Adaptation of the Child-Adolescent Digital Addiction Scale (CADAS) to the Turkish Culture: A Validity and Reliability Study

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Abstract

Purpose: Digital addiction has become one of the types of behavioral addiction that has started to affect all segments of society starting from early childhood. In this context, it was deemed necessary to adapt the Child-Adolescent Digital Addiction Scale (CADAS) to determine the digital addiction levels of school-age children

Design & Methodology: Within the scope of adaptation, data were collected from 305 students from 4th to 12th grades (Mage = 14.14, SD = 2.40) for exploratory factor analysis (EFA), 301 students (Mage = 13.36, SD = 2.16) for confirmatory factor analysis (CFA) and 372 students (Mage = 12.26, SD = 1.55) for criterion validity. Data were collected face-to-face and online voluntarily.

Findings: EFA and CFA were used to determine the validity level of the scale. For criterion validity, the correlation obtained from the Digital Game Addiction Scale (r=.77) and the Social Media Addiction Scale for Adolescents (r=.74) was examined. Cronbach alpha (.875) and McDonald ω (.872) values were calculated for the reliability of the scale. In addition, the corrected item-total correlations of the scale ranged between .66 and .85.

Implications & Suggestions: The findings of the study show that CADAS is valid and reliable for Turkish culture.

Çocuk-Ergen Dijital Bağımlılık Ölçeği'nin (CADAS) Türk Kültürüne Uyarlanması: Geçerlilik ve Güvenilirlik Çalışması

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Öz

Amaç: Dijital bağımlılık, ilk çocukluk yaşlarından başlayarak toplumun tüm paydaşlarını etkisi altına almaya başlayan davranışsal bağımlılık türlerinden biridir. Bu kapsamda özellikle okul çağı çocuklarının dijital bağımlılık düzeylerini tespit etmek için Çocuk-Ergen Dijital Bağımlılık Ölçeğinin (CADAS) uyarlanması gerekli görülmüştür

Yöntem: Uyarlama kapsamında; 4. sınıftan 12. sınıfa kadar olan ve açımlayıcı faktör analizi (EFA) için 305 (Mage = 14.14, SD = 2.40), doğrulayıcı faktör analizi (DFA) için 301 (Mage = 13.36, SD= 2.16) ve ölçüt geçerliliği için 372 (Mage = 12.26, SD=1.55) öğrenciden veri toplanmıştır. Veriler yüz yüze ve çevrimiçi olarak gönüllülük esasına dayanarak toplanmıştır.

Bulgular: Ölçeğin geçerlilik düzeyini belirlemek için EFA ve DFA kullanılmıştır. Ölçüt geçerlilik için Dijital Oyun Bağımlılığı Ölçeği (r=.77) ve Ergenler için Sosyal Medya Bağımlılığı Ölçeği'nden (r=.74) elde edilen korelasyon incelenmiştir. Ölçeğin güvenirlik çalışmaları kapsamında Cronbach alpha (.875) ve McDonald ω (.872) değerleri hesaplanmıştır. Ayrıca ölçeğin düzeltilmiş madde-toplam korelasyonları .66 ile .85 arasında değişmektedir

Sonuçlar ve Öneriler: Çalışmada elde edilen bulgular, CADAS'ın Türk kültürü için geçerli ve güvenilir olduğunu göstermektedir.

INTRODUCTION

With the rapid progress of technology, applications (including new technological devices like phones, tablets, computers, etc.) that provide software, learning, and entertainment environments are constantly being developed. This situation causes individuals to start to spend more and more time with digital devices and the internet. Digital devices (tablets, smartphones, and game consoles) are becoming an integral part of life nowadays, and their use often starts at a very young age (Samaha & Hawi, 2017). Intensive use of digital devices can also trigger addictive behaviors as the loneliness of individuals gradually increases (Batmaz et al., 2021) and their resilience decreases (Doğrusever et al., 2022). Addiction is expressed as a habitual compulsion to continue to engage in certain activities or to use a destructive substance despite the devastating effects on individuals' social, physical, mental, spiritual, and financial conditions (Young & De Abreu, 2010). In other words, addiction can be characterized by impaired behavioral control, excessive desire for the addictive phenomenon, difficulty perceiving significant problems in one's behaviors and interpersonal relationships, and dysfunctional emotional reactions (Olle & Westcott, 2018). The concept of addiction can be examined under two main headings: substance addiction and behavioral addiction. Substance addiction is a neuropsychiatric disorder characterized by a recurrent desire to continue substance use despite its harmful and detrimental effects on individuals (Zou et al., 2017). Behavioral addiction is when a person frequently exhibits behavior that causes conflict in their physical, psychological, and social structure and roles (Karaman & Kurtoğlu, 2009).

