Adaptation of the Social Media Use Disorder Scale to Adults: A Validity-Reliability Study

Sosyal Medya Kullanım Bozukluğu Ölçeğinin Yetişkinlere Uyarlanması: Geçerlilik-Güvenilirlik Çalışması

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Öz

Amaç: Ergenlerde geçerlilik güvenilirliği yapılmış olan, sosyal medya kullanım bozukluğu ölçeğini yetişkin gruba uyarlamaktır.

Gereç ve Yöntemler: Çalışmanın örneklemini 454 yetişkin oluşturdu. Ölçek adet beşli Likert tipi maddeden oluştu. Maddeler arasındaki tutarlılık değerlendirilirken, Cronbach's alpha, Kaiser Meyer Olkin testi, Bartlett testi ve temel bileşenler analizi ile faktör yapısı değerlendirildi.

Bulgular: Yetişkinler için geliştirilen ölçekte, Cronbach's alfa, 0,905 bulundu. Ölçek, psikososyal işlev bozukluğu ve sosyal izolasyon olmak üzere iki alt boyuttan oluşan bir yapı gösterdi. Ölçeğin toplam açıklanan varyansı %69.98 saptandı.

Sonuç: Çalışma sonucunda erişkinler için yüksek güvenilirlikte ve geçerli sosyal medya kullanım bozukluğu ölçeği oluşturulmuştur. Gelişen teknoloji ve sosyal medya göz önüne alındığında bu konuda ileride yeni ölçeklerin geliştirilmesine ihtiyaç olacaktır.

Anahtar Sözcükler: Sosyal medya bağımlılığı; sosyal izolasyon; psikososyal işlev bozukluğu

Abstract

Aim: To adapt the social media use disorder scale, which was validated and reliable in adolescents, to the adult group.

Material and methods: The study's sample size consisted of 454 adults. The scale consists of 9 items in a five-point Likert type. In the evaluation of scale validity, internal consistency among items was assessed by Cronbach's alpha, Bartlett's test, Kaiser-Meyer-Olkin's test, factor structure determination and principal components analysis.

Results: Cronbach Alpha was determined to be 0.905. That showed a structure consisting of two sub-dimensions, psychosocial dysfunction, and social isolation. The total explained variance of the scale was 69.98%.

Conclusion: As a result of the study, a scale, social media use disorder with high reliability and validity for adults was created. Considering the developing technology and social media, there will be a need to develop new scales in this regard in the future.

Keywords: Social media addiction; social isolation; psychosocial dysfunction

"9. Uluslararası Kadın Çocuk Sağlığı ve Eğitimi Kongresi" nde sözlü bildiri olarak sunulmuştur.

Introduction

Worldwide internet use has increased during the last two decades. Nowadays, more than half of the global population has internet access (1). This, as well as the social media usage, has increased. Kepios (2) suggests that, in April 2022, there will be 4.65 billion social media users globally, accounting for 58.7% of the global population. The current data in Turkey by 2021 shows a percentage of 70.8% with an annual increasing rate of 11.1% (3). In the research, the most popular social media applications are Facebook, YouTube, WhatsApp, Facebook Messenger, WeChat, and Instagram (1).

With the Covid-19 pandemic, face to face communication was restricted and people have turned their existing relationships online. Spending more time online presumably increases the dangers of addictive social media use (SMU). Stress is thought to be a key factor in the development of addictive SMUs. The processes behind the link between addictive SMU and stress in situations like the current COVID-19 crisis are unknown (4). Moreover, there are a limited number of validated scales to examine SMUs among the adult population.

The purpose of this study is to analyze the validity and reliability of a common social media addiction scale for Turkish adult individuals for the increasing public health problem.

Materials and Methods
Procedure/Data Collection Tools

This cross-sectional study consisted of 454 adults (312 women and 142 men). Sociodemographic questions (age, gender, educational status, etc.) and a social media addiction scale - short form were applied to the volunteers participating in the research (5). Volunteers were reached through social media (Whatsapp, Facebook, Instagram, etc.) and invited to participate in the study via a google form link. Submitted responses were extracted from Google Forms. The Tepecik Training and Research Hospital's ethical committee approval was received before the study commenced (Decision no: 2022/04–36).

The Social Media Disorder Scale (SMDS)

The SMDS is a nine-item, one-dimensional scale established by van den Eijnden et al (6). The SMDS is scored with a two (yes-no) rating. However, to provide precise data, the SMDS has been converted to a five-point (1=Never, 5=Always) Likert scale. The diagnostic criteria for Internet Gaming Disorder in DSM-V were used to create the SMDS. As a result, each SMDS item signifies a diagnostic criterion. The Turkish adaptation of the SMDS was carried out by Sarıçam et al. (5) with internal consistency (Cronbach α) of 0.75.

