, Faculty of Arts
University of Ljubljana
Slovenia*

Chris Bjornsen
*Department of Psychology
Longwood University
Farmville, Virginia, U.S.A*

Abstract: *We investigated the occurrence of selected types of problematic social media and mobile phone use in emerging adults, specifically social media and mobile phone overuse, phubbing, creeping, and catfishing. Contemporaneous relations with age, gender, and Big Five personality traits were examined. The participants comprised 459 Slovenian emerging adults, aged 18 to 29 years (68% female). The results suggest that problematic behaviors associated with social media and mobile phone use, with the exception of catfishing, are relatively common among young people. The examined behaviors were negatively related to age, and overuse of mobile phones, social media, and creeping were more prevalent in females than males. The Big Five personality traits, most notably high neuroticism and low conscientiousness, uniquely predicted problematic social media and mobile phone use, after accounting for age, gender, and time spent on social media. Mobile phone overuse and phubbing were also associated with high extraversion and low openness, while low agreeableness was related to creeping and catfishing.*

Keywords: *social media overuse, mobile phone overuse, phubbing, catfishing, creeping, personality.*



INTRODUCTION

In today's world, digital technology has become an integral part of people's lives. It enables communication, socializing, information search, learning, and entertainment. The most frequently used electronic devices among young people are mobile phones and laptops. In Slovenia, 99% of individuals between 16 and 34 years of age use mobile phones; among them, more than 97% use smartphones (Republic of Slovenia, Statistical Office [SURS], 2017a). These percentages are similar to those in other European countries (Statista, 2018) and the USA (Pew Research Center, 2017a). Furthermore, more than 90% of young Slovenians use the Internet every day or nearly every day, with 91% of 16- to 24-year-olds and 77% of 25- to 34-year-olds participating in social media (Republic of Slovenia, Statistical Office [SURS], 2017b). Again, this is similar to other European countries (Eurostat, 2018) and the USA (Pew Research Center, 2017b). Although it would be hard to imagine life nowadays without the Internet or mobile phones, their use can be problematic and harmful. In this study, we explored the occurrence of selected (but by no means exhaustive) types of social media and mobile phone use that are described in the literature as addictive or problematic online behaviors. To update the extant understanding of factors contributing to these behaviors, we investigated the role of age, gender, and personality traits in excessive use of social media and mobile phones, phubbing, catfishing, and creeping among Slovenian emerging adults.

Emerging adulthood represents the developmental period from one's late teens through the twenties, observed specifically in societies that emphasize education, professional training, individual choice, and personal independence (e.g., Arnett, 2000; Fierro Arias & Moreno Hernández, 2007; Nelson, Badger, & Wu, 2004; Sirsch, 2018). This period of the lifespan is characterized by more freedom and independence than adolescence, yet with fewer obligations and responsibilities than adulthood. Emerging adults are thus allowed an extended period of time to explore possible life choices (e.g., Arnett, 2006; Crocetti & Tagliabue, 2016). They especially focus on concerns related to work, intimate relationships, and worldviews. Emerging adults consider continuing their education or trying different jobs, taking over responsibilities for themselves, making important life decisions, and defining their social roles. They also spend more time using media than doing anything else, with a substantial portion of the day spent on social media, other Internet sites, and mobile phones (Coyne, Padilla-Walker, & Howard, 2013). Emerging adults may use online media to facilitate developmental processes, including identity, intimacy, and autonomy (Coyne et al., 2013), but at least some of them may be vulnerable to developing mobile phone and social media addiction. While media use has been quite extensively studied in young people, particularly among college students, new forms of media and associated behaviors are emerging swiftly and remain unexplored. In addition, a better understanding is needed of factors contributing to media-related behaviors in diverse populations.

Selected Types of Problematic Social Media and Mobile Phone Use

Social media sites provide users an opportunity to receive appreciation, approval, and opinions from social contacts, and to experience satisfaction due to entertainment, passing time, and very quick virtual feedback (Andreassen, 2015; Karadağ et al., 2015). However, social media, especially visual social media (e.g., Instagram, Pinterest, YouTube, Facebook), is negatively associated with mental health, particularly in young people. Namely, social media (over)use is

associated with poor sleep quality, anxiety, depression (Royal Society for Public Health, 2017), body image concerns, and internalizing symptoms (Marengo, Longobardi, Fabris, & Settanni, 2018). Such associations may be due to social comparison as social media sites are an ideal context for (mainly upward) social comparison, which tends to be related to higher levels of depressive symptoms (for an overview, see Liu et al., 2017). Moreover, excessive use of social media may put the users at risk for addiction.

Social media addiction is a type of behavioral addiction reflecting problematic Internet use, although it is not (yet) formally recognized in common diagnostic taxonomies (Andreassen, 2015; Bjornsen, 2018; Shensa et al., 2017).¹ Similar to chemical addictions, behavioral addictions have common core symptoms, like tolerance (i.e., a diminished response to an activity resulting from repeated use, thus requiring increased engagement to achieve the former effect), withdrawal problems, conflict, salience (i.e., the activity dominates one's thinking, feelings and behavior), relapse, and mood modification (Andreassen, 2015). Social media addiction also includes obsessive, uncontrollable thoughts about social media sites and persistent uncontrollable use of social media (Bjornsen, 2018). Individuals' proneness towards social media addiction can be partly explained by their impulsivity, sensation seeking, low inhibitory control, and poor decision-making abilities (Billieux & Van der Linden, 2012). Likewise, Holmgren and Coyne (2017) documented that social media addiction is negatively associated with cognitive, behavioral, and emotional self-regulative capacities. In the current study, we also included a one-item measure of average daily time spent using social media in order to provide a more complete assessment of the relations between demographic variables and the five types of problematic social media use.

