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Psychometric properties of the Turkish version of Instagram Addiction Scale (IAS)

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Keywords
Instagram addiction, social media, scale adaptation, psychological health, emotion regulation

Abstract
The present study aimed to adapt the Instagram Addiction Scale (IAS), developed by D'Souza and colleagues (2018), into Turkish and investigate its psychometric properties in a Turkish sample. For this purpose, three studies were carried out. In Study 1, language validity of the scale was examined with 90 participants. In Study 2, the factor structure was explored, and reliability and validity analyses were conducted in a study sample of 451 university students. In Study 3, the scale's confirmatory factor analysis was investigated with 468 Instagram users from the general population. Results showed that there was a strong positive correlation between the original English form and Turkish form in two groups. The Turkish form of the scale has a five-factor structure. The psychometric properties were adequate and test-retest reliability was found as .77. Finally, in Study 3, results showed that the five-factor structure of the scale also worked for the general population. Data obtained from the three studies revealed that psychometric properties of the IAS were acceptable for the Turkish population.

Anahtar kelimeler
Instagram bağımlılığı, sosyal medya, ölçek uyarlaması, psikolojik sağlık, duygu düzenleme

Öz

Instagram Bağımlılığı Ölçeği (IBÖ) Türkçe Formunun psikometrik özellikleri

Bu çalışmada, Instagram Bağımlılık Ölçeği'nin (IBÖ) Türkçeye uyarlanması ve psikometrik özelliklerinin Türk örnekleminde incelenmesi amaçlanmıştır. Bu amaçla üç çalışma yürütülmüştür. İlk çalışmada, ölçeğin dil geçerliği 90 katılımcı ile incelenmiştir. İkinci çalışmada ölçeğin faktör yapısı incelenmiş ve güvenirlik ve geçerlik analizleri yapılmıştır. İkinci çalışmanın örneklemi 451 üniversite öğrencisinden oluşmaktadır. Son çalışma, ölçeğin doğrulayıcı faktör analizini genel popülasyondan 468 Instagram kullanıcısı ile incelemek amacıyla yürütülmüştür. Sonuçlar, iki grupta da orijinal İngilizce form ile Türkçe form arasında güçlü pozitif korelasyon olduğunu göstermiştir. Ölçeğin Türkçe formu beş faktörlü bir yapıya sahip olup, psikometrik özellikleri yeterli ve test-tekrar test güvenirliği .77 olarak bulunmuştur. Son olarak, üçüncü çalışmadaki sonuçlar, ölçeğin beş faktörlü yapısının genel popülasyon için de uygun olduğunu göstermiştir. Üç çalışmadan elde edilen sonuçlar, IBÖ'nün psikometrik özelliklerinin Türk popülasyonu için kabul edilebilir olduğunu ortaya koymuştur.

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In today's world, social networking sites play a substantial role in the lives of individuals. Along with technological advancement, internet and related communication technologies have become an essential tool both for individuals and societies. According to the 2019 statistics revealed by "We are Social", 3.484 billion people are actively using social media worldwide (We are Social, 2019), and this number is increasing gradually. Among the many different social networking sites (SNS), Instagram differs due to its nature of focusing just on images, videos, and stories. Instagram was established in 2010; in 2018, it had more than 1 billion monthly active users (Statista, 2018), making it the fastest growing SNS (Sheldon & Bryant, 2016). Instagram was found to be the most preferred SNS among university students (Aparicio-Martínez et al., 2020; Shane-Simpson et al., 2018). According to the July 2020 statistics published by Statista, 42 million people in Turkey are using Instagram (Statista, 2020) with steady increments in its popularity. This statistic makes Turkey the 6th country in Instagram usage ranking in the World (Statista, 2020). Therefore, it is necessary to pay attention to Instagram usage in Turkey.

Even prior to Instagram's popularity, researchers have been trying to understand the effects of SNS usage. Accordingly, social media has both positive and negative effects on individuals. Some studies have revealed that SNS usage was positively related to self-esteem, social capital, and social support (Best et al., 2014; Ellison et al., 2011; Gonzales & Hancock, 2011; Scott et al., 2018), most likely by enabling individuals to overcome their social problems and provide new opportunities (Ellison et al., 2007). In terms of social support, especially older adults were found to benefit from SNS usage (Wu & Chiou, 2020). Although its mechanism is not clear, Pittman and Reich (2016) found that image-based SNSs, like Instagram and Snapchat, help to cope with loneliness while text-based SNS, like Twitter, do not have such an effect. Nonetheless, other studies have pointed out that internet and social media usage can also be detrimental to individuals. Thus, excessive social media usage can bring about lower self-esteem due to the continuous negative feedback that individuals may receive (Valkenburg et al., 2006); moreover, low self-esteem was found to be related to depression (Wang et al., 2018). Various studies have suggested that SNSs can exacerbate loneliness and depression (e.g., Ivie et al., 2020; Primack et al., 2017; Shensa et al., 2017; Wright et al., 2018) along with negative effect on psychological well-being and life satisfaction (Young et al., 2020). Donnelly and Kuss (2016) investigated the relationship between SNS usage and depression and reported that time spent on Instagram was positively related to depression. However, these authors could not detect any significant relationship between depression and the time spent on Twitter, Facebook, or Snapchat. Furthermore, increased SNS use was found to be associated with increased anxiety (Primack et al., 2017; Vannucci et al., 2017). Use of Facebook, WhatsApp, and Instagram were also reported to be related to impulsivity, which suggests that when an individual's control over his impulses decreases, his likelihood of using SNSs increases (Sindermann et al., 2020). Because of these contradictory results, it is clear that more studies are needed to better understand the relationship between Instagram usage and depression, anxiety, stress, and impulsiveness.