One of the types of addiction considered in the category of behavioral addiction is digital addiction, an individual's obsessive, compulsive, and impulsive use of technological tools without thinking (Almourad et al., 2020). Digital devices have positive features especially for children and adolescents including entertainment, convenience, affordability, and portability (Radesky et al., 2015), but heavy use of digital devices (overuse/misuse) can become problematic and negatively affect children and adolescents' educational, psychological, social, and physical well-being (Andreassen et al., 2016; Hawi et al., 2018). Digital addiction is not yet considered an official diagnosis because it is not categorized as such by the American Psychology Association (APA) (2013). However, in the new International Classification of Diseases, 11th Revision (WHO, 2018), gaming disorder (a behavioral addiction to digital games and video games) has been added to the addiction disorders section. Today, games have become an entertaining activity for a broad audience thanks to a variety of digital devices (phones, computers, tablets, etc.). Along with rapid technological developments, the concept of "digital games" has also developed in which a user's passwords allow them to enter a game, and progress step by step, and are mostly preferred by children (Fleer, 2014). The uncontrolled use of virtual games, especially with school-age children, is seen as a risk for addiction (İçen & Uysal, 2021). Digital game addiction is an impulse control disorder with symptoms including being unaware of the time spent playing, not being interested in other activities, persisting despite harmful effects, and feeling deprived when not playing games (APA, 2013).

Digital games have the most appeal or children and adolescents; therefore, if the behavior turns into an addiction, they can be harmed the most (Guvendi et al., 2019). Researchers stated that children and young people are more open to modeling others (Türk & Atli, 2022). They are also at a higher risk of using technology intensively because they have not fully developed their self-awareness and self-control (Gazzaley & Rosen, 2016). In addition, one of the areas where children and young people overuse digital tools is social media platforms. Social media is an interactive virtual-based environment that allows individuals to share text, audio files, and images (Arslan et al., 2015). Access to social media networks such as Facebook, Twitter, and Instagram where multiple access is provided (Aktan & Koçyiğit, 2016) with the widespread use of the internet and the strengthening of the connection infrastructure has also become more accessible. Social media has started to be used frequently by children and adolescents

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because it can be used not only on computers but also on easily portable devices such as phones and tablets, and there are no age restrictions. As a result of excessive use of social media, adverse effects on harming children and adolescents are met with concern by parents and society at large (Şahin & Yağcı, 2017; Turan et al., 2023). For this reason, theoretical and practical studies have begun to be carried out in areas such as digital parenting and the digital society to combat behavioral addictions (Manap & Durmuş, 2020).

When evaluated in general, it may be seen that using digital devices intensively can cause various problems including internet addiction, social media addiction, and digital game addiction. To investigate these problem areas in detail and to produce effective solutions, digital addiction measurement tools are needed. In Turkey, there are many measurement tools related to behavioral addictions caused by excessive and harmful use of digital devices such as internet addiction, social media addiction, and digital game addiction scales (Özgenel et al., 2019; Irmak & Erdoğan, 2015). However, few measurement tools can be used to measure addiction to digital devices more generally. It is seen that the digital addiction scales in Turkey (Arslan et al., 2015; Dilci, 2019; Kesici & Tunç, 2018) consist of many items and include only high school and university students. It is understood that there is a need for a digital addiction scale that includes primary and secondary school students who are at risk for this digital addiction. This research aims to adapt a short and useful digital addiction scale that can be applied to Turkish culture for secondary, and high school students.

METHODS

Participants

The population of the study was students between the ages of 11-19. First, for the CFA of the scale, 301 students (Mage: 13.39, sd=2,03, 48,5% males and 51,5 % girls). Data was collected from 606 students including 305 students (Mage: 14.14, sd= 2.40; 52.8% girls and 47.2% males). Then, data was collected from 372 students for criterion-related validity (Mage = 12.26, sd = 1.55; 55.6% girls and 44.4% males). To conduct confirmatory factor analysis and exploratory factor analysis, a sample size of 2 times or preferably 10 times the number of items must be reached (Kline, 2014). From this study, 30 times the number of items for EFA and CFA was reached. Participants were selected using the convenience sampling method.

Procedure

This research was intended to adapt the Child-Adolescent Digital Addiction Scale (CADAS) developed by Seema et al. (2021) to Turkish culture by investigating its validity and reliability. Participants were selected using the convenience sampling method. The data were first collected face-to-face for language validity. Then, it was collected online with the help of Google Forms for criterion, construct, and criterion validity. The population of the study was students between the ages of 11-19. All participants were active students. It is a distinguishing criterion that students do not have a psychiatric diagnosis. The characteristics of the sample are described in detail under the following headings.