Similar to social media addiction, *mobile phone addiction* is a nonchemical (behavioral) addiction, defined as a problematic and excessive use of one's mobile phone. It includes using mobile phones longer than intended, constantly checking messages, and staying awake due to late-night phone use (Smetaniuk, 2014). With the development of social networking applications for smartphones, social media addiction and mobile phone addiction became even more intertwined, with social networking applications contributing significantly to mobile phone addiction (Salehan & Negahban, 2013). Although social media and mobile phone addiction are related, with both representing an overuse of information and communication technologies (Beranuy, Oberst, Carbonell, & Chamarro, 2009), important distinctions can be identified. Social media can be accessed on devices other than mobile phones, whereas mobile phones can be used for purposes unrelated to social media. Moreover, the distinction between problematic social media versus mobile phone use is also supported by different correlates (Beranuy et al., 2009; Ehrenberg, Juckes, White, & Walsh, 2008; Khang, Kim, & Kim, 2013). Mobile phone addiction in young people shows negative associations with academic performance (e.g., Hawi & Samaha, 2016) and positive associations with psychological distress (Beranuy et al., 2009), anxiety, insomnia (Jenaro, Flores, Gómez-Vela, González-Gil, & Caballo, 2007), and other symptoms of poor mental health (Babadi-Akashe, Zamani, Abedini, Akbari, & Hedayati, 2014).

Mobile phone addiction further positively correlates with *phubbing* behavior (Chotpitayasunondh & Douglas, 2016). This behavior is considered problematic because it refers to using mobile phones during real-life interactions in a way that interrupts and interferes with the interaction (Bjornsen, 2018; Chotpitayasunondh & Douglas, 2016). Phubbing is described as an individual's withdrawal from interpersonal communication (Chotpitayasunondh & Douglas, 2016; Karadağ et al., 2015). Research indicates that smartphone use is associated with lower

quality of face-to-face interactions (Rotondi, Stanca, & Tomasuolo, 2017); phubbing also is associated with lower satisfaction in intimate relationships (J. A. Roberts & David, 2016; Wang, Xie, Wang, Wang, & Lei, 2017). Despite the fact that phubbing may denote disrespectful and inconsiderate social behavior (thus, inappropriate), it has recently become more acceptable (Chotpitayasunondh & Douglas, 2016).

Another problematic behavior that has emerged along with the increase in computer- and smartphone-mediated communication is deception. One type of deception is *catfishing*, that is, altering of one's identity in social media (Drouin, Miller, Wehle, & Hernandez, 2016). The behavior can range from a rather innocuous enhancement of one's physical features to appear more attractive, to assuming a different social role than one's actual self, to outright pretending to be a completely different person in order to manipulate others online for personal gain (Bjornsen, 2018; Drouin et al., 2016). In other words, for some, their online identity is an intentional construction of the self and may or may not be similar to one's offline self. At times, people may alter their online presentation in order to conform to social norms and prevent social criticism (Bjornsen, 2018). Nowadays, social media users commonly expect that others lie online about appearance, age, activities, interests, and gender (Drouin et al., 2016). Nevertheless, presenting a false self on social media is associated with insecure attachment and lower self-esteem (Gil-Or, Levi-Belz, & Turel, 2015) and may create distrust and suspicion among social media users (Kaskazi, 2014).

Creeping (also known as lurking, snooping, or passive social media browsing) refers to following what is happening in someone's life by viewing his/her updates and activity on social network profiles (photos, posts, other people's comments) without that person knowing and without posting anything on the site (Bjornsen, 2018). It involves consuming information without any attempts to provide social connection (Chen, Fan, Liu, Zou, & Xie, 2016). Creeping carries a negative, invasive connotation even though it could be considered the new normal for social media users. Nevertheless, it is associated with various negative outcomes, such as taking time away from healthier face-to-face interaction and work, sleep deprivation, depression (Baker & Algorta, 2016; Frison & Eggermont, 2016; Lup, Trub, & Rosenthal, 2015), a decline in self-esteem due to social comparisons (Underwood & Ehrenreich, 2017), and lower levels of subjective well-being (Chen et al., 2016; Verduyn et al., 2015).

The first goal of our research was to examine the occurrence of the five types of problematic online behaviors among emerging adults in Slovenia. These behaviors reflect relatively new and unexamined aspects of the lives of emerging adults and thus prompted an exploratory approach to learn more about their occurrences. We focused on emerging adults, who use the Internet and mobile phones at least as frequently as adolescents yet more frequently than older adults (Eurostat, 2017; Pew Research Center, 2017a, 2017b).

The Role of Age and Gender in Problematic Social Media and Mobile Phone Use

Research suggests that social media addiction may be more widespread in certain demographic groups. Generally, women and younger adults may be more likely to show signs of social media addiction, although the results across studies are not strongly consistent (for an overview, see Andreassen, 2015). The role of gender in mobile phone addiction also remains rather inconclusive: Some studies, for instance, found no significant gender differences (Bianchi & Phillips, 2005; Kwon et al., 2013), whereas others report mobile phone addiction is more common among females

(Khang, Woo, & Kim, 2012; J. A. Roberts, Yaya, & Manolis, 2014). In contrast, studies report a consistent relation between mobile phone addiction and younger age (Bianchi & Phillips, 2005; Khang et al., 2012). Phubbing is more frequent among females, smartphone owners, and social media users (Chotpitayasunondh & Douglas, 2016; Karadağ et al., 2015). In addition, mobile phone and social media addiction are more strongly related to phubbing among women, whereas Internet and gaming addiction are a more salient influence among men (Karadağ et al., 2015).

With regard to catfishing and related behaviors, studies most often investigated gender differences in the level of deception used in the context of online dating sites (e.g., Guadagno, Okdie, & Kruse, 2012). Generally, no differences between men and women were found, although the specific content of the deception may depend on gender. For example, Toma, Hancock, and Ellison (2008) reported that men systematically overestimate their height and women underestimate their weight in their online dating profiles. Age differences are studied less often, but some evidence suggests that online deception may be more common during adolescence and emerging adulthood than later on (Caspi & Gorsky, 2006). Because both preadult periods are characterized by young people's search for identity (e.g., Arnett, 2000), catfishing may present a form of identity exploration, that is, an expression of one's possible identities and/or the attempt to receive social feedback regarding the self. However, when emerging adults gradually form their identity, the need for exploration decreases, which may result in a decline in catfishing behavior. Creeping may also be more frequent in younger individuals who are more likely to be passive observers than active participants on Facebook and other social media sites in comparison to older users (Pempek, Yermolayeva, & Calvert, 2009). Few studies explore the role of gender in creeping behavior. For example, Frison and Eggermont (2016) reported no differences between high school boys and girls regarding passive Facebook use.