Since SNSs can affect individuals both positively and negatively, factors motivating individuals to use these sites require close investigation. A recent study (Brailovskaia et al., 2020) revealed that five factors may motivate the use of SNSs, namely, "Search for Information and Inspiration", "Search for Social Interaction", "Beat of Boredom and Pastimes", "Escape from Negative Emotions", and "Search for Positive Emotions". Among these motivating factors, "Escape from Negative Emotions" could successfully predict tendencies towards SNS addiction. Based on their findings, Brailovskaia and colleagues (2020) suggested that escape from negative emotions should be primarily evaluated in research on the usage of Facebook and Instagram. As its popularity increased, the interest in researching Instagram users has also increased. Sheldon and Bryant (2016) conducted a study that queried the motives of individuals to use Instagram. These authors reported that students were using Instagram to learn about other people's lives, to archive their memories, to acquire specific traits (such as "being cool"), and to create art and develop their skills. Corroborating these data, Lee and colleagues (2015) reported that Instagram users had five primary social and psychological motives: escapism, voyeurism, social interaction, archiving, and self-expression. Kırcaburun and Griffiths (2018a) also stated that Instagram usage was a way of escaping from the real world and reality. Findings related to escapism with Instagram usage directs attention to emotion regulation, which dictates when to have which emotion and how the individual will experience and express this emotion (Gross, 1998). Many actions can be accounted by emotion regulation, but they cannot be strictly categorized as effective or ineffective (Gross, 2014), as their effectiveness depends on the context. However, there is evidence that the process of emotion regulation is related to addictions, including behavioral addictions (Drach et al., 2021; Williams et al., 2012). Pathological gambling, as well as use of internet and mobile phone are considered to be behavioral addictions (Derevensky et al., 2019). Drach and colleagues (2021) reported that

when problems related to emotion regulation increase, so does problematic SNS usage. Moreover, Donnelly and Kuss (2016) reported a significant relationship between time spent on Instagram and internet addition. This finding also emphasizes the associations between Instagram addiction and emotion regulation strategies.

Currently, despite the large number of Instagram users both worldwide and in Turkey, not enough academic research related to Instagram usage has been conducted. Several addiction scales are in place to measure social media, internet and smartphone usage and addiction (e.g., Akın et al., 2017; Andreassen et al., 2012; Kwon et al., 2013). Nevertheless, very few studies have been solely devoted to Instagram usage. Moreover, some of the currently available studies have used the Young Internet Addiction Scale as Instagram Addiction Scale by simply changing the word "internet" to "Instagram"; such studies have reported good Cronbach's alphas in the range of .85 to .90 (Kırcaburun & Griffiths, 2018b). Although these items can still measure some part of Instagram addiction, they may miss factors that are unique to Instagram usage. For this reason, the need for a valid and reliable Instagram Addiction Scale (IAS) is very clear. To address this deficiency, the present study aimed to adapt the Instagram Addiction Scale (IAS) (D'Souza et al., 2018) into Turkish. The IAS is a 26 item, six-factors scale that measures an individual's lack of control (control over the urge to use Instagram), disengagement (difficulty in stopping the use of Instagram), escapism (use of Instagram to escape from reality), health and interpersonal problems experienced due to Instagram usage, excessive use (awareness about time spent on Instagram), and obsession (urge to post a photo). For this purpose, the psychometric properties of the IAS were examined in a Turkish sample in the current study.

STUDY 1

METHODS

Participants

Study 1 was carried out to validate the language of IAS. This study was conducted on two groups of university students studying at Necmettin Erbakan University, Department of Foreign Languages. Participants were recruited to the study by using the convenience sampling method. The first group consisted of 48 students (36 females and 12 males; M_{age} = 21.52, SD = 2.26). The second group was comprised of 42 students (26 females and 16 males; M_{age} = 21.27, SD = 1.25).

