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Turkish Adaptation Study of Digital Addiction Scale for Children

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Abstract: The aim of this study is to adapt the 'Digital Addiction Scale for Children,' developed by Hawi, Samaha, and Griffiths (2019), into Turkish to create a valid and reliable measurement tool for determining the levels of digital addiction among fourth grade primary school students. For the adaptation of the scale into Turkish, 771 fourth grade primary school students from the central districts of Mersin province were included in the study using a convenient sampling method. First, the translation of the scale into Turkish was carried out with the support of language and field experts. Subsequently, Confirmatory Factor Analysis (CFA) was applied to establish construct validity. According to the results of the conducted CFA, it was found that the structure of the 'Digital Addiction Scale for Children', consisting of 25 items and 9 subscales, had good model fit indices. The Cronbach's Alpha internal consistency coefficient for the reliability of the scale was calculated as .95 for the entire scale. Based on the findings obtained in the study, it can be stated that the 'Digital Addiction Scale for Children' is a valid and reliable measurement tool that can be used to determine the levels of digital addiction among primary school students in Turkey.

Keywords: Digital addiction, scale adaptation, primary school students

Çocuklar İçin Dijital Bağımlılık Ölçeğini Türkçeye Uyarlama Çalışması

Öz: Bu araştırmanın amacı, ilkokul 4. Sınıf öğrencilerinin dijital bağımlılık düzeylerini belirleyebilmek için Hawi, Samaha ve Griffiths (2019) tarafından geliştirilen Çocuklar için Dijital Bağımlılık Ölçeği'nin Türkçeye uyarlanarak geçerli ve güvenilir bir ölçme aracı oluşturmaktır. Ölçeğin Türkçeye uyarlanması için Mersin ilinin 4 merkez ilçesinden 771 ilkokul 4. sınıf öğrencisi uygun örnekleme yöntemi ile çalışmaya dahil edilmiştir. Öncelikle ölçeğin Türkçeye çevirisi dil ve alan uzmanlarının desteğiyle gerçekleştirilmiş, daha sonra da yapı geçerliliğini sağlamak amacıyla Doğrulayıcı Faktör Analizi uygulanmıştır. Gerçekleştirilen Doğrulayıcı Faktör Analizi sonuçlarına göre Çocuklar için Dijital Bağımlılık Ölçeği'nin 25 maddeden ve 9 alt boyuttan oluşan yapısının model uyum indekslerinin iyi düzeyde olduğu bulunmuştur. Ölçeğin güvenirliği için ise Cronbach Alfa iç güvenirlik katsayısı ise ölçeğin tamamı için .95 olarak hesaplanmıştır. Araştırma sonucunda ulaşılan bulgulara göre Çocuklar için Dijital Bağımlılık Ölçeği'nin Türkiye'deki ilkokul öğrencilerinin dijital bağımlılık düzeylerinin belirlenmesinde kullanılabilecek geçerli ve güvenilir bir ölçme aracı olduğu söylenebilir.

Anahtar kelimeler: Dijital bağımlılık, ölçek uyarlama, ilkokul öğrencileri

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Introduction

Since the mid-20th century, technological advancements such as radio, television, telephones, computers, the Internet, and smart devices, have intensively affected various aspects of human life, including production, trade, communication, entertainment, the economy, and education. With the emergence of first personal computers (PCs) since the 1980s and especially the Internet since the 1990s, people have had the opportunity to access digital technologies in their daily lives, too. In the last 15-20 years, the introduction of smartphones and other smart devices with internet connection property has eliminated time and location constraints associated with using digital technologies. Along with the internet and smart device; social media, digital games and online applications have emerged as the most time-consuming technological developments in recent years. In particular, digital devices including computers, smartphones, tablet computers, smartwatches, game consoles, and more, are used intensively by teenagers and children rather than adults (Samaha & Hawi, 2017). Students' use of digital technology is mostly for communication, social media and games (Bağcı, 2019). In recent years, due to the impact of the Covid-19 pandemic, people have spent more time at home, and it is leading to increased use of digital technologies through the Internet (Gökler & Turan, 2020; Király et al., 2020). Like all individuals, students have also had to stay at home during this period, which has made it necessary for education to be conducted online, requiring students to use these digital technologies more frequently (Sirer, 2020). According to the "Children's Use of Information Technologies Survey" published by the Turkish Statistical Institute (TÜİK) in 2021, the internet usage rate among children increased from 53.7% in 2013 to 82.7% in 2021. In parallel to this, according to the findings of the research conducted in the United States in March 2020, it was observed that there was a 70% increase in the content for children and the duration of use of this content after the start of social distancing bans and quarantine practices before the coronavirus cases (Griffith, 2020). According to data from the Statista study conducted in January 2021, the number of active technological device users worldwide was reported as 4.32 billion for mobile internet and 4.66 billion for the Internet, while it was stated that there were 4.2 billion people using social media. Considering the increase in the rate of use of digital technology, the continuous and repetitive use of digital devices and environments is considered to lead to digital addiction in individuals.

The use of digital technologies, especially computer games, has been noted to have positive effects on children when used appropriately and in appropriate durations. It has been indicated that these technologies can calm children, improve their ability to remain calm under stress, enhance their strategic thinking and problem-solving skills, and teach them to make quick and accurate decisions in different situations (Horzum et al., 2008; Tarhan & Nurmedov, 2019). In addition to these benefits, digital technologies offer opportunities to access various sources of information rapidly, communicate with someone on the other side of the world, and express themselves freely in conducive environments. However, contrary to these positive contributions, the misuse and excessive use of digital technologies can lead to negative outcomes. Prolonged screen time has been associated with adverse effects on eye health, neck and back pain, as well as physical problems such as unhealthy nutrition habits and sleep disorders (Dilci et al., 2019; Doğan, 2013). Exposure to violent content, age-inappropriate visuals, and the risks of cyberbullying are also among the potential negative consequences of digital technology usage (Andreassen et al., 2017). Furthermore, it is emphasized that the reduced amount of time individuals spend with people in their physical environment, including parents and friends, may pose a risk of transforming social beings into antisocial individuals (Bağcı, 2019; Gentile et al., 2017).

