Factors That Explain Social Network Addiction in College Students

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Abstract

The objective of the present study is to evaluate the factors which explain university students' addiction to social networks as well as to determine and validate the underlying structure that explains this addiction. The design of the study is non-experimental and transversal. This was an empirical study of the descriptive hypothetical-deductive paradigm type, both exploratory and confirmatory. Our population is made up of public university students in Sonora, Mexico. Our sample is non-probabilistic by self-determination. It consists of 356 students (128 women and 228 men). The scale used was a questionnaire on the addiction to social networks (ARS) designed by Escurra and Salas (2014). A model of four factors with twelve items was obtained. The factors are obsessions with social networks (3 items), excessive time spent on social networks (3 items, neglect of social and school activities (4 items), and the need for being connected (2 items). With the results we can understand the dimensions of the scale used in this study, varying depending on the population studied. Thus, the factorial solution obtained in the exploratory analysis yields different structures which can be confirmed using SEM methodology. These may vary in the explanation of addiction to social networks, depending on the context and the population. It is important to continue using these kinds of studies in other scenarios of the private educational sector, in rural areas, with indigenous populations and students with disabilities, among others, in order to strengthen the scale. The greatest limitation in this kind of study will always be the lack of financing to cover the cost of fieldwork which would allow for broadening the specter of the population to obtain larger samples.

Keywords: social networks, college students, media, media influence.

1. Introduction

The influence the new forms of communication (blog, chat, social network) have on the formation of the identity of young people and their social behavior, is important, as it becomes an alternate route which broadens the spaces and times of social coexistence with family and friends. However, the interaction of adolescents in traditional spaces such as school, cafes, parties, among others, has been annulled (Morduchowicz, 2012).

Social networks are one of the basic tools used for communication nowadays in knowledge-based society. The growth of social networks has brought about their being included in

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environments of formation, not only for administrative work and information for families, but rather within teaching practices, to transmit information and as a means of working in collaboration with others (Marín-Díaz, Cabero-Almenara, 2019).

Social network sites are spaces whose priority is interpersonal contact between individuals or groups, besides establishing personal, professional and geographic connections, among others, stimulating the construction of week links. In online society the concept of connectivity is a quantifiable value which is also known as popularity. That is, the more contacts an individual has, the more valuable that person is because people recognize that he/she is popular and will want to have a relationship with them (Van Dijck, 2016).

Empirical studies on the addiction to the internet suggest alterations in functions such as inhibitory control, decision-making and verbal fluidity. However, it is impossible to establish a profile which indicates the risk for developing addictions in university students. They also point out that more studies need to be carried out to allow for differentiating the addiction on the types of application and where variables such as sex, type of work and stimulus are taken into account (Bernabéu et al., 2020).

In a study carried out at the University of Granada, Spain with 1013 students participating, Romero-Rodriguez et al. (Romero-Rodriguez et al., 2021) found that the abuse in use of internet mainly affects the states of depression, anxiety and stress, and to a lesser degree, self-control. On the other hand, addiction to the internet is spreading among young people, increasing fatigue, anxiety, tension, unrest and errors in everyday life.

Social networks are a part of everyday life; however, it is estimated that problems of mental health in young people have increased along with the increase in social networks. In one systematic review of thirteen studies carried out by Keles et al. (Keles et al., 2020), four areas of predominance in social networks were discovered: time dedicated, activity, investment and addiction. There was a correlation between these areas and depression, anxiety and psychological unrest. Nevertheless, it was pointed out that deeper studies in qualitative research and cohort longitudinal studies are required. It has been documented that people with social anxiety and loneliness are involved in a more problematic way seeking support on social networks (O'Day, Heimberg, 2021). This interaction on social networks is to make up for the lack of physical contact with other people. This study concluded that the problematic use of social networks is due to the frequency and not the pattern of use. At the same time, they recommend more longitudinal studies be made in order to decrease the bi-directional relations between loneliness, social anxiety and the use of social networks.

