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Digital Addiction Scale for Preschoolers (DASP): A Validity and Reliability Study

Ensar YILDIZ ¹, Sibel KARABEKMEZ ², Umur ÖÇ ³, Ayşenur KOÇ ⁴

Abstract

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The objective of this study is to develop a valid and reliable measurement tool to assess digital addiction in preschool children aged 5-6 years. The survey model, one of the quantitative research designs, was used in this research. The study population consists of children aged 5-6 from a provincial center in the Central Anatolia Region of Turkey. A total of 361 children participated: 204 in the EFA (including 65 in the pilot) and 157 in the CFA. Additionally, criterion validity was assessed through an additional application involving 50 children. An Exploratory Factor Analysis (EFA) was conducted first to assess validity and reliability, followed by a Confirmatory Factor Analysis (CFA). The scale's reliability was evaluated using Cronbach's Alpha, which yielded a value of 0.836. The total explained variance was found to be 58.662%. Based on the results of this study, the DASP was developed as a valid and reliable scale for measuring digital addiction in preschool children, comprising four dimensions: excessive use, uncontrolled use, unconscious use, and inability to quit. Within this context, the scale developed in the present study represents the first measurement tool specifically designed to assess digital addiction among preschool children aged 5-6 years and enables data collection directly from the children.

Okul Öncesi Dönem Çocukları İçin Dijital Bağımlılık Ölçeği (ODBÖ): Geçerlik ve Güvenirlik Çalışması

Özet

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Bu çalışmanın amacı, 5-6 yaş okul öncesi çocuklarda dijital bağımlılığı değerlendirmek için geçerli ve güvenilir bir ölçme aracı geliştirmektir. Bu çalışmada nicel araştırma türlerinden biri olan tarama modeli kullanılmıştır. Çalışmanın evrenini, Türkiye'nin İç Anadolu Bölgesi'ndeki bir il merkezindeki 5-6 yaş grubu çocuklar oluşturmaktadır. Pilot uygulamada 65 çocuk, Açıklayıcı Faktör Analizi'ne (AFA) katılan 204 çocuk ve Doğrulayıcı Faktör Analizi'ne (DFA) katılan 157 çocuk olmak üzere toplam 361 çocuk çalışmaya katılmıştır. Ayrıca 50 çocukla yapılan bir uygulama ile ölçüt geçerliği değerlendirilmiştir. Geçerlik ve güvenilirlik değerlendirmeleri için önce Açıklayıcı Faktör Analizi (AFA), ardından Doğrulayıcı Faktör Analizi (DFA) yapılmıştır. Ölçeğin güvenilirliği Cronbach's Alpha kullanılarak değerlendirilmiş ve 0.836 değerine ulaşılmıştır. Açıklanan toplam varyans %58,662 olarak bulunmuştur. Bu çalışmanın sonuçlarına dayanarak okul öncesi çocuklarda dijital bağımlılığı ölçmek için aşırı kullanım, kontrolsüz kullanım, bilinçsiz kullanım ve bırakamama olmak üzere dört boyutu kapsayan geçerli ve güvenilir bir ölçek geliştirilmiştir. Bu bağlamda, mevcut çalışmada geliştirilen ölçek 5-6 yaş grubu okul öncesi çocuklarda dijital bağımlılığı değerlendirmek üzere özel olarak geliştirilen ilk ölçüm aracı olup verilerin doğrudan çocuklardan toplanmasına olanak tanımaktadır.

¹ Asst. Prof. Dr., Sivas Cumhuriyet University, Department of Basic Education, ensaryildiz@outlook.com.tr

² Asst. Prof. Dr., Agri Ibrahim Cecen University, Department of Child Care and Youth Services, skarabekmez@gmail.com

³ Dr., Ministry of National Education, umur586@hotmail.com

⁴ Scientific Expert, Sivas Cumhuriyet University, Department of Basic Education, kocaysenur0@gmail.com



1. Introduction

The integration of digital technologies in our daily lives has significantly increased children's interaction with screens, particularly in early childhood (Canadian Paediatric Society DHTF, 2017). Recent studies report that children under 8 spend an average of 2.5 hours per day using digital screens (e.g., Common Sense Media, 2025; Ponti, 2023). Specifically, devices such as tablets, smartphones, gaming consoles, and computers play an important role in meeting preschool children's educational, entertainment, and social communication needs. This situation may have both positive and negative effects on children's social, cognitive, and emotional development during the preschool period (Rideout, 2017).

