Personality and Instagram use motives with problematic Instagram use among adolescents: A cross-sectional study

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ARTICLE INFO	ABSTRACT
	Contemporary research studies indicate that individuals' personality traits and motivations for using an online activity (e.g., social media) can be related to elevated problematic and addictive use of that activity. Although there are now many studies examining problematic Facebook use and problematic social media use more generally, problematic Instagram use (PIU) has been much less studied. The purpose of the present study was to examine the relationship between personality traits and Instagram use motives in relation to PIU. A total of 358 adolescent Instagram users completed a survey that included assessment tools for the aforementioned variables. Hierarchical regression analyses indicated that different personality traits were related to different Instagram use motives among males and females. More specifically, lower extraversion, meeting new people and socializing, passing time, and using Instagram less for information and education purposes were positively associated with higher PIU among female adolescents. Among male adolescents, only using Instagram for making, expressing, or presenting a more popular self (e.g., online self-presentation) was positively associated with higher PIU. Findings of the present study suggest that in order to better understand problematic Instagram use, personality, motivations, and gender differences should be taken into account simultaneously. **Keywords**: problematic Instagram use; Instagram use motives; personality; internet addiction

Ergenler arasında problemli Instagram kullanımı ile kişilik ve Instagram kullanım motifleri: Kesitsel bir çalışma

ÖZET

Mevcut araştırma çalışmaları, bireylerin kişilik özelliklerinin ve çevrimiçi bir etkinliği (ör. sosyal medya) kullanma motivasyonlarının, bu etkinliğin artan problemli ve bağımlılık yaratan kullanımıyla ilişkili olabileceğini göstermektedir. Facebook ve sosyal medya bağımlılığını daha genel olarak inceleyen birçok çalışma olmasına rağmen, Instagram bağımlılığı çok daha az çalışılmıştır. Bu çalışmanın amacı, kişilik özellikleri ile Instagram kullanım güdüleri arasındaki ilişkiyi Instagram bağımlılığı ile ilişkili olarak incelemektir. Toplam 358 ergen Instagram kullanıcısı, yukarıda belirtilen değişkenler için değerlendirme araçları içeren bir anketi tamamladı. Hiyerarşik regresyon analizleri, farklı kişilik özelliklerinin, erkekler ve kadınlar arasında farklı Instagram kullanım güdüleriyle ilişkili olduğunu göstermiştir. Daha spesifik olarak, daha düşük dışadönüklük, yeni

insanlarla tanışma ve sosyalleşme, zaman geçirme ve Instagram'ı bilgi ve eğitim amacıyla daha az kullanma, kız ergenler arasında daha yüksek Instagram bağımlılığı ile pozitif olarak ilişkiliydi. Erkek ergenler arasında, Instagram'ı yalnızca daha popüler bir benlik oluşturmak, ifade etmek veya sunmak için kullanmak (örneğin, çevrimiçi kendini sunma), daha yüksek Instagram bağımlılığı ile pozitif olarak ilişkiliydi. Bu çalışmanın bulguları, problemli Instagram kullanımının daha iyi anlaşılabilmesi için kişilik, motivasyon ve cinsiyet farklılıklarının eş zamanlı olarak dikkate alınması gerektiğini düşündürmektedir.

Anahtar Kelimeler: Instagram bağımlılığı; Instagram kullanım amaçları; kişilik; internet bağımlılığı

Introduction

Social networking sites (SNSs) have changed the way individuals communicate, maintain and/or establish relationships. They are a powerful tool allowing users to share media content and experiences with other like-minded users from all over the world. Moreover, SNSs are not used only by individuals to stay in contact with friends but are also used by businesses to attract potential customers. Despite the positive features of SNSs, research has shown that their use may have a negative impact on the health and well-being of a small minority of social media users. Problematic SNS use (PSNSU) has been reported to be associated with poor academic performance (Masood et al., 2020), poor sleep quality, low self-esteem (Atroszko et al., 2018; Banyai et al., 2017), and poor mental health (Andreassen et al., 2016; Hussain & Griffiths, 2019; Kircaburun et al., 2018; Shensa et al., 2017; Worsley et al., 2018).