Along another line, to determine the mediating effect of envy in relation to social networks and the fear of loss, a study is underway in China, in which 704 adolescents are participating. The results show evidence that the addiction to social networks is positively associated with fear of loss. Meanwhile, an analysis of moderate mediation indicated a stronger relationship for adolescents with a greater necessity of belonging (Yin et al., 2021).

Ünal-Aydin et al.'s (Ünal-Aydin et al., 2020) research with 337 individuals was meant to determine the potential role of the recognition of emotions played in the development of addiction to social networks and thus propose alternative solutions to the problems entailed in this addiction. The results showed that there are deficits in recognition of emotions among people with addictions to social networks. The mechanisms behind addiction to social networks in adults mainly remain hidden, and for this reason Liu and Ma (2019) developed a study of 463 university students. The results indicate that on-line social support and the fear of loss interceded in the relationship between anxious attachment and the addiction to social networks both in parallel and serial ways. Moreover, on-line social support presented a negative mediation to anxious attachment and the addiction to social networks. In conclusion, it was found that anxious attachment is related to addiction to social networks.

The effect that addiction to social networks has on students' academic performance was studied by Azizi et al. (Azizi et al., 2019). They carried out a cross sectional stratified random sampling study with 360 students. The findings indicate with a statistically significant difference that the male participants are more prone to addiction to social networks. There is a negative, statistically significant relation between students' addiction to social networks and their academic performance.

Through the years the phenomenon of addiction to social networks has increased. The study by Gong et al. (Gong et al., 2019) is centered on determining the process of the formation of this addiction. In their study 335 users of WeChat participated. The results showed that addictive

behavior is determined by the perception of the benefits for the individual, such as social and hedonic benefits, of social networks on the cellular phone. These benefits are influenced by the sense of belonging and habit as distal causes and the benefits perceived are proximal causes.

In research, personality type D (tendency to negative affectivity and social inhibition) has been considered a risk factor for addition to social networks. In the face of this, a study of 679 adolescents was carried out and the findings show that, while controlling for age and sex, the personality type D positively correlated to addiction of social networks. The affective relations with friends also tempers the mediating effect. For adolescents with type D personalities and low degrees of affective relationships with friends, the addiction to social networks was significant. On the contrary, when there are high degrees of affective relationships, the relation was not significant. Thus, it was concluded that type D personality was a risk factor when combined with other factors such as affective relationships with friends, which contributes to addiction of social networks among adolescents (Jia et al., 2019).

The use of social networks causes problems in psychological functioning. In the work of Balikci et al. (Balikci et al., 2020), the association between metacognitive beliefs and problems of social networks among young people was analyzed. 308 individuals participated in the study where variance/covariance analysis was used, with Pearson Correlation and multiple linear regression. The findings show that young people with addiction to social networks showed high scores on all the evaluations on the scale of addiction to social networks and on the questionnaire of metacognition, with the exception of cognitive self-consciousness. Negative beliefs about uncontrollability and dangerous concerns, cognitive confidence and the need to control thoughts are associated with dimensions of modification of the frame of mind, relapse and conflict. The study concludes that dysfunctional metacognitive beliefs are related to the problems of young people's using social networks.

In a study by Li et al. (Li et al., 2022), the reciprocal relationship between fear of loss, the use of social networks and addiction to smart phones is analyzed. 1258 university students in China participated in the study. The results show that a close relationship between fear of loss, the use of social networks and addiction to smart phones exists. The excessive use of social networks and high degrees of fear of the loss of belonging contribute to the addiction to smart phones. Furthermore, the addiction to smart phones also increases the use of social networks and the degree of fear of loss. Thus, a bidirectional influence among the addiction to smart phones, the use of social networks and the fear of loss is suggested.

