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#### **ORIGINAL**



# Psychometric Properties of the Social Media Addiction Scale (SMAS) on Chilean University Students

Propiedades psicométricas de la escala de adicción a los medios sociales (SMAS) en estudiantes universitarios chilenos

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## **ABSTRACT**

**Introduction:** the use and abuse of social networks are harming the mental health of university students. **Objective:** to adapt and validate the Social Media Addiction Scale (SMAS) for the Chilean context to have a reliable instrument to measure addiction to social networks. The sample comprised 686 university students (mean age=28,04, SD=8,4), 71,1 % female, 28,4 % male, and 0,5 % other genders.

**Methods:** confirmatory factor analysis (CFA) using the weighted least squares means and variances method (WLSMV) was used for this study.

**Results:** reliability was Cronbach's alpha  $\alpha$ =0,841. The SMAS yielded two factors that explained 53,433 % of the variance. The CFA yielded very good fit indicators such as CFI=0,959, TLI=0,949, and RMSEA=0,060.

**Conclusions:** based on the results described above, we can affirm that the SMAS is a good instrument to measure social network addiction in college students.

Keywords: Psychometric Properties; Social Media Addiction; University Students; Mental Health.

# **RESUMEN**

**Introducción:** el uso y abuso de las redes sociales está perjudicando la salud mental de los estudiantes universitarios.

**Objetivo:** adaptar y validar la Social Media Addiction Scale (SMAS) al contexto chileno para contar con un instrumento confiable para medir la adicción a las redes sociales. La muestra estuvo compuesta por 686 estudiantes universitarios (edad media=28,04, DE=8,4), 71,1 % mujeres, 28,4 % hombres y 0,5 % otros géneros.

**Métodos:** para este estudio se utilizó el análisis factorial confirmatorio (AFC) mediante el método de mínimos cuadrados ponderados de medias y varianzas (WLSMV).

**Resultados:** la fiabilidad fue del alfa de Cronbach  $\alpha$  = 0,841. El SMAS arrojó dos factores que explicaban el 53,433 % de la varianza. El AFC arrojó indicadores de ajuste muy buenos como CFI=0,959, TLI=0,949 y RMSEA=0,060.

**Conclusiones:** en base a los resultados descritos anteriormente, podemos afirmar que el SMAS es un buen instrumento para medir la adicción a las redes sociales en estudiantes universitarios.

**Palabras clave:** Propiedades Psicométricas; Adicción a las Redes Sociales; Estudiantes Universitarios; Salud Mental.

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#### INTRODUCTION

The college years represent a critical transition to adulthood. Because of this, college students are exposed to a host of stressors, including academic burden (Kariv & Heiman, 2005; Murff, 2005), leaving the nuclear home (Britt et al., 2017), affective isolation (B. Chen et al., 2020), adapting to new instructional methods (Schwieger & Ladwig, 2018; Shim & Lee, 2020), and concerns about the future (Torres et al., 2017).

Local and global studies have shown that depressive, anxious, and alcohol-dependence disorders are the most frequent in the university population (Martínez-Líbano et al., 2023; Richardson et al., 2017; Tembo et al., 2017). The results of the National Health Survey ENS Chile 2009-2010 present Chile with a prevalence of depressive symptoms of 14,4 % in the population aged 15-24 years (Cristi-Montero et al., 2019; Garrido-Méndez et al., 2019). In the same 2016-2017 survey, women appear with a prevalence of 21,7 % in depression and 10,1 % in men (Nazar et al., 2021). In addition to the above, a study on mental health disorders in university students showed that high alcohol consumption and deficits in self-care and recreational behaviors negatively affect students' mental health. These are causes of depressive and anxious symptomatology between 20 % and 30 % of university students; among them, first-year students stand out with 60 % of symptomatology (Antúnez Sanhueza & Vinet, 2013). The same mental health disorders have been aggravated in recent studies in Chilean university students. In 2022, the prevalence of mental health problems in this population was high, with depressive symptoms in 63,1 % of the sample, 69,2 % with anxiety, 57 % with stress, 27,4 % with problematic alcohol consumption, and 14,9 % with inappropriate marijuana use. Some 10,1 % of the sample reported daily medication with antidepressants and/or anxiolytics (Martínez-Líbano et al., 2023). In addition to the above, the results of a study related to the presence of depressive symptomatology show higher rates in the university collective compared to the general population, highlighting, in addition, a greater presence of depressive symptomatology in women than in men (Rossi et al., 2019). Finally, in recent years it has been possible to prove that the pandemic generated serious consequences in the mental health of higher education students, with severe prevalences of depression, anxiety, stress, emotional exhaustion, and suicidal ideation (Martínez-Líbano et al., 2021, 2023; Martínez-Líbano & Yeomans Cabrera, 2021), which has been extended to the new post-pandemic global context.

Worldwide, new information and communication technologies (ICTs) and ease of access have led to an increase in the number of Internet users. In August 2022, social network users worldwide accounted for 4,62 billion, equivalent to 58,4 % of the population. In Chile, in January 2022, there were 17,85 million social network users, equal to 92,8 % of the total population (Martínez-Libano et al., 2023). The Internet and new technological media have positively and negatively affected university students. The Internet has broadened horizons and facilitated communication; however, the adverse effects of excessive use of networks are seen in both the health of the mind and body of this population: year after year, university dropout rates increase (Martínez-Líbano et al., 2022; J. Wang, 2017). In general, Internet addiction is characterized by symptoms such as obsessive thoughts about the Internet, tolerance (need to increase the "dose" to obtain the same result), withdrawal syndrome, uncontrolled urges, and inability to disconnect; sometimes, this involves compulsive web surfing, obsessive use of websites for gaming, gambling, and shopping, and impulse control problems (Metin-Orta, 2020). Because the Internet is not a substance, it is considered a behavioral addiction; this addiction involves compulsive behaviors, a lack of interest in offline activities, and, when attempts are made to stop this behavior, physical and mental consequences, especially in the youth and young adult population (D'Arienzo et al., 2019). A recent study examined the association between problematic Internet use, psychological distress, and coping strategies in college students during the pandemic, showing that problematic Internet use was associated with high levels of psychological distress, self-distraction coping strategies, and behavioral disengagement; 32,2 % of participants had problematic Internet use, and 61,3 % reported psychological distress; younger students had the highest levels of psychological distress (Yusof et al., 2022).

