Validation of the Persian version of the Instagram Addiction Scale among Iranian students

Sayed Ali Sharifi Fard, MSc[1,5], Mark D. Griffiths, PhD[2,6*], Golnaz Ali Babaei, MSc[1,7], Safdar Nabi Zadeh, PhD[3,8], Amir Hossein Majidi, MSc[4,9]

[1]Mohaghegh Ardabili University, Ardabil, Iran
[2]Distinguished Professor of Behavioural Addiction, Nottingham Trent University, Nottingham, UK
[3]Bu Ali Sina University, Hamedan, Iran
[4]Allameh Jafari University, Rafsanjan, Iran
[5]ORCiD: 0000-0001-6152-7971
[6]ORCiD: 0000-0001-8880-6524
[7]ORCiD: 0000-0001-7169-436X
[8]ORCiD: 0000-0002-6260-9343
[9]ORCiD: 0000-0002-8123-0574
*Corresponding author: Dr. Griffiths, mark.griffiths@ntu.ac.uk

Abstract. *Background:* The increasing use of social networking sites (SNSs) globally has brought about significant changes in individuals' daily lives and interpersonal relationships. Instagram is one of the most popular SNSs and has played an important role in these changes. While most individuals' use of Instagram has beneficial effects, there have been some studies suggesting that Instagram use can be addictive for a small minority of users. Therefore, valid and reliable tools are needed to investigate this phenomenon. *Method:* The present study tested the psychometric properties of the 15-item Persian version of the Instagram Addiction Scale (IAS) among Iranian students. Confirmatory factor analysis and convergent validity were used to evaluate scale validity, and Cronbach's alpha and test-retest methods were used to evaluate the reliability. The sample comprised 660 students, including 476 women (72.1%) and 184 men (27.9%). The mean age of the total sample was 23.7 years. *Results:* Cronbach's alpha coefficients were 0.87 for the whole scale, 0.74 for the social effect subscale and 0.84 for the compulsion subscale. Correlation coefficients obtained from divergent validity with psychological well-being and life satisfaction scales were significant. *Conclusion:* The findings suggest that the Persian IAS is a reliable and valid instrument for assessing the risk of Instagram addiction among Iranian students.

Introduction

Social networking sites (SNSs) are a type of social media that can be used to communicate with a large number of individuals and bring many benefits to its users (Huang & Su, 2018). For instance, SNS users can use the platforms for professional/occupational purposes, making friends, sharing common interests, and entertainment (Khalili, 2015). There are many SNSs including Facebook, Twitter, Tumblr, Flickr, Snapchat and Instagram (the latter being the focus of the present study).

Instagram is an image-based SNS created by Kevin Systrom and Mike Krieger and launched in October 2010 (Omnicore, 2020). This SNS is an environment for sharing personal photos and videos that allows users to take and filter photos and share them with followers who can 'like' and comment on them (Kim, Sally & Jung, 2017) Over time, new formats (e.g., Instagram Stories and Instagram Live) have been added to enhance the user experience, and this diversity has made Instagram more engaging and (on average) gets more interactions per post than Facebook and Twitter (Casalo, Flavian & Ibanez-Sanchez, 2017; Socialbakers, 2018). Therefore, Instagram is one of the fastest, and most popular SNSs among young adults, with more than 59% of its users between the ages of 18 and 29 years (Alhabash & Ma, 2017). Based on other reports, 71% of adults aged 18-29 years in the United States use Instagram and 87% of users are from countries outside the US (Omnicore, 2021).

It has been alleged that the attractive and engaging capabilities of Instagram carry the risk of addiction for a minority of users (Kuss & Griffiths, 2017). Concerns about addictive use of social media have led to many studies investigating the causes and consequences of SNS addiction, particularly Facebook (e.g., Brailovskaia, Margraf & Köllner, 2019; Foroughi, Iran Manesh, Nikbin & Hyun, 2019; Iran Manesh, Foroughi, Nikbin & Hyun, 2019; Kenat-Maimon et al., 2018) and Twitter (e.g., Dwyer & Fraser, 2016; Kircaburun, 2016; Ndasauka et al, 2016). However, there are only a few studies concerning Instagram addiction (e.g., Kim & Kin, 2019; Kircaburun & Griffiths, 2019). Currently, there is no valid psychometric instrument for use in Iran (the location of the present study).

The few studies examining Instagram addiction have reported a negative relationship with academic performance and a positive relationship with shyness and loneliness (e.g., Ponnusamy, Iran Manesh, Foroughi & Hyun, 2020). It also has a negative relationship with acceptance, conscientiousness and selfishness which are components of personality (Kircaburun & Griffiths, 2018). Moreover, a study by D'Souza and Hemamalini (2018) found that Instagram addiction among students was associated with depression, mental health problems, and interpersonal problems. Jovic, Corac and Ignjatovic-Ristic (2019) also reported that there

was a positive and significant relationship between the symptoms of depression, anxiety and stress and Instagram addiction. In Iran, despite the widespread use of Instagram, no studies have been carried out, although there are studies examining online addictions more generally (e.g., Forooghi et al, 2019; Shahbazi & Torkian Tabar, 2019; Hadi et al, 2014).

