

Psychometric Properties of the Persian Version of the Instagram Addiction Test (IAT) in the Iranian Population

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Abstract

Introduction: Nowadays, Instagram has become one of the most widely used social media platforms in Iran and around the world. This study aimed to examine the psychometric properties of the Persian version of the Instagram Addiction Test in Iran.

Method: This cross-sectional study utilized an online survey methodology to assess Instagram usage patterns and addiction levels among Iranian users. The survey which was conducted in 2020, targeted a diverse population across various regions of Iran, providing a comprehensive overview of the national Instagram user demographic. The sample comprised 950 participants, selected through convenience sampling approach. Key instruments included the Instagram Addiction Test (1998), the Connor-Davidson Resilience Scale (2003), and the Addiction to Mobile Questionnaire Based on Social Networks (2015). To ensure psychometric analysis, we employed construct validity via exploratory factor analysis, divergent validity through correlation assessment between Instagram addiction and resilience subscales, and convergent validity by evaluating the correlation patterns within Instagram addiction constructs. All data was analyzed using SPSS- 25.

Results: The reliability, indicated by a Cronbach's alpha of 0.706, surpasses the accepted benchmark ($\alpha > 0.7$), confirming the internal consistency of the tool.

Conclusion: This study had substantiated the validity and reliability of the Persian version of the Instagram Addiction Test, affirming its efficacy in measuring dependency levels on this social media platform.

Keywords: Instagram, Internet Addiction, Mobile, Reliability, Resilience

Introduction

The proliferation of social networks has fundamentally altered the landscape of digital interaction, engendering a unique phenomenon: social network addiction [1]. This form of addiction, distinct yet parallel to broader Internet addiction, manifests as an excessive and compulsive use of social networking platforms, often leading to detrimental impacts on individuals' social, psychological, and occupational functioning. The ubiquity of social networks, accelerated by the advent of smartphones and ubiquitous Internet access, has rendered them an integral part of daily life for millions globally, intensifying the propensity for addictive behaviors [2]. The widespread use of social networks and the advancement of communication technology have drawn attention to the issue of social network addiction. Excessive and pathological use of social networks has become a growing concern [3]. Social

media platforms have become an integral part of daily life, making it increasingly challenging for individuals to disengage. The addictive nature of cyberspace and social media has brought it to the forefront, comparable to other addictive behaviors such as eating disorders and sexual addictions [4].

With the easy accessibility of the Internet, its influence has expanded significantly, providing a platform for information, entertainment, knowledge, and serving as a tool for work or study. However, this expansion has been accompanied by concerns over the co-occurrence of mental disorders and Internet addiction, a development demanding increased attention. Studies have highlighted a wide range of prevalence rates for social media addiction, varying from 4.5% to 47% [5], thus emphasizing the necessity to focus on Internet addiction disorder within the context of rapidly evolving Internet-based social media platforms [6]. Since April 2020, Instagram's user base has grown to account for 25.78% of social media platform users as of June 2020, surpassing Facebook, Twitter, and LinkedIn. This trend not only underscores Instagram's increasing prominence in the social media landscape [7] but also highlights the importance of examining the specific nature of addiction to this platform.

The dynamic digital landscape in Iran, characterized by rapid technological advancement and increasing Internet penetration, provides a fertile ground for the study of social media's impact on its population. This context is particularly relevant when examining Instagram's influence, given the platform's soaring popularity among Iranian users. The integration of Instagram into daily life has become a noteworthy aspect of digital culture in Iran, reflecting both global trends and unique local usage patterns [8]. The platform's ability to shape social interactions, cultural expressions, and personal identities makes it a significant subject for academic scrutiny. Moreover, the potential psychological ramifications of Instagram use, ranging from positive engagement to problematic addiction, necessitate deeper understanding of its role in Iranian society. This need is further accentuated by the burgeoning young population in Iran, who are not only avid users of social media but also vulnerable to its addictive aspects [9]. Therefore, exploring the prevalence and characteristics of Instagram use, and its potential addictive tendencies among Iranians, becomes imperative. The following discussion on the prevalence of Internet and Instagram addiction in Iran builds on this context, shedding light on the specific nuances of social media interaction within the Iranian sociocultural framework.