Similarly, problematic smartphone use has developed as an essential part of Internet addiction, described as the inability to regulate device usage time. The negative implications of problematic use in daily life put users' mental health at risk (Coskun & Muslu, 2019). The features of smartphones, the portability of the Internet, and the possibility of having customized applications transform it into a versatile and multipurpose device (Khan et al., 2018; Raj & Raman, 2017). It is due to the varied uses of smartphones that smartphone addiction presents different symptoms than internet addiction: Internet addiction can occur on different types of devices as long as there is internet, and smartphone addiction occurs with the device, whether or not it has internet (Tateno et al., 2019). Haug et al. 2015 indicated that the most relevant smartphone functions for users that were positively associated with device addiction were (1) increased smartphone usage time on a typical day, (2) reduced time spent waiting to use the smartphone first thing in the morning, and (3) reporting social networks as the most relevant personalized function of the device (Haug et al., 2015). To this, Kuss and Griffths 2017 added that social networks are highly relevant to excessive smartphone use (Kuss & Griffiths, 2017).

In 2017, it was estimated that the average daily use of social networks was 135 minutes per day, which implies an increase of 9 % over the previous year (D'Arienzo et al., 2019). Other more current figures for the

year 2021 show that the social network with the highest number of monthly users in the world is Facebook, with 2200 million users approximately, followed by WhatsApp, with 500 million, Twitter with 284 million, and Instagram with 259 million (Stanculescu & Griffiths, 2021). In 2023, this ranking has changed. However, Facebook is still in the lead. The social network with the most users worldwide is Facebook, with approximately 2,96 billion active users worldwide. This represents an increase of 1,65 % over the previous year. The complete ranking of the top 5 social networks with the most users in the world is as follows: Facebook (2,96 billion), YouTube (2,562 billion), WhatsApp (2 billion), Instagram (1,478 billion) and TikTok (1 billion) (Kemp, 2023). It is also estimated that, globally, at least 39 % of the population is currently an active user of social networks (Savci & Griffiths, 2021).

Social network addiction, like Internet addiction, is a behavioral phenomenon characterized by excessive preoccupation with social network use and an uncontrollable need to connect to or use social networks (Quaglieri et al., 2021). Users may develop tolerance and dependence symptoms despite experiencing adverse consequences due to excessive use (Cheng & Lau, 2022). The literature exposes that social network addiction is associated with elements such as low self-esteem (Pantic et al., 2017), sleep disorders (Tandon et al., 2020), and low life satisfaction (Dalvi-Esfahani et al., 2019). Likewise, El-Khoury et al. (2021) associated the social network Facebook with social impairment, loneliness, anxiety, and depression, among other somatic symptoms (El-Khoury et al., 2021). On the other hand, Prakabar (2017) evaluated the effect of Facebook on the social life, health, and behavior of a group of students. It was found that most of the participants complained of headaches, back pain, mood swings, eye problems, and decreased work potential due to excessive use of computers and mobile devices to manage Facebook (Prabakar, 2017). In the study by Farooqui et al. 2013, researchers found that most undergraduate medical students reported using Facebook daily and that 40,1 % spent 3-4 hours exclusively on this activity. In addition, 39 % considered themselves shy in real life, but 60,3 % of the participants were deemed funny by their Facebook friends. Despite all the above, 67 % of the participants in this study did not consider themselves addicted to the social network Facebook (Farooqi et al., 2013). Regarding Instagram and mental well-being, a group of university students expressed that Instagram was positive for the development and maintenance of friendships (Ponnusamy et al., 2020), but at the same time, they considered that this social network had multiple implications for mental well-being due to the presentation of physical ideals, the search for social acceptance, and cyberbullying. Regarding the latter, it was found that 56,3 % of the participants witnessed or received hate through the social network (56,3 %) (Javornik et al., 2022; Popat & Tarrant, 2023). In addition to the above, most expressed that they only presented their best version on this network to show off to their peers. They also perceived an increase in Instagram "likes" associated with peer validation, popularity, and likeability (Moreton & Greenfield, 2022).

Greater problematic social media use was significantly associated with greater depression, anxiety, and insomnia but not with stress. Stress mediated the relationship between depression, anxiety, insomnia, and problematic social media use (Malaeb et al., 2021). However, another study reveals that whether this effect is beneficial or detrimental depends, at least partly, on the quality of social factors in the social networking environment (Seabrook et al., 2016). It was also found that females, college students, and students with low academic achievement had the highest levels of social network addiction (Al-Menayes, 2015). Critical indicators concerning social network addiction are increased daily time spent on social networks, increased time spent on each access, increased frequency of access, increased duration of networking before bedtime, and decreased time between awakening and first network use (Reid Chassiakos et al., 2016). Other researchers suggest the need to detect and address excessive social network use to prevent social network addiction and mental distress among youth (T. Wang et al., 2021).

Continuing with the distress factor, the results of another study related to social network addiction and romantic relationship satisfaction showed that depression, anxiety, and stress partially mediated the impact of social network addiction and romantic relationship satisfaction (Spencer et al., 2017), also finding significant associations between social network addiction and relationship satisfaction through psychological distress (Márquez Benza, 2021). In other words, a high level of social network addiction leads to decreased relationship satisfaction, partially mediated by psychological distress (Satici et al., 2021).

On the other hand, reducing the use of social networks can benefit young college students' mental health (Hou et al., 2019). Most students reported a positive change in mood, reduced anxiety, and improved sleep during and immediately after the social network detoxification period (Radtke et al., 2022). Unexpected findings showed that although Facebook is the most used social network, Instagram was the social network identified as the most difficult to stop using by respondents (Anderson & Jiang, 2018), which has led students to consider social network detoxification in the future (El-Khoury et al., 2021).