PSNSU has been defined as (i) being overly concerned about SNSs, (ii) being driven by a strong motivation to log on or use SNSs, and (iii) committing so much time to SNSs that it negatively impacts social activities, educational studies/occupational duties, interpersonal relationships, and/or psychological health and well-being (Andreassen & Pallesen, 2014). The topic of problematic technology use (and more specifically PSNSU) is an important topic that merits further investigation because research studies have shown that PSNSU has similarities with substance addictions (He et al., 2017; Van Den Eijnden et al., 2016).

Personality and problematic social networking site use

Individual differences, and more specifically personality characteristics, have been associated with PSNSU. Kircaburun et al. (2020) reported that being introverted, conscientious, agreeable, and neurotic (as well as being female) were associated with PSNSU. Kircaburun et al. (2019) found that Machiavellianism and narcissism had small significant direct effects on PSNSU. Marino et al. (2016a) found that extraversion and emotional stability were associated with problematic Facebook use (PFU). Similar findings were reported by Marino et al. (2016b) who found that emotional stability, extraversion, and conscientiousness directly predicted PFU. Marengo et al. (2020) reported that neuroticism showed a direct association with PSNSU. Furthermore, mediation analysis showed that for both extroverts and neurotics, receiving positive feedback because of increased activity was associated with an increased risk of PSNSU.

Savci et al. (2021) reported that PSNSU positively affected narcissistic personality belief. Demiricioglu and Kose (2021) reported that Machiavellianism and psychopathy were positively associated with PSNSU. Furthermore, a direct positive path from psychopathy to PSNSU was reported and females scored significantly higher than males on PSNSU. Chung et al. (2019) found that being female and psychopathy were associated with PSNSU. Tang et al. (2016) reported that agreeableness, conscientiousness, and neuroticism were negatively associated with PSNSU. Similarly, Leong et al. (2019) reported a non-linear association between neuroticism and PSNSU. Taken together, these studies demonstrate that different personality traits are associated with PSNSU.

Social media use motives and gender

Using SNSs to alleviate boredom and to socially connect which may put individuals at risk of PSNSU, has been reported in the research literature (Stockdale & Coyne, 2020). Research by Cao et al. (2020) demonstrated that PSNSU is associated with individual's emotional and functional attachment to the platform. These attachments are, in turn, influenced by motivations of perceived enjoyment and social interaction. Research by Leong et al. (2019) found that the entertainment motivation was the strongest predictor of PSNSU. Marino et al. (2018) reported that "internal" motives (i.e., coping and enhancement) appeared to be more strongly associated with PFU than "external" motives (i.e., conformity and social). Research by Rothen et al. (2018) found that the usage preferences of updating status, gaming via Facebook, and using notifications, were related to PFU.

It is important to consider theoretical explanations for social media use. The uses and gratification approach (Katz, et al., 1974) proposes that users experience gratification of specific needs (i.e., the need for entertainment, information, personal identity, social interaction, and integration) from the use of media or other applications (e.g., social media; see Raacke & Bonds-Raacke, 2008), which enhances the likelihood of repeated use. Ryan et al. (2014) argue that these needs may be associated with PSNSU because the user may be motivated by the desire to escape negative mood states and to feel socially integrated.

The theoretical tenets of the compensatory internet use model (Kardefelt-Winther, 2014) propose that social media use and consequently PSNSU is a reaction by individuals to their negative life situation. Comparably, the I-PACE (Interaction of Person-Affect-Cognition-Execution) model (Brand et al., 2016, 2019) describes the processes underlying the development and maintenance of addictive behavior such as PSNSU. The model includes the components of predisposing variables, affective and cognitive responses to internal or external stimuli, executive and inhibitory control, decision-making behavior resulting in the use of specific internet applications, and consequences of using internet applications. As part of the predisposing variables, there are user motives, such as the social aspects, personality traits, and specific preferences for internet applications. This model, as well as the aforementioned theories, argue for the examination of predisposing variables and user motives to better understand online behaviors. The differing theoretical approaches highlight the importance of closely examining the psychosocial characteristics and potential mechanisms of PSNSU (Wegmann & Brand, 2019).