In sum, research suggests that age and, at least to some extent, gender significantly contribute to most of the selected problematic types of social media and mobile phone use. We thus hypothesized (H1) that females would exhibit higher levels of social media and mobile phone overuse, as well as phubbing, but we expected no gender differences in catfishing and creeping. We further proposed (H2) that emerging adults' age would be negatively related to mobile phone and social media overuse, phubbing, creeping, and catfishing. Additionally, we expected that time spent on social media would be positively associated with other measures of social media use (H3).

The Role of Personality in Problematic Social Media and Mobile Phone Use

An individual's behavior can be seen as a function of the person, the situation, and the person–situation interaction (e.g., Funder, 2008). A common approach to conceptualizing the person is focused on personality traits, that is, dispositional tendencies toward feeling, thinking, and acting in a certain way across time and situations (Costa & McCrae, 1980). The organization of personality traits can be well captured by five basic dimensions as summarized within the Big Five model (Goldberg, 1990) or the five factor model (Costa & McCrae, 1992): *extraversion* represents a tendency toward positive emotionality, sociability, and activity; *agreeableness* refers to prosocial characteristics, such as kindness, thoughtfulness, empathy, altruism, trust, and humility; *conscientiousness* depicts socially desired impulse control reflected in an achievement orientation and reliability; *neuroticism* describes a tendency towards negative emotionality, including anxiety, fear, irritability, and over-reactivity; and *openness* captures individual differences in the breadth, depth, and complexity of one's mental activity (John, Naumann, &

Soto, 2008). The five personality traits have substantial concurrent and longitudinal value in explaining a range of life outcomes across the lifespan (e.g., Paunonen & Ashton, 2001).

Recent studies also suggest an important role of personality traits in problematic mobile phone and social media use. Specifically, a person's propensity toward mobile phone addiction consistently predicts levels of extraversion (Andreassen et al., 2013; Augner & Hacker, 2012; Bianchi & Phillips, 2005; Hong, Chiu, & Huang, 2012; Smetaniuk, 2014) and neuroticism (Augner & Hacker, 2012; Ehrenberg et al., 2008; Hong et al., 2012; J. A. Roberts, Pullig, & Manolis, 2015). Moreover, Andreassen et al. (2013) reported negative associations between mobile phone addiction and agreeableness and openness, and J. A. Roberts et al. (2015) revealed a negative association between mobile phone addiction and conscientiousness, which is mediated through attention impulsiveness. Other studies indicate that social media addiction is associated with extraversion, low conscientiousness (Andreassen et al., 2013; Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Wilson, Fornasier, & White, 2010), neuroticism (Andreassen et al., 2012), and low openness to experience (Andreassen et al., 2013).

To the best of our knowledge, no previous study has investigated the role of the Big Five traits in the phubbing, catfishing, or creeping. We found only one study on psychological correlates of phubbing (Chotpitayasunondh & Douglas, 2016), suggesting that self-control negatively relates to mobile phone addiction, which further contributes to phubbing. Because self-control represents one of the markers of conscientiousness (Costa & McCrae, 1992; Nettle, 2007; B. W. Roberts, Chernyshenko, Stark, & Goldberg, 2005), the trait may play a significant role in phubbing. With regard to catfishing, Drouin et al. (2016) found positive associations between extraversion and honesty on social media (an opposite of catfishing). Drawing parallels between online and offline behavior, real-life stalking is associated with extremely low agreeableness, and moderately low conscientiousness and emotional stability (Kamphuis, Emmelkamp, & de Vries, 2004), suggesting a possible role of these personality traits in online creeping.

To extend the knowledge on the role of personality traits in different online behaviors, we examined the ability of the Big Five traits to concurrently predict emerging adults' problematic mobile phone and social media use, over and above age, gender, and time spent on social media. Specifically, we expected (H4) that high levels of both social media and mobile phone use would be related to extraversion, neuroticism, and low conscientiousness, while mobile phone addiction would also show negative relations with openness. We refrained from formulating any specific hypothesis regarding phubbing, catfishing, and creeping due to the severely limited theoretical and empirical foundation.

METHOD

Participants

We collected data from a convenience sample of 459 Slovenian emerging adults (68% females) between the ages of 18 and 29 years ($M = 22.32$ years, $SD = 2.22$). They were predominantly students (84.5%); 11.4% were employed and 4.1% unemployed. Most respondents (62.7%) lived semi-independently (i.e., partly with parents and partly alone or with a partner), 27.9% resided with parents, and 9.4% had moved out of the parental home. The participants reported they spent on average 159 minutes ($SD = 140$) per day on social media.

Measures

The Manolis/Roberts Cell-Phone Addiction Scale (MRCPAS; J. A. Roberts et al., 2014) includes four items rated on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The items tap into addictive behaviors such as mobile phone overuse and irritability when one's mobile phone is not in sight or the mobile phone's battery is almost exhausted. An example item is "I get agitated when my cell phone is not in sight." We obtained the scale score by averaging the item scores, with higher scores reflecting higher levels of mobile phone addictive behaviors. A confirmatory factor analyses by the authors of the scale showed a single factor structure and a satisfactory internal consistency of the scale ($\alpha = .87$ for the overall sample, and .84 and .88 for males and females, respectively). Good internal consistency of the scale was also found in the present study ($\alpha = .84$).