Based on the above and the severe consequences established in the mental health of young people (Martínez-Líbano et al., 2022), it is necessary to have effective and validated tools regarding social network addiction to continue developing research on the consequences in the general population, so the psychometric analysis focused on the Social Network Addiction Scale (SMAS). It was hypothesized that the SMAS would present a

bifactorial structure with high concurrent validity with the DASS-21, already validated in Chile.

## **METHODS**

## Design

The purpose of the present instrumental study was to determine the psychometric properties of the Social Media Addiction Scale (SMAS) in a sample of 686 university students. This research was approved by the Bioethics Committee of the Faculty of Education and Social Sciences of Universidad Andrés Bello on August 18, 2023.

# **Participants**

The sample consisted of 686 university students with a mean age of 28,04 years and a statistical deviation of 8,4 years; 71,1 % were female, 28,4 % were male, and 0,5 % were persons who did not identify with either of the two previous sexes. Inclusion criteria consisted of being a university student 18 or older. Exclusion criteria were incomplete questionnaires.

#### Instruments

The Social Media Addiction Scale (SMAS): This scale consists of 14 items, where appreciation of the use of social networks and ways of using them are expressed (J. Al-Menayes, 2016). Some of the statements exposed in this scale are; "I tend to use social networks more time than expected, "I tend to find life boring without social networks," and "I tend to neglect my work or schoolwork because of my use of social networks." The reliability level ( $\alpha$ ) of the scale in this study was 0,832.

Depression, Anxiety, and Stress Scale (DASS - 21): This psychometric scale consists of 21 items, in which contextual statements are used to describe the mental state that the person has recently experienced (Antúnez & Vinet, 2012). Some of the representative statements in this questionnaire concerning recent experiences are: "I found it difficult to motivate myself to do things," "I got out of control in certain situations," "I felt that I was very nervous," and "I was worried about situations in which I could panic and make a fool of myself." The scale's reliability (α) in this study was 0,95.

#### **Procedure**

The Social Media Addiction Scale (SMAS) was translated by two professional and native translators, after which the translations were analyzed by two experienced researchers who approved the application. After this, we applied the SMAS and the Depression, Anxiety, and Stress Scale (DASS - 21) to a group of higher education students. Our data collection method was carried out in April and May 2023 through a self-applicable online survey published on the Google Forms platform and disseminated through the Internet on platforms such as Email, Instagram, Facebook, and WhatsApp.

The complete sample, 686 Chilean higher education students, was divided into two halves randomly using the SPSS 29 program. Therefore, to perform the exploratory factor analysis, 343 participants were used, and for the confirmatory factor analysis, the other 343 higher education students were used.

Frequency distributions for the demographic characteristics and completion rates of the SMAS scores were performed using SPSS program version 29. The internal consistency of the SMAS was assessed using Cronbach's alpha and the inter-item correlations using Spearman's rank correlation coefficients (Xiao et al., 2016). Bartlett's sphericity test and Kaiser-Meyer-Olkin's measure of sampling adequacy were used to determine the adequacy of the factor analysis (Shrestha, 2021).

The factor structure of the SMAS was examined by performing an exploratory factor analysis by halves and a confirmatory factor analysis using SPSS AMOS. An exploratory factor analysis was performed using maximum likelihood estimation with geomin oblique rotation (Y. Chen et al., 2019). Screen plots, eigenvalues ( $\geq 1$ ), factor loadings (>0,4), and model fit of one- and two-factor structures were found. Confirmatory factor analysis was then performed to assess model fit. To determine model fit, chi-square model fit statistics ( $X^2$ ), comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) with 90 % confidence intervals, and standardized root mean square residuals (SRMR) were found. The goodness-of-fit criteria of Kline (Kline, 2023) and Hooper et al. (Hooper et al., 2008) were used. The following criteria were used to determine goodness-of-fit: (1) CFI $\geq 0,9$ ; (2) TLI $\geq 0,95$ ; (3) RMSEA<0,08; (4) SRMR<0,08; (5) goodness-of-fit p>0,05 (Cangur & Ercan, 2015; Zhang & Savalei, 2016).

## **RESULTS**

The descriptive results are shown in Table 1.

#### Reliability Results

Reliability was measured by Cronbach's alpha, which yielded a result of 0,832, corresponding to excellent reliability (Ismail et al., 2020).

	Table 1. Descriptive analysis of the items							
Item	Mean	Std. Deviation	Skewness	Kurtosis				
Item1	3,58	1,19	-0,49	-0,64				
Item2	2,36	1,16	0,54	-0,45				
Item3	2,42	1,30	0,48	-0,96				
Item4	1,66	1,07	1,61	1,79				
Item5	3,24	1,28	-0,20	-0,93				
Item6	3,47	1,37	-0,46	-1,00				
Item7	2,39	1,35	0,53	-0,94				
Item8	1,76	0,99	1,29	1,15				
Item9	1,61	1,06	1,85	2,70				
Item10	1,62	1,02	1,63	1,89				
Item11	1,39	0,91	2,66	6,65				
Item12	1,24	0,76	3,71	13,84				
Item13	1,68	1,07	1,57	1,65				
Item14	2,98	1,44	-0,05	-1,31				