One of the reasons for the lack of research in this area in Iran is the lack of validated psychometric tools to assess the risk of Instagram addiction. Various tools have been developed to assess Instagram addiction and its various aspects, including the 15-item Instagram Addiction Scale (IAS-15; Kircaburun & Griffiths, 2018), the 20-item Instagram Addiction Scale (IAS-20; Sholeh & Rusdi, 2019, and the 34-item Instagram Addiction Test (IAT; Souza, Sami Yukta & Be Vera, 2018). Validation and reporting of IAS psychometric properties has also been carried out in several countries (Zarenti et al., 2021; Pekpazar, Aydin, Aydin, Beyhan & Ari, 2021). Therefore, the present study evaluated the psychometric properties of the IAS-15 among Iranian students.

Method

Participants and Procedure

The sample initially comprised 681 students from two universities in Mashhad using a multi-stage cluster sampling method consisting of four stages. After removing surveys that had missing data (n=21), the final sample size was 660 participants. From the two universities, one faculty was randomly selected from each university (all random sampling at each stage was carried out using a lottery). Then two educational courses were randomly selected from each faculty were selected, and four classes from each course across three levels (Bachelor, Master, and Doctorate) were also randomly selected. The survey was completed online.

Measures

Instagram Addiction Scale (IAS): The IAS (Kircaburun & Griffiths, 2018) comprises 15 items based on the Internet Addiction Scale (Young, 1998) and was used to assess the risk of Instagram addiction. Items (e.g., *"How often do you try to cut down the amount of time you spend on Instagram and fail?"*) are rated on a six-point scale from 1 (*never*) to 6 (*always*) with scores ranging from 15 and 90. The cut-off points are defined as: no addiction (15-37), mild addiction (58-38), moderate addiction (73-59), and severe addiction (more than 73). The psychometric properties of the IAS are presented in the Results section.

Basic Psychological Needs Scale (BPNS): The BPNS (Guinea, 2003) comprises 21 items and was used to assess basic psychological needs. The scale comprises three subscales (i.e., independence, competency and relationship). Items (e.g., *"In my daily life I often have to do what I am told"*) are rated on a seven-point scale from 1 (*not true at all*) to 7 (*absolutely true*). A higher score on each subscale indicates a higher level of satisfying basic psychological needs required. In the present study the

Cronbach's alphas were 0.87 for basic needs, 0.70 for independence components, 0.68 for competency, and 0.72 for relationship.

Psychological Well-being Scale (PWS): The PWS (Ryff, 1989, revised 2002) comprises 18 items and was used to assess psychological wellbeing. The scale comprises six factors: independence, mastery of the environment, personal growth, positive communication with others, purpose in life, and self-acceptance. Items (e.g., *"Maintaining intimate relationships is difficult for me and I feel frustrated"*) are rated on a six-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*). The sum of the scores of these six factors is calculated as the overall score of psychological well-being. Psychometric properties of the original version have been reported optimally (Ryff & Singer, 2002). In the present study, the Cronbach's alpha was 0.71 for the total scale. For the subscales, the alphas were 0.69 for independence, 0.73 for mastery of the environment, 0.70 for personal growth, 0.66 for positive communication with others, 0.65 for purpose in life, and 0.78 for self-acceptance.

Single-Question Life Satisfaction Scale: This measure (Sharifi Fard et al., 2022) comprises the single question: *"How do you evaluate your life these days?"* rated on an 11-point scale from 0 (*overall worst condition*) to 10 (*overall best condition*).

Statistical Analysis

Descriptive indicators such as means and standard deviations were used to analyze the data and statistical methods such as confirmatory factor analysis, divergent validity and Cronbach's alphas were used to examine the validity and reliability of the developed scale.

Results

Structural validity (confirmatory factor analysis)

The psychometric properties of the 15-item scale were examined, the results of its reliability and validity are presented below. Factor analysis was used to determine the Construct validity and the results of which are presented in Figure 1.
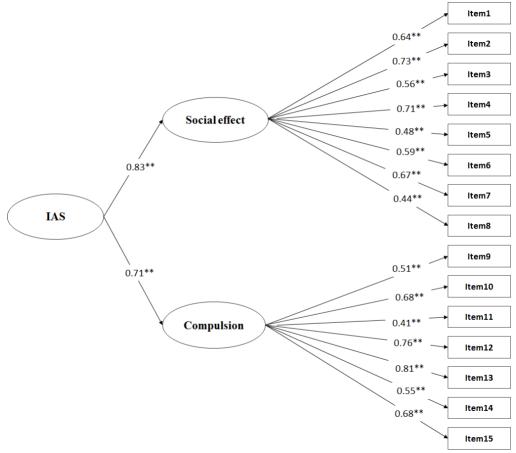
Figure 1. Confirmatory factor analysis of Instagram Addiction Scale (p<0.01)**

The two components (social effect and compulsion) with the main structure (IAS) had a suitable factor load. In addition, the value of the obtained RMSEA index indicated a proper fit of the model (0.041). Because this index was lower than 0.08 and the *p*-value is significant at the level of 0.05, so the fit of the model was good. The ratio of chi-square to the degree of freedom was 1.96, which is significant at the level of 0.01. Other model fit indices also were good (IFI= 0.97, CFI= 0.95, GFI= 0.95, values above 0.9 indicate a goodness of fit). The results of confirmatory factor analysis showed that eight items with social effect component and seven items with compulsion had appropriate factor load (factor loads of all items were above 0.4 and were significant at the level of 0.01). Also, the results of confirmatory factor analysis showed that the social effect and compulsion have a significant relationship with the main structure (Validated coefficients are significant at the level of 0.01). To examine the divergent validity, the relationship between the Instagram Addiction Scale score and the Psychological Well-being Scale, life satisfaction, and basic psychological needs was used. The results are presented in Table 1.