The Social Media Addiction Scale (SMAS, Karadağ et al., 2015) contains 10 items rated from 1 (*never*) to 5 (*always*) on a 5-point Likert scale. The items describe one's constant checking his/her social media accounts: following activities—current events, popular videos, and trendy topics—sharing personal things, checking the accounts of known and unknown people, wondering whether or not one's friends read his/her posts. An example item is "I check over my social media accounts whenever possible." We averaged the item scores to obtain the scale score, with higher scores suggesting higher levels of social media addictive behaviors. Karadağ et al. found that the 10 items loaded over .40 onto two factors (sharing, $\alpha = .82$, and control, $\alpha = .79$), but they based their further analyses on a summary score. The overall scale score contributed to a Facebook addiction score and showed a positive relation to phubbing and mobile phone addiction in their study participants. The internal consistency of the scale in our study was $\alpha = .81$.

The Phubbing Scale (modified from the Partner Phubbing Scale, J. A. Roberts & David, 2016) measures "phone snubbing." The modified Phubbing Scale (Bjornsen, Simpkins et al., 2017) evaluates one's perception of his/her own phubbing behavior (in contrast to the original scale, which assessed the experience of being phubbed by one's partner). An example item in the revised scale is "During a typical mealtime that I spend with other people, I pull out and check my cell phone." Participants rate the items on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). We averaged the item scores into the scale scores, with higher scale scores suggesting more frequent phubbing. The confirmatory factor analysis by the authors of the original scale (J. A. Roberts & David, 2016) showed a single factor structure for the nine items and excellent internal consistency of the scale in two samples ($\alpha = .93$ and .92). In a separate sample, the reliability estimate of the Phubbing Scale was $\alpha = .86$; the criterion-related validity was supported by a positive correlation of the scale scores with neuroticism, as well as negative correlations with conscientiousness and agreeableness (Bjornsen, 2016). The internal consistency of the scale in our study was satisfactory ($\alpha = .77$).

The Creeping Scale (Bjornsen, Simpkins et al., 2017) measures how often someone browses social media sites of others without their knowledge. The scale measures 7 items that are rated on a 7-point Likert scale ranging from 1, *strongly disagree*, to 7, *strongly agree*. An example item is "I creep on people I don't know in order to decide if I want to contact them or become friends." The item scores were averaged into the scale scores (higher scores reflect higher levels of creeping). The scale showed a high internal reliability with the US sample ($\alpha = .91$) and a good internal reliability in the present study ($\alpha = .85$).

The Catfishing Scale (Bjornsen, Simpkins et al., 2017) measures the degree to which people pretend to be different than they actually are or are a completely different person on social media,

including modifying their posts (pictures or text) in order to be perceived as a different person, usually better than they are in reality. The scale includes six items, which are rated on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). An example item is “I pretend to have a different personality on social media so people will like me.” The mean of the item scores represented the scale score; higher scores indicate higher levels of catfishing. The scale was found reliable with the US students ($\alpha = .78$) as well as with our participants ($\alpha = .79$).

The Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) consists of 44 items measuring five factors of personality: extraversion (8 items), agreeableness (9 items), conscientiousness (9 items), neuroticism (8 items) and openness (10 items). Respondents rate each item on a 5-point Likert scale (1 = *disagree strongly*; 5 = *agree strongly*). We derived the scale scores by averaging the respective item scores. John and Srivastava (1999) reported α coefficients between .79 and .88 as well as sufficient convergent validity. The BFI was validated with a large Slovenian sample (Avsec & Sočan, 2007). Internal reliabilities of the five personality scales in our study were satisfactory, with α s of .82 for extraversion, .72 for agreeableness, .83 for conscientiousness, .81 for neuroticism, and .78 for openness.

All measures were translated into Slovenian and all participants were Slovenian. Thus we expected all respondents were linguistically capable of answering the survey questions. The survey presented to the participants contained all the measures as well as an informed consent agreement and questions regarding demographic information.

Procedure

We collected data in the period between October 2016 and May 2017 through an online survey application. Students from the departments within the Faculty of Arts, University of Ljubljana, and the Faculty for Education, University of Primorska, were asked to participate and to recruit another emerging adult. Additionally, participants were recruited via various Facebook profiles (the invitation was posted on researchers' personal profiles, students' group profiles, etc.).

The data were collected anonymously online. Before completing the survey, the respondents provided an informed consent agreement regarding the study. Then, they were asked about their background information. Next, the questionnaires measuring the five problematic aspects of social media and mobile phone use and personality dimension were presented. The instructions provided at the beginning of the survey contained an explanation of the term social media: “The term social media is used as a hypernym for messaging and use of websites or applications, such as Snapchat, Facebook, Twitter, Kik, Pinterest, Vine, Tumblr, Google Plus, YouTube, LinkedIn, etc.” The other terms investigated in this study were generally avoided in the survey. The survey took approximately 15 minutes to complete. The participants received no compensation for completing the survey.

RESULTS

The results are presented according to the aims and hypothesis of the present study. First, we performed descriptive analyses to gain an insight into the occurrence of social media and mobile phone overuse, phubbing, creeping, and catfishing among emerging adults in Slovenia. In order to investigate the associations of these five problematic aspects of social media and mobile phone use, we carried out correlation and hierarchical regression analyses.

Descriptive Analyses

The descriptive statistics across the variables under study and intercorrelations among them are presented in Table 1. In order to compare the mean values on measures of problematic social media and mobile phone behaviors, we conducted one-sample *t*-tests comparing the data to the neutral point on each scale (i.e., a score of 3 or 4, depending on the scale). The comparatively low mean value on the Catfishing Scale ($t = -70.60$, $df = 458$; $p < .001$) is noteworthy. In actuality, 33.3% of the participants reported that they never engaged in catfishing behavior and 48.7% of them indicated very low levels of catfishing. The mean values for the remaining problematic social media and mobile phone behaviors are all somewhat below the midpoint of the respective rating scales (t s -45.03 , -7.27 , -46.95 and -15.35 for social media addiction, mobile-phone addiction, phubbing and creeping, respectively, all $dfs = 458$, all $ps < .001$).

As displayed in Table 1, the five types of problematic social media and mobile phone use were moderately and positively interrelated, with the highest correlations between social media addiction and creeping and between mobile phone addiction and phubbing. We found modest negative associations between age and social media and among mobile phone addiction, phubbing, and creeping. All five types of problematic social media and mobile phone use related negatively to agreeableness and conscientiousness and were positively associated with neuroticism. In addition, catfishing was negatively linked to extraversion, whereas mobile phone addiction and phubbing were negatively associated with openness.