Nowadays, as a result of the frequent use of technological devices especially with their negative effects, the concept of digital addiction has started to emerge. Digital addiction is considered as a broad concept that includes addictions towards the Internet, social media, cell phone, and digital games (Christakis, 2019; Eke, 2019). The term 'digital addiction' encompasses behaviors characterized by an excessive reliance on digital devices. It includes an inability to satiate the desire for digital device usage, the neglect of other activities due to excessive screen time, impairments in social relationships arising from digital overuse, resorting to digital platforms as a coping mechanism for negative emotions and life stressors, experiencing difficulties in reducing or discontinuing usage, manifesting irritability and restlessness when unable to use digital devices, and providing false information regarding the extent and duration of usage. It is worth noting that some scholars have classified this phenomenon as a form of disorder (Savcı & Aysan, 2017). Digital addiction can also be expressed as a general and inclusive term that encompasses newly emerging subtypes related to internet addiction, gaming addiction, social media addiction, and digital media addictions. In the Diagnostic and Statistical Manual of Mental Disorders (DSM 5) published by the American Psychiatric Association (APA) (2013), within the scope of digital addiction; internet gaming disorder was discussed and defined this disorder as a condition that needs further studies. The World Health Organization (2018) has also specifically defined gaming disorder as a mental health condition. Moreover, research has revealed that digital addiction may cause social, academic, economic, professional and physical problems (Dilci et al., 2019; Uyan, 2021; Young, 1998).

Griffiths (1999) stated that technological addictions can be seen as a subset of behavioral addictions. He stated that the fundamental components of addiction consist of six criteria: preoccupation, mood change, tolerance, withdrawal symptoms, conflict and relapse and that any behavior that fulfills these six criteria can be defined as addiction. These fundamental criteria are explained as follows:

- Preoccupation: It refers to the mind always thinking about being online. It is a situation where the individual cannot focus on activities or responsibilities at home, school, or work. With the increase in addiction, there is a decrease in social relationships, and the individual imagines online activities more often.
- Mood Modification: It involves a surge in a person's mood and excitement when they are online. When online, individuals tend to forget about the problems, worries, and troubles they experience in real life. When they cannot struggle with the negativities in their life, they may increase the frequency and duration of being online.
- Tolerance: It refers to the desire to re-experience the effect or pleasure previously obtained and consequently spending more and more time online.
- Conflict: It refers to conflicts or arguments with people in the individual's life due to the time spent with technological devices and on the internet. The source of conflicts is the individual themselves. The individual may postpone school, social life and physical needs in order to spend more time with technological devices or on the Internet. They may have to eat less and sleep less in order to stay online more. They may even lie to their spouse, friends, or others around them.

- Relapse: It is the re-occurrence of a certain activity after a break in the activity. It is the situation of being more dependent than in the past with the negative results of the efforts to interrupt the activity.

Withdrawal Symptoms: These are unwanted mood states that occur when the activity is discontinued. When the activity is not performed or is interrupted, the individual may experience anger, stress, and even aggressive behaviors.

In their study, Hawi, Samaha, and Griffiths (2019) expanded upon the six fundamental criteria for internet and gaming addiction established by Griffiths (1999). In addition to the six criteria - preoccupation, mood modification, tolerance, conflict, relapse, and withdrawal symptoms - they introduced three additional criteria: problems, deception, and displacement. Using these criteria, they developed the 'Digital Addiction Scale for Children,' consisting of nine subscales. The three additional subscales are defined as follows:

- Problems: This refers to a situation where an individual's life becomes unmanageable due to digital addiction, leading to issues such as disrupted sleep, conflict with parents, a decline in academic performance, and an inability to manage finances.
- Deception: This refers to children lying to their parents about what they do on digital devices. It involves instances when a child lies to their parents about the amount of time spent on the device.
- Displacement: This involves a situation where the addicted individual, as a result of conflicts with parents, leaves home or goes to distant places away from their family to be able to use their digital device comfortably. This situation may result in the endangerment of the family institution.

When examining research, it is observed that digital addiction is not limited to adults alone; it affects individuals of all age groups. The increasing use of technological devices in daily life and educational environments has particularly led to the emergence of digital addiction among children and adolescents (Hawi, Samaha & Griffiths, 2019). It is emphasized that children exhibit behaviors such as using digital devices (tablets, smartphones, etc.), playing digital games, frequently watching various videos, and even using social media from a very young age (Blanchard & Moore, 2010; Mustafaoğlu et al., 2018; Zimmerman & Christakis, 2007). Due to the early usage of digital devices, there is a need for researches on digital addiction for children to detect the danger of digital addiction among children as early as possible. At this point, it has been stated that there are only a few studies on the digital addiction levels of primary school students, even at the infancy stage (Çelik & Çelik, 2023). Hazar and Hazar (2017) stated that students in primary school age can be more easily negatively affected by these technologies in terms of affective domain and that digital devices have effects that can isolate students and disconnect them from social life. Bağcı (2019) stated that among the negative consequences of the misuse of digital technologies, there will be asocial and digital-dependent individuals who are lonely and stay away from social life. In a meta-synthesis study conducted by Çelik (2022) on digital addiction in children, it was mentioned that the scales used in 178 theses and 80 articles conducted in the Turkish sample between 2016 and 2021 included measurements related to Internet Addiction Scale, Digital Gaming Addiction Scale, Mobile Phone Usage Scale, and Social Media Addiction Scale. It was determined that none of the reviewed studies used a Digital Addiction Scale encompassing all these addiction types. Moreover, only seven of these studies were conducted with primary school students, highlighting the limited

scope of research involving primary school students. It is worth noting the absence of a valid and reliable Turkish questionnaire to assess the digital addiction levels of primary school students from an early age, rather than scales related to various technology addictions (computer, internet, mobile phone, social media, digital games, etc.). Therefore, aim of this study is to adapt into Turkish the "Digital Addiction Scale for Children" developed by Hawi, Samaha, and Griffihts (2019), which exists in the international literature to measure the digital addiction levels of fourth grade primary school students in Turkey and to ensure its validity and reliability.