Previous research conducted in Iran has shed light on the prevalence of Internet addiction disorder. Studies have reported a prevalence rate of 25% among medical students in 2013 [10], and 25% among university students in 2020 [11]. These findings highlight the need for further investigation into Internet addiction, specifically focusing on the use of Instagram among the Iranian population. The latest census data in 2020 indicated a substantial number of Internet users in Iran, reaching 74,518,000.

Moreover, statistics from the Statista website revealed that approximately 24 million Iranians were active Instagram users, accounting for approximately 32% of Internet users in Iran. This places Iran as the eighth-highest country in terms of Instagram usage, following the United States, Brazil, India, Indonesia, Russia, Turkey, and Japan [12].

Several tools are available to measure Internet addiction, such as the Internet Addiction Scale [13], the Compulsive Internet Use Scale [14], and the Online Cognition Scale [15].

However, there is a need for specific measures targeting Instagram addiction. To address this gap, the IAS has been developed, which assesses addictive behaviors specifically related to Instagram use [3]. Additionally, a questionnaire measuring motivation to use Instagram has been conducted in Taiwan [16]. However, the availability of appropriate tools to measure Instagram addiction in the Iranian context remains limited.

Previous studies on Internet addiction in Iran have primarily focused on specific populations and have predominantly explored general Internet addiction. Given the ease of Internet access and the consequent rise in Internet addiction and social media usage, it is crucial to investigate these areas, considering the negative and detrimental effects of addiction on society, particularly among youth and adolescents. Therefore, there is an urgent need for research that specifically examines Instagram use and addiction in the Iranian population. To address these research gaps, the present study aims to investigate the psychometric properties of the Persian version of the Instagram Addiction Questionnaire. This study represents the first attempt in Iran to develop and validate a measurement tool specifically designed to assess Instagram addiction. By examining the psychometric properties, including reliability and validity, we aim to establish a robust and culturally appropriate instrument to measure Instagram addiction among Iranians.

Convergent validity was established by utilizing the Addiction to Mobile Questionnaire (AMQ), which has been extensively used to assess the Addiction to Mobile Questionnaire Based on Social Networks [17]. Divergent validity was examined using the Conner-Davidson Resilience Scale (CD-RISC), a well-established measure of resilience [18]. By utilizing these measures, we evaluated the extent to which the Persian version of the Instagram Addiction Questionnaire captures distinct aspects of addiction and resilience, providing evidence of its validity. By employing convergent and divergent validity measures, we established the reliability and validity of the questionnaire.

Given the widespread use of Instagram in Iran and the potential risks associated with excessive and addictive behaviors, understanding the psychometric properties of the Instagram Addiction Questionnaire is of utmost importance. This research contributed to the field of addiction studies by providing a validated tool for assessing Instagram addiction in the Iranian context. The findings inform researchers, clinicians, and policymakers

in developing targeted interventions and prevention strategies to address the growing concern of Instagram addiction among the Iranian population.

Method

This cross-sectional study, conducted in 2020, utilized an online survey methodology to explore the patterns and levels of Instagram usage and addiction among Iranian users. The survey aimed to provide a detailed assessment of Instagram's impact on a diverse range of individuals within Iran, offering insights into both regional and national trends in social media behavior. Our study specifically targeted a wide demographic spectrum, encompassing various regions across Iran, thus ensuring a comprehensive representation of the Iranian Instagram user base. We selected a robust sample of 950 participants, employing a convenience sampling approach. This method facilitated the inclusion of a wide array of participants from different geographical areas, age groups, and social backgrounds. By doing so, we aimed to capture the diverse experiences and perspectives of Instagram users in Iran. This demographic distribution within our sample was instrumental in evaluating the psychometric properties of the Instagram Addiction Questionnaire, particularly in context to the Persian-speaking population.

Firstly, we employed the internal consistency method, specifically Cronbach's alpha coefficient, to assess the reliability of the Instagram Addiction Questionnaire. This method provides a measure of the consistency and homogeneity of the questionnaire items.

Secondly, we employed three approaches to evaluate the validity of the questionnaire. Construct validity was assessed through exploratory factor analysis, which helps determine the underlying factor structure of the questionnaire.

Thirdly, to establish divergent validity, we investigated the correlation between Instagram addiction and two subscales of the resilience questionnaire. The rationale for this comparison lies in the distinct nature of the constructs: while Instagram addiction assesses compulsive use, resilience relates to coping and adaptability. This contrast in concepts underlines the distinctiveness of the Instagram Addiction Questionnaire. Lastly, in assessing convergent validity, we examined the correlation between the Instagram Addiction Questionnaire and the Addiction to Mobile Questionnaire Based on Social Networks. The similarity in their focus on technology-related addictive behaviors provides a basis for expecting a positive correlation, thus confirming convergent validity. This approach underscores the comparative assessment of similar constructs in the domain of technological addiction.