The Role of Gender, Age, Time Spent on Social Media, and Personality Traits in Problematic Social Media and Mobile Phone Use

We performed a series of hierarchical regression analyses to investigate the contribution of personal characteristics (gender, age, and personality traits) and time typically spent on social media to each of the concurrently measured five types of problematic mobile phone and social media use. The predictors were entered in three blocks. The first block included background variables (age and gender), the second block included time spent on social media on a typical day, and the third block comprised the five personality traits. Results in Table 2 (Total R^2) show that the measures of personal characteristics jointly explain from 11% to 24% of the variance in the outcome variables (effect size f^2 from .12 to .32). According to Cohen (1992), f^2 values between .02 and .15 represent small effect sizes, whereas effect sizes between .15 and .35 are regarded as moderate. Age and gender explained small, but statistically significant portions of the variance in problematic social media and mobile phone use, except for catfishing. Time typically spent on social media explained statistically significant additional portions of variance (from 1% to 7%) in all of the criteria under study after accounting for age and gender. Personality traits significantly improved the portion of variance explained across the criteria measures, uniquely explaining from 6% to 9% of the variance, over and above the variance accounted for by age, gender, and time spent on social media.

After all variables were entered in the regression models, the following relations between predictor and criterion variables were obtained. Social media addiction scores were associated with the female gender: more time spent on social media, lower levels of conscientiousness, and higher levels of neuroticism. Mobile phone addiction scores were associated with a younger age,

Table 1. Descriptive Statistics and Correlations of Types of Problematic Social Media and Mobile Phone Use with Age, Time Spent on Social Media, and Personality Traits.

	Time on SM	SMA	MPA	Phubbing	Creeping	Catfishing	E	A	C	N	O
Age	-.18*	-.17*	-.26*	-.15*	-.19*	-.06	.03	-.04	.16*	-.11	.08
Time on SM		.30*	.31*	.19*	.15*	.17*	.02	.01	-.17*	.05	-.06
SMA			.53*	.51*	.64*	.39*	-.06	-.14	-.24*	.24*	-.05
MPA				.58*	.50*	.32*	-.02	-.17*	-.24*	.29*	-.15*
Phubbing					.38*	.30*	-.01	-.16*	-.19*	.24*	-.17*
Creeping						.41*	-.12	-.21*	-.22*	.29*	-.11
Catfishing							-.17*	-.19*	-.17*	.25*	-.10
Min		1.10	1.00	1.00	1.00	1.00	1.25	2.11	1.00	1.00	1.80
Max		4.40	7.00	4.78	6.71	4.83	4.88	5.00	5.00	4.88	4.90
M		2.75	3.46	2.52	3.11	1.57	3.56	3.80	3.63	2.80	3.61
SD		.60	1.58	.68	1.24	.74	.68	.53	.64	.66	.59

Note. Time on SM – time typically spent on social media per day, SMA – social media addiction, MPA – mobile phone addiction. E – extraversion, C – conscientiousness, N – neuroticism, O – openness. Possible scores range from 1 to 5 for SMA, Phubbing, and personality traits, and from 1 to 7 for MPA, Creeping and Catfishing. * $p < 0.001$

Table 2. Summary of the Regression Analyses: Background Characteristics, Time Spent on Social Media, and the Big Five Predicting Five Types of Problematic Social Media and Mobile Phone Use

	Social Media Addiction	Mobile Phone Addiction	Phubbing	Creeping	Catfishing
Step 1	$\Delta R^2 = .06^{***}$	$\Delta R^2 = .09^{***}$	$\Delta R^2 = .02^{**}$	$\Delta R^2 = .06^{***}$	$\Delta R^2 = .01$
Age	-.15 ^{***}	-.24 ^{***}	-.15 ^{***}	-.18 ^{***}	-.05
Gender	-.17 ^{***}	-.14 ^{**}	-.04	-.14 ^{**}	-.05
Step 2	$\Delta R^2 = .07^{***}$	$\Delta R^2 = .06^{***}$	$\Delta R^2 = .03^{***}$	$\Delta R^2 = .01^*$	$\Delta R^2 = .02^{**}$
Age	-.11 [*]	-.20 ^{***}	-.12 [*]	-.16 ^{**}	-.03
Gender	-.15 ^{**}	-.12 ^{**}	-.02	-.13 ^{**}	-.03
Time on SM	.27 ^{***}	.26 ^{***}	.17 ^{***}	.10 [*]	.16 ^{**}
Step 3	$\Delta R^2 = .06^{***}$	$\Delta R^2 = .09^{***}$	$\Delta R^2 = .09^{***}$	$\Delta R^2 = .09^{***}$	$\Delta R^2 = .08^{***}$
Age	-.08	-.16 ^{***}	-.08	-.13 ^{**}	-.01
Gender	-.13 ^{**}	-.10 [*]	.00	-.11 [*]	-.01
Time on SM	.24 ^{***}	.23 ^{***}	.14 ^{**}	.08	.15 ^{**}
Extraversion	.05	.14 ^{**}	.16 ^{**}	.03	-.06
Agreeableness	-.09	-.09	-.07	-.13 ^{**}	-.11 [*]
Conscientiousness	-.14 ^{**}	-.13 ^{**}	-.11 [*]	-.11 [*]	-.05
Neuroticism	.15 ^{**}	.22 ^{***}	.21 ^{***}	.18 ^{**}	.16 ^{**}
Openness to Experience	.03	-.09	-.12 ^{**}	-.03	-.01
Total R^2 (Adj. R^2)	$R^2 = .19^{***}$ (.17)	$R^2 = .24^{***}$ (.23)	$R^2 = .14^{***}$ (.13)	$R^2 = .16^{***}$ (.14)	$R^2 = .11^{***}$ (.09)

Note. Standardized regression coefficients are presented. Gender was coded 0 for female and 1 for male. Time on SM refers to time typically spent on social media per day.