Method

In this study, initially, the items in the 'Digital Addiction Scale for Children' were translated into Turkish, with the aim of achieving an accurate and comprehensive translation in terms of language. Afterwards, confirmatory factor analysis was applied to the adapted version of the scale to examine its compatibility with the sub-dimensions present in the original scale. In addition, necessary analyses were conducted to ensure the reliability of the scale adapted into Turkish. Prior to initiating all these procedures, ethical approval for the study was obtained from the Ethics Committee at Mersin University, and approval was settled by the Provincial Directorate of Ministry of National Education.

Participants

The participants in the study were selected by convenience sampling method among fourth grade students in public primary schools in the central districts of Mersin province (Toroslar, Akdeniz, Yenişehir, and Mezitli) during the 2022-2023 academic year. A total of 771 fourth grade students from 21 different schools in these four districts participated in the study. Of these students, 464 (60.2%) were female, while 307 (39.8%) were male. For studies where factor analysis is to be applied, it is suggested the sample size should be at least 200 (Kline, 1994; Pallant, 2007) or at least 300 (Field, 2005). Additionally, in factor analysis studies, existing literature suggests that the sample size should ideally range from 5 to 10 times the total number of items in the scale (Bryman and Cramer, 2001; Cattell, 1978). Therefore, by keeping the sample size large (771 students) within the scope of the study, it was aimed to reach stronger and more reliable results during the analysis of the data and to increase its external validity.

Digital Addiction Scale for Children

To determine the digital addiction levels of primary school fourth-grade students in Turkey, the 'Digital Addiction Scale for Children,' developed by Hawi, Samaha, and Griffiths (2019) to measure digital addiction in children aged 9 to 12, was adapted into Turkish. The original scale, developed in English, consists of 9 factors and 25 items. The sub-scale in the scale are named as 'Preoccupation' (Meşguliyet), 'Tolerance' (Tolerans), 'Withdrawal Symptoms' (Yoksunluk), 'Deception' (Aldatma), 'Mood Modification' (Psikolojik Durum Değişikliği), 'Displacement' (Yer Değişikliği), 'Conflict' (Çatışma), 'Problems' (Problemler), and 'Relapse' (Nüksetme). The scale has a 5-point Likert-type scaling structure from the original response formats. The items are structured as alternating from 'Never' to 'Always' (1 to 5). Scores on the scale can range from a minimum of 25 to a maximum of 125. The Cronbach's alpha coefficient, calculated by the researchers to ensure the internal reliability of the original scale, was found to be .94. The internal reliability coefficients for the factors of the scale were calculated as .65 for the Preoccupation subscale, .71 for the Tolerance subscale, .87 for the Withdrawal Symptoms subscale, .60 for the Deception subscale,

.72 for the Mood Modification subscale, .66 for the Displacement subscale, .63 for the Conflict subscale, .69 for the Problems subscale and .63 for the Relapse subscale.

Procedure – Development of the Turkish Version of the Scale

Before the adaptation of the Digital Addiction Scale for Children into Turkish, Nazir S. Hawi, one of the developers of the original instrument, was contacted via e-mail and his consent was acquired for the adaptation of the scale into Turkish. The original instrument was translated into Turkish by two English teachers, a primary school teacher, and a faculty member of the Department of Computer Education and Instructional Technology (CEIT) in order to use the scale with native Turkish students. Afterwards, expert opinions on the translated items into Turkish were obtained from two faculty members who are experts in the CEIT area. Throughout the process of translating the scale into Turkish, the translation team and field experts were instructed to ensure that the items were both faithful to the original scale and culturally appropriate for the Turkish context. To assess whether the translated items were comprehensible to the target group, a focus group interview was conducted with 14 fourth-grade primary school students in Mersin. Their opinions were gathered regarding the precision, clearness, and comprehensibility of each item, as well as their interpretations of the scale items. As a result of these practices, the suggested adjustments were made in terms of the items being clear, understandable and suitable for the target student level. Subsequently, the scale items were retranslated from Turkish to English by two different English language teachers and compared with the original English form of the scale to check for any discrepancies or shifts in meaning in the language translation. This comparison confirmed that there were no significant differences between the items in the original English form of the scale and the items translated back from Turkish to English. After this comparison, the language translation of the scale items was completed and the scale was made ready for validity and reliability analyses. Rating options were added to the translated items and a demographic information and directive section was inserted at the beginning of the scale.

Data Analysis

In the process of adapting the Digital Addiction Scale for Children into Turkish, Confirmatory Factor Analysis (CFA) gives the evidences about the construct validity of the scale. CFA is a commonly preferred analysis method in the processes of adapting scales constructed in various cultures and samples (Sümer, 2000; Yaşlıoğlu, 2017). In cross-cultural scale adaptation studies, it is recommended to start with CFA directly to determine whether the instrument fits the factor structure in the target culture (Çokluk, Şekercioğlu & Büyüköztürk, 2010). In this study, the AMOS 21.0 program, one of the widely used software programs for CFA, was employed.

The oldest and most frequently used statistic that emerges as a result of CFA to test model-data fit is the Chi-Square Fit (CMIN-χ2). The chi-square fit statistic is a type of statistic that may become more sensitive as the sample size increases, especially in cases involving more than 250 samples. In order to solve this sensitivity problem, it is recommended to use different fit indices in addition to chi-square (Bentler, 1990). In this study, χ2/sd, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI) and Root Mean Square Error of Approximation (RMSEA) indices were taken into consideration according to consequence of CFA conducted to examine the construct validity of the scale. The goodness-of-fit values recommended by Byrne (2011) for the interpretation of the data to be acquired as a result of CFA and the statistics can be seen in Table 1. On the other hand, in order to establish internal reliability for the scale, Cronbach's Alpha coefficient was calculated.