By undertaking these steps, we aimed to thoroughly evaluate the validity criteria of the Instagram Addiction Questionnaire.

Firstly, the content validity of the questionnaire was assessed as an initial step in evaluating its overall quality. The opinions of 10 experts in the field were sought to evaluate the content's validity, logical coherence, and

question clarity. Next, the internal consistency method was employed to assess the reliability of the Instagram Addiction Questionnaire. This method focuses on the uniformity and coherence of the questionnaire's components. Among the internal consistency methods, Cronbach's alpha was utilized to determine the reliability coefficient. The calculated Cronbach's alpha value was 0.706, which met the acceptable threshold of 0.7 for scale reliability. This method does not require repetition and is well-suited for assessing the reliability of transient properties. Following the development and administration of the questionnaire to the Persian population through social networks, the factor analysis method was employed to examine the validity of its structure. Additionally, the convergent and divergent validities were assessed by examining the correlations between the Instagram Addiction Questionnaire and the Conner-Davidson Resilience Scale, and the Addiction to Mobile Questionnaire.

In this cross-sectional study, all users of Instagram software in Iran were included as participants. The sample size was determined using the method proposed by Krejcie and Morgan ($n=348$), and data were collected through field methods [19]. Participant selection was based on simple random sampling [20]. The study recruited volunteers who responded to advertisements disseminated through virtual groups such as WhatsApp, Instagram, and Telegram. A total of 950 individuals participated and completed an online questionnaire. Inclusion criteria required a willingness to participate in the study and complete an electronic questionnaire. The electronic questionnaire was accessible to all members of the community. Exclusion criteria included a history of drug abuse, epilepsy, other neurological disorders, and other mental disorders. The survey was open from 11:14 AM on June 4, 2020, to 12:51 PM on June 19, 2020. To recruit an appropriate sample, a public link containing an invitation to participate in the Instagram Online Addiction Survey and a brief description of the study was utilized. Upon accessing the link, participants received information about the study's purpose and agreed to maintain anonymity and confidentiality. Their completion of the survey indicated their consent and satisfaction. Participants were then instructed to respond to the survey questions.

The tools used in this study were as follows:

Instagram Addiction Test (IAT): This test was adapted from the Persian version of Young's Internet Addiction Test [13]. This self-report questionnaire includes 20 items designed to assess the extent of Instagram use and its potential addictive nature among the Iranian population. Each item in the questionnaire is rated on a five-point Likert scale, ranging from 1 (does not match my experience at all) to 5 (definitely matches my experience). The scale measures various aspects of Instagram usage, including emotional attachment, compulsive use, and impacts on daily life. The total scores can range from 20 to 100, with higher scores indicating a greater level of Instagram addiction. The scoring criteria are as follows: scores below 20 indicate non-users, scores between 20

and 49 indicate normal users, and scores above 49 indicate potential Instagram addiction. The primary modification in this version was the replacement of the term "Internet" with "Instagram" to make it specific to Instagram usage. For data collection, an online survey was developed using Fermer's method [21], facilitating both simple and complex study designs. This method offers immediate feedback and comprehensive data analysis, beneficial for longitudinal studies [22]. The original version demonstrated a Cronbach's alpha of 0.87, indicating high reliability [13]. Its construct validity was established through factor analysis. In the Persian version, preliminary analysis suggests a Cronbach's alpha of .85, affirming its reliability [23]. The content validity was ensured by a panel of bilingual experts, and construct validity was supported by exploratory factor analysis. In the current study, we achieved a Cronbach's alpha of 0.80, aligning with the recommendation to attain at least this level of reliability. This is considered adequate for psychological scales, ensuring the tool's consistency and its ability to accommodate cultural nuances effectively.