Source: Own Elaboration

					Table	2. Corre	lation be	etween i	tems					
Items	item	item	item	item	item	item	item	item	item	item	item	item	item	item
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
item 1	-													
item 2	0,432**													
item 3	0,478**	0,462**												
item4	0,187**	0,440**	0,418**											
item 5	-0,062	-0,174**	-0,06	-0,09										
item 6	0,524**	0,320**	0,391**	0,144**	0,043									
item 7	0,292**	0,245**	0,376**	0,269**	0,018	0,364**								
item 8	0,223**	0,429**	0,341**	0,562**	-,115*	0,130*	0,275**							
item 9	0,193**	0,234**	0,299**	0,369**	-0,025	0,101*	0,239**	0,370**						
item 10	0,220**	0,290**	0,477**	0,449**	-0,07	0,145**	0,396**	0,415**	0,506**					
item 11	0,084	0,159**	0,215**	0,202**	0,039	-0,036	0,151**	0,279**	0,356**	0,341**				
item 12	0,057	0,263**	0,194**	0,424**	-0,023	-0,007	0,211**	0,452**	0,433**	0,489**	0,509**			
item 13	0,220**	0,371**	0,328**	0,449**	-0,163**	0,186**	0,342**	0,392**	0,358**	0,505**	0,300**	0,535**		
item 14	0,484**	0,328**	0,340**	0,208**	-0,009	0,382**	0,264**	0,255**	0,288**	0,293**	0,187**	0,142**	0,357**	-
				**Corr	elation is	significa	int at the	e 0,01 le	vel (2-ta	iled).				

# Factor Analysis of the Scale

KMO tests and Bartlett's test were performed to assess the suitability of the data for a factor analysis (Napitupulu et al., 2017). KMO values range from 0 to 1, where values closer to 1 indicate a higher adequacy of the data (Watson, 2017). Generally, a KMO value higher than 0,6 or 0,7 is considered acceptable to perform a factor analysis instead (Lemos Hoyos & Londoño Arredondo, 2006). For our study, the KMO was 0,860, well above what is required. Bartlett's test evaluates the null hypothesis that the correlation matrix of the variables is an identity matrix, which would indicate no relationship between the variables (Odoi et al., 2022). For our

study, Barlett's test was significant (0,000). Therefore, based on the above background, the high KMO value and the significant Bartlett's test indicate we can perform the factor analysis.

Table 3. Item Analysis Cronbach's Alpha							
Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted			
Item1	27,34	67,87	0,49	0,80			
Item2	28,57	67,58	0,52	0,80			
Item3	28,50	64,68	0,60	0,79			
Item4	29,26	68,41	0,53	0,80			
Item5	28,17	79,37	-0,08	0,84			
Item6	27,46	68,04	0,40	0,81			
Item7	28,54	66,63	0,48	0,80			
Item8	29,17	69,23	0,53	0,80			
Item9	29,32	69,29	0,48	0,80			
Item10	29,30	67,90	0,60	0,79			
Item11	29,55	72,79	0,34	0,81			
Item12	29,70	72,35	0,46	0,80			
Item13	29,26	68,00	0,55	0,80			
Item14	27,95	65,39	0,49	0,80			

Table 4. KMO and Bartlett's Test					
Kaiser-Meyer-Olkin Measure of Sampling Adequacy. 0,860					
	Approx. Chi-Square	1778,724			
Bartlett's Test of Sphericity	df	91			
	Sig.	0,000			

Once the tests were performed, the matrix was rotated to interpret better and simplify the extracted factors. From the above, it was possible to demonstrate the existence of two factors that explained 53,433% of the variance.

Table 5. Rotated Factor Matrix			
	Factor		
	1	2	
Factor 1. Disconnection from Reality due to the Use of Social Media			
Item 12. I often cancel meetings with my friends because of my social networking occupation.	0,783		
Item 10. My school grades or performance at work have worsened because of my use of social networks.	0,661	0,255	
Item 13. I think about what happens on social networks when I am away from them.	0,633	0,253	
Item 4. I get irritated when someone interrupts me while I am using social networks.	0,599	0,262	
Item 8. I would dislike having to reduce the time I spend using social networks.	0,97	0,252	
Item 9. My family often complains about my preoccupation with social networks.	0,573	0,183	
Item 11. I tend to use social networks while driving.	0,538		

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Factor 2. Waste of Time by Use of Social Networks		
Item 1. I tend to use social networks longer than expected.		0,771
Item 6. Time passes without my noticing when I use social networks.		0,667
Item 3. I often neglect my work or schoolwork because I use social networks.	0,346	0,598
Item 14. My use of social networks has increased significantly since I started using them.	0,225	0,554
Item 2. I often feel that life is boring without social networks.	0,358	0,522
Extraction Method: Maximum Likelihood; Rotation Method: Varimax with Kaiser No. in 3 iterations.	ormalization. Rot	ation converged

After performing the rotation, two factors appeared: factor 1 is called "disconnection from reality due to the use of social media" (DRSM), and factor 2 is called "waste of time due to the use of social media" (WTSM).

# **Confirmatory Factor Analysis**

A confirmatory factor analysis was performed with the other part of the sample to confirm the two-factor structure found in the exploratory factor analysis of the SMAS. The confirmatory factor analysis is presented in Figure 1.

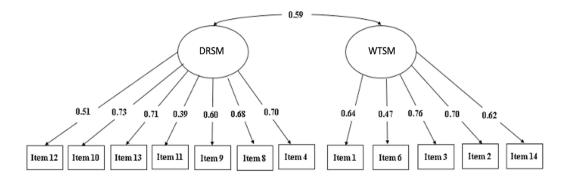


Figure 1. Confirmatory Factor Analysis (CFA)

The indicators show that the SMAS scale presents good fit indicators with a CFI = 0.959, TLI = 0.949, SRMR = 0.084, and RMSEA = 0.060. Therefore, we can assure that the scale presents a good fit given that the CFI and TLI are higher than 0.99 and the RMSEA lower than 0.08. (J. Wang & Wang, 2019).

## **Concurrent Validity**

Concurrent validity was performed with the DASS-21 with good levels of correlation between the two factors yielded by the SMAS and the variables measured by the DASS-21, such as depression, anxiety, and stress (see Table N°6).

Table 6. Concurrent validity.						
Variables	Stress					
DRSM	0,219**	0,240**	0,277**			
WTSM	0,371**	0,366**	0,416**			

## **DISCUSSION**

Our study aimed to analyze and adapt the SMAS, which measures social network addiction. It was found to have good psychometric properties for the Chilean population. Therefore, it can become a suitable tool to measure social network addiction.

