Reliability and Validity Study of the Social Media Addiction Scale: Student Form at King Saud University

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Abstract

Social media addiction (SMA) has become a prevalent issue among individuals worldwide, including students at King Saud University in Saudi Arabia. To address the lack of a validated and reliable measurement tool for assessing SMA in this context, the current study aimed to develop and validate the Social Media Addiction Scale-Student Form (SMAS-SF). A literature review was conducted to identify the relevant dimensions of SMA. Exploratory factor analysis and confirmatory factor analysis were employed to validate the SMAS-SF. The findings demonstrated that the SMAS-SF possesses strong psychometric properties, including construct validity, convergent validity, discriminant validity, and internal consistency reliability. The SMAS-SF comprises 23 items measuring four factors: virtual tolerance, virtual communication, virtual problem, and virtual information. This scale can be effectively used to assess SMA among students aged 18-30 years. Future research could explore the relationship between the SMAS-SF and various variables and investigate its applicability in diverse populations.

Keywords: Social media addiction, King Saud University, scale development, reliability and validity.

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ملخص

تُؤثِرُ مشكلةُ إدمان وسائل التواصل الاجتماعي (SMA) على الناس عالميًا، بما في ذلك الطلاب المسجلين في جامعة الملك سعود في المملكة العربية السعودية. ومن أجل التصدي لمشكلة عدم وجود أداة مُقنَنة وموثوقة لقياس SMA بشكل محدد في هذا السياق، هدفت الدراسة الحالية إلى تطوير وتحقيق صحة "مقياس إدمان وسائل التواصل الاجتماعي - نموذج الطلاب" (SMAS-SF).

أجريت مراجعة شاملة للمراجع الأدبية بهدف تحديد الجوانب المهمة لإدمان وسائل التواصل الاجتماعي. تم استخدام التحليل العاملي الاستكشافي والتحليل العاملي التوكيدي لتحقيق مصداقية وصحة "مقياس إدمان وسائل التواصل الاجتماعي - نموذج الطلاب" (SMAS-SF). أظهرت النتائج أن "مقياس إدمان وسائل التواصل الاجتماعي - نموذج الطلاب" (SMAS-SF) يتمتع بخصائص سيكومترية قوية، بما في ذلك صحة البناء ، وصحة التقارب، وصحة التمييز، وموثوقية التوافق الداخلي.

يتكون "مقياس إدمان وسائل التواصل الاجتماعي - نموذج الطلاب" (SMAS-SF) من 23 عنصرًا يقيس أربعة عوامل: التسامح الافتراضي، والتواصل الافتراضي، والمشكلة الافتراضية، والمعلومات الافتراضية.

يعتبر "مقياس إدمان وسائل التواصل الاجتماعي - نموذج الطلاب" (SMAS-SF) أداة قيمة لتقييم إدمان وسائل التواصل الاجتماعي لدى الطلاب في فئة الأعمار من 18 إلى 30 سنة. وقد تتاح فرص بحثية مستقبلية لاستكشاف العلاقة بين SMAS-SF ومتغيرات مختلفة، ودراسة تطبيقها في شرائح سكانية متنوعة.

الكلمات المفتاحية: إدمان وسائل التواصل الاجتماعي، جامعة الملك سعود، تطوير المقياس، الموثوقية وصحة البناء.

Introduction

The internet has become an integral aspect of contemporary society, serving as a crucial medium for interpersonal communication (Yinal & Banje, 2023). The utilization of social media, which has experienced extensive adoption and popularity, has engendered several communication modalities among individuals (Bedir, 2016). Individuals allocate a substantial amount of their time engaging with social media platforms, a behavior that has the potential to foster addiction (Chegeni et al., 2021). The utilization of social media platforms has experienced substantial growth in recent years (Sun & Zhang, 2020) as a result of the widespread availability of high-speed internet connections and the development of advanced mobile technologies (Poushter, 2016), which facilitate user-friendly experiences and encourage regular engagement (Kuss, 2017). According to Sanjit (2017), social media platforms have the potential to enhance social bonding and communication through their intensity, character, and language. The excessive and habitual utilization of social media platforms has resulted in various compulsive symptoms, including reduced productivity in work-related tasks, weakened social connections, disrupted sleep patterns, and lower overall happiness with life (Dhir et al., 2018). According to Hawi and Samaha (2017), it has been observed that this phenomenon has also contributed to the emergence of emotions such as jealousy, despair, and unease among individuals. While social networks have been recognized as fostering social acceptance and harmony (Velasquez & LaRose, 2015), it is important to acknowledge that they can also have adverse effects on psychosocial and political aspects (Kalpidou et al., 2011).

Social media can be defined as a digital communication platform that enables individuals and groups to create, share, and exchange information, ideas, and content in virtual communities and networks. It encompasses various online platforms and applications that Social media can be defined as a virtual platform within the social domain that facilitates communication between individuals or communities. It enables sharing various forms of content such as information, photos, videos, opinions, and immediate emotions. Additionally, social media offers the opportunity to stay updated on occupational news and current issues, establish new friendships, and form diverse communities based on shared interests or beliefs (Afacan & Ozbek, 2019).

The proliferation of users has led to the widespread acceptance of social networks as a commonplace and contemporary occurrence in society (Boyd

& Ellison, 2010). The growing amount of time individuals dedicate to online engagement on social networks (Kuss & Griffiths, 2011) has prompted discussions regarding addiction and the use of social networking platforms (Andreassen, 2015). There is an increasing amount of data indicating that addiction to social networks is a psychological issue that commonly manifests in adolescents (Ryan et al., 2014).