Table 1

Good Degree of Fit Indices

Sample Size	**N < 250**			**N > 250**		
Observable Number of Variables	i ≤ 12	12 < i < 30	i ≥ 30	i ≤ 12	12 < i < 30	i ≥ 30
CMIN (χ2)	Meaningless p value	Compliance even if it's good meaningful p value	Meaningful p value	Compliance even if it's good meaningful p value	Meaningful p value	Meaningful p value
χ2/df	χ2/df < 2.5			χ2/df < 5		
GFI	> 0.95	> 0.90	> 0.90	> 0.90	> 0.90	> 0.90
CFI	> 0.97	> 0.95	> 0.92	> 0.95	> 0.92	> 0.90
NFI – TLI	> 0.97	> 0.95	> 0.92	> 0.95	> 0.90	> 0.80
RMSEA	< 0.08	< 0.08	< 0.08	< 0.07	< 0.07	< 0.07

Findings

The Digital Addiction Scale for Children was adapted to Turkish, and Confirmatory Factor Analysis (CFA) was conducted on scores obtained from 771 students to ascertain the factor structure of the translated items in alignment with the original scale's 9 sub-dimensions. The results of the CFA applied to the draft scale are presented in Table 2.

Table 2

Model Fit Indicators According to Confirmatory Factor Analysis Results

Indices	**Value**
CMIN (χ2)	905.572
CMIN/df (χ2/sd)	3.789
GFI	0.906
CFI	0.931
NFI	0.909
TLI	0.913
RMSEA	0.060

The Confirmatory Factor Analysis (CFA) conducted to control the model fit of the Turkish adaptation of the Digital Addiction Scale for Children, consisting of 9 factors and a total of 25 items, revealed that the chi-square goodness of fit value (χ2=905.572, df=239, p=.00) was significant. The CMIN/df value for the adapted scale's model fit was calculated as 3.789. In addition, the fit index values for the model were RMSEA: .060, GFI: .906, CFI: .0931, NFI: .909 and TLI: .913. The results of the CFA indicated that the 9-factor, 25-item scale had a good fit. While interpreting the data, the good fit values suggested by Byrne (2011) were evaluated according to the relevant reference values since the number of participants was more than 250 and the number of items was 25 in the scale. As a result of this evaluation, the χ2/df ratio, an important indicator of data fit for a sample size greater than 250, was found to be 3.789, which is below 5, indicating a good fit in this study. The GFI value for the scale was .906, and the CFI value was

.931. Additionally, the NFI value was .909, and the TLI value was .913. Lastly, the RMSEA value was examined, which was found to be .060, lower than .07. When all these fit index values are compared to the recommended goodness of fit values, it can be concluded that the Turkish-adapted scale shows a good level of compatibility with the original scale's factors and yields results similar to the original structure within the Turkish sample.

The factor structure and factor loadings of the scale are presented in Figure 1. It is observed that the factor loadings of the items in the Digital Addiction Scale for Children range from .43 to .82. Since all factor loading values are greater than 0.30, it can be said that the scores obtained from the 25 items in the scale reflect the substructures constituting the Digital Addiction Scale for Children (Büyüköztürk, 2004). In line with this, when the factor loading values in the model were examined as a result of CFA, it was observed that the items in each factor mostly had a high loading value in that factor. The descriptive results of the confirmatory factor analysis are listed in Table 3 according to the items and scale dimensions.