In research by Chen and Roberts (Chen, Roberts, 2020) they explored the variables conformity, improvement, social and confrontation mediated between the types of personality, kindness, extraversion, neuroticism and openness to experience, as well as the addiction to social networks. Also, impulse control was included as a moderator. 304 users of social networks participated in the study which used structural equations for data analysis. The results show the conformity, improvement and motives of confrontation which act as mediators among the various types of personalities and addiction to social networks.

It becomes pertinent to ask ourselves: What factors explain university students' addiction to social networks? What is the underlying structure in the explanation of the phenomenon of addiction to social networks? Thus, our objective: to evaluate the factors which make up the scale of addiction to social networks. Moreover, we hope to determine and validate the underlying structure that explains addiction to social networks in university students.

2. Materials and methods

Our study is of a non-experimental design taking into account that the independent variables are not manipulated and the temporality of data collection. It is cross-sectional since the information was collected at one time. The empirical study is addressed from the hypothetical-deductive paradigm, which is descriptive, exploratory and confirmatory.

Participants and samples

The population of the study is public university students in the state of Sonora, Mexico. The sample is non-probabilistic by self-determination and the census was voluntary. The criterion of inclusion is students registered in the semester who accepted to participate voluntarily and anonymously by answering a questionnaire. Authorization had been obtained from the heads of the university. The instrument was answered digitally and accessed by way of a QR code.

The total number of students at the end of the survey was 356, 128 women and 228 men. 97 % of the participants were between 17 and 24 years old. 68 % only study while 32 % study and work. 52 % of the students are in the first year of university, 39 % in the second and third years and the rest from the fourth year on. In a first filter it was found that in 5 cases the students did not interact on social networks, and they were therefore excluded. Of the students who did use social networks, 97 % used them on their phones and the rest on computers. With reference to where the students connect to social networks, the answers indicated that at home and at school were the two main spaces for connecting to social networks.

In relation to the frequency of connection to social networks, 35 % said they are always connected and another 35 % said that they connected between seven and twelve times a day. 39 % said they personally know over 70 % of their contacts on social networks, 31 % said they know between 51 % and 70 % of their contacts. The rest physically know at least half of the people with whom they interact on social networks. On social networks they share information about their identification, 72 % affirming that the information with which they identify themselves on social networks is real. With respect to the reasons for using social networks, 52 % used it to socialize, for academic and work purposes while 39 % say they use it only for socializing. 5 % use it exclusively for academic purposes and 2 % use it exclusively for work-related purposes is 2 %.

Instrument

The scale used in this study is a questionnaire of addiction to social networks (ARS) designed by Escurra and Salas (2014). The instrument is made up of two parts. The first section asks for socio-demographic information (sex, age, years of studies, present-day activity, educational program, semester, means they most frequently use to connect social networks, place and frequency they connect, people they know personally on the social networks, use of real information on social networks, kind of use they give to social networks). The second section is made up of 24 questions with a Likert scale on what they feel, think and do on social networks. There are five options for answers in this section: always, almost always, sometimes, almost never and never.

The ARS scale is made up of three dimensions (Table 1). The first dimension includes 10 items and is called "obsession with social networks" and refers to the mental ties with social networks, continuously thinking about them, as well as anxiety and anguish for not having access to them. The second dimension is made up of 6 items called "lack of personal control in the use of social networks. In this dimension we find apprehension for the lack of control or suspension of social networks, causing abandonment of school and daily life obligations. In the third dimension, "the excessive use of social networks," made up of 8 items, we see the difficulties for regulating the use of social networks, the time and impossibility of decreasing their use (Escurra, Salas, 2014).

Table 1. Dimensions and items which make up the ARS scale

Dimension	Ítems
Obsession with social networks	2, 3, 5, 6, 7, 13, 15, 19, 22, 23
Lack of personal control in the use of social networks	4, 11, 12, 14, 20, 24
Excessive use of social networks	1, 8, 9, 10, 16, 17, 18, 21

Source: Escurra, Salas, 2014.