The preschool period represents a critical developmental stage during which children acquire fundamental cognitive and social skills (Shonkoff & Phillips, 2000). Excessive screen exposure during this period may lead to negative outcomes, including attention deficits, impulsivity, sleep problems, and reduced social interaction (Radesky et al., 2016). Research demonstrates that excessive digital media use, particularly in the 0-6 age group, may constitute a risk factor for children's developmental processes (World Health Organization [WHO], 2019) and may also carry the risk of digital addiction.

Digital addiction is defined as individuals' excessive and uncontrolled use of digital devices, inability to cease usage, and consequent negative impacts on their daily lives (Young, 1998). For preschool children, digital addiction may manifest through various symptoms. For instance, children may withdraw from social interactions by spending extended periods in front of screens, lose interest in physical activities, and exhibit diminished motivation for play (Radesky et al., 2016). Moreover, they may experience tantrums, restlessness, and difficulty calming down when separated from digital devices (Konok et al., 2017). Their unconscious exposure to age-inappropriate content may lead to passivity in learning processes and reduced attention spans (Christakis, 2009).

Consistent with previous literature, excessive or problematic digital media use is not defined solely by screen time; rather, it is characterized by indicators such as impaired functioning, loss of control, and conflict in daily life (Domoff et al., 2019a). Accordingly, this study does not adopt a clinical diagnostic approach; instead, it aims to examine early behavioral indicators of digital addiction within a developmental framework. In this context, digital addiction is conceptualized not as a clinical disorder, but as a developmental and behavioral pattern characterized by loss of control, compulsive use, emotional responses when access is restricted, and behavioral persistence. This conceptualization is based on key features highlighted in the behavioral addiction literature and in studies of media use in early childhood (Billieux et al., 2015; Radesky & Christakis, 2016). Therefore, the aim of the study is not to label children with a clinical disorder, but to reveal early behavioral tendencies that may indicate increasing vulnerability in later developmental stages, and thus the use of the term "digital addiction" reflects a developmental rather than a clinical perspective.

As digital addiction symptoms manifest differently in early childhood, measurement tools appropriate for this age group are required. Existing digital addiction scales have mostly been developed for adolescents and adults (Lemmens et al., 2009; Young, 1998), while the number of scales for early childhood remains quite limited (Domoff et al., 2019b). Digital addiction in preschool children may present through symptoms such as excessive screen time, resistance to control, and restlessness when deprived of digital devices (Radesky & Christakis, 2016). However, the scarcity of developmentally appropriate scientific measurement tools for preschool children makes it difficult to systematically assess these symptoms, indicating an important methodological need for researchers and practitioners. To address this deficiency, the current study developed an original assessment tool consisting of four fundamental dimensions—excessive use, inability to quit, unconscious use, and uncontrolled use—based on Young's (1998) definition of digital addiction, Griffiths' (2005) components of addiction, and the developmental characteristics of preschool children.

1.1. The Concept of Digital Addiction and Its Effects on Children

Digital addiction represents a type of behavioral addiction resulting from excessive and uncontrolled use of technological devices and digital platforms, including internet use, social media, digital games, and mobile devices. This form of addiction has become increasingly prevalent, particularly among children and adolescents. Similar to traditional addiction models, digital addiction is characterized by individuals' inability to control their behavior, difficulty limiting usage time, and manifestation of withdrawal symptoms when separated from digital devices (Griffiths, 2005).

Children are particularly vulnerable to digital addiction due to their easy access to digital devices and the entertaining content these devices provide. Furthermore, the incomplete nature of children's cognitive and emotional development increases their risk of digital addiction. Digital addiction may negatively affect children's academic achievement, social relationships, physical health, and psychological well-being (Anderson & Jiang, 2018).

Digital addiction has significant effects on children's physical, psychological, and social development. Physical effects include obesity, sleep disorders, and vision problems. Psychological effects encompass various mental health issues such as anxiety, depression, attention deficits, and self-esteem problems (Twenge & Campbell, 2018). Regarding social effects, digital addiction may negatively impact children's family and peer relationships. Children excessively dependent on digital devices withdraw from real-world social interactions, potentially leading to problems such as loneliness and social isolation (Primack et al., 2017). The preschool period is particularly critical, during which children's social and emotional skills develop. Digital addiction emerging in early childhood may negatively affect children's social relationships, communication skills, and attention spans (Çelik & Çelik, 2023).

When examining definitions of digital addiction in the literature, this phenomenon appears to be conceptualized through various dimensions. Four fundamental behavioral categories-excessive use, inability to quit, unconscious use, and uncontrolled use-may be considered as primary indicators of digital addiction.