Figure 1

Analysis Results for the 9-factor Structure of the Scale

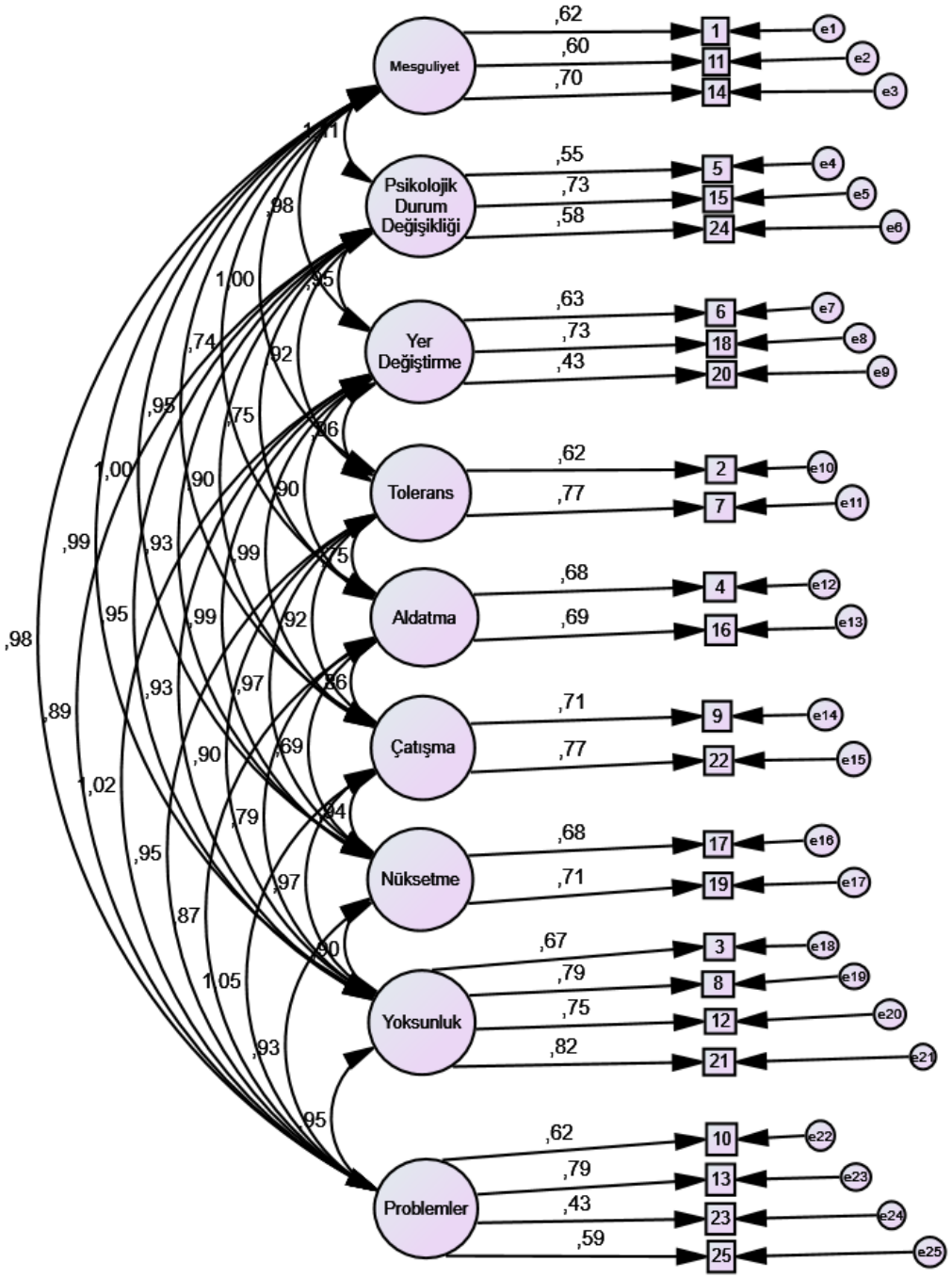

Table 3

Descriptive Results of Confirmatory Factor Analysis

Items		Sub-scale	Estimated Value	S.E.	C.R.	P
i1	<---	Preoccupation (Meşguliyet)	1			
i11	<---	Preoccupation (Meşguliyet)	0,903	0,059	15,212	***
i14	<---	Preoccupation (Meşguliyet)	0,937	0,055	17,144	***
i5	<---	Mood Modification (Psik. Durum Değ.)	1			
i15	<---	Mood Modification (Psik. Durum Değ.)	1,249	0,082	15,241	***
i24	<---	Mood Modification (Psik. Durum Değ.)	1,054	0,08	13,178	***
i6	<---	Displacement (Yer Değiştirme)	1			
i18	<---	Displacement (Yer Değiştirme)	0,908	0,052	17,523	***
i20	<---	Displacement (Yer Değiştirme)	0,731	0,066	11,161	***
i2	<---	Tolerance (Tolerans)	1			
i7	<---	Tolerance (Tolerans)	1,263	0,074	17,1	***
i4	<---	Deception (Aldatma)	1			
i16	<---	Deception (Aldatma)	0,782	0,051	15,303	***
i9	<---	Conflict (Çatışma)	1			
i22	<---	Conflict (Çatışma)	0,954	0,045	21,141	***
i17	<---	Relapse (Nüksetme)	1			
i19	<---	Relapse (Nüksetme)	1,053	0,059	17,844	***
i3	<---	Withdrawal Symptoms (Yoksunluk)	1			
i8	<---	Withdrawal Symptoms (Yoksunluk)	1,206	0,062	19,564	***
i12	<---	Withdrawal Symptoms (Yoksunluk)	0,893	0,048	18,69	***
i21	<---	Withdrawal Symptoms (Yoksunluk)	1,11	0,055	20,246	***
i10	<---	Problems (Problemler)	1			
i13	<---	Problems (Problemler)	1,646	0,090	18,290	***
i23	<---	Problems (Problemler)	0,45	0,040	11,156	***
i25	<---	Problems (Problemler)	0,859	0,059	14,636	***

In light of all these results, it can be stated that the Turkish adaptation of the Digital Addiction Scale for Children has a sufficiently high level of construct validity, and the scale confirms its original 9-factor structure. According to Confirmatory Factor Analysis conducted for the adaptation of the scale to Turkish, the instrument with the confirmed structural model consists of 3 items for the 'Preoccupation' subscale (1, 11, 14); 2 items for the 'Tolerance' subscale (2, 7); 4 items for the 'Withdrawal Symptoms' subscale (3, 8, 12, 21); 2 items for the 'Deception' subscale (4, 16), 3 items for the 'Mood Modification' subscale (5, 15, 24); 3 items for the 'Displacement' subscale (6, 18, 20); 2 items for the 'Conflict' subscale (9, 22); 4 items for the 'Problems' subscale (10, 13, 23, 25); and 2 items for the 'Relapse' subscale (17, 19).

The internal consistency reliability of the factors included in the scale was calculated using the Cronbach's alpha coefficient. According to the results of the data obtained from 771 primary school fourth grade participants in the adaptation of the scale into Turkish, the Cronbach's alpha internal reliability coefficient of the scale was calculated to be .95. The internal consistency

reliability coefficients for the subscales were as follows: .66 for the 'Preoccupation' subscale, .65 for the 'Tolerance' subscale, .84 for the 'Withdrawal Symptoms' subscale, .62 for the 'Deception' subscale, .66 for the 'Mood Modification' subscale, .58 for the 'Displacement' subscale, .71 for the 'Conflict' subscale, .70 for the 'Problems' subscale, and .65 for the 'Relapse' subscale.

