

Social Media Addiction Scale - Student Form: The Reliability and Validity Study

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ABSTRACT

The purpose of this study is to develop a valid and reliable measurement tool to determine the social media addictions of secondary school, high school and university students. 998 students participated in the study. 476 students from secondary schools, high schools and universities participated in the first application during which the exploratory factor analysis of the scale was conducted. 298 students participated in the second application during which the confirmatory factor analysis was carried out. Test-retest method was used to determine the consistency of the scale with the participation of 224 student. Expert opinion, exploratory factor analysis, confirmatory factor analysis, total item correlations, mean differences between upper and lower groups, internal consistency coefficient and test-retest correlation coefficients were calculated within the scope of assessing the validity and reliability of the research. According to the exploratory and confirmatory factor analysis, the scale has a 4-factor structure accounting for 53.16% of the total variance. Kaiser-Meyer-Olkin (KMO) coefficient and the Bartlett's test were found significant respectively at .96 and $\chi^2=12680.88$ ($p=.00$). Internal consistency coefficient (Cronbach's alpha coefficient) was found .93 for the whole scale and at values ranging from .81 to .86 for the sub-factors. Test-retest coefficient was found .94. In conclusion, SMA-SF is a 5-point Likert-type scale consisting of 29 items grouped under 4 factors (virtual tolerance, virtual communication, virtual problem and virtual information). The statistical analysis indicates that the scale is valid and reliable enough to be used in determining the social media addictions of secondary school, high school and university students.

Keywords: Social media, addiction, student, scale development, reliability and validity.

INTRODUCTION

The Internet is a knowledge technology that has entered into every aspect of life as a means of information, trade and communication. Although the purpose of its emergence was to reach secure, fast, inexpensive information and to facilitate communication, today it has become a means of causing significant changes in individuals and society. The fact that internet usage takes place independently of time and space over a virtual environment leads to changing forms of communication. And social media, which is an extension of internet technology, changes communication channels among people. The use of social media in Turkey and around the world is increasing, especially young people and students show intense interest in it.

According to information provided by Internet World Stats (2017) based on data provided by leading organizations in Internet researches (Nielsen/NR, eTForcasts, CIAmanac, ITU, IWS, CIA), as of March 2017 the number of Internet users worldwide has increased by approximately 3 billion 732 million people (49.6%). The rate of increase in internet usage 2000-2017 was 933.8%. In the same research, it is reported that the number of internet users in Turkey is approximately 46 million 283 people (59.6%) and the number of social media (Facebook) users is about 41 million people (53.2%). It is observed that the rate of social media usage in Turkey is higher than that of Europe (37.6%). According to the Turkish Statistical Institute (TUIK, 2016), the rate of individuals using the internet in Turkey is 61.2%. When purposes of internet usage in Turkey is taken into consideration, 82.4% of the individuals who use the internet in the first three months of 2016 have shared their social networking profile or photo, messages and content. This ratio is higher in adolescents and students compared with other age groups (TUIK, 2016).

Social networks are applications that run over the internet and cannot be evaluated independently from the internet. Today, social media tools have enabled each user to become a content producer through account/profile creation with the burst of web 2.0 technologies (Tekvar, 2012). Social media contributes to the transformation of users from passive listeners to active content producers and it makes it easier to stay connected and to produce content by providing applications for different mobile devices and operating systems (Karasu & Arıkan, 2016). Therefore, people use social media more widely than expected. Excessive, problematic, and pathological use leads to personal, social, vocational and educational problems for individuals (Griffiths Kuss & Demetrovics, 2014). There is no consensus among researchers about identifying problematic social networking or Internet

addiction (Wegmann, Stodt & Brand, 2015), depending on the conceptual confusion surrounding the problematic internet use classification.

People think that addiction usually involves substances use such as drugs or alcohol. Uncontrollable habits or practices are also referred to as addiction (Harris, Nagy & Vardaxis, 2014). In this sense, the concept of technological dependency has also been used to describe the extreme Internet usage behaviors that arise due to developed technologies (Kuss & Griffiths, 2012; Turel & Serenko, 2012). Internet addiction (Young, 2004, Sahin, 2011), game addiction (Fisher, 1994, Griffiths & Hunt, 1998; Horzum, 2011), CyberSex addiction (Cavaglian, 2009; Schwartz & Southern, 2000); online addiction (Tüzer, 2011), Social network addiction (Griffiths, 2012), mobile phone addiction (Bianchi & Phillips, 2005; Fidan, 2016), Facebook addiction (Andreassen, Torsheim, Brunborg & Pallesen, 2012), Twitter addiction (Said, Al-Rashid & Abdullah, 2014), social media disorder (van den Eijnden, Lemmens & Valkenburg, 2016) and social media addiction (Andreassen, Torsheim, Brunborg and Pallesen, 2012; Şahin & Yağcı, 2017) have been investigated in the context of behavioral addiction and are gaining importance along with developing technology.