Problematic Instagram use and study aims

Most previous research concerning PSNSU has specifically investigated PFU (e.g., Brailovskaia et al., 2019; Brailovskaia et al., 2019; Dempsey et al., 2019; Marino et al., 2016; Marino et al., 2018; Rothen et al., 2018). However, there are now many SNSs appealing to users from a variety of cultural, social, demographic, and age backgrounds. These sites have different features, orientations, and design layouts. Instagram has an image-centered design layout, encouraging users to post images and add filters and color schemes. This is in contrast to SNSs like Twitter, WhatsApp, and YouTube which have very different functions. Recently, several studies have assessed problematic Instagram use (PIU) (e.g., Balta et al., 2020; Kircaburun & Griffiths, 2019; Martinez-Pecino & Garcia-Gavilán, 2019; Yurdagül et al., 2021). Instagram is now one of the world's most popular SNSs (Yurdagül et al., 2021) and warrants a thorough investigation into its potential associations with PSNSU. The aim of the present study was to expand the emerging literature by analyzing associations between personality traits and Instagram use motives with PIU while also taking gender into consideration.

Method

Participants, procedure, and ethics

The present study was promoted to adolescents in a Turkish high school. A total of 358 adolescent Instagram users participated in the study (61% female; M_{age} = 15.88 years, SD_{age} = 1.04; Range = 14 to 19 years). Paper-and-pencil surveys were handed out to students by the research team by visiting each classroom and informing the students about the study aims. Participants were reassured that all data were confidential and anonymous and that participation in the study was voluntary. Ethical approval for the study was given by the provincial directorate of the National Education Committee and research team's university ethics committee, and complied with the Helsinki declaration.

Design and materials

A cross-sectional survey design was utilized in the present study. Several measures were used to investigate the study variables. These measures are described below.

Instagram Addiction Scale (IAS): The unidimensional IAS (Yurdagül et al., 2021) was used to assess PIU. This scale comprises six items (e.g., "*How often in the past year have you become restless or troubled if you have been prohibited from using Instagram?*") on a five-point Likert scale from "*very rarely*" to "*very often*" that assesses six core components of addiction (i.e., salience, conflict, withdrawal, mood modification, tolerance, and relapse) outlined in the biopsychosocial framework of addiction (Griffiths, 2005). Total scores range between 6 and 30, and higher scores indicate a greater risk of being addicted to Instagram use. The internal consistency coefficient was very good (Cronbach's α = .83).

Ten Item Personality Inventory (TIPI): The TIPI (Gosling et al., 2003; Turkish version: Gunel, 2010) comprises five personality dimensions including extraversion (e.g., "*I see myself as extraverted, enthusiastic*"), neuroticism (e.g., "*I see myself as anxious, easily upset*"), agreeableness (e.g., "*I see myself as sympathetic, warm*"), conscientiousness (e.g., "*I see myself as dependable, self-disciplined*"), and openness to experience (e.g., "*I see myself as open to new experiences, complex*"). Items were scored on a seven-point Likert scale from 1 (*absolutely disagree*) to 7 (*absolutely agree*). The highest scored dimension is considered as the dominant personality trait of the individual. The Turkish form has optimal validity (Gunel, 2010) and reliability coefficients were also high (ranging between .70 and .89 [Gunel, 2010]).

Facebook Usage Aims Scale (FUAS): The FUAS (Horzum, 2016) was used to assess Instagram use motives by replacing the word 'Facebook' with 'Instagram'. One item for each dimension in the FUAS starting with the words *"I use Instagram because I can..."* were responded to with the following responses: (i) *"maintain my existing relationships"*, (ii) *"meet new people and socialize"*, (iii) *"express or present myself as being more popular"*, (iv) *"pass time"*, (v) *"entertain myself"*, (vi) *"manage my tasks an media (videos, photos, etc.)"*, and (vii) *"access information and education"*. Given that each usage aim was assessed using a single item there are no psychometric properties of the scale. However, the correlation coefficients among the usage aims indicate good convergent validity for the instrument.

Statistical analysis

Statistical analyses were carried out using SPSS 25.0 for Windows (IBM SPSS Statistics). Descriptive statistics and Pearson's correlation were calculated to test bivariate relationships between variables. Hierarchical regression analyses were used to examine personality traits.

Results

Descriptive statistics and correlation analyses

Descriptive statistics and Pearson's correlation were first used to analyze data. Mean scores, standard deviations, and correlation coefficients are given in Table 1. PIU was (i) positively correlated with extraversion, neuroticism, and Instagram use motives except informational and educational use, and (ii) negatively with agreeableness and conscientiousness. *T*-tests were used to examine score differences of the study variables among females and males (Table 2). Females scored significantly higher on PIU and using Instagram as a task management tool, whereas males had higher scores of extraversion and openness to experience.