Table 1. Correlation coefficients of Instagram addiction with psychological well-being and life satisfaction

Variables	Wellbeing	Life satisfaction	Autonomy	Competence	Communication
Social effect	-0.34**	-0.30**	-0.29**	-0.32**	-0.24**
Compulsion	-0.32**	-0.35**	-0.31**	-0.35**	-0.26**
IAS	-0.37**	-0.34**	-0.33**	-0.34**	-0.27**

**p< 0.01

The results of Table 1 show that the correlation coefficients between the dimensions of social effect and compulsion and the overall score of the Instagram Addiction Scale with life satisfaction, well-being, and basic psychological needs were all significant ($p<0.01$). Considering that the relationship between the dimensions and the overall score of the Instagram Addiction Scale with basic needs, well-being, and life satisfaction were negative and significant, the divergent validity of the IAS was confirmed. The reliability of the scale with its dimensions were also calculated (Cronbach's alpha). The results are presented in Table 2.

Table 2. Reliability of the whole scale of Instagram addiction and its dimensions by Cronbach's alpha method

Variables	Number of items	Cronbach's alpha coefficient	Test-retest[a]
Social effect	8	0.74	0.76**
Compulsion	7	0.84	0.81**
IAS	15	0.87	0.71**

Test-retest reliability: N= 60, **$p<0.01$

The results in Table 2 show that Cronbach's alpha coefficient for the whole IAS was 0.87 and 0.74 for the social effect dimension and 0.84 for the compulsion dimension. The correlation coefficients by the test-retest reliability were 0.76 for social effect, 0.81 for compulsion and 0.71 for the whole scale, which shows that the IAS has good reliability. The means and standard deviations for each dimension and the whole IAS among males and females were calculated separately (see Table 3).

Table 3. Mean, standard deviation, dimensions, and total scale of Instagram addiction

Indicators	Gender	Number	Mean	Standard deviation	t	p
Social effect	Female	476	39.89	5.99		
	Man	184	39.91	5.65	- 0.048	0.962

		N	Mean	SD		
	Total	660	39.90	5.90		
Compulsion	Female	476	31.84	7.07	- 1.92	0.053
	Man	184	33.04	6.90		
	Total	660	32.17	7.04		
IAS	Female	476	71.73	11.84	- 1.20	0.228
	Man	184	72.95	11.26		
	Total	660	72.07	11.69		

The results in Table 3 show the means and standard deviations of the scale and its dimensions among males and females. There were no significant differences in the overall score and dimensions of Instagram addiction among males and females ($p > 0.05$). in the present sample, the rate of response to each item was determined, the results of which are presented in Table 4.

Table 4. Prevalence of Instagram addiction among participants

Instagram addiction rate	N	Percentage
No addiction	14	2.1%
Mild addiction	151	23.2%
Moderate addiction	336	53%
Severe addiction	143	21.7%

The results of Table 4 show that based on the predetermined cut-off scores, approximately 2.1% of individuals had no risk of addiction to Instagram, 23.2% had a mild addiction risk, 53% had moderate addiction risk, and 21.7% had a severe addiction risk.

Discussion

Over the past decade, the consequences associated with the problematic use of social media have been examined empirically (Kuss & Griffiths, 2017). Some of these studies generally focus on the problematic use of social media more generally (e.g., Wegmann et al., 2015; Kircaburun et al, 2018; Bonyaei et al, 2017) while others have focused on specific social networks such as Facebook and Twitter (e.g., Satici, 2018; Kircaburun, 2016; Andreassen & Pallesen, 2014; Hawi & Samaha, 2017) and Instagram (e.g., Frison & Eggermont, 2017; Huang & Su, 2018; Fioravanti, Prostamo & Casale, 2019). Despite the fact that social media platforms are increasingly similar in their use of similar features, each platform has unique features, a distinct structure, and different attractiveness that allow for a variety of uses (Allahbash & Ma, 2017).

The examination the psychometric properties of the Instagram Addiction Scale (IAS) showed that the scale is valid and reliable in assessing students' addiction risk to Instagram. The Cronbach's alpha in the present study (0.87) was slightly lower compared to the original scale validation (0.90). The correlation coefficients by the test-retest reliability were 0.76 for social effect, 0.81 for compulsion and 0.71 for the whole

scale. Also, the results obtained from the study of fit indices indicated the fit of an acceptable model of the IAS. Therefore, the psychometric properties of the Instagram Addiction Scale are consistent among Iranian participants and in line with the validation of this scale in other studies (Kircaburun & Griffiths, 2018; Zarneti et al., 2021; Pekpazar, Aydin, Aydin, Beyhan & Ari, 2021)

The criterion validity of the Instagram Addiction Scale was assessed divergently using the Psychological Well-Being Scale, Life Satisfaction, and Basic Psychological Needs Scale. The results showed that there was a significant negative correlation between the risk of Instagram addiction and psychological well-being, life satisfaction, and basic psychological needs. Findings from various studies on the relationship between Instagram addiction in particular and social media addiction more generally with psychological well-being and life satisfaction are in line with the present study (De Lenne, Vandenbosch & Eggermont, 2018; Valkenburg et al, 2006; Cardak, 2013; Casale, Lecchi & Fioravanti, 2014; Bozoglan et al, 2013). The results of some studies also have also reported the lack of a direct relationship between social media addiction and life satisfaction (e.g., Allhabash et al, 2014; Park & Lee, 2014; Apaolaza et al, 2013; Valkenburg et al, 2006).