Connor-Davidson Resilience Scale (CD-RISC): This scale is a comprehensive tool employed for evaluating resilience. Comprising 25 items, it is tailored to assess the resilience levels in individuals across various domains. These items cover a wide range of resilience facets, including personal competence, adaptability, positive emotions, and reliance on social support [18]. Participants rate each item on a five-point Likert scale, spanning from "not true at all" (0) to "true nearly all the time" (4). The aggregate of these ratings, ranging between 0 and 100, indicates the respondent's resilience level. Higher scores on the CD-RISC correlate with greater resilience, signifying a more robust ability to cope with and recover from adversities. The international version of the CD-RISC has shown strong psychometric properties. The Cronbach's alpha coefficient, a measure of internal consistency, was reported as 0.85 in previous research [24] indicating high reliability. In the Persian adaptation of the CD-RISC used in our study, the Cronbach's alpha was found to be 0.79 [25]. This level of internal consistency is considered acceptable, reflecting a reliable measure of resilience within the Iranian context. In the current study, the Cronbach's alpha was found to be 0.76. This level of reliability is considered adequate for psychological scales, as it ensures the consistency of the tool.

Addiction to Mobile Questionnaire Based on Social Networks (AMBS): Khajeahmadi et al. developed the Addiction to Social Networks Questionnaire for mobile phones in 2015. This questionnaire features 23 questions, grouped into four distinct components: individual performance, time management, self-control, and social relations. Respondents express their level of agreement for each statement using a five-point Likert scale, ranging from "completely agree" to "completely disagree." The original version of the AMBS showed a Cronbach's alpha coefficient of 0.92 [17], indicating an excellent level of internal consistency. This high alpha value demonstrates that the questionnaire reliably measures the intended construct. In the current study, the Persian version of the

AMBS yielded the Cronbach's alpha coefficient of 0.85. This still represents a high level of internal consistency, suggesting effective measurement of the construct within the Iranian context.

The data were reported as mean \pm Standard Error of Mean (SEM). Statistical analysis was conducted using SPSS® software (SPSS, Chicago, IL; version 25) and JASP software (version 0.4.1.0), an open-source project supported by the University of Amsterdam. The normal distribution of the data sets was assessed using the Kolmogorov-Smirnov test. To explore potential correlations, the Pearson's correlation test was utilized. Additionally, Cronbach's alpha was computed to evaluate the internal consistency of the CIAS-R, BSRS-5, and NS measures. Multiple regression analysis was performed to identify independent psychosocial predictors of Instagram addiction scores. A path analysis of a structural equation model was conducted to illustrate the relationships between significant risk factors and IA scores. All statistical analyses were carried out at a 95% Confidence Level (CI), with a significance level set at $p < 0.05$. Furthermore, multivariate logistic regression analysis was employed to determine key predictors of IA, with adjustments made for age and gender.

Results

A total of 950 individuals actively participated in the online survey. Among the participants, 667 (70.1%) were identified as females, while 284 (29.89%) were identified as males. In terms of age distribution, the majority of respondents, 867 (91.3%), fell within the young adult category, spanning ages 13 to 39 years (mean age = 25.4 years, standard deviation=7.2 years). The middle-aged adult group, encompassing ages 40 to 59 years, accounted for 82 (8.6%) participants, while a sole individual (0.1%) was classified as an older adult, aged 60 years or older. Examining employment status, the survey revealed that 150 (15.8%) respondents were unemployed, 510 (53.7%) identified themselves as students, 121 (12.7%) were employees, and 169 (17.8%) were self-employed. In terms of marital status, the majority of participants, 754 (79.4%), were single, while 196 (20.6%) indicated being married.

In the rigorous assessment of the Persian Version of the IAT using Confirmatory Factor Analysis (CFA), we have meticulously compiled comprehensive model fit indices, presented in Table 1. These indices are crucial in evaluating the model's fit and include Satorra-Bentler Scaled Chi-Square (sbX2), Standardized Root Mean Square Residual (SRMR), Root Mean Square Residual (RMR), Comparative Fit Index (CFI), Normed Fit Index (NFI), Incremental Fit Index (IFI), Relative Fit Index (RFI), Adjusted Goodness of Fit Index (AGFI), Goodness of Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA). The values obtained for these indices in our study are as follows: sbX2 = 300.45, SRMR = 0.033, RMR = 0.047, CFI = 0.96, NFI = 0.91, IFI = 0.96, RFI = 0.89, AGFI = 0.85, GFI = 0.92, and RMSEA = 0.05. The alignment of these indices with their respective acceptable values or thresholds further reinforces the