Table 1. Mean scores, standard deviations, and correlation coefficients of the study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Problematic Instagram use	-												
2. Extraversion	-.21***	-											
3. Neuroticism	.10*	.03	-										
4. Agreeableness	-.19***	.25***	-.23***	-									
5. Conscientiousness	-.17**	.14**	-.20***	.10	-								
6. Openness	-.15**	.31***	-.09	.20***	.23***	-							
7. MER	.12*	.12*	.03	.11*	.04	.07	-						
8. MNPS	.18***	.16**	.07	.01	-.03	.16**	.23***	-					
9. MEPO	.30***	-.05	.05	-.21***	-.12*	-.04	.16**	.29***	-				
10. Passing time	.30***	-.08	.06	-.07	-.08	-.12*	-.02	.01	.10	-			
11. Entertainment	.24***	-.03	.12*	-.03	-.05	-.01	.08	.10	.13*	.55***	-		
12. As a task management tool	.12*	.01	.02	-.05	.00	.10	.12*	.20***	.10***	.08	.11*	-	
13. Information and education	-.07	-.02	-.06	.07	.08	.11*	.02	.04	-.02	-.09	-.06	.21***	-
M	12.36	7.30	6.28	7.24	7.50	8.06	2.77	2.17	1.38	3.91	4.20	2.29	2.47
SD	5.18	1.96	2.16	1.39	1.37	1.62	1.29	1.16	.76	.99	.82	1.24	1.18

Note: MER = Maintaining existing relationships; MNPS = Meeting new people and socializing; MEPO = Making, expressing or presenting more popular self. *p < .05, *p < .01, *p < .001

Table 2. Comparison of the scores of study variables (*t*-test) between females and males

	Female (N=218)	Male (N=140)	*t*-test	Cohen's *d*
Problematic Instagram use	13.50 (5.27)	10.57 (4.50)	5.62***	.60
Extraversion	6.98 (1.89)	7.79 (1.98)	-3.86***	.42
Neuroticism	6.46 (2.10)	6.01 (2.23)	1.96	.01
Agreeableness	7.19 (1.33)	7.31 (1.49)	-.77	.00
Conscientiousness	7.42 (1.32)	7.62 (1.44)	-1.38	.01

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Openness	7.76 (1.64)	8.52 (1.48)	-4.47***	.49
MER	2.82 (1.28)	2.70 (1.30)	.86	.00
MNPS	2.10 (1.16)	2.28 (1.17)	-1.41	.01
MEPO	1.33 (.64)	1.45 (.91)	-1.34	.01
Passing time	3.98 (.98)	3.81 (1.00)	1.63	.01
Entertainment	4.22 (.82)	4.17 (.81)	.50	.00
As a task management tool	2.40 (1.24)	2.12 (1.22)	2.11*	.23
Information and education	2.55 (1.14)	2.36 (1.23)	1.43	.01

Note. MER = Maintaining existing relationships; MNPS = Meeting new people and socializing; MEPO = Making, expressing or presenting more popular self. Mean (S.D.) *$p < .05$, **$p < .01$, ***$p < .001$

Regression analyses

Multiple linear regression analyses were conducted to predict Instagram use motives with personality traits among the total sample, females, and males (Table 3 and 4). Extraversion was positively related to using Instagram to meet new people and socializing among the total sample and females. Neuroticism was positively related to using Instagram for entertainment among the total sample and females. Agreeableness was negatively associated with using Instagram to make, express, or present a more popular self among the total sample, females, and males, and positively with maintaining existing relationships. Conscientiousness was positively related to meeting new people and socializing among the total sample and males, and to using Instagram as a task management tool among the total sample and females.