* $p < .05$, ** $p < .01$, *** $p < .001$

the female gender, more time spent on social media, higher levels of extraversion and neuroticism, and lower levels of conscientiousness. Phubbing was associated with more time spent on social media, higher levels of extraversion and neuroticism, and lower levels of conscientiousness and openness. Creeping was associated with a younger age, the female gender, higher levels of neuroticism, and lower levels of agreeableness and conscientiousness. Finally, catfishing was associated with more time spent on social media, lower levels of agreeableness, and higher levels of neuroticism.

DISCUSSION

The present study explored five types of problematic behaviors related to social media and mobile phone use in Slovenian emerging adults. In addition to social media and mobile phone overuse, we examined the occurrence of phubbing, creeping, and catfishing, a set of recently conceptualized online behaviors. Furthermore, we explored the associations between age, gender, average daily time spent using social media, and the Big Five personality traits and problematic social media use. Average time spent on social media was measured in order to help disentangle the effect of personality from the effect of mere social media use and, thus, to provide a clearer view on the role of Big Five traits in predicting the examined behaviors over and above emerging adults' daily social media activity. In support of H3, average time typically spent on social media was indeed found to significantly predict all of the problematic social media behaviors under study. Yet, personality traits explained additional variance beyond average time on social media.

The Occurrence of the Five Types of Problematic Social Media and Mobile Phone Use

Levels of social media and mobile phone overuse, as well as phubbing, occurred in our participants to an extent that was similar to a sample of Turkish university students (Karadağ et al., 2015). On average, the Slovenian emerging adults checked their social media accounts and followed activities or current events (indicators of social media addiction) rarely to sometimes. They showed moderate levels of problematic use of mobile phones (becoming nervous when the mobile phone was not in sight or its battery nearly exhausted, indicators of mobile phone addiction), and reported that they rarely to sometimes ignore a person or their social surroundings by busying themselves with a phone or other mobile device (indicators of phubbing).

Consistent with Karadağ et al.'s (2015) findings, we obtained moderately positive intercorrelations among social media addiction scores, mobile phone addiction scores, and phubbing. Emerging adults who reported higher levels of behavior indicative of social media addiction also reported higher levels of behaviors reflecting mobile phone addiction. Due to the correlational design of our study, we certainly cannot make any conclusions about the directionality of the relationships as they may run in either or both directions—in other words, social media addiction behaviors leading to mobile phone addiction behaviors and/or the other way around. Furthermore, the two types of behavior may be related due to a common third factor (e.g., one's proneness towards behavioral addictions). Likewise, they may go hand in hand due to the fact that people commonly access their social media accounts by using mobile phones (SURS, 2017a). As could be expected, phubbing, that is, a tendency to ignore others by using

one's mobile phone (Karadağ et al., 2015), was associated specifically with indicators of mobile phone addiction, while creeping and catfishing were related particularly to social media addictive behaviors. Again, caution is needed when interpreting the direction of these associations.

The average level of self-reported creeping in our participants was low to moderate, suggesting that, from time to time, they browse someone's social media sites without that person's knowledge and without posting anything on the site. While both creeping and catfishing represent socially undesirable behaviors (Drouin et al., 2016; Underwood & Ehrenreich, 2017), levels of creeping were higher in our study than levels of catfishing. Possibly, the passive nature of creeping behavior as opposed to the active deception involved in catfishing makes the former less objectionable or at least easier to admit than the latter. Moreover, our results suggest that creeping and catfishing are also positively associated with excessive engagement in social media and mobile phone behaviors.

Catfishing refers to people pretending to be different on social media than they are in reality (Bjornsen, 2018). Thus, it can be considered a deceptive behavior since it reflects a modification of one's identity. Even though people nowadays expect that others lie about their characteristics on the Internet (Drouin et al., 2016), our participants reported that they never or almost never altered their identity on social media. A comparable level of catfishing was found in a sample of U.S. college students (Bjornsen, Poredoš, Puklek Levpušček, Zupančič, & Kavčič, 2017). However, we cannot be certain whether the Slovenian participants avoided catfishing or were simply less willing to admit to such behavior.

The Role of Age and Gender in Five Types of Problematic Mobile Phone and Social Media Use

Gender plays a significant role in various digital technology-associated behaviors, such as preference for online activities (Ha & Hwang, 2014), Internet addiction (Geser, 2006; Jang & Ji, 2012), self-control (Nakhaie, Silverman, & LaGrange, 2000), and communication etiquette (Forgays, Hyman, & Schreiber, 2014). In line with research from different countries and diverse cultural backgrounds (e.g., Andreassen et al., 2013; Baron & Campbell, 2012; Geser, 2006; Karadağ et al., 2015), our female participants scored higher on both social media and mobile phone addiction behaviors, partially supporting H1. Females also exhibited higher levels of creeping than males, which we did not predict. Although creeping is considered a potentially problematic online behavior, its passive nature (in contrast to catfishing) may make it somewhat less socially controversial or objectionable, especially in female emerging adults. Higher levels of creeping among females may also, at least partly, reflect their more frequent engagement in social media and mobile phone use. It should be noted, however, that females reported higher levels of social media and mobile phone addictive behaviors and creeping, even after taking into account the emerging adults' age, time spent on social media, and personality traits. Contrary to our prediction based on the extant research, gender did not significantly predict phubbing. Even though previous research suggests that females may be more likely to engage in phubbing (Chotpitayasunondh & Douglas, 2016; Karadağ et al., 2015), those in our sample may have (relative to males) somewhat suppressed this socially undesirable activity due to the presence of other people in the context of phubbing or were simply more affected by the social desirability bias than males. Thus, the gender differences, if they actually exist, were neutralized.