Statistical Analysis

The IBM SPSS Statistics 26.0 package application was used for all statistical analyses (IBM Corp., Armonk, New York, USA). Construct validity, criterion-related validity, internal consistency reliability, two-half test reliability (split half), and item analysis methods were used to determine the adults' psychometric properties of social media disorder scale-adult form (SMDS-AF). For the construct validity of SMDS-AF, CFA and EFA were performed on the obtained data. To apply explanatory factor analysis to a data group, the data must be suitable for factor analysis and the sample must be sufficient (7). Therefore, first, the results of the Bartlett Sphericity Test, Kaiser-Meyer Olkin (KMO) test were examined. The reason for EFA is to test the theory about the nature of the process and to make an operational definition for the basis of the process by using the observed variables (8). As a result of the explanatory factor analysis (EFA), a structure consisting of two sub-dimensions, "Psychosocial dysfunction" and "Social isolation", was obtained for the social media disorder scale-short form for adults. The Cronbach alpha value for the internal consistency reliability test and the Spearman-Brown coefficients (Guttman split halfcoefficient) for the two-half test reliability were calculated. Confirmatory factor analysis was performed using the IBM AMOS 23 package program. The reason for using CFA is to test whether there is compatibility between the variables that play a role in determining the theoretical factors and the original variables that make up the factors determined by EFA (7). When evaluating DFA fit indices, χ2/df, SRMR (Standardized Root Mean squared Residual), RMSEA (Root Mean Square Error of Approximation- Root Mean Square Errors), CFI (Comparative Fit Index), GFI (Goodness of Fit Index), AGFI (Adapted Goodness of Fit), NFI (Normed Fit Index) and NNFI (Non-Normed Fit Index) values were used.

As the good fit criteria of the χ2/df, ≤ 3, CFI, GFI, AGFI, NFI, RFI ≥ 0.90, SRMR < 0.05, and RMSEA < 0.10 cut-off values are accepted. In the criterion-related validity study of the social media disorder scale-short form for adults, the relationship between psychosocial functionality, social isolation and total scores was analyzed using the Spearman correlation coefficient. Statistical significance was defined as a p-value of less than 0.05.

Results

Explanatory factor analysis (EFA)

The Bartlett Test of Sphericity value was determined as $\chi2=2360.038$, $df=36$ ($p<0.001$), the KMO measure of sampling adequacy sample fit coefficient was 0.915 as a result of EFA applied to data obtained for the adult social media disorder scale-short form (SMDS-AF). As a result of the explanatory factor analysis (EFA), a structure consisting of two sub-dimensions, "Psychosocial dysfunction" and "Social isolation", was obtained for the social media disorder scale-short form for adults (SMDS-AF), and the total variance was explained by a rate of 69.98%. The factor loadings of SMDS-AF vary between 0.580 and 0.870 (Table 1).

The internal consistency coefficient of Cronbach alpha was found to be 0.876 for psychosocial dysfunction and 0.842 for social isolation. The test-retest reliability coefficient of SMDS-AF was found to be 0.876 for psychosocial dysfunction and 0.842 for social isolation. It was established that corrected item-total correlation coefficients of the measurement tool ranged between 0.658 and 0.767 in the psychosocial dysfunction, and between 0.891 and 0.900 in the social isolation. The scale's Cronbach's alpha was calculated as 0.905 in this study.

The corrected item-total correlation values according to the item analysis results of SMDS-AF ranged from 0.629 to 0.767. All item-total Correlation values are higher than 0.30 in Table 2.

Table 1. Item factor loads obtained in exploratory factor analysis

Factor 1	Item No	Factor Loads	Factor 2	Item No	Factor Loads
Psychosocial Dysfunctionality	Item 1	0,716	Social Isolation	Item 6	0,692
	Item 2	0,824		Item 7	0,878
	Item 3	0,769		Item 8	0,580
	Item 4	0,705		Item 9	0,870
	Item 5	0,807			
Total variance explained: 69,98 %					

Table 2. Item-total statistics of the social media disorder scale of adults

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Psychosocil Dysfunction				
Item 1	7,15	39,751	0,663	0,859
Item 2	6,97	35,754	0,781	0,830
Item 3	7,21	37,709	0,753	0,839
Item 4	7,05	38,931	0,664	0,859
Item 5	6,32	35,776	0,680	0,858
Social Isolation				
Item 6	2,15	11,671	0,671	0,802
Item 7	2,51	12,458	0,738	0,787
Item 8	1,65	9,231	0,653	0,843
Item 9	2,44	11,858	0,748	0,776

Table 3 examines the relationship between psychosocial dysfunction, social isolation, and total score. A statistically relationship was appeared between psychosocial dysfunction and social isolation (rho=0.689; p<0.001), psychosocial dysfunction and total scores (rho=0.981; p<0.001), social isolation and total scores (rho=0.806; p<0.001).