Adaptation Process of CADAS

The adaptation process was prepared by considering the recommendations of Hambleton and Patsula (1999). First, permission by mail was obtained from the authors of the original scale. Then, three academic experts in digital addictions translated the CADAS into Turkish. The scale has been handled

sociologically and culturally and has been arranged by considering the current literature. After that, a researcher (English teacher) translated the scale into English. It consisted of an original English form, a Turkish-translated form, and a reversed version. The scale was sent to eight researchers working in the field of digital addiction to evaluate it as "appropriate or not appropriate". The English version of the CADAS was first administered to English-educated individuals (N = 50, male = 22, female = 28, M_{age} = 22.18, SD = 3.62) and then the Turkish version was administered 2 weeks later.

Data Collection Tools
Child-Adolescent Digital Addiction Scale (CADAS)

Seema et al. (2022) developed the CADAS to evaluate the behaviors and emotions of adolescents aged 11-19 years toward digital devices. Factor loadings ranged from .598 to .759. Cronbach's alpha coefficient was .83. The scale consists of a total of 10 items. Example items: "If I can't use my digital device, I feel bored", "If I can't use my digital device, I get grumpy", and "As soon as I put my digital device away, I feel the urge to use it again". There are no reverse items in the scale. The scale is a seven-point Likert-type scale; 1 = never, 2 = rarely, 3 = somewhat rarely, 4 = so-so, 5 = often, 6 = somewhat often, 7 = very often. The total score obtained from the scale gives the CADAS score.

Digital Game Addiction Scale (DGAS-7)

The DGAS-7 was created by Lemmens et al. (2009). DGAS-7 has a single-factor structure and was adapted into Turkish by Irmak and Erdoğan (2015). Exploratory factor analysis (EFA) and CFA were performed within the scope of construct validity. Example items: "Have you ever thought about playing a computer game all day?", Did you feel bad when you didn't play?". In this study, Cronbach's alpha coefficient was calculated as .84.

Social Media Addiction Scale for Adolescents (SMAS)

The SMAS was developed by Özgenel, Canpolat, & Ekşi (2019). There are nine items in the one-dimensional scale, and factor loads vary between .69 and .79. CFA results are as follows: values of CMIN/df=2.694, GFI=.92, AGFI=.87, CFI=.95, RMR=.06, and SRMR=.04 indicate acceptability. The reliability coefficient of the scale is 0.904. Example items: "When I do not use social media, I get angry, anxious or sad", "When I surf social media, I extend the time by saying "just a little more"", "I use social media more to feel happy". In this study, the Cronbach Alpha coefficient was calculated as 0.908.

Statistical Analyses

The SPSS 25 and AMOS 24 programs were used for the validity and reliability analysis of the data obtained within the scope of the study. Construct validity, criterion validity, and content validity were used for the scale's validity. Expert opinion was sought for the scale's content validity, and EFA was used for construct validity. To determine the scale's reliability, Cronbach's Alpha reliability coefficient and McDonald ω value were used. Statistically, the significant value was determined as p <.05.

RESULTS

Construct Validity

Exploratory factor analysis (EFA)

EFA was performed to determine the construct validity of the data collected from 305 (47.2% male, 52.8% female) adolescents (Mage = 14.14, SD = 2.40). Kaiser-Meyer-Olkin (KMO) coefficient and Barlett Sphericity test were used to evaluate whether the data were suitable for factor analysis. In addition, EFA results show that CADAS explains 41.50% of the variance as a single dimension. Maximum likelihood extraction method and varimax rotation were used. For social sciences, the variance values between 40% and 60% are accepted and for a factor to be significant, at least 5% of the declared variance should belong to that factor (Çokluk et al., 2012). The results are shown in Table 1.

Table 1

KMO and Bartlett's Test Values

Kaiser-Meyer-Olkin Value		.90
Bartlett's Test of Sphericity	Chi-square Value	1133.229
	Degrees of Freedom	45
	p	.001