Procedure

Permission to adapt the IAS to Turkish was first obtained from D'Souza and colleagues (2018) who developed this scale. Then, ethical approval was obtained from Ankara Yıldırım Beyazıt University Ethical Committee (Approval Date: 21.11.2018, Approval Number: 30). Subsequently, the scale items were translated to the Turkish by a clinical psychologist and a social psychologist. Each item in the two translated versions were compared, and the better translation was chosen for the Turkish form. If neither translation reflected the exact meaning, researchers translated the items together. The Turkish translation was then evaluated for clarity by five experts (one psychologist, one social worker, and three psychological counselors) with a five-point Likert scale. Following the suggestions of these experts the necessary corrections were carried out and the Turkish version of the scale was finalized. The authors preferred to not use back translation, as it has its own disadvantages and limitations. For example, being fluent in two languages, bilingual translators do not necessarily use a language in the same way as monolingual people. Translators may assume that there is always an equivalent word in the target language in the back translation. Therefore, although the translator may have expertise in the language, limited knowledge of scale adaptation or development can be a bottleneck. Thus, the translator must have linguistic talent as well as knowledge and skills in scale development (Behr, 2017; Douglas & Craig, 2007). Other scale adaptation studies using the method of the current study have been published (Deniz et al., 2008; Özyeşil et al., 2011).

Written informed consent, including details about procedure, and the Turkish and English versions of the scales were distributed to the study group comprised of students studying at the Department of English Language Teaching. A total of ninety-one students were recruited and divided into two groups. In the first group, forty-eight students completed the original English form first, and three weeks later, they completed the Turkish form. In the second group, forty-three students first completed the Turkish form of IAS, and three weeks later, they filled the original English form.

Statistical Analyses

Correlation analyses were carried out using the IBM Statistical Package for the Social Sciences (SPSS) program to evaluate the similarity of data collected with the Turkish and English forms.

RESULTS

Results revealed that there was a strong statistically significant positive correlation in the content between the original English form and Turkish form both for the first group (r = .94, p < .001) and the second group (r = .96, p < .001) of participants.

STUDY 2

Study 2 was carried out to conduct an explanatory factor analysis and to test the reliability, concurrent, and convergent validities of the IAS.

METHODS

Participants

A total of 451 university students studying at Necmettin Erbakan University and Ankara Yıldırım Beyazıt University participated in Study 2. Participants were selected using the convenience sampling method. This cohort did not include any of the participants of Study 1. Two hundred and ninety-nine (66.3%) of the participants in Study 2 were females, and 126 (27.9%) were males (M_{age} = 20.61, SD = 1.62). Twenty-six participants did not indicate their age or gender information.

Measures

Instagram Addiction Scale (IAS) The test for Instagram Addiction (TIA) was developed by D'Souza and colleagues (2018) to measure Instagram addiction levels of individuals. It is a 5-point Likert scale ranging from *never* (1) to *all the time* (5) and consists of 26 items. It comprises of six-factors, namely, lack of control (e.g., "My routine is disturbed due to the use of Instagram."), disengagement (e.g., "I spend longer time than what I meant to on Instagram."), escapism (e.g., "I block disturbing thoughts by using Instagram"), health and interpersonal troubles (e.g., "Since I started using Instagram, my interaction with my family has reduced."), excessive use (e.g., "I try to hide my time spent on Instagram from others.") and obsession (e.g., "I feel compelled to post pictures soon after a meeting or an event."). The Cronbach's alpha values varied from .68 to .86, and item-total correlations varied from .39 to .73 in the original form of TIA. According to these results, the scale's psychometric properties were acceptable.

Young Internet Addiction Scale The Young Internet Addiction Scale was developed by Young (1998) by considering the DSM IV pathological gambling diagnosis criteria. It is a single factor, 20-question, and 5 point-Likert type scale ranging from *does not apply* (1) to *always* (5). Individuals who score above 80 points are classified as internet addicts, 50-79 points are classified as internet addiction risk group, and lower than 50 points are classified as not addicted to the internet. The Turkish validity and reliability study of this scale was carried out by Bayraktar (2001), and Cronbach's alpha value of the scale was .91. The validity and reliability study showed that the scale's psychometric properties were appropriate for the Turkish population. Additionally, this scale's Cronbach's alpha value was .92 in the current study.

Barratt Impulsiveness Scale-11 Patton and colleagues (1995) developed the scale, and Güleç and colleagues (2008) tested its validity and reliability for the Turkish version. This scale consists of 30 items and is a 4-point Likert type scale ranging from *rarely/never* (1) to *almost always/always* (4). The internal consistency coefficient for the original version of the scale was calculated as .82 in a cohort of undergraduate students. Factor analysis of the scale showed a three-factor structure (attentional impulsiveness, motor impulsiveness, non-planning impulsiveness) in the Turkish sample. For the total score, Cronbach's alpha was .78 in the undergraduate student sample and .81 in a clinical sample. In the current study, the total impulsiveness score was used, and the Cronbach's alpha value for this score was .74.