Discussion, Conclusion & Recommendations

In this study, it is aimed to adapt and assess the validity and reliability of the 'Digital Addiction Scale for Children,' developed by Hawi, Samaha, and Griffiths (2019), for fourth-grade elementary school students in our country. It has been stated that the frequent use of technological devices and the lack of control over their usage, along with the way they are used, can lead to physical, social, academic, etc., consequences, even in children and adolescents, as much as in adults (Hazar and Hazar, 2017; Çelik 2022). Language and field experts were consulted to ensure the appropriateness of the translation of the scale and content control. To establish the validity of the Digital Addiction Scale for Children, content and structural validity were tested, and internal consistency coefficients were calculated for the reliability of the scale. Based on the findings obtained in this study, it was concluded that the Turkish version of the scale with 25 items and a structure consisting of 9 sub-factors can be used in a valid and reliable manner for the Turkish primary school students population. In the validated scale, the 'Engagement' subscale comprises 3 items, the 'Psychological State Change' subscale comprises 3 items, the 'Displacement' subscale comprises 3 items, the 'Tolerance' subscale comprises 2 items, the 'Deception' subscale comprises 2 items, the 'Conflict' subscale comprises 2 items, the 'Relapse' subscale comprises 2 items, the 'Withdrawal' subscale comprises 4 items, and the 'Problem' subscale consists of 4 items.

Confirmatory Factor Analysis (CFA) was applied for the instrument to analyze the construct validity. The results obtained from the repeated analysis revealed that the original 9-factor structure with 25 items, as present in the original scale, was consistent and compatible with the Turkish form of the instrument. In the consequence of the CFA, especially the $\chi 2/sd$ ratio was found to be 3.789. Although some studies (Bentler, 1990; Schumacher & Lomax, 2004) suggest that this ratio should be less than 3 to test construct validity, Byrne (2011) stated that this value should be less than 5 in studies with a sample size of more than 250, which is an acceptable level to test construct validity. Furthermore, it was determined that the 9-factor structure of the scale adapted to Turkish had adequate model fit indices (GFI: .906, CFI: .931, NFI: .909, TLI: .903, RMSEA: .060), and the scale was considered to have model fit.

In addition, Cronbach's Alpha internal consistency coefficients of the whole instrument and its subscales were calculated to test the reliability of the scale adapted into Turkish. The original scale had internal consistency coefficients of .94 for the entire scale and between .60 and .87 for the subscales. On the other hand, the Cronbach's alpha value of the Turkish adapted form of the scale was .95 and the coefficients for the sub-dimensions were calculated between .58 and .84. At this point, it was found that the scale adapted to Turkish has internal consistency values parallel to the original scale. Considering the small number of items in the subscales of the scale, it is plausible to assert that the internal consistency coefficients of these subscales have met the adequacy criteria for ensuring the scale's reliability.

Overall, according to results of this study, the Turkish-adapted 'Digital Addiction Scale for Children' is considered to have a sufficient level of construct validity and reliability, as assessed based on the findings obtained from CFA results and internal consistency coefficients. In the literature, although there are scales determining primary school students' levels of Internet

addiction, social media addiction, and gaming addiction; no scales have been found specifically designed to assess the digital addiction levels of primary school students, encompassing all of these concepts (Çelik, 2022; Deniz and Gürültü, 2018; Ünal and Deniz, 2015). It is thought that with this scale, which specifically determines the levels of Digital Addiction, it may be possible to obtain data covering students' use of all the technologies they use, thus fulfilling an important need. With this scale, not only can the digital addiction levels of elementary school students be determined, but also the relationships between students' digital addiction levels and other variables can be examined.

However, considering that the sample of this study consisted only of fourth grade primary school students studying in four districts in the center of Mersin province, it is suggested to actualize studies to ensure the validity and reliability of the Digital Addiction Scale for Children in samples from other regions and provinces of Turkey. It is also predicted that studies to be conducted in larger and different samples will contribute to the validity and reliability of the Digital Addiction Scale for Children by comparing the outcomes reached in this study. In addition, validity and reliability studies can be conducted for the use of the scale at different grade levels in primary school. Considering the lack of adequate scales to measure the digital addiction of primary school students in Turkey at an early age, it is recommended that researchers use the scale whose validity and reliability were tested in this study.

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Geniş Özet

Günümüzde teknolojik cihazların sık kullanılması sonucunda özellikle olumsuz özelliklerinin de etkisiyle dijital bağımlılık kavramı karşımıza çıkmaya başlamıştır. Dijital bağımlılık; İnternet bağımlılığı, cep telefonu bağımlılığı, sosyal medya bağımlılığı ve dijital oyun bağımlılığı türlerini kapsayan geniş bir kavram olarak ele alınmaktadır (Christakis, 2019; Eke, 2019). Dijital cihazların aşırı kullanımı, kullanma isteğini doyuramama, aşırı kullanımdan dolayı aktivitelerin ihmal edilmesi, aşırı kullanımın sosyal ilişkilere zarar vermesi, negatif duygu ve yaşam stresinden bir kaçış aracı olarak kullanma, kullanımı azaltma ve durdurmada problemler yaşama, kullanımın mümkün olmadığı durumlarda gergin ve sinirli olma ve kullanım süresi ve miktarına ilişkin yalan söyleme durumu olarak tanımlanan dijital bağımlılık kavramı bir hastalık olarak da nitelenmektedir (Savcı ve Aysan, 2017). Dijital bağımlılık; internet bağımlılığı, oyun bağımlılığı ve sosyal medya bağımlılığı veya dijital medya bağımlılıklarıyla ilgili yeni ortaya çıkan konuların alt türlerini içeren genel ve kapsayıcı bir terim olarak da ifade edilebilir. Amerikan Psikiyatri Birliği (APA) (2013) tarafından yayınlanan Ruhsal Bozuklukların Tanısal İstatistiksel El Kitabında (DSM 5) dijital bağımlılık kapsamında; internet oyun bozukluğunu (internet gaming disorder) ele almış olup bu bozukluğu daha fazla çalışılmaya ihtiyaç duyulan bir durum olarak tanımlamıştır. Dünya Sağlık Örgütü (2018) de özellikle oyun oynama bozukluğunu bir ruh sağlığı durumu olarak tanımlamıştır. Dahası dijital bağımlılığın sosyal, akademik, ekonomik, mesleki ve fiziksel sorunlara neden olduğu yapılan araştırmalarla ortaya çıkarılmaktadır (Dilci vd., 2019; Uyan, 2021; Young, 1998).