As a result of the EFA performed on adolescents, it was seen that the items of the scale were gathered under a single factor with an eigenvalue greater than 1. In the line graph in Figure 1, it is seen that there is a break after the 1st factor. Table 2 below shows the EFA factor loading values for the scale.
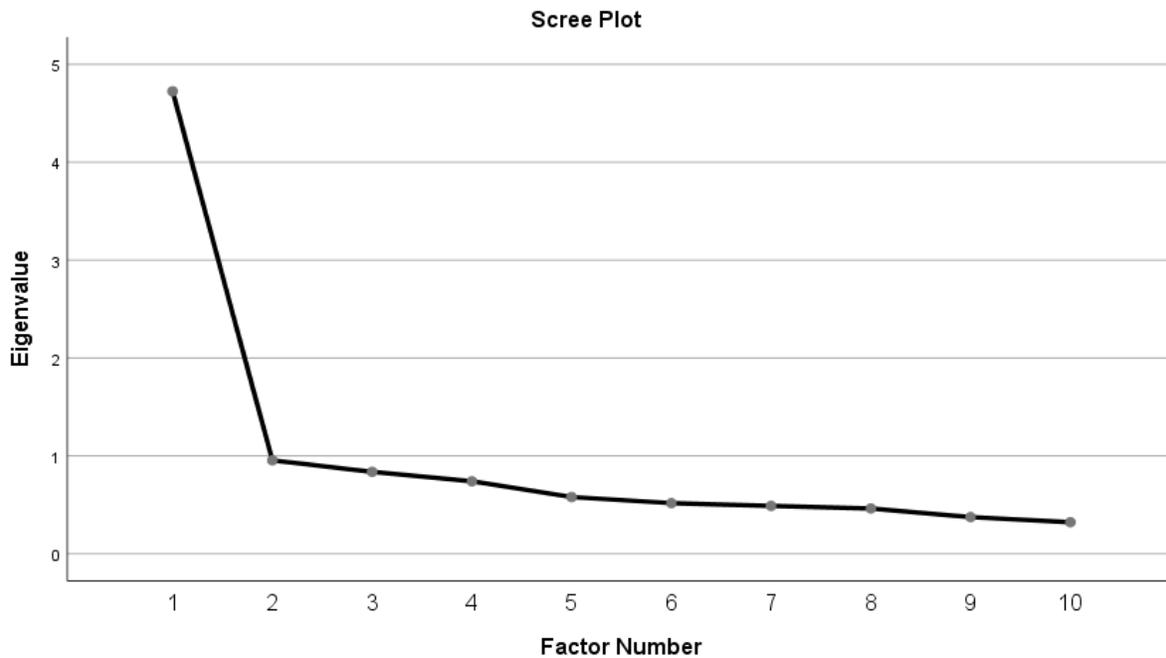
Figure 1. Scree Plot on CADAS

Table 2

Factor Loads of the CADAS

Items	Load Values	
	Turkish Form	Original Form
1	.717	.666
2	.599	.645
3	.783	.701
4	.656	.658
5	.671	.759
6	.608	.660
7	.590	.635
8	.569	.608
9	.649	.651
10	.566	.598

When Table 2 is examined, it may be seen that the scale has a single-factor structure, and the items in the scale have high load values in the range of .56-.78. In addition, no significant difference was found between CADAS scale and gender, age and educational level as a result of the T-test.

Confirmatory factor analysis (CFA)

The single-factor constructs of CADAS were tested with CFA. For CFA, data were collected from 301 individuals (48.5% male, 51.5% female) (M_{age} = 13.36, SD = 2.16). The results of CFA are presented in Figure 2. When the one-dimensional and 10-item structure of CADAS was examined by the CFA (ML estimation method), it was seen that the general agreement values were in the desired range (CMIN/df = 2.478; RMSEA = .07; NFI = .91; CFI = .94; GFI = .94; RFI = .88). (Sample's normality value: skew = .37, kur = -.73; sd = 11.05). According to Schermelleh-Engel, Moosbrugger, & Müller (2003), the acceptable fit values for DFA are between 2≤ χ2/sd≤3 of χ2/sd, RMSEA is between 0.05≤ RMSEA≤0.08, AGFI is between 0.85≤AGFI≤0.90, and the GFI should be between 90≤GFI≤0.95. In this context, it is seen that the fit indices of the model obtained because of the CFA regarding CADAS are at an acceptable level.
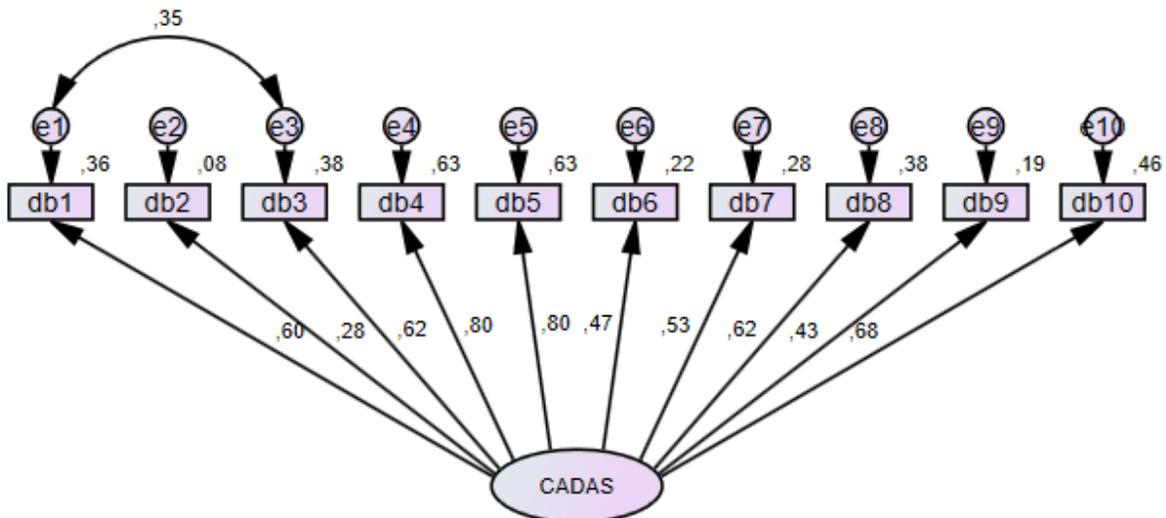