structural integrity and constructs validity of the Persian IAT. Specifically, the CFI and IFI values exceeding 0.90 and the low RMSEA value indicate an excellent fit between the model and the observed data. This comprehensive validation process substantiates the effectiveness of the Persian IAT as a robust tool for assessing Instagram addiction within the Iranian population, making a significant contribution to the field of social media addiction research in diverse cultural contexts. The construct validity analyses of the questionnaire were conducted as follows: Factor analysis was employed to categorize the problem attributes of the questionnaire content. The appropriateness of factor analysis was

determined through a Kaiser-Meyer-Olkin (KMO) Test and Bartlett's test of Sphericity, yielding a KMO value of 0.877 and a significant p-value of less than 0.005. These results indicated that factor analysis was suitable for the dataset (Table 2). A reliability analysis was performed to assess the problem attributes' consistency. The obtained Cronbach's alpha ranged from 0.676 to 0.724, with an overall reliability coefficient of 0.706. This indicated that the questionnaire exhibited decent consistency and stability. The overall reliability coefficient exceeding the basic requirement of 0.7 for Cronbach's alpha demonstrated the satisfactory internal consistency of the questionnaire.

Table 1. Model Fit Index

| χ^2_{df} | SRMR | RMR | CFI | NFI | IFI | RFI | AGFI | GFI | RMSEA |
|---------------|-------|-------|------|------|------|------|------|------|-------|
| 300.45 | 0.033 | 0.047 | 0.96 | 0.91 | 0.96 | 0.89 | 0.85 | 0.92 | 0.05 |

Table 2. KMO and Bartlett's Test

| | | | |
|--|--------------------|--|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | | .87 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | | 4238.51 |
| | df | | 190 |
| | Sig. | | .0001 |

Upon confirming the assumption, an analysis of the participants' responses was undertaken with the objective of summarizing the variables and identifying a concise set of factors. To achieve this, the principal component analysis model was employed. In the initial stage of factor analysis, factors were extracted based on predetermined criteria. The Eigenvalue and scree plot were utilized for this purpose. The Eigenvalue represents the proportion of total variable variance explained by each factor, serving as an indicator of its explanatory significance. Factors with low Eigenvalues have a limited role in explaining variable variance. For the purpose of variable reduction in factor analysis, an Eigenvalue exceeding one is considered desirable. In our study, four

factors were identified with Eigenvalues surpassing one, collectively accounting for 46.365% of the variance (Table 3). The scree plot, illustrated in Figure 1, depicts the four factors and the point at which the curve transitions into a straight line. The Scree Plot and Table were utilized to examine the four-factor structure of Instagram addiction. Factor analysis was conducted on the data using orthogonal rotation, with 12 iterations to achieve the most suitable composition and factor structure. The findings indicated that the four-factor structure of Instagram addiction explained 36.46% of the total variance. Table 3 presents the eigenvalues, the percentage of variance accounted for by each factor, and the density percentage of each factor.

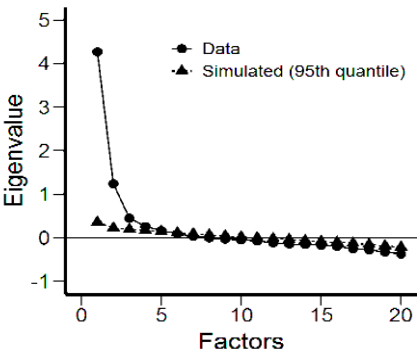


Figure 1. Scree Plot

Table 3. Total Variance of Instagram Addiction Scale

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.98 | 24.91 | 24.91 | 4.98 | 24.91 | 24.91 | 2.93 | 14.67 | 14.67 |
| 2 | 2.09 | 10.46 | 35.38 | 2.09 | 10.46 | 35.38 | 2.44 | 12.21 | 26.89 |
| 3 | 1.19 | 5.97 | 41.35 | 1.19 | 5.97 | 41.35 | 2.15 | 10.79 | 37.69 |
| 4 | 1.00 | 5.01 | 46.36 | 1.00 | 5.01 | 46.36 | 1.73 | 8.67 | 46.36 |

Extraction Method: Principal Component Analysis.

Table 3 presents the eigenvalues and the percentage of variance explained by each factor in the Instagram addiction scale. The four factors have eigenvalues of 4.983, 2.094, 1.94, and 1.002, explaining 24.916%, 10.468%, 5.970%, and 5.011% of the variance, respectively. In total, these four factors account for 46.365% of the variance in the scale. The communality of each question was examined to assess its correlation with the overall test. The majority of correlation values between the questions and the entire test exceeded 50%, indicating a strong correlation between each question and the overall test. This high correlation demonstrates the suitability of the questions for factor analysis. The communality values for each question can be found in Table 4.