In order to explain the results obtained from the relationship between social media addiction and well-being and life satisfaction, previous research findings suggest several things. First, there are important differences between different types of social network platforms, which causes differences in the use of these networks and as a result, the effects of each have been different. Among the existing social networks, Instagram may be potentially more attractive and addictive to some users than other social network platforms because it provides more opportunities to share images and videos and use different filters to make changes to users' images. Also, the 'Instagram Stories' feature may also facilitate more habitual use (Al-Yafi et al., 2018). Therefore, the use of Instagram is more focused on introducing and promoting individuals themselves rather than building and maintaining relationships (Dumas et al, 2017).

The second is the difference between active and passive use of social networking sites. During active use, users actively and directly interact with the content of other users (Verduyn et al, 2017) which has a positive and significant relationship with well-being and life satisfaction (Myers, 2000) because this interaction creates and increases social communication. Individuals become inactive, but inactive use, in which users view other individuals' content without interaction, may not be as useful (Verduyn et al, 2017).

The third is the role of social comparison and envy in the impact of addiction on social networks and its association with well-being and life satisfaction. The results of studies in this field show that among users who experience social comparison and envy, there is a negative association between problematic and addictive use of social networks (such as

Instagram) with well-being and life satisfaction. Because individuals in social networks are constantly exposed to the positive characteristics of others, which arouses the desire for social comparison and envy in people with a tendency to social comparison, and also reduces positive emotional experiences. (Muise et al, 2009; De Vries et al, 2017; Krasnova et al, 2013; Chou & Edge, 2012; Fox & Moreland, 2015).

The results of the prevalence of Instagram addiction showed that 21.7% were severely addicted to Instagram based on the cut-off used. These figures suggest that the cut-off is too low and not differentiating addicted and non-addicted Instagram users. Reports concerning the prevalence of social media addiction generally report much lower prevalence estimates. For example, a study by Kircaburun and Griffiths (2018) reported that only 0.9% had severe addiction to Instagram using the same scale as the one used in this study. Also based on a self-report survey 37% to 40% of US adults young claimed they were addicted to social media (Statista, 2019). Another study with Chinese students reported 12% to be addicted to social media (Wu, Cheung, Ku & Hung, 2013). Olowu and Seri (2012) surveyed 884 students in Nigeria and reported 27% as addicted to social media.

In a meta-analysis of 63 independent samples from 32 countries, Cheng et al. (2021) reported a prevalence rate of 5% for social media addiction when using the strictest (monothetic) cut-off criteria. According to the results of this meta-analysis, SNS addiction in collectivist societies is higher than in individualistic societies. Members of individualistic cultures may be largely exposed to internal demands (e.g., mood swings) to use social media, while collectivist cultures may be subject to internal and external demands (e.g., group norms) that may increase their vulnerability to social media addiction. In addition, members of collectivist (as opposed to individualistic) cultures are more likely to use social media to gain social support, peer satisfaction, and consensus (Chen & Kim, 2013; Cheng Et al, 2021).

The reasons for the high rate of Instagram addiction among Iranian students may be explained from several perspectives. For instance, Iranian culture is collectivist and a recent meta-analysis (i.e., Cheng et al., 2021) found that social media addiction was much higher in collectivist countries. Other psychosocial and cultural reasons may account for high intensity Instagram use. Iran lacks good recreational facilities and Instagram use provides ready access to entertainment. Iran has high unemployment rates and Instagram provides opportunities for internet-based businesses More specifically, the unemployment rate in Iran is high and this rate has increased in recent years with an increase in graduates. Therefore, many individuals spend a lot of time on Instagram in order to be able to advertise others' wares and services in the future by gaining more followers and to earning income from this. Also, due to the high use of Instagram by Iranians, many business owners, such as consultants or shopkeepers, need a lot of activity to gain followers to advertise on Instagram. Making friends and dating, especially among adolescents and young people, can be

facilitated by Instagram. While such features are not unique to Iran, cultural and social limitations in Iran may mean that such features are more highly valued and/or used in Iran compared to other countries.

Conclusion, limitations, and future research

The present study has a number of limitations. The sample was young and comprised only university students from a limited number of universities. Therefore, the sample was not representative of all Iranian universities or the Iranian population more generally. Future research needs to be carried out with non-student samples and other age groups. Also, self-report data, modest sample size, and measures demonstrating concurrent validity are other limitations of this study. Therefore, conducting research with other methods such as observation, large sample size with participants of different ages and subcultures, and using other measures is recommended. Based on the high prevalence estimate of Instagram addiction obtained in the present study, prevention, intervention, and treatment appear to be necessary for reducing it and its associated psychological consequences.