Cognitive-Behavioral Avoidance Scale (CBAS) The Cognitive-Behavioral Avoidance Scale was developed by Ottenbreit and Dobson (2004), and the Turkish adaptation study was conducted by Çakır (2016). It is a self-report, 31-item, and 5-point Likert type scale (ranging from *completely wrong for me* = 1 to *completely true for me* = 5). Similar to the original form, the Turkish version has a 4-factor structure, which are behavioral-social avoidance, cognitive-nonsocial avoidance, cognitive-social avoidance, and behavioral nonsocial avoidance. The reliability analysis of CBAS revealed that Cronbach's alpha value was .93 for the total score. Cronbach's alpha values of factors of CBAS were .86 for behavioral-social avoidance subscale, .72 for behavioral-nonsocial avoidance subscale, .77 for cognitive-social avoidance subscale and .88 for cognitive-nonsocial avoidance subscale. In the current study, Cronbach's alpha value was .92 for the total score, and for the four factors, the values were .86, .67, .71, and .84, respectively.

Depression, Anxiety, Stress Scale-21 (DASS-21) This scale was developed by Lovibond and Lovibond (1995) and was adapted into the Turkish by Yıldırım and colleagues (2018). The DASS-21 scale consists of 21 items

and is 4-point Likert type scale. The scale has three factors: depression, anxiety, and stress. Psychometric properties of this scale were examined with an undiagnosed group and a patient group, and acceptable results were obtained. Cronbach's alpha values for DASS-21 were .89 for the depression subscale, .87 for the anxiety subscale, and .90 for the stress subscale. In the current study, the Cronbach's alpha coefficients were .87 for the depression subscale, .83 for the anxiety subscale, and .86 for the stress subscale.

Procedure

The questionnaire booklets were prepared by taking the order effect into consideration. Prior to recruitment, all participants received a written informed consent form stating the details of the study and were assured that participation was voluntary. Participants who decided to volunteer approved this form, and at the end, the booklets and volunteer participation forms were gathered separately.

Statistical Analyses

The IBM SPSS Statistics program was used for all statistical analyses. First, Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity results were investigated to determine the suitability of the obtained data for factor analysis. Principal components analysis (PCA) was conducted with varimax rotation to determine the factor structure of the IAS. To examine concurrent validity, relationships between Instagram addiction and internet addiction were investigated, and to investigate convergent validity, the associations between Instagram addiction, depression, anxiety, stress, impulsiveness, and cognitive-behavioral avoidance scores were examined. The internal consistency coefficient and item-total correlations were analyzed for reliability analyses.

RESULTS

In the evaluation of suitability of the collected data for factor analysis, the KMO coefficient was .94, and Bartlett's Test of Sphericity result was 6141.83 ($p < .001$) suggesting that the current data was suitable for factor analyses. The cut-off value for factor loadings was considered as .50 in the development study of the IAS (D'Souza et al., 2018). The cut-off for factor loadings was also determined as .50 in the current study, which indicates that substantial factor loads could be obtained, as suggested by Comrey and Lee (1992). Five factors with eigenvalues greater than one were obtained after the factor analysis in the current study. These five factors explained 62.16% of the total variance. The original version of the IAS has six factors; however, in the Turkish version five factors were found. The sixth factor consists of two items in the original version of the scale. In general, a factor is recommended to contain at least three items (DeVellis, 2012), which suggests that use of the sixth factor from the original scale may lead to complications. Besides, the two items of the sixth factor were loaded on to other factors in the current study and the final scale was accepted to consist of five factors. The factor loads are shown in Table 1. Based on the factor loadings and considering the .50 criterion, it was decided to exclude five items from the scale. Although the item-total correlations were within acceptable limits, some of the extracted items were found to be loaded on more than one factor. Therefore, these five items were excluded from the scale, and the total number of items was decreased to 21. The item factor loadings of the IAS varied between .51 and .82. The item-total correlation of scale items ranged from .38 to .73. The coefficients for item-total correlation are shown in Table 1.

The relationships between the scores of the IAS and internet addiction were examined to determine the concurrent validity of the IAS. As shown in Table 2, a strong positive statistically significant correlation was obtained between the total score of the IAS and internet addiction ($r = .58$, $p < .001$). Similarly, positive correlations in the range of .29 and .54 were determined between the subdimensions of the IAS and internet addiction (Table 2).