Younger people use social network sites (Chou, Hunt, Beckjord, Moser, & Hesse, 2009; Kuss & Griffiths, 2011; McAndrew & Jeong, 2012) and the Internet in general (Bernier &

LaFlamme, 2005) more often than older people. As impulsivity and addictive behaviors are also more common among younger age groups (Griffiths, 1996), extant studies correspondingly report negative relations between age and both mobile phone addiction (Andreassen et al., 2013; Bianchi & Phillips, 2005; Khang et al., 2012; Smetaniuk, 2014) and social media addiction (Andreassen et al., 2013; Karadağ et al., 2015). Our results generally concur with those findings and extend them to other types of problematic social media and mobile phone use (except for catfishing), supporting H2. However, the associations between age and social media overuse and phubbing notably diminished after taking into account time spent on social media and personality traits. This suggests that the respective characteristics may explain age-related differences in levels of social media addiction and phubbing. Nevertheless, the lower rates of mobile phone overuse and creeping among older emerging adults was evident even after taking into account gender, time spent on social media, and personality. Although the relations between emerging adults' age and problematic social media and mobile phone use were rather modest, the outcomes suggest that, within the period of emerging adulthood, mobile phone addiction and creeping may decrease as young people approach adulthood.

The Role of Personality Traits in Five Types of Problematic Mobile Phone and Social Media Use

As expected (H4), concurrently assessed personality traits uniquely predicted problematic mobile phone and social media use in a manner supporting five out of seven predictions, over and above the emerging adults' background characteristics and time typically devoted to social media activity. This concurs with the notion that dispositional tendencies to feel, think, and act in a certain way across time and contexts represent a crucial source of a wide range in human behavior (e.g., Funder, 2008), which our results now extend to recently identified behaviors associated with new information–communication technologies. Furthermore, our study reveals that the emerging adults' self-reports on the five basic personality traits differentially predict the types of disruptive or problematic mobile phone and social media use, supporting the distinctiveness of these online behaviors.

In addition to previous research demonstrating neuroticism as a risk factor in a variety of behavioral addictions, including social media addiction (Andreassen et al., 2013) and mobile phone addiction (Augner & Hacker, 2012; Ehrenberg et al., 2008; Hong et al., 2012; J. A. Roberts et al., 2015; Smetaniuk, 2014), the trait played an overarching role across the five behaviors under study (in support of H4). Communication through mobile phones and social media, as opposed to in-person communication, may be more common among emerging adults with higher levels of neuroticism due to social anxiety (Ehrenberg et al., 2008), general proneness towards anxiety, lack of self-confidence, reliance on avoidant coping strategies, and ruminative identity exploration (Luyckx, Klimstra, Duriez, Schwartz, & Vanhalst, 2012).

Lower levels of conscientiousness in our participants predicted higher levels of both social media and mobile phone addictive behavior (supporting H4), as well as higher levels of phubbing and creeping. The findings are consistent with the previously documented role of conscientiousness in social media addiction (Andreassen et al., 2012, 2013; Wilson et al., 2010), mobile phone addiction (J. A. Roberts et al., 2015), and phubbing (Chotpitayasunondh & Douglas, 2016). It seems that individuals with poor levels of voluntary impulse control, inhibition, and capability in delaying immediate gratification—manifested in low levels of

discipline, organization, determination, and perseverance—tend to spend more time on social media and mobile phones and more time creeping others online and are more likely to interrupt real-life social interactions by attending to their mobile phones. Our results also are congruent with the idea that social networks serve as an opportunity for individuals low in conscientiousness to procrastinate (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011), which may be relevant not only for social media use but for mobile phone use as well.

Extraversion specifically predicted mobile phone overuse (in line with H4) and phubbing in our sample. The positive association between extraversion and mobile phone overuse supports previous findings (Andreassen et al., 2013; Bianchi & Phillips, 2005; Smetaniuk, 2014) and appears consistent with the extraverts' need for socializing (e.g., John et al., 2008). Thus, they seem likely to use mobile phones as a medium to seek out and maintain a wide range of social contacts (Andreassen et al., 2013; Gosling et al., 2011). Moreover, due to their inclination to strive for rewards and stimulation in general (Costa & McCrae, 1992), extraverts may use mobile phones for nonsocial stimulation purposes as well (Bianchi & Phillips, 2005).

Whereas past research indicates positive relations between openness and frequency of social media use (Correa, Hinsley, & De Zuniga, 2010), social media and mobile phone use is no longer regarded as a novel activity by young people. Thus, curiosity and susceptibility to novel, diverse experiences (high openness) may no longer predispose individuals to more frequent use of social media. Indeed, more recent findings by Andreassen et al. (2013) showed an inverse relation of openness with mobile phone overuse. Accordingly, we expected that openness would negatively predict mobile phone addictive behaviors (H4), but the negative association was not statistically significant. The results suggest, in line with the outcomes of other studies (Ehrenberg et al., 2008; J. A. Roberts et al., 2015), that openness may not be a crucial factor in mobile phone overuse. Nonetheless, the trait may play an important role in emerging adults' (less frequent) phubbing. Our findings showed that the less broad-minded emerging adults, who are less likely to accept new ideas and activities and/or try new behaviors, are more likely to engage in socially inappropriate phubbing than their more open-minded peers.

Finally, agreeableness displayed negative associations with creeping and catfishing. As the trait is particularly important in establishing and maintaining positive interpersonal relationships, it seems that more helpful, friendly, trusting, pleasant emerging adults tend to avoid mobile phone and social media behaviors that could harm their relationships. Hence, agreeableness may represent a protective factor against problematic online behaviors (Andreassen et al., 2013). Also, higher levels of empathy in agreeable individuals (Nettle, 2007) could inhibit them from doing things they perceive as unpleasant. Although all of the types of online behaviors we examined may be considered socially undesirable, our results imply that this may be particularly the case for creeping and catfishing.