Social media addiction is considered as a kind of internet addiction (Kuss & Griffiths, 2012). Individuals who spend too much time on social media have a desire to be notified of anything immediately, which can cause virtual tolerance, virtual communication and virtual problem. Behaviors that force the person into these actions can be explained as social media addiction.

Turne & Serenko (2012) have identified three notionally different perspectives to explain the formation of social network addiction: *Cognitive-behavioral model*; this model emphasizes that ‘abnormal’ social networking arises from maladaptive cognitions and is amplified by various environmental factors, and eventually leads to compulsive and/or addictive social networking. *Social skill model*; this model emphasizes that ‘abnormal’ social networking arises because people lack self-presentational skills and prefer virtual communication to face-to-face interactions, and it eventually leads to compulsive and/or addictive use of social networking. *Socio-cognitive model*; this model emphasizes that ‘abnormal’ social networking arises due to the expectation of positive outcomes, combined with internet self-efficacy and deficient internet self-regulation eventually leads to compulsive and/or addictive social networking behavior (Griffiths, 2013).

The transition from normal to problematic social media use is seen as an important mechanism to alleviate stress, loneliness or depression for the individual, so they become more active with more social media. This ultimately leads to many problems and exacerbates the unwanted mental states of the individual (Xu & Tan, 2012). Brown & Bobkowski (2011) stated that social media use can lead to harmful behaviors such as aggression, personality disorder, unhealthy diet, early sexuality, tobacco and alcohol use in young people. As a result, the psychological dependence level in social sharing develops when this cyclical situation is repeated in order to get rid of the unwanted mood in social media use.

The researchers conducted in different countries revealed that internet usage addiction is not limited to university students, but also includes secondary school and high school students (Al-Menayes, 2015). Individuals who spend 8.5 to 21.5 hours online per week are considered to be addicted (Yang & Tung, 2007).

It can be said that the determination of this situation is important when considering the problems caused by social media addiction. The diagnosis of social media addiction cannot be justified indiscriminately or just by observation. Valid and reliable scales can be used for this. In this respect, when the literature about social media addiction scales was examined, various researches, tests and scales were found (Banyai et.al, 2017; Al-Menayes, 2015). It seems that there are a few researches in Turkish literature to determine the social media addiction of university students (Tutkun Ünal & Deniz, 2015; Kırık, Arslan, Çetinkaya & Gül, 2015; Şahin ve Yağcı, 2017). However, there were no tests or scales that measured the social media addiction of 12-22 year old students in the literature. 12-18 age group is accepted as puberty or adolescence in developmental psychology literature (Gündoğdu, 2016). The term late puberty is proposed as well for 18-25 ages (Arnett, 2004). The latter is considered as the prolongation of development (Arnett, 2007). From this point of view, it can be said that 12-22 ages show similar properties. In this context, this study aims to develop a measurement for the determination of social media addiction of students and reveal the validity and reliability results.

METHOD

The progress of the scale development work carried out to determine the social media addiction of the students and the characteristics of the working group are presented below.

Study Group

The study included students from 12 to 22 years of age ($M=17.26 \pm SD=3.09$) who were studying in different departments of a university as well as secondary and high school students in the districts representing different socio-economic levels of a city during the 2016-2017 academic year. The scale development process was carried out with the participation of a total of 998 students. 566 (56.7%) female students and 432 (43.3%) male students participated voluntarily. The participants were determined by simple random sampling. The working group has been considered to be "at least ten times the number of items" (Sönmez & Alacapınar, 2014). 476 students from secondary school, high school and university participated in the first application in which explanatory factor analysis of the scale was performed and 298 students participated in the second application in which confirmatory factor analysis was performed. The test-retest method was used to determine the consistency of the scale and the application was performed with the participation of 224 students.

Development of Scale Form

In order to establish a trial form for determining the social media addiction of students, it was necessary firstly to create a conceptual framework by examining the social media use and addiction research (Griffiths, 1995; Young, 2004; Şahin, 2011; Al-Menayes, 2015, Tutgun Unal & Deniz, 2015, Banya et al., 2015). In this framework, a frame for the scope of the "Social Media Addiction Scale-Student Form (SMAS-SF)" was determined in line with the information obtained from the related literature and opinions of field experts, an item pool consisting of 41 items was formed and a draft form was prepared. The scale includes 39 positive and 2 negative items. A 5-point grading is used in the scale: "(1) Definitely not appropriate", "(2) Not appropriate", "(3) Undecided", "(4) Appropriate" and "(5) Quite appropriate". The negative items are scored reversely.

The collected data were uploaded to SPSS 22.00 and LISREL 8.80 programs in order to conduct statistically reliability and validity tests of the scale. Values for negative expressions are inversely encoded when loading to the programs.

The Scoring of the Scale

This is a 5-point Likert type scale which consists of 29 items and 4 sub-dimensions. 1-5 items are within virtual tolerance sub dimension, 6-14 items are within virtual communication sub dimension, 15-23 items are under virtual problem sub dimension and 24-29 items are under virtual information sub dimension. All of the items in the scale are positive. The highest point that can be scored from the scale is 145, and the least one is 29. The higher scores indicate that agent perceives himself as a "social media addict".