Funding

This study received no funding.

Availability of data and material

The data that support the findings of this study are available from the first author upon reasonable request.

Author's contributions

Writing of the paper [Sayed Ali Sharifi Fard and Mark D. Griffiths]; Methodology [Mark D. Griffiths and Sayed Ali Sharifi Fard], Data gathering [Golnaz Ali Babaei and Amir Hossein Majidi]; Data analysis [Safdar Nabi Zadeh]; Resources [Sayed Ali Sharifi Fard]; Supervision, [Mark D. Griffiths].

Ethics and informed consent

All procedures followed were in accordance with the ethical standards of the ethics committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants in the study.

Ethics Approval

The study was approved by the first author's university ethics committee.

References

Akhbarati, F., & Bashardost, S. (2016). Predicting psychological well-being based on family performance and basic psychological needs of students. *Journal of Principles of Mental Health,* 18, 374-379. https://dx.doi.org/10.22038/jfmh.2016.7758

Alhabash, S., & Ma, M. (2017). A tale of four platforms: Motivations and uses of Facebook, Twitter, Instagram, and Snapchat among college students? *Social Media+ Society, 3*(1), 2056305117691544. https://doi.org/10.1177/2056305117691544

Alhabash, S., Chiang, Y., & Huang, K. (2014). MAM & U&G in Taiwan: Differences in the uses and gratifications of Facebook as a function of motivational reactivity. *Computers in Human Behavior, 35,* 423–430. https://doi.org/10.1016/j.chb.2014.03.033

Al-Yafi, K., El-Masri, M., & Tsai, R. (2018). The effects of using social network sites on academic performance: the case of Qatar. *Journal of Enterprise Information Management,* 31, 446-462. https://doi.org/10.1108/JEIM-08-2017-0118

Andreassen, C. S. (2015). Online social network site addiction: A comprehensive review. *Current Addiction Reports, 2*(2), 175–184. doi: 10.1007/s40429-015-0056-9

Andreassen, C. & Pallesen, S. (2014). Social network site addiction—an overview. *Current Pharmaceutical Design, 20*(25), 4053-4061. doi: 10.2174/13816128113199990616.

Apaolaza, V., Hartmann, P., Medina, E., Barrutia, J. M., & Echebarria, C. (2013). The relationship between socializing on the Spanish online networking site Tuenti and teenagers' subjective wellbeing: The roles of self-esteem and loneliness. *Computers in Human Behavior, 29*(4), 1282–1289. https://doi.org/10.1016/j.chb.2013.01.002

Bányai, F., Zsila, Á., Király, O., Maraz, A., Elekes, Z., Griffiths, M. D., Demetrovics, Z. (2017). Problematic social media use: Results from a large-scale nationally representative adolescent sample. *PloS One, 12*(1), e0169839. doi: 10.1371/journal.pone.0169839.

Błachnio, A., Przepiorka, A., Boruch, W., & Bałakier, E. (2016). Self-presentation styles, privacy, and loneliness as predictors of Facebook use in young people. *Personality and Individual Differences, 94,* 26-31. https://doi.org/10.1016/j.paid.2015.12.051

Bozoglan, B., Demirer, V. & Sahin, I. (2013). Loneliness, self-esteem, and life satisfaction as predictors of Internet addiction: a cross-sectional study among Turkish university students. *Scandinavian Journal of Psychology, 54*(4), 313–319. doi:10.1111/sjop.12049.

Brailovskaia J, Margraf J, Köllner V. (2019). Addicted to Facebook? Relationship between Facebook Addiction Disorder, duration of Facebook use and narcissism in an inpatient sample. *Psychiatry Research, 273,* 52-57. https://doi.org/10.1016/j.psychres.2019.01.016

Cardak, M. (2013). Psychological well-being and internet addiction among university students. *Turkish Online Journal of Educational Technology-TOJET, 12*(3), 134–141.

Casale, S., Lecchi, S., & Fioravanti, G. (2014). The association between psychological well-being and problematic use of internet communicative services among young people. *Journal of Psychology, 149*(5), 480–497. doi:10.1080/00223980.2014.905432.

Casaló LV, Flavián C, Ibáñez-Sánchez S. (2017a). Understanding consumer interaction on Instagram: The role of satisfaction, hedonism, and content characteristics. *Cyberpsychology, Behavior and Social Networking, 20*(6), 369-375. https://doi.org/10.1089/cyber.2016.0360

Casaló, L. V., Flavián, C., & Ibáñez-Sánchez, S. (2017b). Antecedents of consumer intention to follow and recommend an Instagram account. *Online Information Review, 41*(7), 1046–1063. https://doi.org/10.1016/j.jbusres.2018.07.005

Cheng, C., Lau, Y., Chan, L., & Luk, J.W. (2021). Prevalence of social media addiction across 32 nations: Meta-analysis with subgroup analysis of classification schemes and cultural values. *Addictive Behaviors, 117,* 106845. doi: 10.1016/j. addbeh.2021.106845

Chou, H.-T. G., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior, and Social Networking, 15*(2), 117–121. doi:10.1089/cyber.2011.0324.