Procedure

To analyze the data, we first verified the internal consistency and reliability of all items as well as the normality. If it is found that the univariant is biased or has an excess of Kurtosis, analysis using polychoric correlation matrices. Following, in order to obtain underlying structure of the database exploratory factor analysis with extraction of components and Varimax rotation. With the factor solution obtained, confirmatory structural analysis is carried out using AMOS v23.

The resulting model is evaluated for absolute fit, structural fit and parsimony to achieve the best adjustment model (Hair et al., 1999). The indicators for measurement are X^2 (chi squared), Goodnes of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI), Root Mean Square Error Approximation Fit Index RMSEA) and the Comparative fit index (CFI), which compare the estimate model with the null model that indicates the independence of the variables being studied.

Internal consistency and validity test

The instrument was validated using Cronbach alpha coefficient, where $\alpha = .9$ scale for the 24 items was obtained (without including the corresponding social-demographic information). $\alpha = .87$ was obtained for the three dimensions which make up the scale, these values being greater than .7, which indicates acceptability according to what Oviedo and Campo-Arias (Oviedo and Campo-Arias, 2005) described. Thus, it was concluded that the instrument complies with the desirable characteristics of internal consistency and reliability for validating a scale. 351 cases were validated, excluding the 5 cases which corresponded to participants who said they never used social networks.

Data normality

To verify data normality, the data matrix was evaluated using the asymmetric values which must be less than 2 and in the kurtosis the values should be less than 7, besides the asymmetric significance KS-1 (Kim, 2013). In Table 2 the values of asymmetry and Kurtosis are shown. Here it can be seen that they do not comply with said criteria, since in most cases the values are negative. The asymptotic significance does not exceed the recommended threshold (>.05), the reason for which it must be assumed that the data matrix does not present normality.

Table 2. Statistical Description, asymmetry and Kurtosis

Variables	$\bar{X}$ Measure	Standard Deviation	Asymmetry	Kurtosis	Asymptotic Signifiance Kolmogorov-Smirnov)
X1	3.1	1.05	-.007	-.45	.000
X2	3.44	.992	-.242	-.238	.000
X3	3.92	1.021	-.92	.605	.000
X4	3.05	1.186	-.042	-.84	.000
X5	3.91	1.084	-.82	.052	.000
X6	4.29	.987	-1.423	1.447	.000
X7	4.04	1.072	-.995	.254	.000
X8	3.44	1.053	-.103	-.673	.000
X9	2.96	1.222	.035	-.858	.000
X10	2.87	1.107	.089	-.648	.000
X11	3.72	1.093	-.609	-.132	.000
X12	3.12	1.296	-.179	-1.005	.000
X13	2.78	1.248	.142	-.989	.000
X14	3.43	1.121	-.4	-.419	.000
X15	4.08	1.029	-1.024	.482	.000
X16	3.05	1.111	-.208	-.616	.000
X17	2.85	1.103	.046	-.629	.000
X18	2.87	1.241	.085	-.905	.000
X19	4.07	1.033	-1.098	.817	.000
X20	3.72	1.065	-.545	-.183	.000
X21	3.52	1.055	-.372	-.283	.000
X22	4.26	2.906	15.226	267.108	.000
X23	3.97	1.028	-.927	.517	.000
X24	3.68	1.196	-.698	-.317	.000

Note: n = 351

Faced with the absence of data normality, evaluating using polychoric correlation matrices for measuring (Ogasawara, 2011; Timmerman, Lorenzo-Seva, 2011) and Chi-squared statistics with n degrees of freedom and the Bartlett's sphericity test with Kaiser to evaluate the pertinence of performing Factorial Exploratory Analysis was recommended. Thus, FEA was carried out to obtain a factorial solution based on the extraction of principle components and Varimax rotation.