There is a prevailing belief among individuals that addiction predominantly encompasses the consumption of substances, such as narcotics or alcoholic beverages. The term addiction is commonly used to describe habits or practices that are difficult to control (Fraser et al., 2014). The concept of technological reliance has been employed to characterize the excessive utilization of the Internet resulting from advanced technological developments (Turel & Seronko, 2012). The phenomenon of addiction to the internet (Lozano-Blasco et al., 2022), addiction to video games (Toker & Baturay, 2016), Online sexual activity addiction (Agastya et al., 2020), addiction to the internet (D'Arienzo et al., 2019), Social network addiction (Shahnawaz & Rehman, 2020), addiction to mobile phones (Sahu et al., 2019), Facebook dependence (Uram & Skalski, 2022), Twitter addiction (Lozano-Blasco et al., 2023), social media disorder (Boer et al., 2022), and social media addiction (Marengo et al., 2022) have been the subject of investigation within the field of behavioral addiction. These phenomena have gained significant attention in line with the advancement of technology.

The issue of social media addiction is a significant contemporary one that our society confronts. The phenomenon of social media addiction can be conceptualized as a psychological issue that gives rise to various challenges in different domains of individuals' lives, including personal, professional/educational, and interpersonal spheres. This addiction is characterized by the development and perpetuation of cognitive, affective, and behavioral patterns that lead to issues such as impaired occupational functioning, emotional disturbances, relapse, and conflicts (Tung et al., 2022). The use of social media platforms has the potential to result in an addiction to social media, necessitating individuals to exert control over their usage and ensure that it does not impede upon other responsibilities and activities (Ryan et al., 2014). Social media addiction can be classified as a manifestation of internet addiction when individuals exhibit an excessive inclination towards the overconsumption of social media platforms (Carbonell & Panova, 2017). According to Afacan and Ozbek (2019), those

who exhibit symptoms of social media addiction frequently experience excessive concern regarding social media and an overwhelming compulsion to engage in its use.

In recent years, many individuals have developed a dependence on social media platforms, resulting in adverse consequences on several aspects of their lives. Previous endeavors to build a scale for measuring social media addiction (SMA) have yet to be conducted in the context of Saudi Arabia. Therefore, it is imperative to execute a study in this specific region to address this gap in the literature. One of the primary aims of this study was to investigate and ascertain the pertinent dimensions of the Social Media Addiction (SMA) phenomenon as documented in existing scholarly literature. The primary objective of this study was to create and authenticate a scale about social media addiction (SMA) among King Saud University students in Saudi Arabia. The purpose of this research is to establish a measurement tool that is both valid and reliable in assessing the extent of social media addiction among students at King Saud University.

Literature Review

The phenomenon of addiction to social networks is subject to a diverse range of opinions (Azizi et al., 2019). While several theories explain the phenomenon of SMA, the primary focus of this study is on the behavioral elucidation theory. Based on the behavioral explanation hypothesis, individuals employ social networks to fulfill many gratifications, including but not limited to escapism and enjoyment. This principle is considered fundamental within the theoretical framework proposed by Sadock and Sadock (2008).

The proliferation of information technologies, such as desktops and laptops, tablet PCs, and smartphones, is widely acknowledged to have played a crucial role in the widespread adoption of social networking platforms and the subsequent rise in addiction rates. These advancements in technology have facilitated convenient and rapid access to social networking sites, a factor known to contribute to addictive behaviors. Notably, adolescents are particularly susceptible to developing addictive tendencies towards these new technologies, as highlighted by Echeburúa and de Corral (2010). According to Van den Eijnden et al. (2016), while examining user profiles on social networks, it becomes evident that teens constitute the most active user demographic. When examining the statistics from 2017, it is observed that approximately 73% of Facebook users fall within the age range of 18-34, while 9% of users are aged 13-17, and 10% fall within the age range of 35-44 (We are Social, 2017). The heightened level of concern arises from

the escalating prevalence of social network addiction among teenagers and young adults, leading to their withdrawal from essential developmental pursuits (Park et al., 2008).

Social media addiction can be characterized as a habit that lacks control and is compulsive in nature, resulting in negative effects on an individual's regular tasks (Ryan et al., 2014). Social media addiction is a well-defined and specific phenomenon (Sun & Zhang, 2020). It refers to an individual's excessive preoccupation with social media, characterized by a strong enthusiasm and the allocation of additional physical resources towards its use. This addiction can have detrimental effects on various aspects of a user's life, including their social interactions, professional obligations, academic tasks, and even their overall well-being (Schou Andreassen & Pallesen, 2014).

The current body of scholarly literature on social media addiction can be traced to the transformative advancements in the field of social media (Arora & Mehta, 2023). Dalvi-Esfahani et al. (2019) argue that online behavioral addiction is a psychosocial disorder characterized by the presence of withdrawal symptoms, affective imbalances, and the deterioration of social relationships. The detrimental impact of over reliance on social media platforms on individuals' mental health and their ability to function well academically or professionally necessitates a thorough examination of this widespread problem. Nevertheless, scholars have made efforts to assess this particular type of addiction within virtual networks, yet they have consistently encountered limitations in terms of study pertaining to its conceptualization (Saqib & Amin, 2022).