D'Souza, L., & Hemamalini, M. J. (2018). Instagram addiction and depression among college students. *International Journal of Indian Psychology, 6*(4), 96-102. doi:10.25215/0604.091

D'Souza, L., Samyukta, A., & Bivera, T. J. (2018). Development and validation of test for Internet addiction (TIA). *International Journal of Indian Psychology, 6*(3), 4-14. doi: 10.25215/0603.81

de Lenne, O., Vandenbosch, L., Eggermont, S., Karsay, K., & Trekels, J. (2018). Picture-perfect lives on social media: A cross-national study on the role of media ideals in adolescent well-being. *Media Psychology, 23*(1), 1-27. doi: 10.1080/15213269.2018.1554494.

De Vries, D. A., Möller, A. M., Wieringa, M. S., Eigenraam, A. W., & Hamelink, K. (2017). Social comparison as the thief of joy: Emotional consequences of viewing strangers' Instagram posts. *Media Psychology, 21*(2), 222–245. doi:10.1080/15213269.2016.1267647.

Dhir, A., & Tsai, C. C. (2017). Understanding the relationship between intensity and gratifications of Facebook use among adolescents and young adults. *Telematics and Informatics, 34*(4), 350-364. https://doi.org/10.1016/j.tele.2016.08.017.

Dumas, T.M., Maxwell-Smith, M., Davis, J.P., & Giulietti, P.A. (2017). Lying or longing for likes? Narcissism, peer belonging, loneliness and normative versus deceptive like-seeking on Instagram in emerging adulthood. *Computers in Human Behavior, 71*, 1–10. https://doi.org/10.1016/j.chb.2017.01.037

Dwyer, R., & Fraser, S. (2016). Addicting via hashtags: How is Twitter making addiction? *Contemporary Drug Problems, 43*(1), 79-97. https://doi.org/10.1177/0091450916637468

Fioravanti, G., Prostamo, A., & Casale, S. (2019). Taking a short break from Instagram: The effects on subjective well-being. *Cyberpsychology, Behavior, and Social Networking*, *23*(2), 107-112. doi:10.1089/cyber.2019.0400.

Fischer, M. J., Asselman, F. L., Kruitwagen-van Reenen, E. T., Verhoef, M., Wadman, R. I., Visser-Meily, J. M., ... & Schröder, C. D. (2020). Psychological well-being in adults with spinal muscular atrophy: the contribution of participation and psychological needs. *Disability and Rehabilitation, 42*(16), 2262-2270. https://doi.org/10.1080/09638288.2018.1555864

Foroughi, B., Iranmanesh, M., Nikbin, D., & Hyun, S. S. (2019). Are depression and social anxiety the missing link between Facebook addiction and life satisfaction? The interactive effect of needs and self-regulation. *Telematics and Informatics, 43,* 101247. https://doi.org/10.1016/j.tele.2019.101247

Fox, J., & Moreland, J. J. (2015). The dark side of social networking sites: An exploration of the relational and psychological stressors associated with Facebook use and affordances. *Computers in Human Behavior, 45,* 168–176. doi:10.1016/j.chb.2014.11.083.

Frison, E. & Eggermont, S. (2017). Browsing, posting, and liking on Instagram: the reciprocal relationships between different types of Instagram use and adolescents' depressed mood. *Cyberpsychology, Behavior, and Social Networking, 20*(10), 603–609. doi:10.1089/cyber.2017.0156.

Gagne, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion, 27*(3), 199-223. https://doi.org/10.1080/714044203

Gagne, M. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology, 15*(4), 372–390. doi:10.1080/714044203.

Hadi, S., Nouri, R., Mohammad Khani, S. H., & Manshei, G. H. (2014). Comparison of psychological well-being, acceptance and social adjustment between non-addicted and internet-addicted female students in Isfahan high schools. *Journal of Rehabilitation Research in Nursing, 1*(2), 52-62.

Hawi, N. S. & Samaha, M. (2017). The relations among social media addiction, self-esteem, and life satisfaction in university students. *Social Science Computer Review, 35*(5). doi: 10.1177/0894439316660340.

Huang, Y. T. & Su, S. F. (2018). Motives for Instagram use and topics of interest among young adults. *Future Internet, 10*(8), 1-12. doi: 10.3390/fi10080077.

Iran Manesh, M., Foroughi, B., Nikbin, D., & Hyun, S. S. (2019). Shyness, self-esteem, and loneliness as causes of FA: The moderating effect of low self-control. *Current Psychology,* Advance online publication. https://doi.org/10.1007/s12144-019-00465-w

Jovic, J., Ćorac, A., & Ignjatović-Ristić, D. (2019). Correlation between Instagram addiction and the symptoms of depression, anxiety and stress. *European Neuropsychopharmacology, 29,* S316-S317. https://doi.org/10.1016/j.euroneuro.2019.09.459

Junco, R., & Cotten, S. R. (2012). No A 4 U: The relationship between multitasking and academic performance. *Computers & Education, 59*(2), 505-514. https://doi.org/10.1016/j.compedu.2011.12.023

Kanat-Maymon, Y., Almog, L., Cohen, R., & Amichai-Hamburger, Y. (2018). Contingent self-worth and Facebook addiction. *Computers in Human Behavior, 88,* https://doi.org/10.1016/j.chb.2018.07.011