Table 4. Communality of Each Item of IAT

| | Initial | Extraction |
|---------|---------|------------|
| ITEM 1 | 1.00 | .44 |
| ITEM 2 | 1.00 | .22 |
| ITEM 3 | 1.00 | .59 |
| ITEM 4 | 1.00 | .50 |
| ITEM 5 | 1.00 | .49 |
| ITEM 6 | 1.00 | .56 |
| ITEM 7 | 1.00 | .58 |
| ITEM 8 | 1.00 | .52 |
| ITEM 9 | 1.00 | .51 |
| ITEM 10 | 1.00 | .58 |
| ITEM 11 | 1.00 | .58 |
| ITEM 12 | 1.00 | .56 |
| ITEM 13 | 1.00 | .40 |
| ITEM 14 | 1.00 | .44 |
| ITEM 15 | 1.00 | .26 |
| ITEM 16 | 1.00 | .52 |
| ITEM 17 | 1.00 | .23 |
| ITEM 18 | 1.00 | .37 |
| ITEM 19 | 1.00 | .42 |
| ITEM 20 | 1.00 | .42 |

Extraction Method: Principal Component Analysis

Figure 2 illustrates the outcomes of the factor rotation procedure, which aimed to establish a coherent and interpretable structure of factors within the questionnaire. The factor loadings of each individual question were examined to determine the content and meaning of each factor. By analyzing the factor loadings, the underlying themes or dimensions represented by each factor were identified. This analysis contributed to a better understanding of the relationship between the questions and their corresponding factors, enhancing the overall comprehension of the constructs under investigation. Based on the rotated matrix, a group of questions that exhibited high correlation with each other were identified and combined to form factors or subsets. These factors were named based on their theoretical foundations and in consultation with experts in the field. The factors were labeled as the first factor, the second factor, the third factor, and the fourth factor. Assigning meaningful names to the factors helped in better understanding the underlying dimensions being measured by the questionnaire and provided a clear structure for interpretation and analysis.

In evaluating the divergent validity of the Persian Version of the IAT in the Iranian population, the study extends beyond mere correlation analysis. While the initial assessment involved determining the correlation between Instagram addiction and two subscales—control and safe relationships—of the Conner-Davidson Resilience Scale (CD-RISC), yielding a Pearson correlation coefficient of 0.406, further analysis is essential to establish a comprehensive understanding of divergent validity. To strengthen the claim of divergent validity, the study employs additional statistical techniques and theoretical underpinnings. Firstly, factor analysis is conducted to ensure that Instagram addiction and the constructs of control and safe relationships load onto distinct factors, reinforcing the notion that these are separate constructs. This analytical approach demonstrates that the dimensions of Instagram addiction are not only statistically independent of the resilience factors but also conceptually divergent. The study explores the theoretical rationale behind expecting low correlations between these constructs. Instagram addiction, characterized by excessive and compulsive use of social media, is theoretically distinct from the aspects of control and resilience. While Instagram addiction may relate to a lack of self-regulation and an over-reliance on social media for emotional gratification, control and safe relationships, as measured by the CD-RISC, pertain to an individual's ability to maintain composure and foster healthy, secure interpersonal connections. The low correlation, thus, substantiates the theoretical distinction between these constructs. To provide further empirical support, the study examines the relationship between Instagram addiction and other psychological constructs that are theoretically unrelated, such as optimism or general life satisfaction. This approach helps to establish a pattern of non-association with constructs divergent from Instagram addiction, thereby strengthening the argument for divergent validity. The divergent validity of the Instagram Addiction Questionnaire within the Iranian population is substantiated not only by the low correlation with select CD-RISC subscales but also through a comprehensive analysis that includes factor analysis, theoretical rationale, and empirical examination of relationships with theoretically unrelated constructs. This multifaceted approach ensures that the instrument accurately discriminates Instagram addiction from distinct psychological phenomena, thereby validating its use in research and clinical settings.