In the past decade, there has been a notable integration of addictive behaviors, such as the excessive utilization of the Internet and social media platforms, into the fabric of contemporary society. Addictive behavior refers to the repetitive engagement in patterns that increase an individual's susceptibility to developing physical or mental illnesses and experiencing societal challenges (Azizi et al., 2019). Social media addiction (SMA) can be characterized as an excessive preoccupation with social networking sites (SNSs), accompanied by a compelling want to often access or utilize these platforms. This behavior is often accompanied by a significant investment of time and energy in SNSs, resulting in detrimental effects on various aspects of one's social activities, academic or professional pursuits, interpersonal connections, as well as psychological health and overall well-being. According to the findings of Hou et al. (2019), addictive social media consumption has been identified as a distinct form of technological dependency. Social media addiction, also known as SMA, refers to the excessive use of social

media platforms by an individual. This excessive usage leads to significant impairment in their life, to the point that they may struggle to control their behavior, resulting in substantial interference with their daily tasks (Ryan et al., 2014). The aforementioned behaviors encompass compulsive engagement in activities, coupled with a lack of interest in typical pursuits, as well as the manifestation of physical and psychological symptoms that hinder the cessation of those behaviors (Soper & Miller, 1983). Researchers have also acknowledged a noteworthy similarity between substance dependency and non-chemical addictive behavior (Stein et al., 2018). However, according to Vahia (2013), the most recent version of the "Diagnostic and Statistical Manual of Mental Disorders" (DSM-5) does not categorize SMA as a disorder. Nevertheless, there are writers who have conceptualized social media addiction as a maladaptive psychosomatic disorder related to the utilization of social networks. This condition is characterized by a habitual pattern of behavior that is accompanied by a decrease in self-regulation and results in the neglect of essential responsibilities (Turel & Serenko, 2012). Specifically, Subjective Mental Attitude (SMA) encompasses characteristics such as a lack of concern for the matters requiring attention, changeable emotional states, concealment of addictive behaviors and routines, and cognitive challenges (Azizi et al., 2019).

Furthermore, Sun and Ng (2012) argue that engaging in excessive use of social networks, prioritizing personal interest in other users' profiles over job obligations, and experiencing heightened levels of anxiety are all manifestations of Social Media Addiction (SMA). The behaviors exhibited by individuals using social media platforms distinguish the concept of Social Media Addiction (SMA) from the notions of "social media problematic usage" or "social media disorder." This is the reason that the current work has focussed on SMA.

Data Analysis

The assessment of scale's construct validity underwent through the Kaiser-Meyer-Olkin (KMO) coefficient and the Bartlett Sphericity test, determining the need for factor analysis. (Hair et al., 2019). The Exploratory Factor Analysis (EFA) was used to ascertain the validity structure of the scale. During the execution of Exploratory Factor Analysis (EFA), various methods can be employed for factor extraction. The most commonly utilized approach is Principal Component Analysis (PCA), as indicated by Hair et al. (2019). PCA functions primarily as a dimensionality reduction method, converting the initial variables into a reduced set of uncorrelated variables referred to as principal components. This process aids in streamlining the data structure and uncovering the fundamental factors, as

highlighted by Abdi and Williams (2010). In addition to factor extraction, factor rotation is used in EFA to determine the grouping of variables. One commonly utilized rotation method is Varimax rotation. Varimax rotation is classified as an orthogonal rotation technique, aiming to maximize the variance of squared loadings within each factor. Simultaneously, it strives to maintain distinct loadings for each variable, as described by Tabachnick, Fidell, and Ullman in 2007.

Confirmatory Factor Analysis (CFA) was performed to identify scale items that cross-load on other constructs that are in the conceptual framework in question. CFA is being referred to as a measurement model because it is concerned with how and to what extent the observed variables are linked to their fundamental latent factors (Hair et al., 2019).

Following factor analysis, the remaining scale items undergo evaluation through independent sample t-tests to determine their discriminative powers. Additionally, the validity feature of the scale is assessed by testing item-total correlations using Pearson's r test, as outlined by Büyüköztürk (2002). Examining discrimination is recognized as a crucial element in assessing the validity of a scale, as highlighted by Büyüköztürk (2015). The evaluation of item discrimination involves assessing the significance of the distinction between the scale scores of the top 27% and bottom 27% subgroups after ranking the raw scores in ascending order.

Discrimination is considered to be one of the most important pieces of evidence used in determining the validity of a scale (Büyüköztürk, 2015). The discrimination of items on the scale is determined by testing the meaningfulness of the difference between the scale scores of the 27% upper and 27% subgroups after the raw scores are ranked from small to large.

Regarding the reliability of the scale, Cronbach Alpha, Sperman-Brown and the Guttmann split-half reliability formula were used to assess the internal consistency and stability of the scale. The validity and reliability analysis of the data obtained from the application was conducted using IBM SPSS 26.0 and AMOS 24.

Construct Validity

Exploratory Factor Analysis

Kaiser-Meyer-Olkin (KMO) and Bartlett's Test were used to find out about the suitability and accuracy of factors within a provided sample (Hair et al., 2019).

The results show that KMO = .938, Bartlett test value $\chi 2 = 3761.4$, df= 276, p= .000. To conduct item factor analysis, it is recommended to ensure a Kaiser-Meyer-Olkin (KMO) value of at least 0.70. Additionally, the Bartlett test must yield significant results, as indicated by Kalayci (2009). The results obtained from the scale indicate the suitability of the data for factor analysis.

The factor analysis employed basic components analysis and varimax vertical rotation to eliminate items with factor loading values below .40 and items with loading values across different factors, as outlined by Abdi and Williams (2010). Hence, 6 items were excluded from the measurement since they were not determinative of which factor was measured.