Table 3. Summary of the multiple linear regression analysis predicting Instagram use motives among total sample (N=358)

	β						
	MER	MNPS	MEPO	PT	ENT	ATMT	I&E
Extraversion	.08	.14*	.01	-.04	-.04	-.02	-.07
Neuroticism	.06	.05	-.02	.04	.12*	.01	-.02
Agreeableness	.10	-.04	-.22***	-.03	.01	-.07	.05
Conscientiousness	.03	-.07	-.11	-.05	-.02	-.02	.06
Openness	.02	.14*	.03	-.09	.02	.13*	.10
R^2	.03	.05	.06	.02	.02	.02	.02

Note. MER = Maintaining existing relationships; MNPS - Meeting new people and socializing; MEPO = Making, expressing or presenting more popular oneself; PT = passing time; ATMT = As a task management tool; ENT = entertainment; I&E = Informational and educational. *$p < .05$; **$p < .01$; ***$p < .001$

Table 4. Summary of the multiple linear regression analysis predicting Instagram use motives among females and males

	β						
	MER	MNPS	MEPO	PT	ENT	ATMT	I&E
Extraversion	.00; .17	.22**; .04	.11; -.11	-.06; .01	-.08; -.02	-.01; .00	-.09; -.02
Neuroticism	.13; .00	-.05; .16	-.05; .00	.06; .02	.16*; .07	.02; -.04	-.00; -.05
Agreeableness	.21**; -.04	-.03; -.10	-.16*; -.27**	-.02; -.03	.02; -.01	-.06; -.10	.05; .03
Conscientiousness	.05; .00	-.10; .02	-.09; -.08	-.01; -.12	-.03; -.03	-.03; .01	.02; .10
Openness	.04; .07	.09; .20*	.03; -.01	-.08; -.07	-.02; .10	.14*; .17	.10; .15
R^2	.05; .04	.06; .07	.03; .13	.02; .03	.03; .01	.02; .03	.02; .05

Note. MER = maintaining existing relationships; MNPS = Meeting new people and socializing; MEPO = Making, expressing or presenting more popular oneself; PT = Passing time; ATMT = As a task management tool; ENT = Entertainment; I&E = Informational and educational. The values on the left belong to females whereas the values on the right belong to males. * $p < .05$; ** $p < .01$

Hierarchical regression analyses were used to examine personality and motivational correlates of PIU (Table 5). Personality traits were included into the equation in Block 1, and Instagram use motives in Block 2. Being female, lower extraversion, using Instagram more for meeting new individuals and socializing, making expressing or presenting a more popular self, and passing time were positively associated with PIU among

the total sample. Furthermore, PIU was (i) positively related to meeting new individuals and socializing, and passing time, and (ii) negatively with extroversion, and informational and educational Instagram use among females. PIU was only positively associated with making, expressing or presenting a more popular self among males. The models explained 27%, 19%, and 32% of the variance in PIU among the total sample, females, and males respectively.

Table 5. Summary of hierarchical regression analyses with PIU as the outcome variable among total sample, females, and males

	β(t) Total sample (N=358)	Female (N=218)	Male (N=140)
Demographics	$R^2 = .08$ $(F_{(1,356)}=29.52^{***})$		
Gender	-.25***		
Personality	$R^2 = .14$ $(F_{(6,351)}=9.37^{***})$	$R^2 = .04$ $(F_{(5,212)}=1.82)$	$R^2 = .13$ $(F_{(5,134)}=4.04^{**})$
Extraversion	-.13**	-.14*	-.09
Neuroticism	.00	-.01	.06
Agreeableness	-.09	-.10	-.05
Conscientiousness	-.07	-.08	-.09
Openness	-.01	.03	-.10
Instagram use motives	$R^2 = .30$ $(F_{(13,344)}=11.26^{***})$	$R^2 = .23$ $(F_{(12,205)}=5.14^{***})$	$R^2 = .25$ $(F_{(12,127)}=6.39^{***})$
MER	.08	.08	.11
MNPS	.14*	.18**	.06
MEPO	.20***	.10	.44***
PT	.18**	.26***	.06
ATMT	.08	.08	.08
ENT	.01	.04	-.08
I&E	-.06	-.14*	.07
	$R^2_{Adj} = .27$	$R^2_{Adj} = .19$	$R^2_{Adj} = .32$

Note: MER = Maintaining existing relationships; MNPS = Meeting new people and socializing; MEPO = Making, expressing or presenting more popular oneself; PT = Passing time; ATMT = As a task management tool; ENT = Entertainment; I&E = Information and education; * $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

The present study built on the contemporary literature by analyzing associations between personality traits and Instagram use motives with PIU while considering gender. The analyses provided many novel findings concerning Instagram usage motivations, PIU, gender, personality, and the interrelationships between these four variables. Each of the key results obtained in the present study are discussed sequentially.