Griffiths (1999) teknolojik bağımlılıkların davranışsal bağımlılıkların bir alt kümesi olarak görülebileceğini belirtmiştir. Bağımlılığın temel bileşenlerinin; dikkat çekme, ruh hali değişikliği, tolerans, yoksunluk belirtileri, çatışma ve nüksetme olmak üzere altı kriterden meydana geldiğini ve bu altı kriteri yerine getiren her türlü davranışın bağımlılık olarak tanımlanabileceğini belirtmiştir. Hawi, Samaha ve Griffihts (2019) yapmış oldukları çalışmada Griffiths (1999) tarafından belirlenen altı temel internet ve oyun bağımlılığı kriteri olan meşguliyet (dikkat çekme), psikolojik durum değişikliği, tolerans, çatışma, nüksetme, yoksunluk kriterlerine ek olarak problemler, aldatma ve yer değişikliği kriterlerini eklemişlerdir. Daha sonra bu kriterleri kullanarak dokuz alt boyuttan oluşan "Çocuklar için Dijital Bağımlılık Ölçeği"ni geliştirmişlerdir.

Dijital bağımlılığın sadece yetişkin bireylerde olmadığı hatta her yaş grubundan bireylerde aynı durumla karşılaşıldığı görülmektedir. Her geçen gün günlük yaşamda ve eğitim ortamlarında

teknolojik cihazların daha yoğun bir şekilde kullanılması özellikle çocuk ve ergenlik dönemindeki bireylerde dijital bağımlılığın gözlenmesine sebep olabilmektedir (Hawi, Samaha ve Griffiths, 2019). Çocuklarda çok erken yaşlarda dijital cihazları (tablet, akıllı telefon vb.) kullanma, dijital oyun oynama, çeşitli videoları yoğunlukla izleme ve hatta sosyal medya kullanma davranışları gözlemlendiği vurgulanmaktadır (Blanchard ve Moore, 2010; Mustafaoğlu et al., 2018; Zimmerman ve Christakis, 2007). Dijital cihazların erken yaşlarda kullanılmasından dolayı çocuklar arasında dijital bağımlılık tehlikesinin mümkün olduğunca erken tespit edilebilmesi için çocuklara yönelik dijital bağımlılıkla ilgili çalışmalara ihtiyaç duyulmaktadır. Bu noktada ilkokul öğrencilerinin dijital bağımlılık düzeyleri ile ilgili çalışmaların çok az olduğu, hatta emekleme aşamasında olduğunu belirtilmiştir (Çelik ve Çelik, 2023). Bağcı (2019) dijital teknolojilerin yanlış kullanımının olumsuz sonuçları arasında yalnız kalan, sosyal hayattan uzak duran asosyal ve dijital bağımlı bireylerin olacağını belirtmiştir. Çeşitli teknoloji (Bilgisayar, İnternet, cep telefonu, sosyal medya, dijital oyun vb.) bağımlılıkları ile ilgili ölçeklerden ziyade küçük yaşlardan itibaren özellikle ilkokul öğrencilerinin dijital bağımlılık düzeylerini ortaya çıkarabilecek geçerli ve güvenilir bir Türkçe ölçme aracının eksikliği dikkat çekmektedir. Bundan dolayı bu çalışmada Türkiye'deki ilkokul 4. sınıf öğrencilerinin dijital bağımlılık düzeylerini ölçmek için uluslararası alan yazında var olan ve Hawi, Samaha ve Griffihts (2019) tarafından geliştirilen "Çocuklar için Dijital Bağımlılık Ölçeği"nin (Digital Addiction Scale for Children) Türkçeye uyarlanması, geçerlilik ve güvenirliğinin sağlanması amaçlanmıştır.

Yöntem

Bu çalışmada Hawi, Samaha ve Griffiths (2019) tarafından 9 ile 12 yaş arasındaki çocukların dijital bağımlıklarını ölçmeyi amaçlayan "Çocuklar için Dijital Bağımlılık Ölçeği"nin Türk kültürüne uyarlanması için öncelikle ölçekte İngilizce olarak oluşturulan maddeler Türkçeye çevrilmiş ve dil açısından doğru ve kapsayıcı bir çeviri olması hedeflenmiştir. Çalışmaya 2022-2023 eğitim-öğretim döneminde Mersin ilinin merkez ilçelerindeki (Akdeniz, Mezitli, Toroslar ve Yenişehir) devlet ilkokullarından uygun örnekleme yöntemi ile belirlenen 771 ilkokul 4. sınıf öğrencisi katılmıştır. Bu öğrencilerin 464'ü (%60,2) kız öğrenci iken 307'si (%39,8) erkek öğrencidir. "Çocuklar için Dijital Bağımlılık Ölçeği" 25 maddeden ve 9 alt boyuttan oluşmaktadır. Bu alt boyutlar 'Meşguliyet', 'Tolerans', 'Yoksunluk', 'Aldatma', 'Psikolojik Durum Değişikliği', 'Yer Değiştirme', 'Çatışma', 'Problem' ve 'Nüksetme' olarak isimlendirilmiştir. Ölçek özgün yanıtlama biçimlerinden 5'li likert tipi ölçekleme yapısındadır. Ölçekten en yüksek 125 puan, en az ise 25 puan alınabilmektedir.