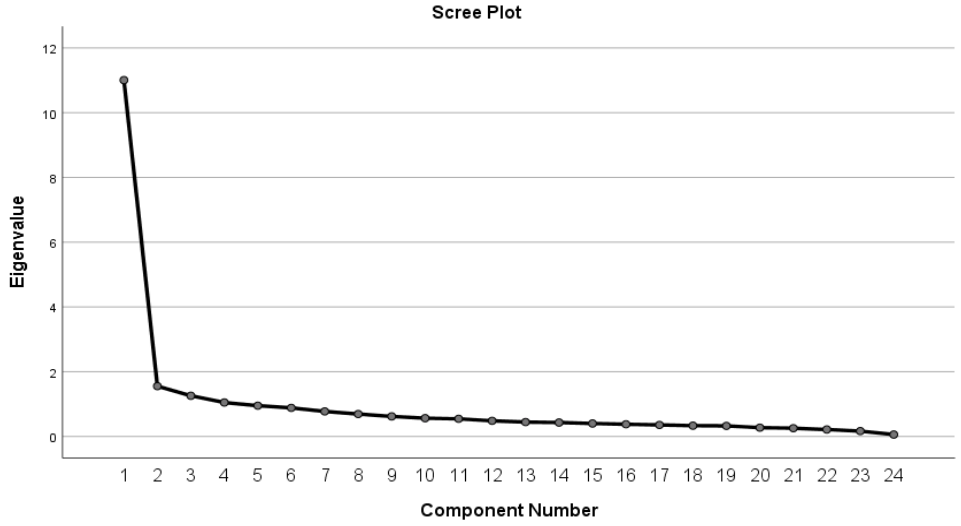

Figure 1. Social media addiction scale-student form self-value factor graph

After conducting an analysis using basic components analysis and Varimax rotation, it was established that there are four factors with eigenvalues exceeding 1 and a variance value surpassing 5%. The first factor explains 24.5% of the variance, the second factor explains 16.56%, the third factor explains 12.36%, and the fourth factor explains 8.49%. In total, the scale accounts for 61.92% of the variance. The findings indicate that, out of the 23 items on the scale, 8 items align with the first factor, 7 items with the second factor, 4 items with the third factor, and 4 items with the fourth factor, as illustrated in Table 1.

Table 1. The factor loadings of social media addiction scale-student form and item-total correlation

Draft Scale Item No	Scale Item No	Factor Loadings before Rotation	Factor Loading Values				Item-total Correlation Coefficients
			Virtual Tolerance	Virtual Communication	Virtual Problem	Virtual Information	
Item_1	1	.841	.826				0.78
Item_2	2	.719	.818				0.78
Item_3	3	.631	.737				0.76
Item_4	4	.669	.716				0.81
Item_5	5	.746	.710				0.75
Item_6	6	.689	.705				0.42
Item_7	7	.724	.696				0.80
Item_8	8	.670	.689				0.58
Item_9	9	.684		.730			0.66
Item_10	10	.587		.681			0.66
Item_11	11	.517		.653			0.56
Item_12	12	.506		.632			0.64
Item_13	13	.488		.573			0.61
Item_14	14	.497		.548			0.66
Item_15	15	.408		.454			0.49
Item_16	16	.733			.756		0.66
Item_17	17	.662			.753		0.61
Item_18	18	.650			.727		0.61
Item_19	19	.646			.661		0.58
Item_20	20	.654				.623	0.62
Item_21	21	.351				.567	0.64
Item_22	22	.577				.561	0.78
Item_21	23	.403				.515	0.72
Variance (%)			24.50	16.56	12.36	8.49	
Total Variance	61.92%						

The results presented in table 1 show there are 4 factors scale structure, which consists of 23 items. The factor loadings of all the items range between 826-.454. In the study, items were evaluated based on their Item-total correlation. Items with substance-test correlation values of 0.30 and above were considered to have discriminative power. The results indicate that the item-total correlation coefficients for all items range between .81 and .42.

These factors are designated based on insights gathered from both literature and expert opinions. Accordingly, the initial element is termed virtual tolerance, followed by virtual communication as the second factor, virtual problem as the third factor, and virtual information as the fourth factor.

Confirmatory Factor Analysis

Confirmatory factor analysis was conducted at both the first and second levels to assess the validity of factors identified through exploratory factor analysis. The analysis utilized data gathered from 249 students. As depicted in Figure 2, a model of equality was established, comprising four factors and 23 items, as unveiled by the exploratory factor analysis.

Following the confirmatory factor analysis, the Chi-Square value ($\chi 2$) is 412.31, with 224 degrees of freedom and a p-value of .000. This indicates that the Chi square values, adjusted for sample size variations, demonstrate a satisfactory agreement for the specific sample under consideration. (Kline, 2005). As seen in Figure 2, the sub-dimension virtual tolerance of scale's factor loadings control ranges from .740 to .846; the sub-dimension virtual communication ranges from .636 to .739; the sub-dimension virtual problem ranges from .691 to .808; the sub-dimension virtual information ranges from .494 to .712. According to the guidelines proposed by Hair et al. (2019), items with factor loadings surpassing 0.50 are considered acceptable.