From the exploratory factor analysis, it was possible to determine the existence of two factors related to addiction to social networks: factor 1, disconnection from reality due to the use of social media (DRSM), and

factor 2, waste of time due to the use of social media (WTSM).

The disconnection from reality through social networks can be understood, given that sometimes people show an idealized version of their own self through social networks (Chua & Chang, 2016; Jin et al., 2019). The above could even generate unfavorable comparisons (Fardouly et al., 2015) and dissatisfaction with one's own life (Abel et al., 2016), resulting in a sense of disconnection and permanent loneliness in people who try to disconnect from reality. Although social networks allow an apparent connection with others (Carr & Hayes, 2015), the interaction that occurs on these platforms is often more superficial and lacks the richness of face-to-face interactions (Bibi et al., 2018; McCrae et al., 2017), generating in people who feel an emotional disconnection.

The second factor (time wasted using social networks) appears when some people become dependent on social networks, spending long hours on them (Yesilyurt & Solpuk Turhan, 2020) and neglecting other important activities and relationships (Han et al., 2019). This dependence can lead to feelings of isolation and disconnection from reality (Tsay et al., 2013).

Concerning the confirmatory factor analysis, it was found that this scale presents very good fits, all above 0.90, which is the standard of adequate fit for psychometric scales. Therefore, it is a good instrument that correctly measures addiction to social networks.

The validation of psychometric scales is fundamental in scientific research, as it helps us confirm the consistency and stability of the construct we wish to measure and gives us confidence that the results will be valid, thus contributing to the study of new phenomena.

#### CONCLUSION

The SMAS is a scale with good psychometric properties for measuring addiction to social media. It has good reliability (Cronbach's alpha ( $\alpha$ ) 0,841. The CFA yielded very good fit indicators such as CFI=0,959, TLI=0,949, and RMSEA 0,060 and presents two factors: (1) Disconnection from reality due to social media use (DRSM) and (2) Waste of time due to social media use (WTSM), which explain 53,433 % of the variance. It also presents a good psychometric fit and concurrent validity with the DASS-21. Based on the above, we can say that we have a scale with good indicators for measuring addiction to social networks in the Chilean population.

#### **REFERENCES**

- 1. Abel, J. P., Buff, C. L., & Burr, S. A. (2016). Social media and the fear of missing out: Scale development and assessment. Journal of Business & Economics Research (JBER), 14(1), 33-44.
- 2. Al-Menayes, J. J. (2015). Dimensions of social media addiction among university students in Kuwait. Psychology and Behavioral Sciences, 4(1), 23-28.
- 3. Anderson, M., & Jiang, J. (2018). Teens, social media & technology 2018. Pew Research Center, 31(2018), 1673-1689.
- 4. Antúnez Sanhueza, Z., & Vinet, E. V. (2013). Mental health problems among students of a regional Chilean university [Problemas de salud mental en estudiantes de una universidad regional chilena]. Revista Médica de Chile, 141(2), 209-216. https://doi.org/10.4067/S0034-98872013000200010
- 5. Antúnez, Z., & Vinet, E. (2012). Escalas de depresión, ansiedad y estrés (DASS 21): Validación de la versión abreviada en estudiantes universitarios Chilenos. Terapia Psicologica, 30(3), 49-55. https://doi.org/10.4067/S0718-48082012000300005
- 6. Bibi, A., Bukhari, S., Sami, A., Irfan, A., & Liaqaut, H. (2018). Effect of latest technology and social media on interpersonal communication on youth of Balochistan. Journal of Managerial Sciences, XI (3), 475-490.
- 7. Britt, S. L., Ammerman, D. A., Barrett, S. F., & Jones, S. (2017). Student Loans, Financial Stress, and College Student Retention. Journal of Student Financial Aid, 47(1), 3.
- 8. Cangur, S., & Ercan, I. (2015). Comparison of model fit indices used in structural equation modeling under multivariate normality. Journal of Modern Applied Statistical Methods, 14(1), 14.
- 9. Carr, C. T., & Hayes, R. A. (2015). Social media: Defining, developing, and divining. Atlantic Journal of Communication, 23(1), 46-65.
  - 10. Chen, B., Sun, J., & Feng, Y. (2020). How have COVID-19 isolation policies affected young people's

mental health?-Evidence from Chinese college students. Frontiers in Psychology, 11, 1529.