3. Discussion and Results

The results obtained with FEA are now presented: Bartlett's sphericity test deliver the value Chi-squared of 4092.154 with 276 gl and p-value <.001 and the Kaiser-Meyer-Olkin (KMO) measure of 0.937 as well as the MSA values which all exceeded the > 0.5 threshold, making them

acceptable values. Besides the polychoric correlation matrices show positive values in all cases (Table 3), which provides evidence use FEA.

Table 3. Matrices of polychoric correlations and measurements of sample adequacy

Item	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	MSA
X1	1	0.684	0.523	0.487	0.478	0.452	0.509	0.454	0.347	0.425	0.495	0.435	.941
X2		1	0.57	0.448	0.436	0.441	0.425	0.429	0.32	0.38	0.453	0.348	.919
X3			1	0.393	0.435	0.478	0.421	0.4	0.233	0.319	0.43	0.238	.927
X4				1	0.415	0.379	0.432	0.374	0.364	0.521	0.405	0.275	.953
X5					1	0.578	0.611	0.505	0.373	0.397	0.456	0.313	.973
X6						1	0.701	0.558	0.342	0.358	0.494	0.315	.927
X7							1	0.575	0.403	0.429	0.503	0.416	.941
X8								1	0.365	0.411	0.485	0.337	.958
X9									1	0.666	0.357	0.427	.916
X10										1	0.418	0.493	.918
X11											1	0.351	.967
X12												1	.899

Item	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	MSA
X13	1.00	-0.01	-0.08	-0.19	-0.21	-0.22	-0.13	-0.13	-0.14	-0.10	-0.15	-0.13	.846
X14		1.00	0.43	0.39	0.35	0.19	0.38	0.35	0.31	0.20	0.37	0.49	.942
X15			1.00	0.37	0.39	0.27	0.49	0.35	0.37	0.16	0.47	0.44	.948
X16				1.00	0.65	0.41	0.35	0.48	0.41	0.08	0.40	0.52	.950
X17					1.00	0.48	0.32	0.46	0.48	0.12	0.41	0.47	.944
X18						1.00	0.26	0.31	0.33	0.11	0.34	0.33	.963
X19							1.00	0.51	0.36	0.23	0.43	0.48	.939
X20								1.00	0.54	0.21	0.49	0.52	.934
X21									1.00	0.17	0.63	0.41	.922
X22										1.00	0.20	0.21	.848
X23											1.00	0.47	.925
X24												1.00	.935

Five components were obtained in the extraction of principle components which account for 61.31 % of the variance explained (Table 4).
Table 5 shows the rotated components matrix.

Table 4. Explanation of Total Variance

Factors	F1	F2	F3	F4	F5
Values	3.896	3.378	2.628	2.570	2.242
% variance	16.235	14.075	10.951	10.709	9.340
Accumulated variance	16.235	30.310	41.261	51.970	61.310