Confirmatory Factor Analysis (CFA)

The results of Confirmatory Factor Analysis, χ2/df, SRMR, RMSEA (Root Mean Square Error of Approximation), CFI, AGFI, GFI, NFI, and NNFI values, which are the criteria that show the strongest model compatibility among the fit indices of the model, are shown in Table 4. As a result of confirmatory factor analysis (CFA), goodness of fit index values was obtained as χ2=53.512, df=22, RMSEA=0.056, SRMR=0.027, GFI=0.976, AGFI=0.950, CFI=0.987 and NFI=0.978. Considering these compliance limits, the path diagram and standardized coefficients and the path diagram results of the model obtained by creating two factors, Psychosocial dysfunction and social isolation factors were given in Figure 1 and Figure 2. Model fit indices criteria in Table 4 when the model fit indices for the social media disorder scale for adults are evaluated according to the fit limits. Varimax factor rotation was used.

Table 3. The relationship between psychosocial functioanality, social isolation and total scores

	Psychosocial dysfunction		Social Isolation		Total Score	
	rho	*p-value*	*rho*	*p-value*	*rho*	*p-value*
Psychosocial dysfunction	1,000	-	0,689	<0,001	0,981	<0,001
Social Isolation			1,000	-	0,806	<0,001
Total Score					1,000	-

Table 4. Evolution of goodness-of-fit measures obtained in confirmatory factor analysis

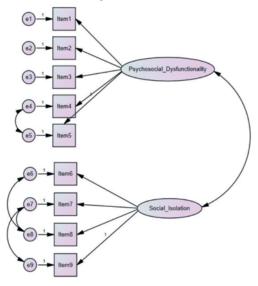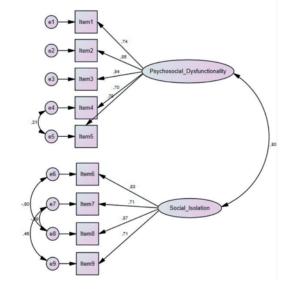| Statistics	Abbreviation	Cut-of	Results
Chi-squared/degress of freedom	$X^{2/df}$	<3	2,432
Probability value for the model	p	<0,05	<0,001
Standardized Root Mean squared Residual	SRMR	<0,05	0,027
Root mean square error of approximation	RMSEA	<0,10	0,056
Comparative Fit Index	CFI	≥0,90	0,987
Joreskog goodness-of-fit	GFI	≥0,90	0,976
Joreskog adapted goodness-of-fit	AGFI	≥0,90	0,950
Bentler-Bonett Normed Fıt Index	NFI	≥0,90	0,978
Bentler-Bonett Non-Normed Fit Index	NNFI	≥0,90	0,987

Figure 1. Path diagram

Figure 2. Path diagram with standardized coefficients

Discussion

In our study, we constructed an adult version of the SMU Disorder scale, which has previously been validated and confirmed reliable in adolescents. The Cronbach alpha of the scale was 0.905.

The internet and then social media, which entered into lives as a result of technological developments, became easier to access and a habit with the inclusion of the internet feature in mobile phones. In some individuals, it has become an addiction (9). Social media addiction is rising with each day and has become a problem that both psychologists and clinicians focus on (10). Although it is not yet included in the DSM, studies on the diagnosis and treatment of social media addiction became much more popular. Here, we showed that this instrument is valid in adults to measure social media addiction as well as adolescents.

The scale's internal consistency coefficient was determined to be 0.876. In the original scale, each item of the scale has been expected to be a subfactor and it has nine subfactors. Since the KMO sample adequacy is over 0.5 (KMO=0.915) and the Bartlett sphericity test is significant

($x2$=2360.038, df=36 (p<0.001), the scale is factorable. According to Mulaik (11), this value should be greater than 0.60. According to Hutcheson and Sofroniou (12), the fact that the KMO values are between 0.80 and 0.90 and the Bartlett Sphericity Test value is significant indicates that the sample is suitable for the application. The exploratory factor analysis yielded the following results: two sub-factors related to the scale were reached. The subfactors were named "Psychosocial dysfunction" and "Social isolation". The first fifth item was about the psychosocial life of an individual. The last four items were about social isolation. Thus, the scale is divided into two subfactors because of the nature of the items. The total variance was 69.98% in our study. The factor loadings of the scale vary between 0.580 and 0.870. The criterion for corrected item-total correlation values in the literature is that the relevant values are greater than 0.30 (13). The other scales in this domain had Cronbach's alpha coefficients of 0.91 for university students and 0.86 for adolescents, respectively (14). The Cronbach's alpha coefficient of the SMU Disorder Scale-Long Form scale is 0.86 for adolescents and 0.91 for university students and (5). Orbatu et al. developed and validated a social media addiction scale in the Turkish language with a Cronbach's alpha coefficient of 0.869 in adolescents (15).

Our study protocol has some limitations. First, the cross-sectional design prevented us tu use particula statistical methods. Second, using an online survey may limit the anonymous character of the answers of the volunteers. Despite these shortcomings, the study showed the scale as a reliable tool for measuring social media addiction levels in adult individuals with high internal consistency.

Conclusion

As a result of this study, it was shown that the Social Media Addiction Scale, whose features were examined, has high validity and reliability in Turkish adults. It's important to remember that all scales may not show a valid and reliable structure over the past number of years, as individuals' social media usage patterns can change over time. The sample in this study was composed of adults and it was shown that the instrument could measure social media addiction in individuals in this age group.

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