- 11. Chen, Y., Li, X., & Zhang, S. (2019). Joint maximum likelihood estimation for high-dimensional exploratory item factor analysis. Psychometrika, 84, 124-146.
- 12. Cheng, C., & Lau, Y.-C. (2022). Social Media Addiction during COVID-19-Mandated Physical Distancing: Relatedness Needs as Motives. International Journal of Environmental Research and Public Health, 19(8).
- 13. Chua, T. H. H., & Chang, L. (2016). Follow me and like my beautiful selfies: Singapore teenage girls' engagement in self-presentation and peer comparison on social media. Computers in Human Behavior, 55, 190-197.
- 14. Coskun, S., & Muslu, G. K. (2019). Investigation of Problematic Mobile Phones Use and Fear of Missing Out (FoMO) Level in Adolescents. COMMUNITY MENTAL HEALTH JOURNAL, 55(6), 1004-1014. https://doi. org/10.1007/s10597-019-00422-8
- 15. Cristi-Montero, C., Sadarangani, K. P., Garrido-Méndez, A., Poblete-Valderrama, F., Díaz-Martínez, X., & Celis-Morales, C. (2019). Relación entre niveles de actividad física y sedentarismo con síndrome metabólico. ENS Chile 2009-2010. Salud Pública de México, 61, 166-173.
- 16. 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.
- 17. 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(4), 1094-1118. https://doi.org/10.1007/s11469-019-00082-5
- 18. El-Khoury, J., Haidar, R., Kanj, R. R., Bou Ali, L., & Majari, G. (2021). Characteristics of social media 'detoxification' in university students. Libyan Journal of Medicine, 16(1).
- 19. Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & Halliwell, E. (2015). Social comparisons on social media: The impact of Facebook on young women's body image concerns and mood. Body Image, 13, 38-45.
- 20. Farooqi, H., Patel, H., Aslam, H. M., Ansari, I. Q., Khan, M., Iqbal, N., Rasheed, H., Jabbar, Q., Khan, S. R., Khalid, B., Nadeem, A., Afroz, R., Shafiq, S., Mustafa, A., & Asad, N. (2013). Effect of Facebook on the life of Medical University students. International Archives of Medicine, 6(1), 1. https://doi.org/10.1186/1755-7682-6-40
- 21. Garrido-Méndez, A., Concha-Cisternas, Y., Petermann-Rocha, F., Díaz-Martínez, X., Leiva, A. M., Troncoso, C., Martinez, M. A., Salas-Bravo, C., Álvarez, C., & Ramírez-Campillo, R. (2019). Influencia de la edad sobre el cumplimiento de las recomendaciones de actividad física: Resultados de la Encuesta Nacional de Salud en Chile 2009-2010. Revista Chilena de Nutrición, 46(2), 121-128.
- 22. Han, X., Han, W., Qu, J., Li, B., & Zhu, Q. (2019). What happens online stays online?——Social media dependency, online support behavior and offline effects for LGBT. Computers in Human Behavior, 93, 91-98.
- 23. Haug, S., Paz Castro, R., Kwon, M., Filler, A., Kowatsch, T., & Schaub, M. P. (2015). Smartphone use and smartphone addiction among young people in Switzerland. Journal of Behavioral Addictions, 4(4), 299-307. https://doi.org/10.1556/2006.4.2015.037
- 24. Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. Electronic Journal of Business Research Methods ., 6(1), 53-60. https://www.researchgate.net/ publication/254742561
- 25. 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(1).
- 26. Ismail, M. M., El Shorbagy, K. M., Mohamed, A. R., & Griffin, S. H. (2020). Cross-cultural adaptation and validation of the Arabic version of the Western Ontario Shoulder Instability Index (WOSI-Arabic). Orthopaedics

- & Traumatology: Surgery & Research, 106(6), 1135-1139. https://doi.org/10.1016/J.OTSR.2020.04.006
- 27. Javornik, A., Marder, B., Barhorst, J. B., McLean, G., Rogers, Y., Marshall, P., & Warlop, L. (2022). 'What lies behind the filter?'Uncovering the motivations for using augmented reality (AR) face filters on social media and their effect on well-being. Computers in Human Behavior, 128, 107126.
- 28. Jin, S. V., Muqaddam, A., & Ryu, E. (2019). Instafamous and social media influencer marketing. Marketing Intelligence & Planning, 37(5), 567-579.
- 29. Kariv, D., & Heiman, T. (2005). Task-oriented versus emotion-oriented coping strategies: The case of college students. College Student Journal, 39(1).
- 30. Kemp, S. (2023, January 26). Digital 2023: Global Overview Report. https://datareportal.com/reports/digital-2023-global-overview-report?utm\_source=DataReportal&utm\_medium=Article&utm\_campaign=Digital\_2023&utm\_content=Article\_Hyperlink
- 31. Khan, S. M., Gumus, A., Nassar, J. M., & Hussain, M. M. (2018). CMOS enabled microfluidic systems for healthcare based applications. Advanced Materials, 30(16), 1705759.
  - 32. Kline, R. B. (2023). Principles and practice of structural equation modeling (5th ed.). Guildford Press.
- 33. Kuss, D. J., & Griffiths, M. D. (2017). Social networking sites and addiction: Ten lessons learned. International Journal of Environmental Research and Public Health, 14(3), 311.
- 34. Lemos Hoyos, M., & Londoño Arredondo, N. H. (2006). Construcción y validación del cuestionario de dependencia emocional en población colombiana. Acta Colombiana de Psicología, 9(2), 127-140.
- 35. Malaeb, D., Salameh, P., Barbar, S., Awad, E., Haddad, C., Hallit, R., Sacre, H., Akel, M., Obeid, S., & Hallit, S. (2021). Problematic social media use and mental health (depression, anxiety, and insomnia) among Lebanese adults: Any mediating effect of stress? Perspectives in Psychiatric Care, 57(2), 539-549.
- 36. Márquez Benza, K. (2021). Adicción a redes sociales y satisfacción familiar en adolescentes de un colegio privado de Lima Metropolitana.
- 37. Martínez-Líbano, J., González Campusano, N., & Pereira Castillo, J. (2022). Las Redes Sociales y su Influencia en la Salud Mental de los Estudiantes Universitarios: Una Revisión Sistemática. REIDOCREA, 11(4), 44-57.
- 38. Martínez-Libano, J., Torres-Vallejos, J., Campusano, N. G., Castillo, J. P., Simkin, H., Oyanedel, J. C., & Yeomans, M. M. (2023). Psychometric Properties and Measurement Invariance of The Fear of Missing Out Scale (FoMOs) In Chilean University Students. Salud, Ciencia y Tecnologia, 3:328. https://doi.org/10.56294/saludcyt2023328
- 39. Martínez-Líbano, J., Torres-Vallejos, J., Oyanedel, J. C., González-Campusano, N., Calderón-Herrera, G., & Yeomans-Cabrera, M. M. (2023). Prevalence and variables associated with depression, anxiety, and stress among Chilean higher education students, post-pandemic. Frontiers in Psychiatry, 14. https://doi.org/10.3389/fpsyt.2023.1139946
- 40. Martínez-Líbano, J., & Yeomans Cabrera, M. M. (2021). SUICIDAL IDEATION AND SUICIDAL THOUGHTS IN UNIVERSITY STUDENTS DURING THE COVID-19 PANDEMIC: A SYSTEMATIC REVIEW. Revista Argentina de Clinica Psicologica, 30(2), 390-405. https://doi.org/10.24205/03276716.2020.40
- 41. Martínez-Líbano, J., Yeomans Cabrera, M. M., González Campusano, N., & Campos Flores, E. (2021). Emotional Exhaustion and Mental Health in a Sample of Chilean Social Science Students During the COVID-19 Pandemic. {PSOCIAL} Journal of Research in Social Psychology, 7(2), 69-81. https://www.redalyc.org/journal/6723/672371742002/html/
- 42. McCrae, N., Gettings, S., & Purssell, E. (2017). Social media and depressive symptoms in childhood and adolescence: A systematic review. Adolescent Research Review, 2, 315-330.