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Figure 2. Confirmatory Factor Analysis Model Regarding the CADAS

Criterion-Related Validity

Criterion validity was examined using the DGAS-7 and SMAS, which were used in the original form of CADAS (N = 372, 44.4% male, 55.6% female, M_{age} = 12.26, SD = 1.55). As a result of the correlation analysis performed to determine the criterion validity of the scale, a significant positive correlation was found between DGAS-7 (r = .77, p<.01) and SMAS (r = .74, p<.01). The correlation value between the English and Turkish versions of CADAS was calculated as r=.94. It was found that there is a significant relationship in the direction of the results regarding the criterion validity shown in Table 3.

Table 3

Correlation Values Between Scales

Variables	1	2	3
CADAS	1		
DGAS-7	.77**	1	
SMAS	.74**	.72*	1
Mean	27.13	14.18	17.26
SD	12.51	6.19	8.42
Skewness	93	.95	1.08
Kurtosis	.53	.31	.49

**p < .01

*p<.05

For item analysis, adjusted item-total correlation analysis and unpaired samples t-test were used to test whether the differences between the item mean scores of the lower 27% and upper 27% groups were significant. It was observed that the corrected item-total correlations ranged from .66 to .85. The t-values for the differences in item scores of the 27% lower and upper groups determined according to the total scores ranged between 8.90 (*p<.01*) and 19.27 (*p<.01*). Also, Cronbach's alpha value was α=.87, and the McDonald ω value was calculated as ω=.87. The acceptable Cronbach's alpha value should be .70 and above (Büyüköztürk, 2018). This shows that the reliability of the scale is sufficient. Findings related to item analysis are shown in Table 4.

Table 4

Correlation Values Between Scale Items

Items	1	2	3	4	5	6	7	8	9	10
1	-	.399*	.623*	.510*	.557*	.395*	.380*	.323*	.412*	.373*
2		-	.562*	.313*	.308*	.375*	.256*	.419*	.462*	.328*

3	-	.470*	.500*	.457*	.440*	.408*	.511*	.409*
4		-	.558*	.373*	.416*	.317*	.388*	.433*
5			-	.491*	.379*	.326*	.346*	.350*
6				-	.396*	.389*	.416*	.250*
7					-	.397*	.412*	.411*
8						-	458*	.401*
9							-	.411*
10								-

Internal Consistency Coefficient	Mc. Donald ω Değeri	Cronbach's Alpha Değeri
CADAS	.872	.875

p<0.001

For item analysis, adjusted item-total correlation analysis and unrelated t-tests were used to test whether the differences between the item mean scores of the lower 27% and upper 27% groups were significant. It was observed that the corrected item-total correlations ranged from .66 to 85. The t-values for the differences in item scores of the 27% lower and upper groups determined according to the total scores ranged between 8.90 ($p<.01$) and 19.27 ($p<.01$). Also, Cronbach's Alpha value was α=.87, and Mc. The Donald ω Value was calculated as ω=.87. The acceptable Cronbach's Alpha value should be .70 and above (Büyüköztürk, 2018). This shows that the reliability of the scale is sufficient. Findings related to item analysis are shown in Table 5.