Analysis of Data

The construct validity of the scale was examined by the Kaiser-Meyer-Olkin (KMO) coefficient and the Bartlett Sphericity test, and it was determined whether or not to perform factor analysis (Russell, 2002; Kalayci, 2009). Explanatory factor analysis was performed on the data through the obtained data. A factor analysis method has been adopted to determine the validity structure of the scale (Balci, 2009; Seçer, 2013). An analysis of basic components was conducted to determine the factors underlying the scale; Factor loadings were investigated by choosing Varimax rotation technique. The factorization technique was used in the analysis of the basic components (Büyüköztürk, 2002). By identifying the grouped factors observed in the scale, the number of variables was reduced (Seçer, 2013). The factor analysis was repeated by removing the items below 30 as a result of the principal components analysis and by removing the factor loadings which are distributed to two factors (Kline, 1994; Büyüköztürk, 2002; Balci, 2009).

The exploratory factor analysis was applied to a different study group in order to test the model structure. Confirmatory factor analysis was performed on the obtained data. Confirmatory factor analysis is based on the relationship between observed and unobserved variables (items and factors) that are treated as hypotheses (Pohlmann, 2004). It has been tested whether the model created through previously acquired information has been verified by the present data. Many adaptation indices are used in literature to demonstrate the adequacy of the model (Kline, 2005).

As a result of the factor analysis, the item discriminative powers of the remaining scale items are determined by testing them with independent sample t test and the validity feature of the scale is determined by testing the item-total correlations with Pearson's r test (Büyüköztürk, 2002). Discrimination is considered to be one of the most important pieces of evidence used in determining the validity of a scale (Büyüköztürk, 2008). 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.

Internal consistency coefficients and stability tests were performed to determine the reliability of the scale. The internal consistency level of the scale was calculated using the Cronbach Alpha reliability coefficient and the correlation value between two peer half was calculated by using the Spearman-Brown and the Guttman split-half reliability formula. The level of stability within the reliability of the scale was calculated by determining the correlation values between the results of the two applications which were conducted within four weeks intervals (Büyüköztürk, 2002; Balcı, 2009).

Negative items on the scale are coded by reverse scoring. The scale is determined as a result of analysis and it was applied to the study group by multiplying the scale. The validity and reliability analysis of the data obtained from the application was conducted using IBM SPSS 20.0 and Lisrel 8.80 programs.

FINDINGS

In this section, findings on the validity and reliability studies of "Social Media Addiction Scale: Student Form (SMAS-SF)" are included.

Findings Related to the Validity of the Scale

The validity of a measurement tool can be defined as the degree of serving purpose of the items prepared to measure a specific feature (Seçer, 2013). In this context, the findings of content validity and construct validity, total item correlations and item discrimination levels of SMAS-SF are presented below.

Content Validity

The validity of the quantitative and qualitative content of the scaled items has been consulted by expert opinion (Balcı, 2009; Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2015). One expert in the field of psychological counseling and guidance, one expert in psychiatric field, two experts in computer and instructional technology field, one expert in measurement and evaluation field and one expert in Turkish language education have shared their opinions about whether SMAS-SF is adequate to measure social media addiction. Opinions of these experts were obtained using a 3-point rating form. Experts were asked to respond by marking the "appropriate", "partially appropriate" and "not suitable" options for the items on the form. In the view of the experts, the content validity rate of the items has been determined (Veneziano & Hooper, 1997). The said ratios were determined by the ratio of the total number of experts who responded positively to each item to the total number of experts.

The items with a coverage rate of less than 0.80 in the created item pool were subtracted from the draft scale. The draft scales were read by two Turkish literature experts in order to eliminate mistakes related to imputation and punctuation errors. Some items were removed from the scale in line with the calculated coverage validity ratios and some items were rearranged (Şahin & Beydoğan, 2016). The draft scale of 41 items has been prepared for initial implementation with the contribution of student opinions, information obtained from the literature and the literature experts. 38 of the items in the draft scale were positive and 3 of them were negative. Against the material created, five-grade options have been placed to determine the attitude levels of the students. These options were edited and scored as: (1) I do not agree at all, (2) I little agree, (3) I agree, (4) I quite agree, and (5) I strongly agree. The final scale was multiplied and applied.

Construct Validity

Exploratory Factor Analysis

The suitability of the data obtained from the scale items for the factor analysis was determined by using the Kaiser Meyer Olkin (KMO) and Bartlett test. The values have been obtained as KMO test value, .965; Bartlett test value $\chi^2 = 18304.06$; $df=400$ ($p=.00$). In order to perform item factor analysis, it is suggested that the value of KMO should be at least .70 (Sönmez & Alacapınar, 2014) and the Bartlett test should be meaningful (Kalaycı, 2009). Findings on the scale show that the data are appropriate for factor analysis.