Ölçekte yer alan maddeler iki İngilizce Öğretmeni, bir Sınıf Öğretmeni ve bir Bilgisayar ve Öğretim Teknolojileri Eğitimi (BÖTE) Bölümü öğretim üyesi tarafından Türkçeye çevrilmiştir. Daha sonra BÖTE alan uzmanı iki öğretim üyesinden Türkçeye çevrilen maddeler için uzman görüşü alınmıştır. Ölçeğin Türkçeye çevrilen maddelerinin hedef grubu tarafından anlaşılıp anlaşılmadığını kontrol etmek için Mersin ilinde eğitim gören 14 ilkokul 4. Sınıf öğrencisi ile odak grup görüşmesi yapılmıştır. Daha sonra ölçek maddeleri 2 farklı İngilizce Öğretmeni tarafından tekrar Türkçeden İngilizceye çevrilerek ölçeğin orijinal İngilizce formundaki her madde ile karşılaştırılıp, dil çevirisinde bir anlam kayması olup olmadığı kontrol edilmiştir.

Çocuklar için Dijital Bağımlılık Ölçeği'nin Türkçeye uyarlanması sürecinde ölçeğin yapı geçerliliğinin test edilebilmesi için Doğrulayıcı Faktör Analizi (DFA) gerçekleştirilmiştir. Model-veri uyumunu test etmek amacıyla gerçekleştirilen DFA sonucunda ortaya çıkarılan istatistiklerden Ki-Kare Uyum (CMIN-χ2) istatistiği, örneklem büyüklüğü arttıkça özellikle 250'den fazla

örneklem içeren durumlarda daha hassas olabildiği için ki-kareye ek olarak ölçeğin yapı geçerliğini incelemek için χ2/sd, Uygunluk indeksi (GFI), Karşılaştırmalı Uygunluk İndeksi (CFI), Normlaştırılmış Uyum İndeksi (NFI) ve Yaklaşık Hataların Ortalama Karekökü (RMSEA) indeksleri dikkate alınmıştır.

Bulgular

Çocuklar için Dijital Bağımlılık Ölçeği Türkçe uyarlamasının model uyumunu belirlemek için gerçekleştirilen DFA sonucunda 9 faktör ve toplamda 25 maddeden oluşan faktör yapısının ki-kare uyum değerinin (χ2=905.572, Sd=239, p=.00) anlamlı olduğu bulunmuştur. Taslak ölçeğin model uyumuna ilişkin olarak CMIN/sd değeri ise 3.789 olarak hesaplanmıştır. Ayrıca, modele ilişkin uyum indeks değerleri ise RMSEA: .060, GFI: .906, CFI: .0931, NFI: .909 ve TLI: .913 olarak bulunmuştur. Yapılan DFA sonuçları 9 faktörlük ve 25 maddelik ölçeğin iyi uyum değerine sahip olduğunu göstermiştir. Veriler yorumlanırken Byrne (2011) tarafından önerilen iyi derece uygunluk değerleri arasında katılımcı sayısı 250'den fazla ve madde sayısının da ölçekte 25 olduğu için ilgili referans değerlere göre değerlendirilmiştir. Bu değerlendirme neticesinde; veri uyumunun önemli göstergelerinden biri olan örneklem sayısının 250'den büyük olan modellerde χ2/sd oranın 5'in altında olması iyi bir uyumun olduğunun göstergelerinden kabul edilmekte olup bu çalışmada χ2/sd oranı 3.789 bulunmuştur. Ölçeğin uyumuna ilişkin RMSEA değerine bakılmış ve bu değerin .060 olduğu görülmüştür. RMSEA değerinin ise .07'den düşük olduğu da belirlenmiştir. Tüm bu uyum indeksi değerleri iyi derecede uygunluk değerleri ile karşılaştırıldığında, Türkçeye uyarlanan ölçeğin orijinal ölçekteki faktörler açısından iyi düzeyde uyum sağladığı ve Türkiye örnekleminde de orijinal ölçekteki yapıya benzer sonuçlara ulaşıldığı söylenebilir.

Ölçeğin Türkçeye uyarlanmasında 771 ilkokul 4. Sınıf katılımcısından elde edilen verilerin sonuçlarına göre ölçeğin Cronbach alfa iç güvenirlik katsayısını .95 olarak bulunmuştur. Alt boyutlarına göre iç güvenirlik katsayıları ise Meşguliyet alt boyutu için .66, Tolerans alt boyutu için .65, Yoksunluk alt boyutu için .84, Aldatma alt boyutu için .62, Psikolojik Durum Değişikliği alt boyutu için .66, Yer Değiştirme alt boyutu için .58, Çatışma alt boyutu için .71, Problemler alt boyutu için .70 ve Nüksetme alt boyutu için .65 şeklindedir.

Tartışma ve Sonuç

Sonuç olarak bu çalışma kapsamında Türkçeye uyarlanan "Çocuklar için Dijital Bağımlılık Ölçeği"nin, elde edilen bulgulara göre DFA sonuçları ve iç güvenirlik katsayıları ışığında yeterli düzeyde yapı geçerliği ve güvenirliğe sahip olduğu değerlendirilmektedir. Alan yazında ilkokul öğrencilerinin teknolojik bağımlılıkları ile ilgili çalışmalarda öğrencilerin İnternet bağımlılığı, sosyal medya bağımlılığı ve oyun bağımlılığı düzeylerini belirleyen ölçekler olsa da; bu kavramların tamamını kapsayan ilkokul öğrencilerinin dijital bağımlılık düzeylerini belirlemeye yönelik ölçeklere rastlanmamıştır (Çelik, 2022; Deniz ve Gürültü, 2018; Ünal ve Deniz, 2015). Öğrencilerin kullandıkları teknolojilerin tamamına yönelik olarak özellikle Dijital Bağımlılık düzeylerini belirleyen bu ölçek ile öğrencilerin teknolojik cihaz ve sistemlere yönelik kullanımlarını kapsayan bir veri elde etmenin mümkün olabileceği ve önemli bir ihtiyacın karşılanabileceği düşünülmektedir. Bu ölçek ile hem ilkokul öğrencilerinin dijital bağımlılık düzeyleri belirlenebilecek hem de öğrencilerin dijital bağımlılık düzeyleri ile diğer değişkenler arasındaki ilişkiler incelenebilecektir.