The relationship between the score of the IAS and impulsiveness, cognitive-behavioral avoidance and depression, anxiety, and stress were examined to determine convergent validity of the IAS. Positive correlations ranging from .14 to .17 were obtained between the subdimensions of the IAS (except health and interpersonal trouble dimension) and impulsiveness (Table 3). Positive correlations ranging from .14 to .25 were obtained between the escapism subdimension of the IAS and subdimensions of the cognitive-behavioral avoidance scale. Similarly, the subdimension lack of control and disengagement were positively associated (correlation coefficient range = .12-.27) with all cognitive-behavioral avoidance subscales. The subdimension obsession was found to be positively correlated only to cognitive-nonsocial ($r = .10$, $p < .05$) and behavioral-nonsocial avoidance ($r = .12$, $p < .05$). The subdimension health and interpersonal trouble was positively associated (correlation coefficient range = .17-.25) with all cognitive-behavioral avoidance subscales except the cognitive-social avoidance subdimension. Positive correlations (correlation coefficient range = .19-.29) were detected between escapism, lack of control, disengage-

Table 1. Instagram Addiction Scale Factor Loadings and Item-Total Correlation Coefficients

Items	Item No	Factors					Item-Total Correlation
		Lack of Control	Escapism	Disengagement	Obsession	Health and Interpersonal Trouble	
1. I often upload photos or videos on Instagram.	1	-	-	.230	**.666**	-	.38
2. I feel compelled to post pictures soon after a meeting or an event.	2	-	-	.151	**.790**	-	.45
3. I feel unhappy over the number of likes and the comments I get.	3	-	.318	-	**.700**	.211	.50
4. I keep checking how many people have liked or commented or viewed my posts.	4	.133	.207	.146	**.744**	.122	.54
5. I keep checking what the recent updates or the current trends are.	-	.159	.236	.257	.462	-	.34
6. I become restless when I am denied/ unable to use Instagram.	5	.179	.413	**.506**	.339	.133	.68
7. I block disturbing thoughts by using Instagram.	6	.136	**.810**	.134	.117	-	.54
8. I use Instagram when I am stressed.	7	.200	**.798**	.212	.209	-	.66
9. When I want to get away from certain thoughts, I use Instagram.	8	.173	**.816**	.236	.140	.122	.65
10. I use Instagram as a get away from reality.	9	.272	**.759**	-	-	.149	.59
11. I try to hide my time spent on Instagram from others.	10	**.641**	.236	-	.106	-	.43
12. My performance or productivity (work/ studies) has been affected due to Instagram.	11	**.769**	.142	.218	-	.202	.61
13. I am not able to concentrate on my studies/work due to Instagram use.	12	**.779**	.161	.161	.127	.204	.62
14. My routine is disturbed due to use of Instagram.	13	**.760**	.208	.181	-	.231	.63
15. I forget to eat in time due to use of Instagram.	-	.458	.110	.143	-	.339	.36
16. I say "just a few more minutes" to myself when online but continue to use it.	14	.401	.177	**.516**	.158	.115	.65
17. I try to cut down the usage of Instagram but fail to do so.	-	.446	-	.487	-	.260	.47
18. People often comment negatively on the amount of time I spend on Instagram.	-	.434	-	.356	.166	.377	.44
19. Going to Instagram is the first thing I do when I wake up.	15	-	.160	**.702**	.215	-	.51
20. I feel energized and happy while using Instagram	-	-	.473	.434	.218	.105	.45
21. I feel like I am missing something when I am unable to use Instagram.	16	-	.260	**.632**	.298	.279	.66
22. I have an urge to spend more and more time on Instagram.	17	.238	.320	**.571**	.277	.307	.73
23. I spend longer time than what I meant to on Instagram.	18	.416	.168	**.655**	.115	.195	.68
24. I have backache due to use of Instagram.	19	.226	.183	.201	-	**.799**	.55
25. Since I started using Instagram, my interactions with my family has reduced.	20	.382	-	.158	.200	**.647**	.57
26. Instagram use has negatively affected my physical health.	21	.293	.128	.175	-	**.807**	.55
Eigenvalues		**9.85**	**2.43**	**1.72**	**1.13**	**1.03**	
Explained variance		**37.89**	**9.35**	**6.60**	**4.35**	**3.97**	

ment, health, and interpersonal trouble subdimensions and depression, anxiety, stress. A positive correlation was also detected between the subdimension of obsession and anxiety (r = .18, p < .001) and stress (r = .16, p < .001); however, the relationship between obsession and depression (r = .05, p > .05) did not reach

statistical significance. The total score of the IAS was positively correlated with impulsiveness, all cognitive-behavioral avoidance subscales, depression, anxiety, and stress (correlation coefficient range = .13-.30).

Table 2. Correlation Analysis Results for Concurrent Validity of Instagram Addiction Scale

	1	2	3	4	5	6	7
ESC	-						
LC	.47*	-					
DIS	.58*	.58*	-				
OBS	.41*	.30*	.55*	-			
HIT	.38*	.59*	.56*	.30*	-		
ITS	.77*	.75*	.89*	.68*	.69*	-	
IA	.39*	.54*	.54*	.29*	.47*	.58*	-

Note. ESC: Escapism, LC: Lack of Control, DIS: Disengagement, OBS: Obsession, HIT: Health and Interpersonal Trouble, ITS: Instagram total score, IA: Internet addiction. *$p < .001$

In the determination of internal consistency values, the Cronbach's alpha coefficient was found to be .92 for the whole scale, .84 for lack of control, .89 for escapism, .86 for disengagement, .78 for obsession, and .83 for health and interpersonal trouble subscales (Table 4).