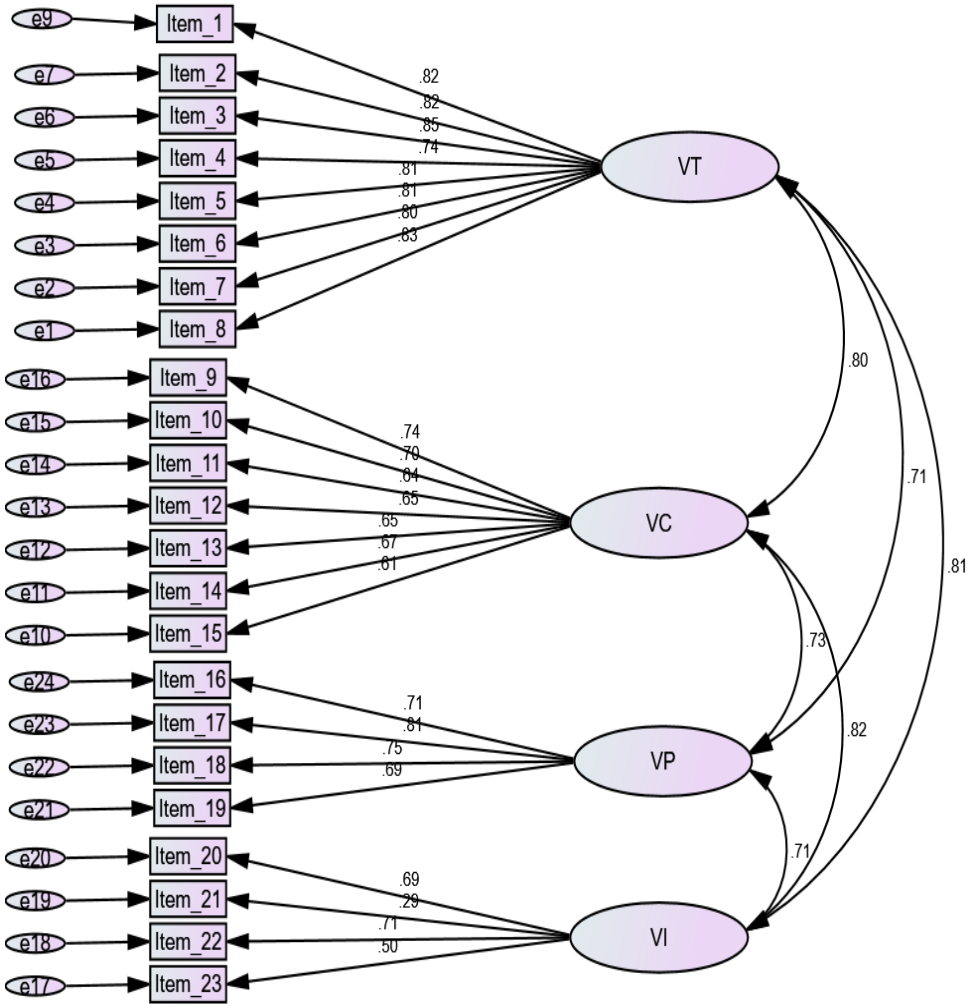

Figure 2. First-level confirmatory factor analysis correlation diagram (standardized)

Table 2 displays the t values derived from confirmatory factor analysis. The t values for all items fall within the range of 3.84 to 15.87, signifying significance at a .01 level for all t values obtained during the initial confirmatory factor analysis.

Table 2. First-Level Confirmatory Factor Analysis t-Test Values

Item No	t	Item No	t	Item No	t
Item_1	15.87**	Item_11	8.83**	Item_21	6.90**
Item_2	15.57**	Item_12	8.23**	Item_22	3.84**
Item_3	15.57**	Item_13	8.37**	Item_23	7.10**
Item_4	16.45**	Item_14	8.35**		
Item_5	13.46**	Item_15	8.57**		
Item_6	15.42**	Item_16	9.21**		
Item_7	15.39**	Item_17	9.83**		
Item_8	15.10**	Item_18	10.93**		
Item_9	9.25**	Item_19	10.27**		
Item_10	9.17**	Item_20	7.12**		

**P<0.01

A second-tier confirmatory factor analysis was performed to demonstrate that the four factors identified in the initial confirmatory factor analysis of the scale signify a social media addiction construct conceptualized as a superstructure. The second-tier factor model was assessed by incorporating second-tier variables into the initial confirmatory structure, which underwent testing with four observable variables and 23 items. The connectivity diagram for the second-tier confirmatory factor analysis of the scale is illustrated in Figure 3.