Extraversion was positively related to using Instagram to meet new people and socializing among the total sample and females. This finding is consistent with previous studies (e.g., Blackwell et al., 2017; Bowden-Green et al., 2020; Wilson et al., 2010). Extraverted individuals may be more likely to use social media because they crave social interaction (Blackwell et al., 2017). In concurrence with this, Ivcevic and Ambady (2012) argued that extroverted individuals have more friends on Facebook. Indeed, a growing number of studies emphasize that extroverts are very popular on social media (e.g., Ross et al., 2009; Zywica & Danowski, 2008). A recent review examining the relationship between extroversion and social media use found that extroverts are likely to use social media, spend more time using one or more social media platforms, and regularly create content (Bowden-Green et al., 2020). Consequently, the general finding in the literature is that extraverts use social media primarily to socialize (e.g., Eşkisu et al., 2017; Ryan & Xenos, 2011). Therefore, the finding related to extraverted females in the present study appears to be compatible with the literature.

Neuroticism was positively related to using Instagram for entertainment among the total sample and females. An increasing number of studies have reported that neuroticism is positively associated with social media use (Balta et al., 2019; Blackwell et al., 2017; Correa et al., 2010; Ross et al., 2009). Correa et al. (2010)

argued that individuals experiencing greater neuroticism and negative affectivity are more likely to use social media. This finding is relatively consistent with the literature. The relationship between neuroticism and the use of social media for entertainment is not surprising. Indeed, neuroticism reflects a person's tendency to experience psychological distress, and high levels of the trait are associated with a sensitivity to threat (Ross et al., 2009). Numerous studies show that social media use can be an activity that is used to avoid psychological distress for some users (e.g., Van Den Eijnden et al., 2016; Radovic et al., 2017). High levels of neuroticism cause negative affect. Therefore, it appears reasonable to assume that one of the quickest and most convenient ways to reduce this negative effect is to use social media. On the other hand, some studies have found no relationship between neuroticism and social media use for entertainment (Horzum, 2016).

Agreeableness was negatively associated with using Instagram to make, express, or present a more popular self among the total sample, females, and males. Agreeableness involves warmth, cooperativeness, and helpfulness. Therefore, individuals may use social media to present essential self traits and refrain from attention-seeking (Seidman, 2013). According to Ross et al. (2009), individuals who are low on agreeableness are more likely to have significant difficulty forming offline friendships and, therefore, are likely to have fewer friends who can be added to SNSs. Horzum (2016) found that agreeableness negatively related to expressing or presenting a more popular self and entertainment gratifications on social media (Horzum 2016). Therefore, this result in the present study appears to be compatible with the literature.

Agreeableness was positively associated with using Instagram to maintain existing relationships among the total sample, females, and males. Agreeableness is another aspect of interpersonal behavior, reflecting a tendency to be trusting, sympathetic, and cooperative (Ross et al., 2009). Considering these characteristics of agreeable individuals, the finding in the present study is therefore not surprising. According to Seidman (2013), agreeable individuals generally use social media for communication and as a way to maintain their relationships. Consequently, it can be said that agreeable individuals tend to maintain their offline relationships in social media environments.

Conscientiousness was positively related to (i) meeting new individuals and socializing among the total sample and males, and (ii) using Instagram as a task management tool among the total sample and females. Again, these results are not surprising. Indeed, conscientiousness is characterized by discipline, responsibility, and orderliness, enabling individuals to retain greater control of emotions and desires, therefore managing social media more smoothly (McCrae & John, 1992; Seidman, 2013; Whaite et al., 2018).

Being female was positively associated with PIU among adolescents. According to Kircaburun et al. (2020), females use social media more problematically than males. Several studies have also reported that females are more prone to PSNSU use than males (Andreassen et al., 2017; Chung et al., 2019; Griffiths et al., 2014). This finding is consistent with previous studies. According to Van Deursen et al. (2015), females are more socially-oriented and therefore more sensitive to developing problems such as addiction towards activities that involve social relationship elements. However, the predictive relationship between gender and PSNSU may be complicated by other variables such as personality and cultural backgrounds, which may influence motivations for usage and usage patterns (Chung et al., 2019).