First, we conducted the basic components analysis in order to determine if the scale is one-dimensional. The basic components analysis used in the factor analysis and varimax vertical rotation technique is used to remove the items with factor loading values less than .40 and the items with two loading value at different factors (Balcı, 2009). At the end of the analysis of the basic components analysis in the factor analysis and the rotation process with the Varimax technique, 6 factors were determined with a value greater than 1.00. Due to excessive factor numbers, Cattell's scree test was done.

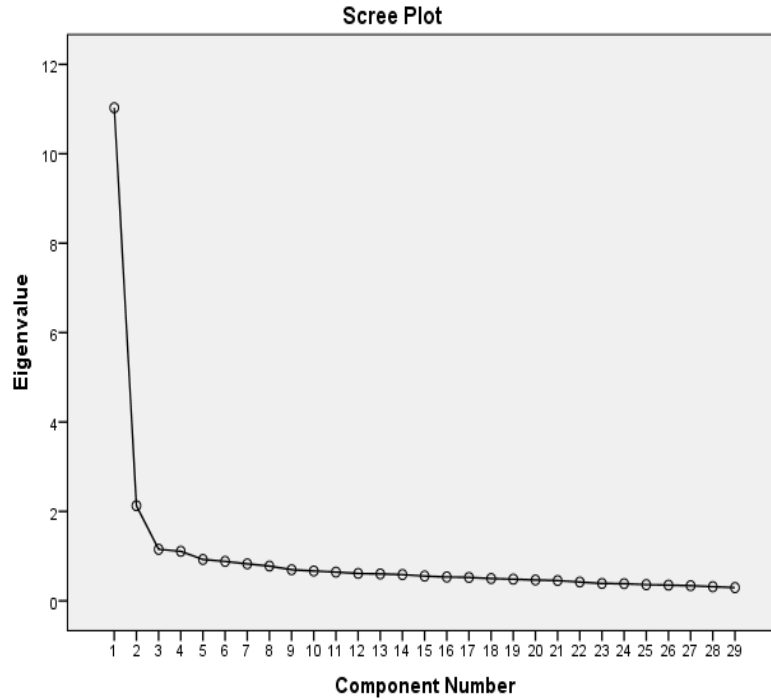


Figure 1. Social media addiction scale-student form self-value factor graph

It is possible to say that the number of factors in the scale can be limited to 4 because the factors after the fourth point are small and the distances between them are very close and similar in the eigenvalue graph. Büyüköztürk (2002) states that the eigenvalue graph will give the number of factors of fast drops or fracture points as seen in the graph.

As a result of the exploratory factor analysis, factor loading values of the items were examined and 5 items were subtracted from the measurement since they were not determinative of which factor is measured. As a result of the factor analysis, it was seen that the items in the measure were collected in four groups. Experts examine the items in the group and determine what they measure thematically. Four items which had high loading values in more than one factor were removed from the scale after the restructuring analysis.

In the scope of the study, it was determined that there are 4 factors with an eigenvalue greater than 1 and a variance value of more than 5%. The variance explained by the first factor is 14.17%; The variance explained by the second factor is 14.15%; The variance explained by the third factor is 12.97% and the variance explained by the fourth factor is 11.86%. The total variance explained by the scale is 53.16%. The results of the analysis showed that 5 items of 29 items on the scale gave the first factor, 9 gave the second factor, 9 gave the third factor and 6 gave the high loading value in the fourth factor.

It was determined that the factor number is 4, KMO value .96; Bartlett value $\chi^2=12680.88$; $df=371$ ($p=.00$) in the scale consists of 29 items. It is stated that factor loading values vary as follows: .61 and .77 in the first factor .48 and .68 in the second factor .41 and .47 in the third factor and .53 and .71 in the fourth factor.

After the measurement factors have been determined, the items collected in each factor have been identified. Correlation values of the items and item-total scores were calculated. The alternating factor loadings, item-total scale correlation, common factor variance values and factor loading values obtained according to the analysis result are given 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	
M1	1	.66	.77				.59
M2	2	.64	.75				.60
M4	3	.63	.71				.57
M3	4	.60	.70				.66
M5	5	.54	.61				.64
M18	6	.51		.68			.50
M11	7	.34		.55			.41
M21	8	.39		.54			.49
M26	9	.56		.54			.71
M24	10	.49		.53			.64
M28	11	.59		.51			.72
M20	12	.34		.50			.52
M34	13	.50		.50			.67
M27	14	.49		.48			.67
M14	15	.62			.67		.68
M30	16	.53			.66		.53
M10	17	.56			.64		.59
M31	18	.57			.57		.59
M15	19	.49			.55		.53
M17	20	.53			.54		.63
M29	21	.51			.50		.64
M22	22	.49			.48		.67
M16	23	.50			.41		.68
M38	24	.61				.715	.62
M40	25	.62				.703	.61
M39	26	.44				.562	.53
M37	27	.44				.560	.59
M35	28	.53				.556	.65
M36	29	.58				.539	.69
Variance (%)			14.17	14.15	12.97	11.86	
Total Variance: 53.16%							