To rigorously assess the convergent validity of the Persian version of the IAT, we conducted a detailed analysis of its relationship with the Addiction to Mobile Questionnaire Based on Social Networks (AMBS). Our approach went beyond simply computing the Pearson correlation coefficient; we also explored the underlying dimensions of addiction that both questionnaires aim to measure. We obtained a Pearson correlation coefficient of 0.78, indicative of a strong and positive correlation between the IAT and the AMBS. This high correlation is significant, suggesting that both instruments are capturing similar facets of addiction related to mobile devices and social

networking behaviors. However, to deepen our understanding of this relationship, we conducted a factor analysis on the combined item pool of both questionnaires. This analysis aimed to identify common factors underlying both measures and to verify if these factors align with theoretical constructs of social media addiction. The factor analysis revealed several shared dimensions, including 'Compulsive Usage', 'Withdrawal Symptoms', and 'Interference with Daily Life', all of which are critical indicators of addiction as per

established psychological theories. These findings bolster the argument for the convergent validity of the IAT, as it not only correlates with another measure of similar construct but also shares underlying addiction-related dimensions. Moreover, we performed a cross-validation with a different sample to verify the consistency of these findings. The cross-validation process reiterated the strong correlation between the IAT and the AMBS, further confirming the robustness of the IAT's convergent validity.

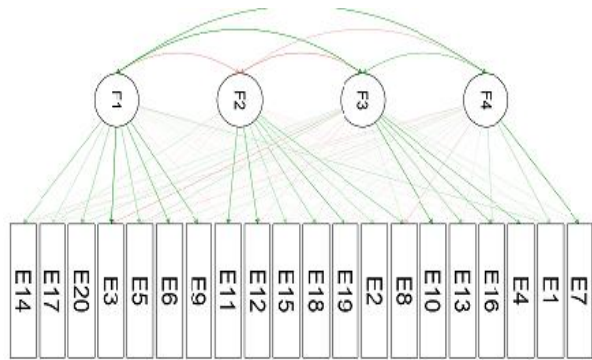


Figure 2. Path Diagram

Discussion

The primary objective of this study was to standardize the IAT for Persian-speaking individuals and to rigorously evaluate its psychometric properties. In achieving this, the study involved an extensive process of translation and cultural adaptation, ensuring the relevance and appropriateness of the IAT for the Iranian context. The findings of this study are significant as they demonstrate the capability of the Persian IAT to distinguish between individuals with symptoms of Instagram addiction and normal users. The test, comprising 20 items on a 5-point Likert scale, covers crucial aspects of addiction such as Time Management, Individual Performance, Self-Control, and Social Communication. Each of these subscales were meticulously analyzed, revealing a nuanced understanding of the multifaceted nature of Instagram addiction. Upon comparison with existing literature, the need for a robust and culturally sensitive tool to measure Instagram addiction becomes evident. Other studies, such as the one conducted by Zarenti et al. in 2011 in Greek, employed a similar approach and reported that their questionnaire, based on the Young Internet Addiction Scale, was effective in measuring Instagram addiction [26]. Their study, like ours, confirms the effectiveness of adapting established addiction scales to new contexts and platforms. This parallel strengthens the validity of our approach and the global applicability of such measures. Another study [27] investigated the motivations behind Instagram usage among students. Their findings indicated predominant motivations centered around social interaction and diversion, with notable gender differences. In line with this, our study's results suggest that the motivations and subsequent addiction patterns vary significantly between genders. For instance, our findings show that female users are more inclined to use Instagram as a means of escapism, while male users tend

to focus on self-promotion. This gender-specific insight adds a valuable dimension to understanding Instagram addiction. The gender differences highlighted in our study's findings can be attributed to varied socialization patterns and gender roles within the Iranian society. The tendency of female users to use Instagram as a means of escapism might be understood as a response to societal constraints or a form of seeking social connection in a digital space that feels more controlled and safer. On the other hand, male users' focus on self-promotion could be linked to societal expectations of assertiveness and self-display in public spheres, which are now extending into digital realms. These findings underscore the importance of considering gender-specific influences and societal norms when examining social media addiction, as they play a crucial role in shaping the motivations and behaviors of users. Our study extends these findings by correlating motivational factors with specific addiction tendencies as measured by the Persian IAT. The significant relationship between individual performance, time management, and addictive behavior provides a deeper understanding of how different usage patterns can indicate potential addiction. In exploring the underlying reasons for the patterns observed in the Persian IAT, it is essential to consider the unique socio-cultural factors at play within the Iranian context. The high significance found in the Time Management and Individual Performance subscales may reflect broader societal pressures and norms. For instance, the pervasive influence of social media on daily routines and the increasing societal emphasis on online presence may contribute to the blurring of lines between productive use and addiction. This suggests that Instagram addiction in the Iranian context is not merely a matter of individual behavior but also a reflection of broader social trends and expectations. The pressure to conform to these trends, coupled with the platform's

design, which encourages constant engagement, might be key factors driving addictive behaviors.