Table 5
Item Analysis Values of CADAS

Items	Substance Discrimination		Adjusted Item-total Correlation
	t	p	
1	15.35	.000	.78
2	11.02	.000	.66
3	19.27	.000	.85
4	16.91	.000	.79
5	17.31	.000	.81
6	12.19	.000	.73
7	14.50	.000	.75
8	8.90	.000	.66
9	13.33	.000	.73
10	13.78	.000	.74

DISCUSSION

This study aimed to adapt the CADAS developed by Seema et al. (2022) to Turkish culture. The digital addiction scales in the Turkish literature (Arslan et al., 2015; Dilci, 2019; Kesici & Tunç, 2018) contained many items (29, 53, 28) and were developed for individuals aged 15 and over. The excessively high number of items in the existing scales makes it difficult for primary, secondary, and high school students to use (Bhandari & Nikolopoulou, 2023). For this reason, an adaptation study of CADAS, which includes primary and secondary school students and has only a few items, has been carried out. Experts were

consulted to ensure the scale's content validity, and EFA was performed to test the construct validity. As a result of EFA, it was revealed that the scale had a single-factor structure, as in the original, and the explained variance (41.50%) was sufficient. This result showed that digital addiction has universal characteristics regardless of the individualistic culture of the Northern European country Estonia and the collectivist culture of Turkey.

SMAS and DGAS-7 were used to determine the criterion validity of CADAS. It was observed that there were statistically significant positive correlations between CADAS and DGAS-7 (r=.77) and SMAS (r=.74). In studies supporting this result, it is seen that digital game addiction is closely related to many psychological factors such as psychological resilience (Batmaz et al., 2022), loneliness (Batmaz & Çelik, 2021) and sense of responsibility (Kaya et al, 2023), especially the activities carried out in digital media (for information; cyberbullying and cyber victimization (Batmaz et al., 2020)). In addition, digital addiction is closely related to social media addiction. It is supported by studies that the frequency of phubbing behavior of young people who are addicted to social media increases (Tanhan et al., 2023), and the level of digital game addiction increases (Savci & Aysan, 2017). When the literature is examined, it is seen that the validity and reliability results of similar scales developed for children and adolescents are compatible with CADAS (Hawi et al., 2019; Kesici & Tunç, 2018). In confirmatory factor analysis, a connection was established between items 1 and 3 of the scale. The 1st item on the scale is "I feel bored when I do not use my mobile device (anxiety)" and the 3rd item is "I feel cranky when I do not use my mobile device (withdrawal)". The reason for this correlation is that the respondents perceived these questions as like each other. It is understood that being bored when not using the mobile device and feeling cranky serve a similar purpose. These results seem to be compatible with the conceptual framework (Çelik, 2022), which considers social media addiction and digital game addiction as sub-types of digital addiction. Besides the criterion validity of CADAS, its reliability was also tested. As a result of the evaluation, it was determined that the Cronbach's alpha value for the internal consistency coefficient of CADAS was .87. In conclusion, this study was carried out to translate the Digital Addiction Scale for Teenagers (Seema et al., 2022) into Turkish, CADAS, was found to be a valid and reliable scale.

Limitations and Directions/Suggestions for Future Research

This study has several strengths and weaknesses. First, the study's sample size must exceed the minimum (6 people for each item) recommended level (Catell, 1978) to make the adaptation studies stronger. Therefore, the sample size of this research is sufficient. Besides, the fact that the research sample is between the ages of 11-19 expands the field of use. However, the validity of this scale on individuals over the age of 19 can be tested in future studies. This study used EFA to test the scale's validity. In addition, different statistical approaches such as the Rasch Model can be used. As a result, researchers who want to examine the digital addiction levels of individuals between the ages of 11-19, defined as adolescence by the World Health Organisation (2020), can use this scale. In this context, in future research on digital addiction, studies can be conducted on the causes of digital addiction such as digital parenting or various psychological and physical disorders caused by digital addiction. These studies can be conducted more effectively by mental health professionals and academicians working in the field of behavioral addiction using the digital addiction scale.

In addition to the limitations of this study, we offer some suggestions for future researchers. Since digital addiction is a rapidly rising risk in today's world, new measurement tools that include different characteristics (psychological, social, and cognitive aspects) can be developed. In addition, experimental research can be conducted on different models (constructed equation modeling, internalizing, and

externalizing, meaningful school, digital game addiction, school belonging, etc.) to evaluate the effect of digital addiction on the problems that arise especially in children and adolescents.

Ethics committee approval was received for this study from the Ethics Committee of the University (Approval No: 22.08.2022-3185, 2022/446).

REFERENCES

Aktan, E., & Koçyiğit, M. (2016). Sosyal medya'nın turizm faaliyetlerindeki rolü üzerine teorik bir inceleme. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 62-73.

Almourad, M. B., McAlaney, J., Skinner, T., Pleva, M., & Ali, R. (2020). Defining digital addiction: Key features from the literature *Psihologija*, *53*(3), 237–253. 10.2298/PSI191029017A

American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors*, *30*(2), 252. 10.1037/adb0000160

Arslan, A., Kırık, A. M., Karaman, M., & Çetinkaya, A. (2015). Lise ve üniversite öğrencilerinde dijital bağımlılık. *Uluslararası Hakemli İletişim ve Edebiyat Araştırmaları Dergisi*, *8*(8), 34-58.