When Table 1 is examined, it is seen that the factor loadings of the scale items are collected in 4 sub-dimensions. According to the results of the repeated factor analysis, the items with factor loading values of less than 0,30 were eliminated from the scale which consists of 41 items. Item-test correlations were used to determine the discriminative power of the items. In the study, substances with a substance-test correlation values of 0.30 and above were taken as the basis. As a result of the analysis, 4 factor scale structure, which consists of 29 items, was reached. Factor loading values of the items were found to be between .41 and .77 for the overall measurement. These factors are named according to the information obtained from the literature and the expert opinion. According to this, the first factor is virtual tolerance, the second factor is virtual communication, the third factor is virtual problem and the fourth factor is virtual information.

Confirmatory Factor Analysis

First and second level confirmatory factor analysis were performed to test the accuracy of its 4-dimensional structure which is determined as the result of the exploratory factor analysis. Confirmatory factor analysis was performed on data collected from 298 students, except for the sample collected for the explanatory factor analysis. As shown in Figure 2, a model of equality has been established, which can be predicted by a four-factorial and a 29-factor structure, which is revealed by exploratory factor analysis.

As a result of the confirmatory factor analysis, the Chi Square value is (χ^2)=1576.98, the degree of freedom is $\chi^2/df=4.25$. It can be said that the Chi square values, which vary according to the sample size, have an acceptable concordance for the current sample to which this sample applies (Kline, 2005). For the structural suitability of

the scale, the RMSEA (Root Mean Square Error of Approximation), SRMR (Standardized Root Mean Square Residual, GFI(Good Fit Index), AGFI (Adjusted Goodness of Fit Index) and NFI (Normed Fit Index) values are taken into account (Browne and Cudeck, 1993; Kline, 2005; Raykov and Marcoulides, 2006; Byrne, 2010). The data obtained by the confirmatory factor analysis validates the model.

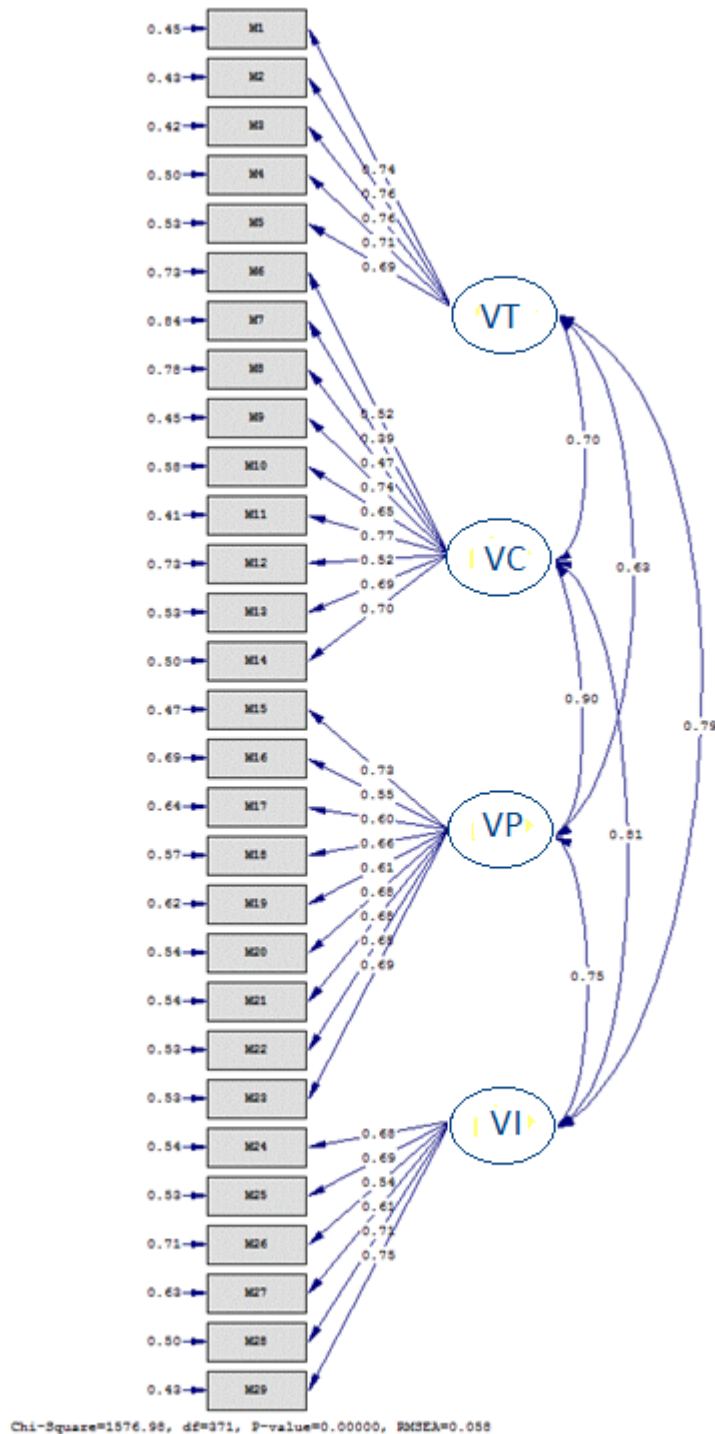


Figure 2. First-level confirmatory factor analysis correlation diagram (standardized)

As seen in Figure 2, the sub-dimension virtual tolerance of scale’s factor loadings control ranges from .69 to .76; the sub-dimension virtual communication ranges from .39 to .77; the sub-dimension virtual problem ranges from .55 to .73; the sub-dimension virtual information ranges from .54 to .75.