This study, while contributing valuable insights into Instagram addiction within the Iranian population, encounters several limitations that merit consideration: The most significant limitation is the reliance on a convenience sampling method. This approach may have introduced selection biases, as participants who are readily available or willing to participate might differ systematically from the broader population. Consequently, the findings might not fully represent the diverse experiences and behaviors of all Persian-speaking individuals regarding Instagram usage. The study's focus on Persian-speaking individuals potentially limits the generalizability of the findings to other linguistic and cultural groups. Instagram usage patterns and their psychological implications can vary significantly across different cultures and languages, which our study does not address. Data were collected using self-report measures, which, while practical, are susceptible to recall bias and social desirability bias. Respondents might not accurately remember their usage patterns or could respond in a manner they believe is socially acceptable, thereby skewing the results. The study's cross-sectional nature limits the ability to infer causality between Instagram use and its psychological impacts. This design captures a snapshot in time, lacking the temporal dimension required to understand how Instagram addiction develops and evolves. The study predominantly relies on quantitative methods, capturing data through structured scales and numerical values. While this approach offers measurable and objective insights, it falls short in capturing the depth and complexity of individual experiences. Qualitative data, gathered through methods like interviews or open-ended questionnaires, could provide rich, narrative details that bring a deeper understanding of personal attitudes, motivations, and feelings regarding Instagram use. This qualitative perspective is crucial for a more holistic understanding of Instagram addiction, as it can uncover subtleties and complexities that purely quantitative data might miss. External variables such as socio-economic status, access to technology, and social environment, which might influence Instagram usage patterns, were not extensively controlled or examined in this study.

Addressing these limitations, in future research will be crucial to gain a more comprehensive understanding of Instagram addiction and its impacts across different populations.

The findings of this study have important implications for future researchers in the field of social media addiction; future studies should consider using a more diverse sampling strategy to mitigate the biases introduced by convenience sampling. Stratified sampling or random sampling methods could be employed to ensure a more representative sample of the Persian-speaking population, enhancing the generalizability of the findings. Given the limitation of the study's focus on Persian-speaking individuals, subsequent research should explore Instagram

addiction in various linguistic and cultural contexts. Comparative studies could reveal how cultural, social, and environmental factors influence Instagram usage patterns and addiction. The reliance on quantitative methods in your study highlights the need for future research to integrate qualitative approaches. In-depth interviews, focus groups, and ethnographic studies could provide richer, more nuanced insights into the personal experiences and psychological impacts of Instagram addiction. Future studies should aim to control or examine external variables like socio-economic status, access to technology, and social environment. Understanding how these factors correlate with Instagram usage can provide a more comprehensive view of the addiction. To overcome the cross-sectional nature of your study, future research should employ longitudinal designs. This would allow the examination of the development and progression of Instagram addiction over time, offering insights into causal relationships. There is a scope for research focusing on the development and evaluation of intervention and prevention strategies for Instagram addiction. This could include studies on cognitive-behavioral therapy, mindfulness techniques, or educational programs aimed at promoting healthier social media usage patterns. Research could also explore how changes in Instagram's algorithm and user interface impact user behavior and addiction levels. This could include examining the effects of features like time spent reminders, content recommendation algorithms, and the impact of influencers and advertisements. It would be beneficial for future research to compare Instagram addiction with addiction to other social media platforms. This can help in understanding if certain features of Instagram are more conducive to addiction or if similar patterns are observed across various platforms. By addressing these aspects, future research can build upon your study's findings, offering a more comprehensive understanding of Instagram addiction and its implications across different populations and contexts.

Conclusion

This study contributes to the literature by providing a standardized and psychometrically sound Instagram Addiction Questionnaire for Persian speakers. The findings support the validity and reliability of the Persian version of the questionnaire in assessing the severity of dependence on Instagram. The identification of specific subscales, such as time management and individual performance, highlights the factors associated with Instagram addiction. Overall, this study emphasizes the importance of recognizing and addressing Instagram addiction as a significant social problem, particularly among youth and adolescents.

Conflicts of Interest

The authors declare no conflicts of interest.

Ethical Approval

This research took into account all ethical principles.

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