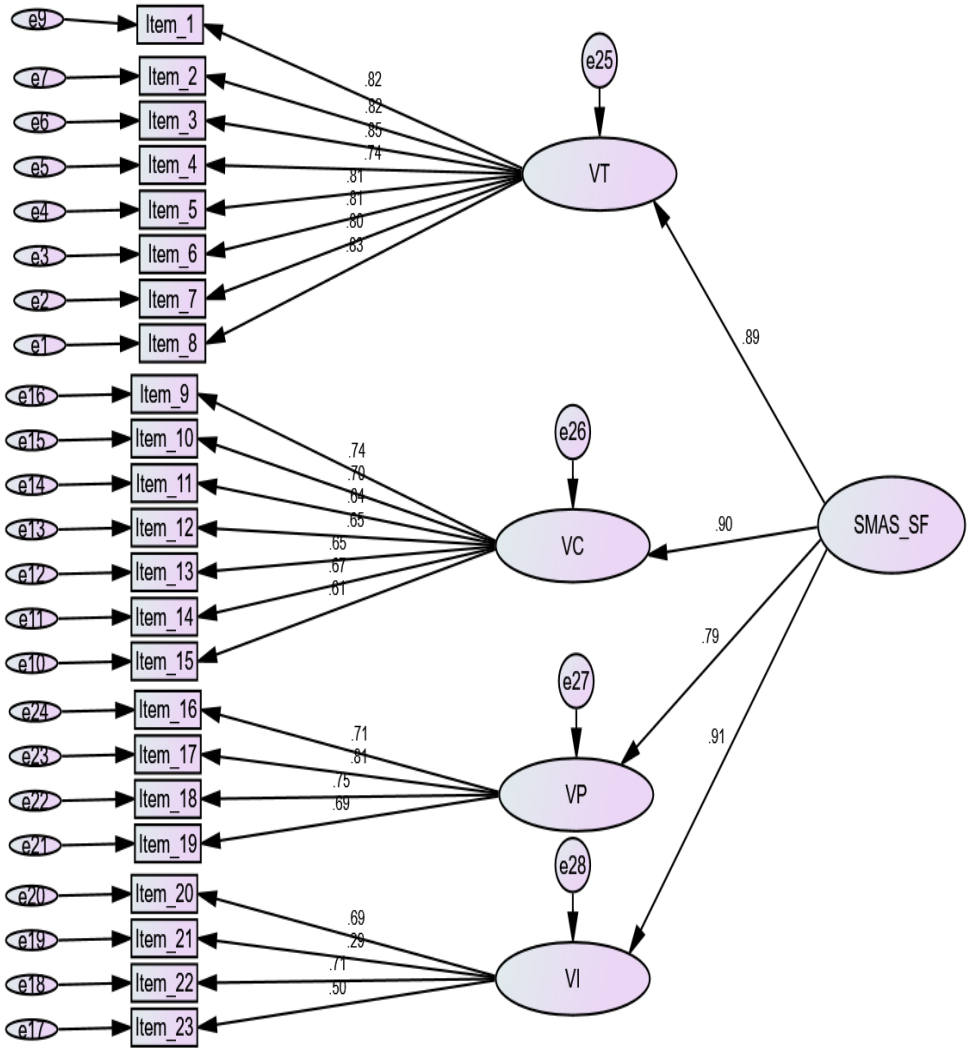

Figure 3. Second-level confirmatory factor analysis correlation diagram (standardized)

Figure 3 displays the factor loadings derived from the confirmatory factor analysis model. Within the virtual tolerance subdimension, factor loadings vary between .794 and .905. The range of the virtual communication

subdimension is .608 to .737, while the virtual problem subdimension spans from .692 to .807. Additionally, the virtual information subdimension demonstrates loadings ranging from .293 to .710. In accordance with the criteria outlined by Hair et al. (2019), items exhibiting factor loadings exceeding 0.50 are deemed satisfactory.

The results of the First and Second Level CFA measurement model showed an adequate model fit, as presented in table 6.13 below. All of the values of the model fit indices are higher than the acceptable levels. Therefore, the results confirm that the model is well-fitted to the observed data.

Table 3. Fit indices and fit indices values obtained from DFA

Inspected Fit Indices	Perfect Fit	Acceptable Fit	First Level Confirmatory Factor Analysis Fit Indices	Second Level Confirmatory Factor Analysis Fit Indices
$\chi 2/df$	$0 \leq \chi 2/df \leq 2.00$	$2.00 \leq \chi 2/d<5.00$	1.801	1.825
RMSEA	$0 \leq$ RMSEA $\leq$ 0.05	0.05 $\leq$ RMSEA $\leq$ 0.08	0.054	0.058
S-RMR	$0 \leq$ S-RMR $\leq$ 0.05	0.05 $\leq$ S-RMR $\leq$ 0.10	0.041	0.04
NFI	0.95 $\leq$ NFI $\leq$ 1.00	0.90 $\leq$ NFI $\leq$ 0.95	0.921	0.901
CFI	0.97 $\leq$ CFI $\leq$ 1.00	0.95 $\leq$ CFI $\leq$ 0.97	0.960	0.950
GFI	0.95 $\leq$ GFI $\leq$ 1.00	0.90 $\leq$ GFI $\leq$ 0.95	0.961	0.930
AGFI	0.95 $\leq$ AGFI $\leq$ 1.00	0.85 $\leq$ AGFI $\leq$ 0.95	0.952	0.941

Item Discrimination

The discriminatory capacity of the scale items was assessed by computing the raw scores for each item and arranging them in ascending order. Following this, the significance of the score differences between the lower 27% subgroup and the upper 27% subgroup was examined. The results, including t-values and significance levels from the test, are detailed in Table 4.

Table 4. Levels of item discrimination

Virtual Tolerance		Virtual Communication		Virtual Problem		Virtual Information	
Items	t	Items	t	Items	t	Items	t
Item_1	6.775**	Item_9	5.922**	Item_16	5.000**	Item_20	11.398**
Item_2	7.678**	Item_10	5.437**	Item_17	8.366**	Item_21	8.775**
Item_3	7.865**	Item_11	4.769**	Item_18	8.663**	Item_22	12.231**
Item_4	5.743**	Item_12	5.573**	Item_19	6.777**	Item_23	9.195**
Item_5	7.666**	Item_13	6.079**				
Item_6	7.717**	Item_14	5.834**				
Item_7	7.344**	Item_15	5.728**				
Item_8	7.512**						
F 1	8.680**	F 2	7.664**	F 3	8.912**	F 4	16.228**
Total	17.395**						

df: 131; **p<.01

As indicated in Table 4, the 23 scale items exhibit varying independent sample t-test values for the total score, ranging from 4.769 to 12.231. Notably, the t-value for the general population stands at 17.395. Specifically, virtual tolerance, virtual communication, virtual problem, and virtual information display values of 8.680, 7.664, 8.912, and 16.228, respectively. Importantly, all t-test values were found to be significant at a level of p<.01. These results suggest that the scale demonstrates internal validity by effectively distinguishing between students with high addiction and those with minor addiction.