The t values obtained as a result of confirmatory factor analysis are presented in Table 2. According to the findings in Table 2, it was determined that the t value for the items in the Social Addiction Scale-Student Form

changed between 12.26 and 27.61. According to this, all t values obtained in the first level confirmatory factor analysis were found to be significant at .01 level.

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

Item No	t	Item No	t	Item No	t	Item No	t
M1	25.58**	M6	16.69**	M15	25.40**	M24	22.95**
M2	26.52**	M7	12.26**	M16	17.97**	M25	23.28**
M3	26.61**	M8	14.89**	M17	19.72**	M26	17.07**
M4	24.14**	M9	26.28**	M18	22.24**	M27	19.85**
M5	23.13**	M10	21.92**	M19	20.40**	M28	24.23**
		M11	27.61**	M20	23.26**	M29	26.35**
		M12	16.62**	M21	23.15**		
		M13	23.66**	M22	23.39**		
		M14	24.44**	M23	23.51**		

**p<.01

Second level confirmatory factor analysis was conducted to show that the 4 factors obtained by the first level confirmatory factor analysis of the scale represent a social media addiction variable defined as a superstructure. The second level factor model was tested by adding second level variables to the first level confirmatory structure which were tested with 4 potential and 29 indicator variables. The connection diagram of the second level confirmatory factor analysis of the scale is presented in Figure 3.

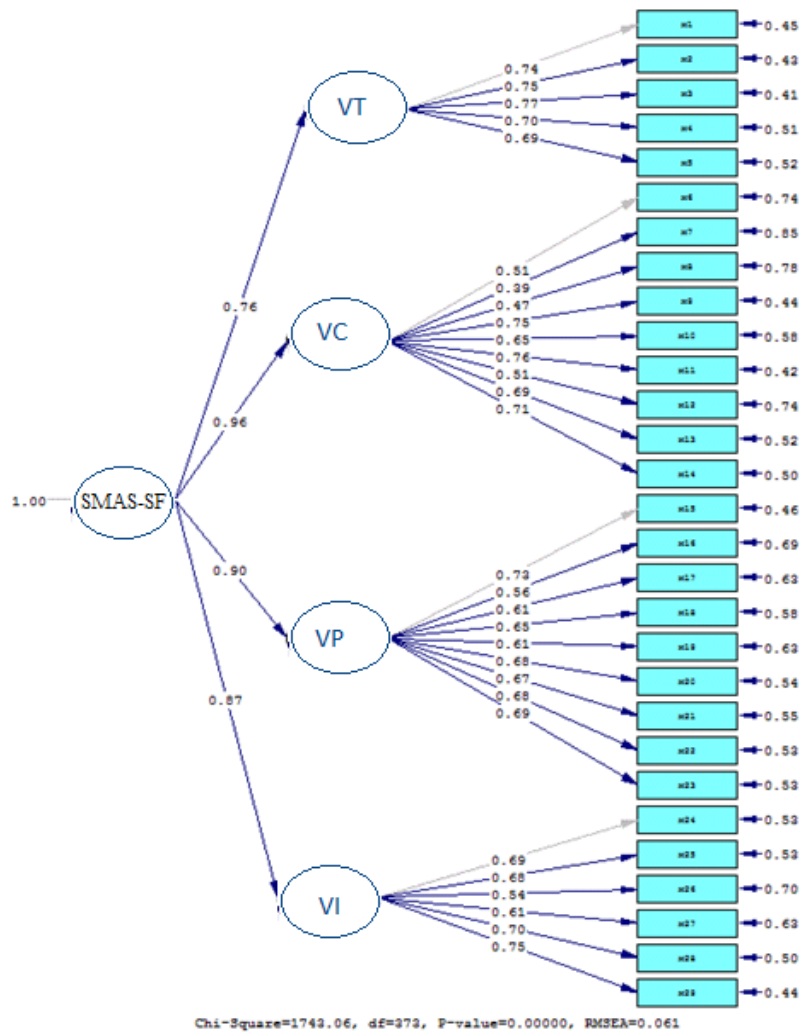


Figure 3. Second-level confirmatory factor analysis correlation diagram (standardized)

The factor loadings of the model obtained from the confirmatory factor analysis are shown in Figure 3. The sub-dimension virtual tolerance for factor loadings ranges from .69 to .77; the sub-dimension virtual communication

ranges from .39 to .76; the sub-dimension virtual problem ranges from .56 to .73 and the sub-dimension virtual information ranges from .54 to .75.