Batmaz, H., & Celik, E. (2021). Examining the Online Game Addiction Level in terms of Sensation Seeking and Loneliness in University Students. *Addicta: The Turkish Journal on Addictions*, *8*(2), 126-131.

Batmaz, H., Türk, N., & Doğrusever, C. (2021). The mediating role of hope and loneliness in the relationship between meaningful life and psychological resilience in the Covid-19 pandemic during. *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi, 9*(5), 1403-1420. https://doi.org/10.18506/anemon.895199

Batmaz, H., Türk, N., Kaya, A., Yıldırım, M., & Assistant, R. (2023). Cyberbullying and Cyber victimization: examining mediating roles of Empathy and Resilience. *Current Psychology*, 1-11. https://doi.org/10.1007/s12144-022-04134-3

Batmaz, H., Ulusoy, Y., & İnceoğlu, F. (2020). The mediating role of digital game addiction in the correlation between cyber victimization and cyberbullying. *International Social Sciences Studies Journal*, *6*(73), 5093-5108.

Bhandari, P. & Nikolopoulou, K. (2023, June 22). *What Is a Likert Scale? | Guide & Examples.* Scribbr. Retrieved March 12, 2024, from https://www.scribbr.com/methodology/likert-scale/

Büyüköztürk, Ş. (2018). *Sosyal bilimler için veri analizi el kitabı (24. Baskı).* Ankara: Pegem Akademi.

Catell, R. B. (1978). *The scientific use of factor analysis*. The USA: Plenum Press

Çelik, E. (2022). *Çocuklarda dijital bağımlılığın öncülleri ve ardılları: Bir metasentez çalışması.* (Yayınlanmamış Yüksek Lisans Tezi). İnönü Üniversitesi, Malatya.

Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2012). *Sosyal bilimler için çok değişkenli istatistik: SPSS ve LISREL uygulamaları* (Vol. 2). Ankara: Pegem Akademi.

Dilci, T. (2019). A study on validity and reliability of digital addiction scale for 19 years or older. *Universal Journal of Educational Research, 7*(1), 32-39.

INUEBED

Türk, Batmaz & Keleş / Adaptation of the Child-Adolescent Digital Addiction Scale (CADAS) to the Turkish Culture: A Validity and Reliability Study

Doğrusever, C. , Türk, N. & Batmaz, H. (2022). The mediating role of meaningful life in the relationship between self-esteem and psychological resilience. *İnönü Üniversitesi Eğitim Fakültesi Dergisi, 23* (2) , 910-928. https://doi.org/10.17679/inuefd.1029866

Fleer, M. (2014). The demands and motives afforded through digital play in early childhood activity settings. *Learning, Culture and Social Interaction*, *3*(3), 202-209. https://doi.org/10.1016/j.lcsi.2014.02.012

Gazzaley, A., & Rosen, L. D. (2016). *The distracted mind: Ancient brains in a high-tech world*. MIT Press.

Güvendi, B., Tekkurşun Demir, G., & Keskin, B. (2019). Ortaokul öğrencilerinde dijital oyun bağımlılığı ve saldırganlık. *Uluslararası Toplum Araştırmaları Dergisi, 11*(18), 1196-1217. https://doi.org/10.26466/opus.547092

Hambleton, R. K., & Patsula, L. (1999, June 15). Increasing the validity of adapted tests: Myths to be avoided and guidelines for improving test adaptation practices 1, 2. https://www.org.journal.html

Hawi, N. S., Samaha, M., & Griffiths, M. D. (2018). Internet gaming disorder in Lebanon: Relationships with age, sleep habits, and academic achievement. *Journal of Behavioral Addictions*, *7*(1), 70-78. https://doi.org/10.1556/2006.7.2018.16

Hawi, N. S., Samaha, M., & Griffiths, M. D. (2019). The digital addiction scale for children: Development and validation. *Cyberpsychology, Behavior, and Social Networking*, *22*(12), 771-778.

İçen, B. & Uysal, G. (2021). İlköğretim birinci kademe öğrencilerinin sanal oyun bağımlılık düzeylerinin belirlenmesi. *Mersin Üniversitesi Sağlık Bilimleri Dergisi, 14*(3), 532-544. https://doi.org/10.26559/mersinsbd.856867

Irmak, A. Y., & Erdoğan, S. (2015). Dijital Oyun Bağımlılığı Ölçeği Türkçe formunun geçerliliği ve güvenilirliği. *Anatolian Journal of Psychiatry/Anadolu Psikiyatri Dergisi*, *16* (Özel sayı.1), 10-18. http://dx.doi.org/10.5455/apd.170337

Karaman, M. K., & Kurtoğlu, M. (2009). Öğretmen adaylarının internet bağımlılığı hakkındaki görüşleri. *Akademik Bilişim*, *11*(13), 641-650.