Findings Related to the Reliability of the Scale

Internal Consistency Levels

The scale's reliability, assessed in relation to various factors, is determined through the utilization of Peer-to-Peer Correlations, the Sperman-Brown formula, the Guttmann Split-Half reliability coefficient, and Cronbach Alpha reliability formulas. Table 5 displays the reliability analysis values for both the overall scale and its individual factors.

Table 5. Social media addiction scale-student form's reliability coefficients

Factors	Item No	Peer-to-Peer Correlations	Sperman Brown	Guttmann Split-Half	Cronbach Alpha
Virtual Tolerance	8	.891	.942	.942	.938
Virtual Communication	7	.746	.854	.834	.843
Virtual Problem	4	.766	.800	.800	.826
Virtual Information	4	.742	.751	.744	.743
Total	23	.778	.875	.871	.920

The reliability results for the scale are presented in Table. The scale demonstrates a Peer-to-Peer Correlation of .778, Pearson correlation coefficient of .778, a Sperman Brown reliability coefficient of .875, a Guttmann Split-Half value of .871, and a Cronbach Alpha reliability coefficient of .920. Conversely, the co-half correlations for the factors exhibit a range from .742 to .891, Sperman Brown values vary between .751 and .942, Guttmann Split-Half values range from .744 to .942, and Cronbach Alpha values fluctuate between .743 and .938. Notably, all internal consistency reliabilities are deemed high and acceptable.

Conclusions and Recommendations

Given the profound impact of social networking on students' daily lives, there arises a need for a reliable measurement tool to assess social media addiction. This study sought to create the "Social Media Addiction Scale-Student Form (SMAS-SF)" and to validate and establish its reliability. A literature survey in Saudi Arabia revealed widespread social media use among 18-30-year-olds. Surprisingly, no existing scale or test addressed addiction levels in this age group, making the proposed measurement tool a potentially significant contribution to the field.

Validity and reliability assessments were conducted on the collected data. The initial scale application involved 133 participants, with exploratory factor analysis. Results from these studies affirm the SMAS-SF as a valid and reliable instrument for identifying students' social media addictions. The scale, comprising 23 positively framed items, delineates four factors: virtual tolerance, virtual communication, virtual problem, and virtual information, each rated on a Likert scale with five grades. Notably, both explanatory and confirmatory factor analyses align with acceptable standards, as per the relevant literature survey.

The findings regarding the scale's validity and reliability underscore its utility in gauging students' social media addiction. Future research could explore the relationship between this developed scale and various variables through descriptive studies. It is anticipated that this scale will not only measure addiction levels but also facilitate the implementation of tailored interventions based on the results.

In conclusion, this study affirms that the SMAS-SF is a valuable tool for determining social media addiction in students aged 18-30 years. The scale's validity and reliability warrant consideration in different sample groups and across diverse age ranges, suggesting potential for broader applicability.

Reference

Abdi, H. and Williams, L.J. (2010) 'Principal component analysis', Wiley interdisciplinary reviews. Computational statistics, 2(4), pp. 433-459 Available at: 10.1002/wics.101.

Afacan, O., & Ozbek, N. (2019). Investigation of social media addiction of high school students. *International Journal of Educational Methodology, 5*, 235–245.

Agastya, I. G., Siste, K., Nasrun, M. W., & Kusumadewi, I. (2020). Cybersex addiction: an overview of the development and treatment of a newly emerging disorder. *Medical Journal of Indonesia, 29*, 233â–41.

Andreassen, C. S. (2015). Online social network site addiction: A comprehensive review. *Current addiction reports, 2*, 175–184.

Arora, S., & Mehta, M. (2023). Love it or hate it, but can you ignore social media?-A bibliometric analysis of social media addiction. *Computers in Human Behavior*, 107831.

Azizi, S. M., Soroush, A., & Khatony, A. (2019). The relationship between social networking addiction and academic performance in Iranian students of medical sciences: a cross-sectional study. *BMC psychology, 7*, 1–8.

Bedir, A. (2016). The effect of using social media on collage academic success and attitude. *Unpublished master's thesis). Ataturk University, Erzurum, Turkey*.

Boer, M., van den Eijnden, R. J., Finkenauer, C., Boniel-Nissim, M., Marino, C., Inchley, J., et al. (2022). Cross-national validation of the social media disorder scale: findings from adolescents from 44 countries. *Addiction, 117*, 784–795.

Boyd, D. M., & Ellison, N. B. (2010). Social network sites: definition, history, and scholarship. *IEEE Engineering Management Review, 38*, 16–31.

Carbonell, X., & Panova, T. (2017). A critical consideration of social networking sites' addiction potential. *Addiction Research & Theory, 25*, 48–57.

Chegeni, M., Shahrbabaki, P. M., Shahrbabaki, M. E., Nakhaee, N., & Haghdoost, A. (2021). Why people are becoming addicted to social media: A qualitative study. *Journal of Education and Health Promotion, 10*.

D'Arienzo, M. C., Boursier, V., & Griffiths, M. D. (2019). Addiction to social media and attachment styles: a systematic literature review. *International Journal of Mental Health and Addiction, 17*, 1094–1118.