The absence of a red arrow in the t values between the factors and the items after the standardized analyzes indicates that all the items are significant at the level of $\alpha .05$ (Jöreskog and Sörbom, 1993). The perfect and acceptable compliance measures for the fit indices examined in the study and the fit indices obtained from the first and second confirmatory factor analyzes are presented in Table 3.

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

Inspected FitIndices	Perfect Fit	Acceptable Fit	First Level Confirmatory Factor Analysis Fit Indices	Second Level Confirmatory Factor Analysis Fit Indices
χ^2/sd	$0 \leq \chi^2/df \leq 2.00$	$2.00 \leq \chi^2/d < 5.00$	3.25	3.67
RMSEA	$0 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	0,05	0.06
S-RMR	$0 \leq S-RMR \leq 0.05$	$0.05 \leq S-RMR \leq 0.10$	0.04	0.05
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	0.97	0.97
CFI	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI \leq 0.97$	0.98	0.98
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	0.90	0.89
AGFI	$0.95 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.95$	0.88	0.87

According to the findings in Table 3, it can be seen that the values obtained as a result of explanatory and confirmatory factor analysis are consistent. This indicates that the construct validity of the "Social Media Addiction Scale: Student Form" is confirmed.

Item Discrimination

The discrimination power of the items in the scale was calculated. For this, the raw scores obtained from each item are ranked from small to large. Subsequently, the significance of the difference between subgroup 27% and upper 27% group item scores was tested. Findings of t values and significance levels obtained after the test are presented in Table 4.

Table 4. Levels of item discrimination

Virtual Tolerance		Virtual Communication		Virtual Problem		Virtual Information	
Item	t	Item	T	Item	t	Item	t
M1	18.51(**)	M7	11.83(**)	M15	23.46(**)	M24	19.16(**)
M2	21.69(**)	M8	15.50(**)	M16	16.72(**)	M25	22.87(**)
M3	22.48(**)	M9	22.52(**)	M17	19.00(**)	M26	16.64(**)
M4	21.21(**)	M10	19.60(**)	M19	14.10(**)	M27	20.40(**)
M5	20.43(**)	M11	18.62(**)	M20	16.59(**)	M28	20.74(**)
		M12	16.36(**)	M21	16.06(**)	M29	26.58(**)
		M13	19.40(**)	M22	19.92(**)		
		M14	22.25(**)	M23	19.16(**)		
F1	32.76(**)	F2	32.95(**)	F3	30.07(**)	F4	35.65(**)
						Total	45.45(**)

df: 338; **p<.01

As seen in Table 4, the 29 items in the scale, the factors and the independent sample t-test values for the total score vary from 11.83 to 26.58. The t value for the general population is 45.45; 32.76 for F1 (VT) subdimension; 32.95 for F2 (VC); 30.07 for F3 (VP) and 35.65 for F4 (VI) (p <.01). According to this finding, it can be said that the scale has internal validity, meaning that it distinguishes students with high addiction and students with minor addiction.

Findings Related to the Reliability of the Scale

Internal consistency and stability analyses were performed on the data to calculate the reliability of the scale. The processes and findings are presented below.

Internal Consistency Levels

The reliability of the scale according to the factors and general is calculated by using Peer-to-Peer Correlations, Sperman-Brown formula, Guttman Split-Half reliability coefficient, and Cronbach Alpha reliability formulas. Reliability analysis values for the overall scale and factors are presented in Table 5.

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

Factors	Item No	Peer-to-Peer Correlations	Sperman Brown	Guttman Split-Half	Cronbach Alpha
Virtual Tolerance	5	.70	.82	.82	.81
Virtual Communication	9	.69	.81	.81	.81
Virtual Problem	9	.75	.86	.74	.86
Virtual Information	6	.66	.79	.79	.82
Total	29	.83	.91	.90	.93

As shown in Table 5, Peer-to-Peer Correlations was calculated as .83; Sperman Brown reliability coefficient was calculated as .91; Guttman Split-Half value was calculated as .90, and Cronbach Alpha reliability coefficient was calculated as .93. On the other hand, it is seen that the co-half correlations for the factors vary between .66 to .75; Sperman Brown values vary between .79 and .86; Guttman Split-Half values vary between .79 and .82 and Cronbach Alpha values vary between .81 and .86. The data on reliability coefficients show that all dimensions and sub-dimensions have reliable results.

Stability Level

The stability characteristics of the scale were examined and the test-retest method was used. This study group was conducted with the participation of 224 students who did not participate in the previous stages of the scale. In the study group, the time between the two applications was determined as four weeks. Table 6 summarizes the findings that show the test-retest results for the general scale and the factors.