Limitations and Future Directions

Certain limitations of the present study should be highlighted. The data were based on self-report measures, which are subject to various biases (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). One possible bias is the social desirability bias, although it may have been lessened by the anonymous online data collection procedure we applied in our study. However, the possibility of a common method bias² remains. In addition, the study relied on a convenience sample of Slovenian emerging adults, overrepresented by females, younger emerging adults, and university

students, limiting the generalizability of the results. Due to the sampling and data gathering procedure, the sample may have suffered from self-selection bias. We speculate that emerging adults who daily devote more time engaging in online activities were more likely to participate. Based on their personality tendencies, one could also expect that more extraverted, agreeable, and open individuals were more likely to fill out the survey. However, as practically all emerging adults in Slovenia use smartphones (SURS, 2017a), spend time online daily (SURS, 2017b), and seem to spend a notable portion of the day on social media, other Internet sites, and mobile phones (Coyne et al., 2013), we would not expect large discrepancies in the results if a different procedure was employed. Further, we did not ask the participants to report on the specific social media platforms they use, which could be related to problematic mobile phone and social media use, though it is less likely to affect the association of background and personality characteristics with the studied behaviors.

Our cross-sectional and correlational study design precludes any causal conclusions or inferences on directionality of the relationships obtained. Longitudinal studies using cross-lagged panel designs are needed to elucidate the direction of associations found in this and previous studies. Finally, the links between the Big Five and the problematic aspects of social media and mobile phone use were rather modest, suggesting that other psychological characteristics may be involved. Promising sets of personal characteristics to be investigated in the future are specific personality traits, such as the Dark Triad: narcissism, Machiavellianism, and psychopathy (e.g., Buckels, Trapnell, & Paulhus, 2014; Fox & Rooney, 2015), and measures of executive function (e.g., Billieux, 2012; Zhou, Zhou, & Zhu, 2016). Likewise, future studies with large age-heterogeneous and gender-balanced samples could further examine possible moderating roles of age and gender in the relations between personality traits and problematic use of social media and mobile phones.

CONCLUSIONS

Taken together, the results of the present study indicate that behaviors associated with problematic use of social media and mobile phones (except catfishing) are relatively common among emerging adults in Slovenia. Nevertheless, the prevalence of those behaviors may have been somewhat underestimated due to social desirability bias (King & Bruner, 2000). Our findings further suggest that the respective online behaviors tend to be lower among older than younger emerging adults (partly due to a lower amount of time spent on social media) even within the limited age range, and that females engage in slightly higher levels of both social media and mobile phone overuse and creeping than males. In addition, we documented a unique contribution of the Big Five personality traits to the five types of problematic social media and mobile phone use. High neuroticism and low conscientiousness appeared to be the main personality risk factors. The Big Five also showed differential relations with emerging adults' problematic use of social media and mobile phones, implying that various problem behaviors associated with modern technology and their factors should be studied separately. In addition, these results suggest that each personality trait can be regarded as a risk or a protective factor in various human behaviors. For example, while extraversion is generally considered a desirable trait in Western societies (e.g., Cain, 2012) and is associated with some positive outcomes (e.g., subjective well-being; Steel, Schmidt, & Shultz, 2008), it may predispose individuals to higher levels of mobile phone use and phubbing.

IMPLICATIONS FOR APPLICATION

The present study reveals age-related decline in social media and mobile phone overuse, phubbing, and creeping within emerging adulthood, with a negative age effect on mobile phone overuse and creeping remaining evident even after accounting for time typically spent on social media and personality traits. Additionally, females reported higher levels of social media and mobile phone overuse and creeping than males. Thus, educators and policy makers should target their prevention and intervention programs not only on adolescents and/or boys, but also on (younger) emerging adults, especially females. The findings regarding the role of personality in problematic aspects of social media and mobile phone use suggest that education and intervention would benefit from taking into account individuals' personality traits. For example, educators might inform young people (and general public) why individuals with certain personality configuration may be more susceptible to social media and mobile phone overuse. More precisely, young people high in neuroticism and/or low in conscientiousness should be identified and focused on as they seem to be particularly at risk for problematic behavior related to social media and mobile phone and the potential consequences. For example, individuals high in neuroticism might benefit from learning effective strategies of coping with anxiety in order to prevent spending a lot of time on social media and/or mobile phone; behavior modification techniques could be used with individuals low in conscientiousness in order to increase focus on important goals, develop habits that decrease chances for social media and mobile phone overuse (e.g., leaving the mobile phone in another room when studying), and so on.

Lastly, although our measurement of catfishing was primarily exploratory, and participants reported comparatively lower levels of this behavior compared to the other problematic behaviors, we note that higher levels of this behavior were significantly associated with lower agreeableness, higher neuroticism, and more time spent on social media. The limited extant research (Gil-Or et al., 2015; Kaskazi, 2014) indicates that presenting a false identity on social media may be connected to, or contribute to, pathological traits. We therefore suggest that clinicians who work with emerging adults that spend comparatively more time on social media may want to pay special attention to the presence of catfishing or similar behaviors.

ENDNOTES

1. The DSM-5 added a subsection on "Non-substance-related disorders" to the category of "Substance-related and Addictive Disorders," but presently the only condition with defined criteria is the gambling disorder. Other conditions were also considered with the problematic use of the Internet (including gaming, social networking, etc.) noted as potentially addictive (Potenza, 2014). The addictive nature of social media is indicated mainly by the mental preoccupation and negligence of other aspects of social functioning, and possibly also abstinence symptoms when faced with sudden cessation of social networking (Pantic, 2014). Similarly, mobile phone addiction shares a number of criteria similar to those of dependence in psychiatric classifications (Kwon et al., 2013). The focus of this study is on self-reported occurrence of behaviors reflecting excessive use of social media and mobile phones and not on clinical diagnosis of addiction. However, as previous studies of these behaviors (and associated questionnaires) tend to apply the term addiction we cautiously use it as well.
2. The common method bias refers to the possibility that associations between variables measures are attributable, at least in part, to the same measurement method (in our case, all variables were assessed

by questionnaires) rather than solely to associations between constructs the measures are assumed to represent (Podsakoff et al., 2012).

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Authors' Note

All correspondence should be addressed to
Mojca Poredoš
Department of Psychology, Faculty of Arts
University of Ljubljana
Aškerčeva 2
1000 Ljubljana, Slovenia
mojca.poredos@ff.uni-lj.si

Human Technology: An Interdisciplinary Journal on Humans in ICT Environments
ISSN 1795-6889
www.humantechnology.jyu.fi