- 43. Metin-Orta, I. (2020). Fear of Missing Out , Internet Addiction and Their Relationship to Psychological Symptoms. ADDICTA-THE TURKISH JOURNAL ON ADDICTIONS, 7(1), 67-73. https://doi.org/10.15805/ addicta.2020.7.1.0070
- 44. Moreton, L., & Greenfield, S. (2022). University students' views on the impact of Instagram on mental wellbeing: a qualitative study. BMC PSYCHOLOGY, 10(1). https://doi.org/10.1186/s40359-022-00743-6
- 45. Murff, S. H. (2005). The impact of stress on academic success in college students. ABNF JOURNAL, 16(5), 102.
- 46. Napitupulu, D., Kadar, J. A., & Jati, R. K. (2017). Validity testing of technology acceptance model based on factor analysis approach. Indonesian Journal of Electrical Engineering and Computer Science, 5(3), 697-704.
- 47. Nazar, G., Gatica-Saavedra, M., Provoste, A., Leiva, A. M., Martorell, M., Ulloa, N., Petermann-Rocha, F., Troncoso-Pantoja, C., Celis-Morales, C., Nazar, G., Gatica-Saavedra, M., Provoste, A., Leiva, A. M., Martorell, M., Ulloa, N., Petermann-Rocha, F., Troncoso-Pantoja, C., & Celis-Morales, C. (2021). Factores asociados a depresión en población chilena. Resultados Encuesta Nacional de Salud 2016-2017. Revista Médica de Chile, 149(10), 1430-1439. https://doi.org/10.4067/s0034-98872021001001430
- 48. Odoi, B., Twumasi-Ankrah, S., Samita, S., & Al-Hassan, S. (2022). The Efficiency of Bartlett's Test using Different forms of Residuals for Testing Homogeneity of Variance in Single and Factorial Experiments-A Simulation Study. Scientific African, e01323.
- 49. Pantic, I., Milanovic, A., Loboda, B., Błachnio, A., Przepiorka, A., Nesic, D., Mazic, S., Dugalic, S., & Ristic, S. (2017). Association between physiological oscillations in self-esteem, narcissism and internet addiction: A cross-sectional study. Psychiatry Research, 258, 239-243.
- 50. Ponnusamy, S., Iranmanesh, M., Foroughi, B., & Hyun, S. S. (2020). Drivers and outcomes of Instagram Addiction: Psychological well-being as moderator. Computers in Human Behavior, 107, 106294.
- 51. Popat, A., & Tarrant, C. (2023). Exploring adolescents' perspectives on social media and mental health and well-being-A qualitative literature review. Clinical Child Psychology and Psychiatry, 28(1), 323-337.
- 52. Prabakar, S. (2017). Internet Surfing Addiction factors affecting the Internet use and its consequences. International Journal in Management & Social Science, 5(8), 398-406.
- 53. Quaglieri, A., Biondi, S., Roma, P., Varchetta, M., Fraschetti, A., Burrai, J., Lausi, G., Martí-Vilar, M., González-Sala, F., & Di Domenico, A. (2021). From emotional (Dys) regulation to internet addiction: a mediation model of problematic social media use among italian young adults. Journal of Clinical Medicine, 11(1), 188.
- 54. Radtke, T., Apel, T., Schenkel, K., Keller, J., & von Lindern, E. (2022). Digital detox: An effective solution in the smartphone era? A systematic literature review. Mobile Media & Communication, 10(2), 190-215.
- 55. Raj, P., & Raman, A. C. (2017). The Internet of Things: Enabling technologies, platforms, and use cases. CRC press.
- 56. Reid Chassiakos, Y. L., Radesky, J., Christakis, D., Moreno, M. A., Cross, C., Hill, D., Ameenuddin, N., Hutchinson, J., Levine, A., & Boyd, R. (2016). Children and adolescents and digital media. Pediatrics, 138(5).
- 57. Richardson, T., Elliott, P., Roberts, R., & Jansen, M. (2017). A longitudinal study of financial difficulties and mental health in a national sample of British undergraduate students. Community Mental Health Journal, 53, 344-352.
- 58. Rossi, J., Jimenez, J., Barros, P., Assar, R., Jaramillo, K., Herrera, L., Quevedo, Y., Botto, A., Leighton, C., & Martinez, F. (2019). Depressive symptomatology and psychological well-being among Chilean university students. REVISTA MEDICA DE CHILE, 147(5), 579-588. https://doi.org/10.4067/S0034-98872019000500579
- 59. Satici, B., Kayis, A. R., & Griffiths, M. D. (2021). Exploring the Association Between Social Media Addiction and Relationship Satisfaction: Psychological Distress as a Mediator. INTERNATIONAL JOURNAL OF MENTAL HEALTH