Table 6. Social media addiction scale-test-retest reliability coefficient of student form

		Second Application				
		Virtual Tolerance	Virtual Communication	Virtual Problem	Virtual Information	Total
Factor1	Virtual Tolerance	.83(**)				
Factor2	Virtual Communication		.87(**)			
Factor3	Virtual Problem			.87(**)		
Factor4	Virtual Information				.81(**)	
Total						.94(**)

n=224; **p<.01

As can be seen in Table 6, the correlation coefficients between the responses of the students were found to be positively correlated between .81 and .87 (p<.01), despite the four-week time interval. The high correlation value (r=.94) for the overall scale is another indicator of stability. Kalaycı (2009) shows that Pearson correlation coefficient is .70, .89 and states that relation is high. According to this, it can be said that the overall scale and the items in each factor measurements produce stable measurements.

According to the results of the reliability analysis, it can be said that "Social Media Addiction Scale-Student's Form (SMAS-SF)" is a valid and reliable scale.

CONCLUSIONS AND RECOMMENDATIONS

Since social networking deeply affects the daily lives of students, it reveals the necessity of a measurement tool to determine social media addiction. This study aimed to develop the "Social Media Addiction Scale-Student Form (SMAS-SF)" and to conduct validity and reliability calculations of the scale. As a result of a literature survey in Turkey, it has been observed that social media are widely used among 12-22 year olds. However, no scale or test was found to measure the addiction levels of students in this age group. For this reason, it can be thought that this measurement tool can provide important contributions to the literature survey.

In the development process of the scale, an item pool consisting of 86 items was created in line with the information obtained from the literature survey, and opinions of field experts and a draft form was prepared. Then, a draft scale consisting of 41 items was prepared and this scale was applied to a participant group of 476 students between the ages of 12-22. The validity and reliability studies were performed on the obtained data. The first application of scale to which exploratory factor analysis was performed by 476 participants attended in the first application of scale, and 298 participants attended in the second application in which confirmatory factor analysis was performed. 224 participants took part in the test-retest application within the scope of the reliability study of the scale. A total of 998 students participated in the development process of the scale.

Findings from validity and reliability studies show that the scale is a valid and reliable measurement tool and that can be used to identify students' social media addictions. The developed scale consists of 29 items and 4 factors (virtual tolerance, virtual communication, virtual problem and virtual information) with Likert type five grades. All the items on the scale are positive. When the relevant literature survey is examined, it is seen that the results of explanatory and confirmatory factor analysis of the SMAS-SF are at an acceptable level.

Findings of validity and reliability of the scale indicate that SMAS-SF is available to determine the social media addiction of the students. In the later period, descriptive research that explores the relationship between the developed scale in this study and different variables may contribute to the literature survey. It is thought that with the developed scale, it is possible to determine the addiction levels of students and help to take appropriate measures according to the results.

As a final result of the study, it can be said that the current scale can be used to determine social media addictions of the students, aged 12-22 years. Validity and reliability studies of the scale can be repeated in different sample groups and other age ranges.

There are a few assessment tools to determine the social media addiction of university students in Turkish literature. This assessment tool is different from other assessment tools and contributes to the relevant literature in that it aims at determining the social media addiction levels of 12-22 year-old students.

Social Media Addiction Scale Student Form (SMAS-SF)

EXPLANATION: Different states related to social media use on the internet are given below. You are asked to read each expression carefully and put (X) for the expression you deem the most correct for you. Do not skip any item and mark each state please.		<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree				
1	I am eager to go on social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	I look for internet connectivity everywhere so as to go on social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Going on social media is the first thing I do when I wake up in the morning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	I see social media as an escape from the real world.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	A life without social media becomes meaningless for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	I prefer to use social media even there are somebody around me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I prefer the friendships on social media to the friendships in the real life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	I express myself better to the people with whom I get in contact on social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	I am as I want to seem on social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	I usually prefer to communicate with people via social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Even my family frown upon, I cannot give up using social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	I want to spend time on social media when I am alone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	I prefer virtual communication on social media to going out.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Social media activities lay hold on my everyday life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	I pass over my homework because I spend much time on social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	I feel bad if I am obliged to decrease the time I spend on social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	I feel unhappy when I am not on social media.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Being on social media excites me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	I use social media so frequently that I fall afoul of my family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	The mysterious world of social media always captivates me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	I do not even notice that I am hungry and thirsty when I am on social	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	media.					
22	I notice that my productivity has diminished due to social media.	?	?	?	?	?
23	I have physical problems because of social media use.	?	?	?	?	?
24	I use social media even when walking on the road in order to be instantly informed about developments.	?	?	?	?	?
25	I like using social media to keep informed about what happens.	?	?	?	?	?
26	I surf on social media to keep informed about what social media groups share.	?	?	?	?	?
27	I spend more time on social media to see some special announcements (e.g. birthdays).	?	?	?	?	?
28	Keeping informed about the things related to my courses (e.g. homework, activities) makes me always stay on social media.	?	?	?	?	?
29	I am always active on social media to be instantly informed about what my kith and kin share.	?	?	?	?	?

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