To determine the test-retest reliability of the IAS, the measurement was repeated after two weeks with some of the participants who participated in Study 2. These participants were identified with a code (a nickname) that they wrote in the booklet in the initial study and were recruited from the same population of university students studying at Necmettin Erbakan University. The sample was composed of 107 (70 females and 37 males) individuals (M_{age} = 19.96, SD = .88). The test-retest analyses indicated that the initial study and the retest two weeks later had a strong positive and statistically significant correlation (r = .77, $p < .001$).

STUDY 3

To examine the construct validity obtained from the exploratory factor analysis, Study 3 was conducted with an independent sample with a broader age range. A confirmatory factor analysis was employed.

METHODS

Participants

Four hundred sixty-eight volunteers whose ages ranged from 18 to 62 years participated in this study. The participants were recruited to Study 3 using the convenience sampling method. The sample consisted of 341 (72.9%) female and 127 (27.1%) male participants (M_{age} = 30.53, SD = 9.71). Five of the participants were illiterate (1.1%), 6 (1.3%) were primary school graduates, 7 (1.5%) were secondary school graduates, 88 (18.8%) were high school graduates, 228 (48.7%) were university graduates, 106 (22.6%) had a higher education degree such as MSc, and 28 (6%) had completed their Ph.D. In the cohort, 188 (40.2%) participants were married, 244 (52.1%) were single, 3 (0.6%) were widowed, 14 (3%) were divorced, and 19 (4.1%) were engaged to be married.

Procedure

For Study 3, data were collected online with the use of Google Forms. As a data collection tool, Personal Information Form (including questions about age, gender, education, and marital status) and the IAS were used. Before the study, participants received a written informed consent form; participation in the study was strictly on a voluntary basis.

Statistical Analyses

Confirmatory factor analysis of the IAS was conducted via structural equation modeling using the IBM SPSS Amos program.

RESULTS

The confirmatory factor analysis fit indices for the IAS were as follows: $\chi^2/df = 3.55$, $p < .000$, GFI = .88, AGFI = .84, CFI = .92, NFI = .89, TLI = .90, IFI = .92, RMSEA = .07, SRMR = .06, $p < .001$. However, some fit indices like GFI and AGFI were not completely within acceptable limits. For this reason, advised modifications were applied. According to the modification indices, covariances between the error variances of 1st and 2nd items were observed; additionally, covariances between the error variances of 14th and 18th items could improve the model. Following these modifications, fit indices were found as $\chi^2/sd = 2.86$, $p < .000$, GFI = .91, AGFI = .88, CFI = .94, NFI = .91, TLI = .93, IFI = .94, RMSEA = .06, SRMR = .06, $p < .001$. These results show that the five-factor structure of the Turkish version of the IAS was also appropriate for the general population. The tested model is shown in Figure 1.

DISCUSSION

The aim of the present study was to adapt the Instagram Addiction Scale developed by D'Souza and colleagues (2018) into Turkish and conduct the reliability, validity, exploratory and confirmatory factor analyses of the trans-

Table 3. Correlation Analysis Results for Convergent Validity of Instagram Addiction Scale

	IMP	BSA	CNA	BNA	CSA	DEP	ANX	STR
ESC	.15**	.14**	.24***	.25***	.18***	.19***	.23***	.26***
LC	.14**	.15**	.24***	.20***	.12*	.20***	.27***	.24***
DIS	.14**	.12*	.22***	.27***	.14**	.21***	.21***	.25***
OBS	.17***	-.08	.10*	.12*	.05	.05	.18***	.16***
HIT	.09	.17***	.25***	.21***	.09	.23***	.29***	.27***
ITS	.18***	.13**	.27***	.28***	.16**	.23***	.30***	.30***

Note. ESC: Escapism, LC: Lack of Control, DIS: Disengagement, OBS: Obsession, HIT: Health and Interpersonal Trouble, ITS: Instagram total score, IMP: Impulsiveness, BSA: Behavioral Social Avoidance, CNA: Cognitive Nonsocial Avoidance, BNA: Behavioral Nonsocial Avoidance, CSA: Cognitive Social Avoidance, DEP: Depression, ANX: Anxiety, STR: Stress.
*$p < .05$, **$p < .01$, ***$p < .001$