Kaya, A., Türk, N., Batmaz, H., & Griffiths, M. D. (2023). Online gaming addiction and basic psychological needs among adolescents: the mediating roles of meaning in life and responsibility. *International Journal of Mental Health and Addiction*, 1-25. https://doi.org/10.1007/s11469-022-00994-9

Kesici, A., & Tunç, N. F. (2018). The Development of the Digital Addiction Scale for the University Students: Reliability and Validity Study. *Universal Journal of Educational Research*, *6*(1), 91-98.

Kline, P. (2014). An easy guide to factor analysis. Routledge. https://doi.org/10.4324/9781315788135

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media Psychology*, *12*(1), 77-95. https://doi.org/10.1080/15213260802669458

Manap, A., & Durmuş, E. (2020). Dijital ebeveynlik farkındalık ölçeğinin geliştirilmesi. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, *21*(2), 978-993. https://doi.org/10.17679/inuefd.711101

Olle, D. A., & Westcott, J. R. (2018). *Video game addiction*. Mercury Learning and Information.

Özgenel, M., Canpolat, Ö. ve Ekşi, H. (2019). Ergenler için Sosyal Medya Bağımlılığı Ölçeği (ESMBÖ): Geçerlik ve güvenirlik çalışması. *Addicta: The Turkish Journal on Addictions, 6,* 629–662. http://dx.doi.org/10.15805/addicta.2019.6.3.0086

Radesky, J. S., Schumacher, J., & Zuckerman, B. (2015). Mobile and interactive media use by young children: the good, the bad, and the unknown. *Pediatrics, 135(*1), 1–3. https://doi.org/10.1542/peds.2014-2251

Şahin, C., & Yağcı, M. (2017). Sosyal medya bağımlılığı ölçeği yetişkin formu: Geçerlilik ve güvenirlik çalışması. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi, 18*(1), 523-538.

Samaha, M., & Hawi, N. S. (2017). Associations between screen media parenting practices and children's screen time in Lebanon. *Telematics and Informatics*, *34*(1), 351-358. https://doi.org/10.1016/j.tele.2016.06.002

Savci, M., & Aysan, F. (2017). Technological addictions and social connectedness: predictor effect of internet addiction, social media addiction, digital game addiction and smartphone addiction on social connectedness. *Dusunen Adam: Journal of Psychiatry & Neurological Sciences*, *30*(3), 202-216.

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, *8*(2), 23-74.

Seema, R., Heidmets, M., Konstabel, K., & Varik-Maasik, E. (2022). Development and validation of the Digital Addiction Scale for Teenagers (DAST). *Journal of Psychoeducational Assessment*, *40*(2), 293-304. https://doi.org/10.1177/07342829211056394

Tanhan, F., Özok, H. İ., Kaya, A., & Yıldırım, M. (2023). Mediating and moderating effects of cognitive flexibility in the relationship between social media addiction and phubbing. *Current Psychology*, 1-12. https://doi.org/10.1007/s12144-023-04242-8

Turan, M. E., Adam, F., Kaya, A., & Yıldırım, M. (2023). The mediating role of the dark personality triad in the relationship between ostracism and social media addiction in adolescents. *Education and Information Technologies*, 1-17. https://doi.org/10.1007/s10639-023-12002-1

Türk, N. & Atli, A. (2022). Popüler dizi-film karakterlerinin lise öğrencilerinin rol model alma davranışı üzerindeki etkisi: 'Onun gibi olsam'. *Milli Eğitim Dergisi, 51*(234), 1639-1660. https://doi.org/10.37669/milliegitim.802862

World Health Organization (2020). Orientation Program on Adolescent Health for Health care Providers. From:https://apps.who.int/iris/bitstream/handle/10665/42868/9241591269_Handout_eng.pdf?sequence=2

World Health Organization. (18 June 2018). WHO releases new International Classification of Diseases (ICD 11). From: https://www.who.int/news/item/18-06-2018-who-releases-new-international-classification-of-diseases-(icd-11)

Young, K. S., & De Abreu, C. N. (Eds.). (2010). *Internet addiction: A handbook and guide to evaluation and treatment*. John Wiley & Sons.

Zou, Z., Wang, H., d'Oleire Uquillas, F., Wang, X., Ding, J., & Chen, H. (2017). Definition of substance and non-substance addiction. *Substance and Non-substance Addiction*, *1010,* 21-41. https://doi.org/10.1007/978-981-10-5562-1_2