Table 5. Rotated components matrix

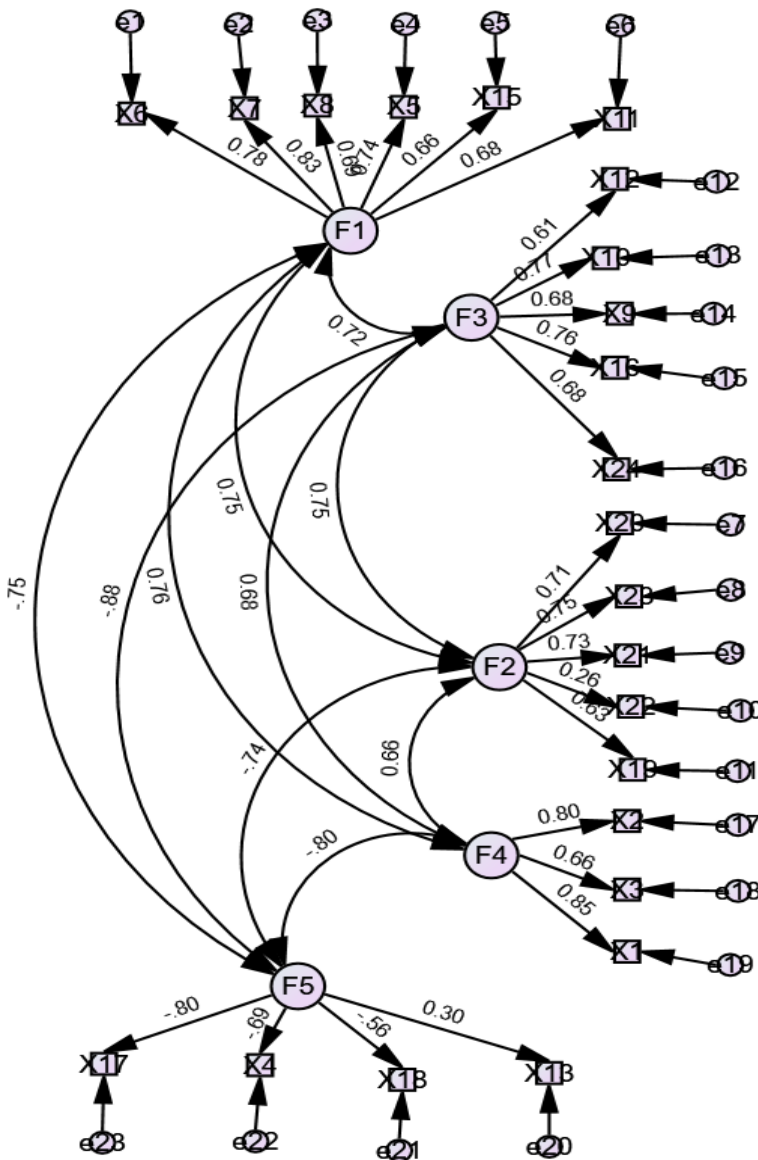| Item	Component				
	F1	F2	F3	F4	F5
X6. I get in a bad mood if I can't connect to social networks.	.791				
X7. I feel anxious when I can't connect to social networks.	.740				
X8. Access and use of social networks makes me feel relieved. It relaxes me.	.698				
X5. I don't know what to do when I am disconnected from social networks.	.672				
X15. Even when I'm doing something else, I'm thinking about what's going on on social networks.	.559				
X11. I think about what might be happening on social networks.	.540				
X12. I think I should control my urge to connect to social networks.		.726			
X10. I usually spend more time on social networks than what I'd originally planned on.		.721			
X9. I lose track of time when I connect to social networks.		.708			
X16. I spend a lot of time each day connecting and disconnecting from social networks.		.591			
X24. I think the intensity and frequency I access and use social networks is a problem.		.572			
X20. I neglect homework and studying to be connected to social networks.			.631		
X23. When I'm in class without access to social networks I feel bored.			.627		
X21. Even when I'm in class I secretly connect to social networks.			.600		
X22. My girlfriend/boyfriend or friends or relatives have called attention to my dedication to and time spent on social networks.			.561		
X19. I ignore my friends and family so I can be connected to social networks.			.502		
X2. I need more and more time to take care of matters related to social networks.				.738	
X3. The time I used to spend connected to social networks isn't enough anymore. I need more.				.684	
X1. I feel a great need to keep connected to social networks.				.662	
X14. I try unsuccessfully to control my habits of prolonged and intense use of social networks.					
X13. I can remain without access to social networks for several days.					.643
X18. I am aware of alerts sent to my phone or computer from social networks.					.524
X4. As soon as I wake up, I connect to social networks.					.516
X17. I spend a lot of time connected to social networks.					.500

Note: Method for extraction using analysis of principle components. Method of rotation with Varimax and normalization Kaiser. The rotation has converged 7 iterations. Item X14 does not present a charge > .5.