Table 4. Cronbach Alpha Coefficients of Instagram Addiction Scale

Factors	Item Numbers	Cronbach Alpha Coefficient
Lack of Control	10, 11, 12, 13	.84
Escapism	6, 7, 8, 9	.89
Disengagement	5, 14, 15, 16, 17, 18	.86
Obsession	1, 2, 3, 4	.78
Health and Interpersonal Trouble	19, 20, 21	.82
Total	All items	.92

lated scale. Firstly, the scale was translated from English to Turkish, and the results showed that the Turkish version of the scale was equivalent to the English version. Factor analysis was conducted to determine the factor structure of the scale. In order to obtain substantial factor loads, the cut-off score for factor loadings was determined as .50 in the current study (Comrey & Lee, 1992). Accordingly, a five-factor structure with 21 items was found to be better suited to the data and accepted, despite the fact that the original version of the form has six factors with 26 items. In the original form, the sixth factor consists of two items. In general, a factor is recommended to contain at least three items (DeVellis, 2012), which suggests that use of the sixth factor from the original scale may lead to complications. Besides, the two items of the sixth factor were loaded on to other factors in the current study and the final scale was accepted to consist of five factors.

Internal consistency and test-retest reliability were next analyzed to test the reliability of the scale and the data obtained were highly robust (DeVellis, 2012). Moreover, a similarity with the results of the original scale (D'Souza et al., 2018) was also noted. Generally, it is suggested that the reliability coefficient should be .70 and above (George & Mallery, 2003). In this study, the dimension with the lowest reliability coefficient was found to be .78 for obsession subdimension. This value was calculated as .92 for the overall scale. Thus, it can be stated that the scale is a reliable measure that is specific for Turkish culture.

Correlation analyses carried out to determine concurrent validity indicated strong positive correlations

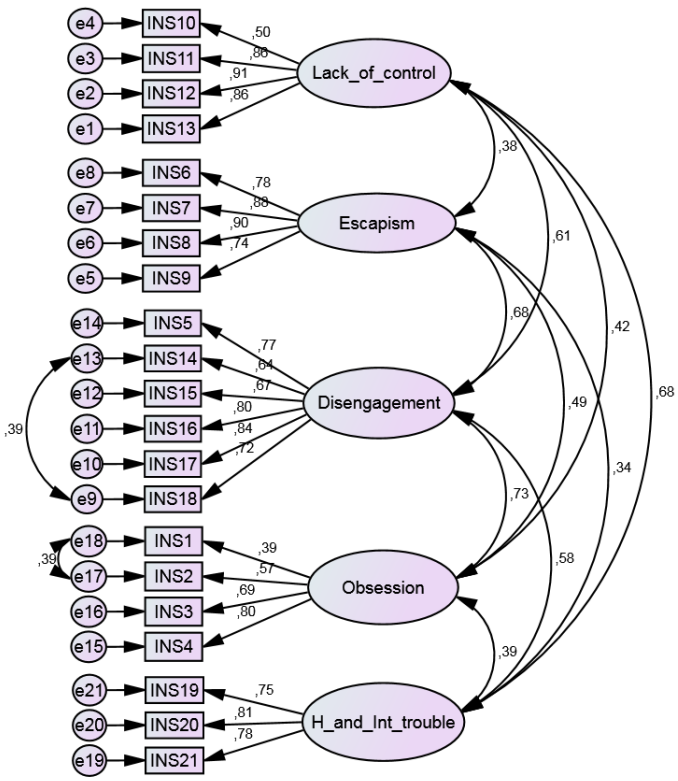

Figure 1. Instagram Addiction Scale's Confirmatory Factor Analysis

between the total score of the IAS and its subdimensions, and internet addiction. Previous studies have shown a positive relationship between internet addiction and excessive social media usage. Hawi and Samaha (2019) found a significant positive correlation between social media usage habits and internet addiction test.

Supporting this, Przepiorka and Blachnio (2016) reported a similar relationship between the intensity of Facebook usage and internet addiction. Moreover, as stated before, a significant positive association between internet addiction and time spent on Instagram was also detected (Donnelly & Kuss, 2016).

As an indication of convergent validity, positive correlations were detected between the IAS total score as well as its subdimensions and depression, anxiety, stress, impulsiveness, and cognitive-behavioral avoidance subdimensions. Several other studies in the published literature corroborate the data (particularly convergent validity) obtained in the current study (e.g., Donnelly & Kuss, 2016; Gul et al., 2018; Lup et al., 2015; Savci & Aysan, 2015). However, as solely correlation analyses were conducted in the current study, it remains to be established whether Instagram addiction leads to depression, anxiety, and stress or vice versa, or whether there may be a reciprocal relationship between these variables. Individuals may feel depressed, anxious, and stressed due to social comparisons or negative feedback they receive. Alternately, Instagram might be used as a regulation tool to escape from those feelings or ideations. In any case, further studies are needed to address the association. The link between impulsiveness and Instagram usage, however, appears to be clear; when individuals cannot regulate their impulses, their likelihood of Instagram usage increases (Sindermann et al., 2020). Since most of these associations are predictive in nature, additional studies with appropriate statistical analyses are needed.