Khalili, L. (2015). Students use social networks. *Journal of Human Interaction and Information, 2*(1), 59-73. http://hii.khu.ac.ir/article-1-2467-fa.html

Kim, B., & Kim, Y. (2019). Facebook versus Instagram: How perceived gratifications and technological attributes are related to the change in social media usage. *The Social Science Journal, 56*(2), 156-167. https://doi.org/10.1016/j.soscij.2018.10.002

Kim, D. H., Seely, N. K., & Jung, J. H. (2017). Do you prefer, Pinterest or Instagram? The role of image-sharing SNSs and self-monitoring in enhancing ad effectiveness. *Computers in Human Behavior, 70,* 535-543. https://doi.org/10.1016/j.chb.2017.01.022

Kırcaburun, K. (2016). Effects of gender and personality differences on Twitter addiction among Turkish undergraduates. *Journal of Education and Practice, 7*(24), 33–42.

Kircaburun, K., & Griffiths, M. D. (2018). Instagram addiction and the Big Five of personality: The mediating role of self-liking. *Journal of Behavioral Addictions, 7*(1), 158-170. https://doi.org/10.1556/2006.7.2018.15

Kırcaburun, K., & Griffiths, M. D. (2019). Problematic Instagram use: The role of perceived feeling of presence and escapism. *International Journal of Mental Health and Addiction, 17*(4), 909-921. https://doi.org/10.1007/s11469-018-9895-7

Kircaburun, K., Kokkinos, C. M., Demetrovics, Z., Király, O., Griffiths, M. D., & Çolak, T. S. (2018). Problematic online behaviors among adolescents and emerging adults: Associations between cyberbullying perpetration, problematic social media use and psychosocial factors. *International Journal of Mental Health and Addiction, 17*, 891-908. https://doi.org/10.1007/s11469-018-9894-8

Kirschner, P. A., & Karpinski, A. C. (2010). Facebook® and academic performance. *Computers in Human Behavior, 26*(6), 1237-1245. https://doi.org/10.1016/j.chb.2010.03.024

Kozan, H. İ. Ö, Baloğlu, M., Kesici, Ş., & Arpacı, İ. (2019). The role of personality and psychological needs on the problematic Internet use and problematic social media use. *Addicta: The Turkish Journal on Addictions, 6,* 203−219. http://dx.doi.org/10.15805/addicta.2018.6.2.0029

Krasnova, H., Wenninger, H. E., Widjaja, T., & Buxmann, P. (2013, March). Envy on Facebook: A hidden threat to users' life satisfaction? Paper presented at the 11th International Conference on Wirtschaftsinformatik (WI), Leipzig, Germany.

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction—A review of the psychological literature. *International Journal of Environmental Research and Public Health, 8*(9), 3528–3552. https://doi.org/10.3390/ijerph8093528

Kuss, D. J., & Griffiths, M. D. (2017). Social networking sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health, 14*(3), 311. https://doi.org/10.3390/ijerph14030311

Lepp, A., Barkley, J. E., & Karpinski, A. C. (2015). The relationship between cell phone use and academic performance in a sample of U.S. college students. *SAGE Open, 5*(1), 215824401557316. https://doi.org/10.1177/2158244015573169

McAndrew, F. T., & Jeong, H. S. (2012). Who does what on Facebook? Age, sex, and relationship status as predictors of Facebook use. *Computers in Human Behavior, 28*(6), 2359–2365. doi: 10.1016/j.chb.2012.07.007.

Moksnes, U. K., & Espnes, G. A. (2013). Self-esteem and life satisfaction in adolescents—gender and age as potential moderators. *Quality of Life Research, 22*(10), 2921–2928. doi: 10.1007/s11136-013-0427-4.

Moqbel, M., & Kock, N. (2018). Unveiling the dark side of social networking sites: Personal and work-related consequences of social networking site addiction. *Information & Management, 55*(1), 109-119. https://doi.org/10.1016/j.im.2017.05.001

Muise, A., Christofides, E., & Desmarais, S. (2009). More information than you ever wanted: Does Facebook bring out the green-eyed monster of envy? *CyberPsychology & Behavior,* 12(4), 441–444. doi:10.1089/cpb.2008.026.

Myers, D. G. (2000). The funds, friends, and faith of happy people. *American Psychologist, 55*(1), 56–67. doi:10.1037/0003-066x.55.1.56.

Ndasauka, Y., Hou, J., Wang, Y., Yang, L., Yang, Z., Ye, Z., ... & Zhang, X. (2016). Excessive use of Twitter among college students in the UK: Validation of the Microblog Excessive Use Scale and relationship to social interaction and loneliness. *Computers in Human Behavior, 55,* 963-971. https://doi.org/10.1016/j.chb.2015.10.020

Olowu, A. O., & Seri, F. O. 2012. A study of social network addiction among youths in Nigeria. *Journal of Social Science and Policy Review, 4,* 62–71.