Confirmatory test

With the factorial solution obtained in FEA, we now proceed to the confirmation of the model of initial measurement, but using SEM methodology based on these criteria: Charges must be ≥ .07 in order to evaluate the adjustment of the various existing models of indicators of goodness of fit which may be used, depending on the size of the sample, the kind of variables and the points, among others (Hair et al., 1999). These indicators are index of normed adjustment (INA), index of

non-normed adjustments (INNA), the index of incremental adjustments (IIA), the index of comparative adjustments (ICA) and the root mean squared error (RMSE).

The goodness of fit allows for establishing a model which predicts that the correlation matrix for the structural equations model is the maximum Chi-squared plausibility. This criterion to determine probability, whose value should be between two and three, allows us to verify that the model presents an acceptable adjustment, although it may reach five (Hair et al., 1999). With respect to the index of the goodness of fit (IGF), this indicates whether the model shows an acceptable fit when it nears one. If it nears zero, then it has a bad fit. The root mean squared error (EMSE) is an index of population discrepancy that when it has values equal to or less than .10 is evidence of a good fit of the model. However, if the values are less than or equal to .05, this shows an optimum fit of the model (Hu, Bentler, 1995). In Figure 1 a model of standardized estimators is presented.
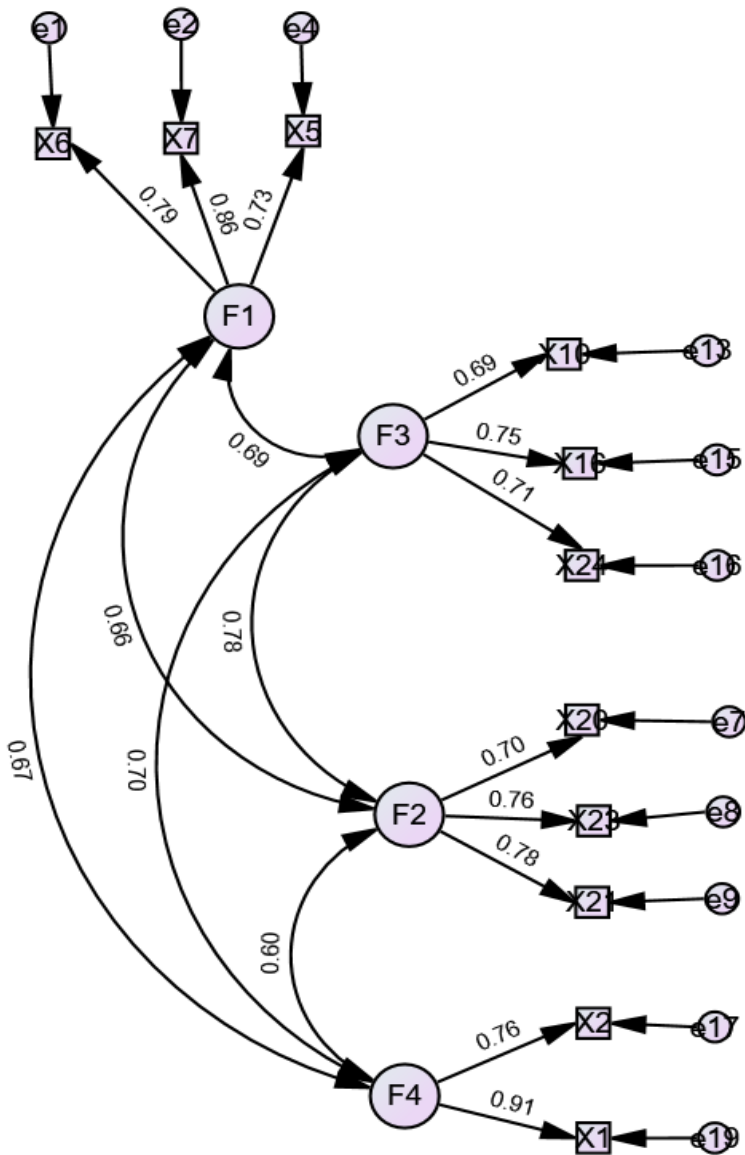