Lower extraversion was positively associated with PIU among adolescents. Many studies have found that extroverted individuals use social media more actively and are popular on social media (Ivcevic & Ambady, 2012; Ross et al., 2009; Zywica & Danowski, 2008). Moreover, extroverted individuals use social media more to maintain their existing relationships, pass the time, and manage their tasks (Kircaburun et al., 2020). As extraversion decreases among young individuals, social isolation increases (Whaite et al., 2018). Individuals who are socially isolated may become dependent on social media environments to establish social relationships (Savci &Aysan, 2018). Consequently, as extraversion increases, the possibility of benefiting positively from social media increases, and the risk of problematic use decreases.

Using Instagram more for meeting new people and socializing were positively associated with PIU among adolescents. A phenomenon related to meeting the need for socialization in online environments has been conceptualized in recent years as 'sofalizing'. 'Sofalizing' is a term that emerged from the combination of the words 'sofa' and 'socializing' and is defined as interacting with others online from home rather than going out and meeting individuals (Tosuntaş et al., 2020). The phenomenon of sofalizing appears to be related to the finding in the present study that those who used Instagram for meeting new people and socializing reported higher PIU. Meeting the need for socialization in social media environments is considered an

important risk factor in why some individuals develop PSNSU (Tosuntaş et al., 2020). Therefore, meeting the need for socialization frequently online can greatly contribute to PSNSU (Savci & Aysan, 2017).

Making, expressing and/or presenting a more popular self and passing the time on Instagram was positively associated with PIU among adolescents. First of all, as the engagement with social media increases, the risk of problematic use also increases. Indeed, using social media to pass the time is considered an important component of the PSNSU (van Den Eijnden et al., 2016). In previous studies, passing time on social media has been found to be positively associated with PSNSU (Chung et al., 2019; Savci et al., 2022; Van Den Eijnden et al., 2016). In recent years, many users have used social media to express or present a more popular self. Indeed, researchers have theorized that a minority group uses social media intensively for presenting an idealized appearance (Brown & Knight, 2015), impressing others (Qiu et al., 2015), getting likes (Coulthard & Ogden, 2018), and engaging in self-manipulation for a good impression (Bazarova et al., 2012). Instagram appears to be an ideal medium to achieve these goals. As the use of Instagram increases, the risk of problematic use may increase for some individuals (Yurdagül et al., 2021).

PIU was (i) positively associated with meeting new individuals and socializing and passing the time among females, and (ii) negatively associated with extraversion and informational and educational Instagram use among females. As aforementioned, the risk of the PSNSU increases as the time spent on social media increases among both males and females (Chung et al., 2019; Savci et al., 2022). In addition to using social media for meeting new individuals, socializing is considered a risk factor for PSNSU (Tosuntaş et al., 2020). Finally, unlike the findings in the present study, PSNSU has been found to be positively associated with extraversion (e.g., Andreassen et al., 2012; Sheldon et al., 2021; Wang et al., 2015). Wilson et al. (2010) found that extraverted individuals reported higher PSNSU tendencies. However, some researchers have reported that there is no significant relationship between PSNSU and extroversion (Kircaburun & Griffiths, 2018).

PIU was only positively associated only with making, expressing, or presenting a more popular self among male adolescents. This result is not surprising. One of the primary uses of social media among males is making, expressing or presenting a more popular self (Horzum, 2016). As aforementioned, using social media for this purpose intensively can be a risk factor for PSNSU.

Limitations and conclusion

The results of the present study should be considered in light of several limitations. A cross-sectional Turkish convenience sample was used for collecting the data, and the assessment instruments used were all based on self-report, which are subject to well-known methodological biases. Future studies should therefore use more representative samples, from different countries, using more robust designs (e.g., longitudinal studies). The present study investigated the relationship between personality traits and Instagram use motives with PIU. Findings of the present study suggest that in order to better understand problematic Instagram use, personality, motivations, and gender differences should be taken into account simultaneously. This is because (i) lower extraversion, (ii) meeting new people and socializing, passing time, and (iii) using Instagram less for information and education purposes were positively associated with higher PIU among female adolescents. Among male adolescents, only using Instagram for making, expressing, or presenting a more popular self was positively associated with higher PIU. The present study contributes novel findings in explaining PSNSU, especially PIU. The findings could also be used in developing prevention programs for those experiencing PIU and demonstrates that examining specific SNSs rather than SNSs more generally may provide a more nuanced approach in examining motives and problematic use of social media platforms.

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