Dalvi-Esfahani, M., Niknafs, A., Kuss, D. J., Nilashi, M., & Afrough, S. (2019). Social media addiction: Applying the DEMATEL approach. *Telematics and Informatics, 43*, 101250.

Dhir, A., Yossatorn, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing—A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International Journal of Information Management, 40*, 141–152.

Echeburúa, E., & De Corral, P. (2010). Adicción a las nuevas tecnologías ya las redes sociales en jóvenes: un nuevo reto. *Adicciones, 22*, 91–95.

Fraser, S., Moore, D., & Keane, H. (2014). *Habits: remaking addiction.* Springer.

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*, 576–586.

Hou, Y., Xiong, D., Jiang, T., Song, L., & Wang, Q. (2019). Social media addiction: Its impact, mediation, and intervention. *Cyberpsychology: Journal of psychosocial research on cyberspace, 13*.

Kalpidou, M., Costin, D., & Morris, J. (2011). The relationship between Facebook and the well-being of undergraduate college students. *CyberPsychology, behavior, and social networking, 14*, 183–189.

Kuss, D. (2017). Mobile technology and social media: The "extensions of man" in the 21st century. *Human Development, 60*, 141–143.

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*, 3528–3552.

Lozano-Blasco, R., Mira-Aladrén, M., & Gil-Lamata, M. (2023). Social media influence on young people and children: Analysis on Instagram, Twitter and YouTube. *Comunicar, 31*, 125–137.

Lozano-Blasco, R., Robres, A. Q., & Sánchez, A. S. (2022). Internet addiction in young adults: A meta-analysis and systematic review. *Computers in Human Behavior, 130*, 107201.

Marengo, D., Fabris, M. A., Longobardi, C., & Settanni, M. (2022). Smartphone and social media use contributed to individual tendencies towards social media addiction in Italian adolescents during the COVID-19 pandemic. *Addictive behaviors, 126*, 107204.

Park, S. K., Kim, J. Y., & Cho, C. B. (2008). Prevalence of Internet addiction and correlations with family factors among South Korean adolescents. *Adolescence, 43*.

Poushter, J., & others. (2016). Smartphone ownership and internet usage continues to climb in emerging economies. *Pew research center, 22*, 1–44.

Ryan, T., Chester, A., Reece, J., & Xenos, S. (2014). The uses and abuses of Facebook: A review of Facebook addiction. *Journal of behavioral addictions, 3*, 133–148.

Sadock, B. J., & Sadock, V. A. (2008). *Kaplan & Sadock's concise textbook of clinical psychiatry.* Lippincott Williams & Wilkins.

Sahu, M., Gandhi, S., & Sharma, M. K. (2019). Mobile phone addiction among children and adolescents: a systematic review. *Journal of Addictions Nursing, 30*, 261–268.

Sanjit, K. (2017). Social media as a tool for family communication in the digital age: communication functions, relationship bonding and building of mutual understanding.

Saqib, N., & Amin, F. (2023). The development and validation of the Indian social media addiction scale. *Online Information Review*.

Schou Andreassen, C., & Pallesen, S. (2014). Social network site addiction-an overview. *Current pharmaceutical design, 20*, 4053–4061.

Shahnawaz, M. G., & Rehman, U. (2020). Social networking addiction scale. *Cogent psychology, 7*, 1832032.

Soper, W. B., & Miller, M. J. (1983). Junk-time junkies: An emerging addiction among students. *The School Counselor, 31*, 40–43.

Stein, D. J., Billieux, J., Bowden-Jones, H., Grant, J. E., Fineberg, N., Higuchi, S., et al. (2018). Balancing validity, utility and public health considerations in disorders due to addictive behaviours. *World Psychiatry, 17*, 363.

Sun, B., & Ng, V. T. (2012). Identifying influential users by their postings in social networks. *Proceedings of the 3rd international workshop on Modeling social media*, (pp. 1–8).

Sun, Y., & Zhang, Y. (2021). A review of theories and models applied in studies of social media addiction and implications for future research. *Addictive behaviors, 114*, 106699.

Toker, S., & Baturay, M. H. (2016). Antecedents and consequences of game addiction. *Computers in Human Behavior, 55*, 668–679.

Tung, S. E., Gan, W. Y., Chen, J.-S., Ruckwongpatr, K., Pramukti, I., Nadhiroh, S. R., et al. (2022). Internet-related instruments (Bergen social media addiction scale, smartphone application-based addiction scale, internet gaming disorder scale-short form, and nomophobia questionnaire) and their associations with distress among Malaysian university students. *Healthcare, 10*, p. 1448.

Turel, O., & Serenko, A. (2012). The benefits and dangers of enjoyment with social networking websites. *European Journal of Information Systems, 21*, 512–528.

Uram, P., & Skalski, S. (2022). Still logged in? The link between Facebook addiction, FoMO, self-esteem, life satisfaction and loneliness in social media users. *Psychological Reports, 125*, 218–231.

Van den Eijnden, R. J., Lemmens, J. S., & Valkenburg, P. M. (2016). The social media disorder scale. *Computers in human behavior, 61*, 478–487.

Velasquez, A., & LaRose, R. (2015). Social media for social change: Social media political efficacy and activism in student activist groups. *Journal of Broadcasting & Electronic Media, 59*, 456–474.

Yinal, A., & Banje, F. U. (2023). Social media habits of university students and the effects of media on students. *TOJET: The Turkish Online Journal of Educational Technology, 22*.