Fig. 1. Model of standardized estimators

To verify whether the model in figure 1 should be adjusted, the index of the maximum Chi-squared plausibility is used to prove the hypothesis of independence among the variables. The values obtained are CMIN/DF (2.558), RMSEA (.066), TLI (.885) and CFI (.908) and parsimony goodness of fit > .05, which indicates the model has a satisfactory fit. However, it is desirable to improve the values of the standardized estimators (>.65) and exclude the negative values. Thus, the model must be further adjusted.

Fig. 2. Model of addiction to social networks

Table 6. Matrix of rotated components (confirmatory model)

Item	F1	F2	F3	F4
X6. I get in a bad mood if I can't connect to social networks.	.791			
X7. I feel anxious when I can't connect to social networks.	.740			
X5. I don't know what to do when I am disconnected from social networks	.672			
X10. I usually spend more time on social networks than I had originally planned to.		.721		
X16. I spend a lot of time each day connecting to and disconnecting from social networks.		.591		
X24.I think the intensity and frequency I access and use social networks is a problem.		.572		
X20. I neglect homework and studying to be connected to social networks.			.631	
X23. When I'm in class without access to social networks I feel bored.			.627	
X21. Even when I'm in class I secretly connect to social networks.			.600	
X19. I ignore my friends and family so I can be connected to social networks.			.502	
X2. I need more and more time to take care of matters related to social networks.				.738
X1. I feel a great need to keep connected to social networks.				.662

The results of model 2 of addiction to social networks show the following: Chi-squared = 82.705 degrees of freedom = 38 Probability level = .000, CMIN/DF (2.176); RMSEA (0.05); TLI (0.956), CFI (0.974) as well as the values of parsimony (>.5), which indicate the best fit for the model (Figure 2 and Table 6).

4. Conclusion

The results show a four-factor model which differs from Escurra and Salas' (2014) model, that presents three factors. Factor F1 is made up of three items (X6, X7, X5) which coincide with the factor of obsession for social networks of Escurra and Salas' model. Factor F2, excessive time on social networks is made up of items S10, X16 and X24. Factor F3, I neglect social and school activities for social networks, consists of items X20, X23, X21 and X19. Factor F4, the need to be connected, includes items X2 and X1. Factor 2, Excessive time on social networks is made up of three items, of which two of them make up lack of personal control on the use of social networks of Escurra and Salas' model.

Moreover, the model with four factors consists of two items, in contrast to Escurra and Salas' model in which the three factors make a total of 24 items. Similarly, Gonzalez et al. (Gonzalez et al., 2021), using the ARS scale with Mexican adolescents who attend high school in the private sector obtained a three-factor model, coinciding the factors of obsession to social networks and excessive use of social networks with Escurra and Salas' model, but with eleven of the original 24 items. Likewise, Lobos-Rivera et al (Lobos-Rivera et al., 2022) in a study on Salvadoran adults using the ARS scale obtained three factors, discarding 6 items from the original scale.

Bueno et al. (Bueno et al., 2019) found that the ARS scale applied to secondary students in public schools in Peru, presented a five-factor structure with an explained variance of 61.54 % in contrast to Escurra and Salas' three factors. Thus, it may be established that the dimensions of the scales emerge depending on the population being studied and on this the reliability of the model for determining addictions to social networks will be based.

Future lines of research

Future studies should broaden the sample to include other scenarios such as students in private schools, in rural area, Indigenous students, students with disabilities, among othesr to strengthen the scale. Similarly, the present study was developed for higher education and could be expanded to investigate other educational levels.

Furthermore, the possibility of building an instrument for evaluating addiction to social networks with the rapid growth of technology and the ever-growing number of people who are using one or various social networks simultaneously should be explored.

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