Omnicore (2021). Instagram by the numbers: Stats, demographics & fun facts. https://www.omnicoreagency.com/instagram-statistics/

Orr, E. S., Sisic, M., Ross, C., Simmering, M. G., Arseneault, J. M., & Orr, R. R. (2009). The influence of shyness on the use of Facebook in an undergraduate sample. *CyberPsychology & Behavior, 12*(3), 337-340. https://doi.org/10.1089/cpb.2008.0214

Park, N., & Lee, S. (2014). College students' motivations for Facebook use and psychological outcomes. *Journal of Broadcasting & Electronic Media, 58*(4), 601-620. https://doi.org/10.1080/08838151.2014.966355

Pekpazar, A., Aydın, G. K., Aydın, U., Beyhan, H. & Arı, E. (2021). Role of Instagram addiction on academic performance among Turkish university students: Mediating effect of procrastination. *Computers and Education Open, 2,* 100049. https://doi.org/10.1016/j.caeo.2021.100049.

Phua, J., Jin, S. V., & Kim, J. J. (2017). Uses and gratifications of social networking sites for bridging and bonding social capital: A comparison of Facebook, Twitter, Instagram, and Snapchat. *Computers in Human Behavior, 72,* 115-122. https://doi.org/10.1016/j.chb.2017.02.041

Ponnusamy, S., Iran Manesh, M., Foroughi, B., & Hyun, S. S. (2020). Drivers and outcomes of Instagram addiction: Psychological well-being as moderator. *Computers in Human Behavior, 107*, 106294. https://doi.org/10.1016/j.chb.2020.106294

Ryan, T., & Xenos, S. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior, 27*(5), 1658-1664. http://dx.doi.org/10.1016/j.chb.2011.02.004

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069–1081. https://doi.org/10.1037/0022-3514.57.6.1069

Ryff, C. D., & Singer, B. (2002). From social structure to biology: Integrative science in pursuit of human health and well-being. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 541–554). Oxford University Press.

Sanz-Blas, S., Buzova, D., & Miquel-Romero, M.J. (2019), From Instagram overuse to Instastress and emotional fatigue: The mediation of addiction. *Spanish Journal of Marketing, 23,* 143-161.

Satici, S. A. (2019). Facebook addiction and subjective well-being: A study of the mediating role of shyness and loneliness. *International Journal of Mental Health and Addiction, 17*(1), 41-55. https://link.springer.com/article/10.1007/s11469-017-9862-8

Satici, S. A., & Uysal, R. (2015). Well-being and problematic Facebook use. *Computers in Human Behavior, 49,* 185-190. http://dx.doi.org/10.1556/2006.6.2017.004

Serenko, A., & Turel, O. (2015). Integrating technology addiction and use: An empirical investigation of Facebook users. *AIS Transactions on Replication Research, 1*(2), 1-18. https://doi.org/10.2307/41409972

Shahbazi, F., & Turkian Tabar, M. (2019, October). Predicting cyberspace dependence based on psychological well-being and feelings of loneliness in female high school students in Azana, Fifth National Conference on New Research in Iranian Curriculum Planning, Tehran. https://civilica.com/doc/967802/

Sharifi Fard, S. A., Ali Babaei, G., Ahmad Panah, M., Zolgharnein, M., Nabizadeh, S., & Taheri, H. (2021). Assessing and adapting the psychometric properties of the Life Satisfaction Scale of single-question. Unpublished manuscript.

Sheldon, P., Rauschnabel, P. A., Antony, M. G., & Car, S. (2017). A cross-cultural comparison of Croatian and American social network sites: Exploring cultural differences in motives for Instagram use. *Computers in Human Behavior, 75,* 643–651. doi: 10.1016/j.chb.2017.06.009.

Sholeh, A., & Rusdi, A. (2019). A new measurement of Instagram addiction: Psychometric properties of the Instagram Addiction Scale (TIAS). In: Proceedings of the Conference of the 11th Indonesian Student Association in Korea (pp. 91–97). CISAK.

Socialbakers (2018). Instagram engagement: Everything you need to know. Retrieved November 3, 2021, from: https://www.socialbakers.com/blog/instagram-engagement

Statista (2021). Share of online users in the United States who report being addicted to social media as of April 2019, by age group. https://www.statista.com/statistics/1081292/social-media-addiction-by-age-usa/

Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *CyberPsychology & Behavior, 9*(5), 584–590. doi:10.1089/cpb.2006.9.584.

Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do social network sites enhance or undermine subjective well-being? A critical review. *Social Issues and Policy Review, 11*(1), 274-302. http://dx.doi.org/10.1111/sipr.12033

Wegmann, E., Stodt, B., & Brand, M. (2015). Addictive use of social networking sites can be explained by the interaction of Internet use expectancies, Internet literacy, and psychopathological symptoms. *Journal of Behavioral Addictions, 4*(3), 155–162. doi:10.1556/2006.4.2015.021.

Wu, A. M. S., Cheung, V. I., Ku, L., & Hung, E. P. W. (2013). Psychological risk factors of addiction to social networking sites among Chinese smartphone users. *Journal of Behavioral Addictions, 2*(3), 160–166. doi: 10.1556/jba.2.2013.006

Young, K. S. (1998). *Caught in the net: How to recognize the signs of internet addiction – and a winning strategy for recovery.* John Wiley & Sons.

Zarenti M, Bacopoulou F, Michou M, et al. (2021). Validation of the Instagram Addiction Scale in Greek Youth. *European Molecular Biology Network Journal*, *26,* e973. doi: 10.14806/ej.26.1.973.