To test the confirmatory factor analysis for the Turkish version of the IAS, a measurement model was created and tested. This model indicated that the five-factor structure was suitable for the Turkish version of the scale. Psychometric properties of the five-factor structure of the Turkish version of the IAS were found to be satisfactory; therefore, the scale was a valid and reliable measurement tool for Turkish culture.

Conclusions, Limitations of the Study and Suggestions for Future Studies

The current study has both some limitations and strengths. First of all, data for the primary analysis of the Turkish version of the IAS (Study 2) was gathered from university students; of these, most of the participants were female. To mitigate this and to test the suitability of the scale for the general population, a confirmatory factor analysis of the IAS (Study 3) was conducted with participants from the general population. The number of female participants in Study 3 were still greater than male participants; nonetheless, the suitability of the scale for both university students and the general population can be concluded.

Data of Study 1 and Study 2 were collected with paper-pencil forms; however, the data of the confirmatory factor analysis were collected via the Internet, as it was believed to be easier to reach Instagram users in this way. It is not clear whether this type of data collection has affected the results. One way to ameliorate this would be to conduct further studies both with paper-pencil forms and via the Internet. Moreover, the correlations obtained from Study 1 and from the test-retest analysis were not close to each other. In the language validity study (Study 1), the researchers did not ask the participants whether they used Instagram or not. When the responses were analyzed, the scores obtained were mostly in the range of 1 or 2, which gave the impression that participants did not use Instagram. This point should be taken into consideration while using IAS. In addition, participants from a clinical sample (who were diagnosed with depression, anxiety, etc.) as another study arm would have been beneficial in testing the predictive power of IAS in the current study.

In conclusion, the number of included items makes the IAS an easily administered scale. The IAS is a reliable and valid scale for use in a Turkish sample. As internet-based addictions are more relevant in today's world, it is crucial to determine the factors that can exacerbate these addictions. In this regard, the IAS can be used in studies aiming to identify the factors for Instagram addiction in Turkish culture.

Compliance with Ethical Standards Ethical approval was obtained from Ankara Yıldırım Beyazıt University Ethical Committee (Approval Date: 21.11.2018, Approval Number: 30).

Conflict of Interest The authors declare that they have no conflict of interest.

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Instagram Bağımlılığı Ölçeği

	Asla	Ara sıra/ Nadiren	Bazen	Çoğu zaman	Her zaman
1. Instagram'a sıklıkla fotoğraf ya da video yüklerim.	1	2	3	4	5
2. Kendimi bir buluşma ya da etkinlikten hemen sonra fotoğraf paylaşmak zorunda hissederim.	1	2	3	4	5
3. Aldığım yorumların ve beğenilerin sayısı az olduğunda kendimi mutsuz hissederim.	1	2	3	4	5
4. Paylaşımlarımı kaç kişinin gördüğünü, beğendiğini ya da yorum yaptığını sürekli kontrol ederim.	1	2	3	4	5
5. Instagram kullanmam mümkün olmadığında/yoksun kaldığımda kendimi huzursuz hissederim.	1	2	3	4	5
6. Instagram kullanarak zihnimdeki rahatsız edici düşünceleri engellerim.	1	2	3	4	5
7. Stresli olduğumda Instagram kullanırım.	1	2	3	4	5
8. Bazı düşüncelerden uzaklaşmak istediğimde Instagram kullanırım.	1	2	3	4	5
9. Instagram'ı gerçeklerden uzaklaşmak için kullanırım.	1	2	3	4	5
10. Instagram'da geçirdiğim süreyi başkalarından saklamaya çalışırım.	1	2	3	4	5
11. Instagram'dan dolayı performansım ya da üretkenliğim (iş/okul) etkilenir.	1	2	3	4	5
12. Instagram kullanımından dolayı okuluma/işime odaklanamam.	1	2	3	4	5
13. Instagram kullanımımdan dolayı rutin işlerimi aksatırım.	1	2	3	4	5
14. Çevrimiçi olduğumda kendime "yalnızca birkaç dakika daha" derim ancak kullanmaya devam ederim.	1	2	3	4	5
15. Uyandığımda yaptığım ilk şey Instagram'a girmektir.	1	2	3	4	5
16. Instagram'ı kullanamadığımda bir şeyler kaçırıyormuş gibi hissederim.	1	2	3	4	5
17. Instagram'da daha fazla zaman geçirmek için güçlü bir istek duyarım.	1	2	3	4	5
18. Instagram'da düşündüğümden/planladığımdan daha fazla zaman harcarım.	1	2	3	4	5
19. Instagram kullanımından dolayı bel ve sırt ağrısı çekerim.	1	2	3	4	5
20. Instagram kullanmaya başladığımdan beri ailemle olan etkileşimim azaldı.	1	2	3	4	5
21. Instagram kullanımı fiziksel sağlığımı olumsuz yönde etkiler.	1	2	3	4	5