- 60. Savci, M., & Griffiths, M. D. (2021). The Development of the Turkish Social Media Craving Scale (SMCS): a Validation Study. INTERNATIONAL JOURNAL OF MENTAL HEALTH AND ADDICTION, 19(2), 359-373. https://doi.org/10.1007/s11469-019-00062-9
- 61. Schwieger, D., & Ladwig, C. (2018). Reaching and retaining the next generation: Adapting to the expectations of Gen Z in the classroom. Information Systems Education Journal, 16(3), 45.
- 62. Seabrook, E. M., Kern, M. L., & Rickard, N. S. (2016). Social networking sites, depression, and anxiety: a systematic review. JMIR Mental Health, 3(4), e5842.
- 63. Shim, T. E., & Lee, S. Y. (2020). College students' experience of emergency remote teaching due to COVID-19. Children and Youth Services Review, 119, 105578.
- 64. Shrestha, N. (2021). Factor analysis as a tool for survey analysis. American Journal of Applied Mathematics and Statistics, 9(1), 4-11.
- 65. Spencer, T. A., Lambertsen, A., Hubler, D. S., & Burr, B. K. (2017). Assessing the mediating effect of relationship dynamics between perceptions of problematic media use and relationship satisfaction. Contemporary Family Therapy, 39, 80-86.
- 66. Stanculescu, E., & Griffiths, M. D. (2021). Anxious Attachment and Facebook Addiction: The Mediating Role of Need to Belong, Self-esteem, and Facebook Use to Meet Romantic Partners. INTERNATIONAL JOURNAL OF MENTAL HEALTH AND ADDICTION. https://doi.org/10.1007/s11469-021-00598-9
- 67. Tandon, A., Kaur, P., Dhir, A., & Mäntymäki, M. (2020). Sleepless due to social media? Investigating problematic sleep due to social media and social media sleep hygiene. Computers in Human Behavior, 113, 106487.
- 68. Tateno, M., Teo, A. R., Ukai, W., Kanazawa, J., Katsuki, R., Kubo, H., & Kato, T. A. (2019). Internet addiction, smartphone addiction, and Hikikomori trait in Japanese young adult: social isolation and social network. Frontiers in Psychiatry, 10, 455.
- 69. Tembo, C., Burns, S., & Kalembo, F. (2017). The association between levels of alcohol consumption and mental health problems and academic performance among young university students. PLoS One, 12(6), e0178142.
- 70. Torres, C., Otero, P., Bustamante, B., Blanco, V., Diaz, O., & Vazquez, F. L. (2017). Mental Health Problems and Related Factors in Ecuadorian College Students. INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, 14(5). https://doi.org/10.3390/ijerph14050530
- 71. Tsay, S., Mu, P., Lin, S., Wang, K. K., & Chen, Y. (2013). The experiences of adult ventilator-dependent patients: A meta-synthesis review. Nursing & Health Sciences, 15(4), 525-533.
- 72. Wang, J. (2017). Analysis of the Role of New Media in University Students' Mental Health Education System. EURASIA JOURNAL OF MATHEMATICS SCIENCE AND TECHNOLOGY EDUCATION, 13(10), 6979-6985. https://doi.org/10.12973/ejmste/78711
  - 73. Wang, J., & Wang, X. (2019). Structural equation modeling: Applications using Mplus. John Wiley & Sons.
- 74. Wang, T., Wong, J. Y. H., Wang, M. P., Li, A. C. Y., Kim, S. S., & Lee, J. J. (2021). Effects of Social Networking Service (SNS) Addiction on Mental Health Status in Chinese University Students: Structural Equation Modeling Approach Using a Cross-sectional Online Survey. JOURNAL OF MEDICAL INTERNET RESEARCH, 23(12). https://doi.org/10.2196/26733
- 75. Watson, J. C. (2017). Establishing evidence for internal structure using exploratory factor analysis. Measurement and Evaluation in Counseling and Development, 50(4), 232-238.

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- 76. Xiao, C., Ye, J., Esteves, R. M., & Rong, C. (2016). Using Spearman's correlation coefficients for exploratory data analysis on big dataset. Concurrency and Computation: Practice and Experience, 28(14), 3866-3878.
- 77. Yesilyurt, F., & Solpuk Turhan, N. (2020). Prediction of the Time Spent on Instagram by Social Media Addiction and Life Satisfaction. Cypriot Journal of Educational Sciences, 15(2), 208-219.
- 78. Yusof, M., Aw, N., & Ls, S. (2022). Prevalence of Problematic Internet Use and its Association with Psychological Distress and Coping Strategies among Universiti Teknologi Mara Students during the COVID 19 Pandemic. 21(3), 109-118.
- 79. Zhang, X., & Savalei, V. (2016). Bootstrapping confidence intervals for fit indexes in structural equation modeling. Structural Equation Modeling: A Multidisciplinary Journal, 23(3), 392-408.

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# SUPPLEMENTARY MATERIAL

# SOCIAL MEDIA ADDICTION SCALE (SMAS) / ESCALA DE ADICCIÓN A LAS REDES SOCIALES

La escala de adicción a las redes sociales es una variante traducida al español de la prueba de adicción al internet, que consiste en 12 ítems que se clasifican en una escala Likert de 5 niveles. No hay respuestas buenas o malas. Marca según tu primera impresión, no te detengas demasiado en cada frase.

Las opciones de respuestas son:

- 1. Totalmente en desacuerdo.
- 2. En desacuerdo.
- 3. Neutral.
- 4. De acuerdo.
- 5. Muy de acuerdo.

Según sus actividades diarias y las redes sociales, responda lo siguiente:	1	2	3	4	5
1. A menudo uso las redes sociales más tiempo del previsto.					
2. A menudo encuentro que la vida es aburrida sin las redes sociales.					
3. A menudo descuido mi trabajo o trabajo escolar debido a mi uso de las redes sociales.					
4. Me irrito cuando alguien me interrumpe cuando estoy usando las redes sociales.					
5. El tiempo pasa sin que yo lo sienta cuando estoy usando las redes sociales.					
6. Me molestaría si tuviera que reducir la cantidad de tiempo que paso usando las redes sociales.					
7. Mi familia se queja con frecuencia de mi preocupación por las redes sociales.					
8. Mis calificaciones escolares o mi rendimiento en el trabajo se han deteriorado debido a mi uso de las redes sociales.					
9. A menudo uso las redes sociales mientras conduzco.					
10. A menudo cancelo las reuniones con mis amigos debido a mi ocupación con las redes sociales.					
11. Me encuentro pensando en lo que sucedió en las redes sociales cuando estoy lejos de ellas.					
12. Siento que mi uso de las redes sociales ha aumentado significativamente desde que comencé a usarlas.					