1.1.1. The Excessive Use Dimension

Excessive use represents one of the most apparent dimensions of digital addiction. This dimension relates to children using digital devices for durations substantially exceeding recommended limits, with consequent negative impacts on their daily lives. Excessive use may lead children to neglect schoolwork, disrupt sleep patterns, and reduce physical activity (Matthias et al., 2022).

Underlying reasons for excessive use include the rapid reward mechanisms provided by digital devices and children's easy access to these devices. In particular, digital games and social media platforms are designed to capture children's attention and sustain their engagement for extended periods. This impairs children's time perception and leads to excessive dependence on digital devices (Gentile et al., 2011).

1.1.2. The Inability to Quit Dimension

The inability to quit dimension refers to difficulties children experience in ceasing digital device use. This dimension represents one of the most significant indicators of digital addiction and is associated with children displaying negative emotional reactions such as restlessness, irritability, and anxiety when separated from digital devices (Kuss & Griffiths, 2012).

The inability to quit dimension particularly relates to children developing emotional attachments to digital devices. Children may use digital devices as a form of escape mechanism and feel incomplete when separated from these devices. This situation reinforces children's dependence on digital devices and makes cessation more difficult (Young, 1996; 1998).

1.1.3. The Unconscious Use Dimension

Unconscious use refers to children losing their sense of time and space when using digital devices and lacking awareness of their negative effects. This dimension is characterized by children not realizing how much time they spend using digital devices and ignoring the negative health impacts of these devices (Shanmugasundaram & Tamilarasu, 2023).

Unconscious use is particularly associated with children focusing on content from digital devices and remaining under its influence. Children lose track of time while engaging with digital content and underestimate the time they spend using these devices. This leads to children becoming excessively dependent on digital devices while remaining unaware of these devices' negative effects (Rideout et al., 2010).

1.1.4. The Uncontrolled Use Dimension

Uncontrolled use refers to children's inability to control their behavior when using digital devices and their difficulty limiting their use. This dimension represents one of the most serious indicators of digital addiction and refers to the loss of control children experience when using digital devices (Davis, 2001).

Uncontrolled use is particularly associated with children's excessive desire for content from digital devices and their difficulty regulating their consumption. Children cannot stop themselves when using digital devices and struggle to limit usage. This situation increases children's dependence on digital devices and exacerbates the negative effects of these devices (Brand et al., 2014).

1.2. The Importance of the Research

The rapid dissemination of digital technologies has led to children spending more time with screens from an early age (Plowman, 2016). This increased interaction may have both supportive and limiting effects on preschool children's cognitive, social, and emotional development (Neumann, 2016). However, the limited number of valid and reliable

scales capable of measuring digital addiction behaviors in this age group necessitates more in-depth investigation of this issue (Kabali et al., 2015).

The importance of developing a digital addiction scale for preschool children directly relates to this age group's increased digital media exposure and potential accompanying addiction problems. Most research on digital addiction has focused on older age groups (adolescents and university students) and primarily on subcategories of digital addiction, such as digital game addiction and internet addiction (Altınok, 2021; Hazar & Hazar, 2017; Kaçmaz et al., 2023; Kuss & Griffiths, 2012; Lemmens et al., 2009; Taş, 2019). While research focuses on understanding the long-term consequences of digital habits established in early childhood, there remains a need to develop a scale for digital addiction during the preschool period.

Kuss and Griffiths (2012) examined digital media use through various dimensions, including excessive, uncontrolled, and unconscious use, identifying addiction-related symptoms. Taş (2019), having developed an internet addiction measurement scale for adolescents, tested this scale on a large sample. Based on the DSM-5 criteria for Internet Gaming Disorder, the scale consists of 9 items. It is structured as a single-factor model, reflecting the overall severity of internet addiction. The items evaluate behaviors such as preoccupation with internet use, increased time spent online, failed attempts to reduce use, withdrawal symptoms, neglect of academic or social responsibilities, and continued use despite negative consequences. In a study by Kaçmaz et al. (2023), the Digital Addiction Scale for Children was adapted into Turkish, with its reliability and validity tested through psychometric analyses. Conducted with 326 secondary school students, the study's results demonstrated the scale's suitability for measuring children's digital addiction levels. Although these studies did not target preschool children, their commonality lies in examining digital addiction through various dimensions and systematically identifying addiction-related symptoms.

When examining studies on digital addiction during the preschool period, some research has focused on parents' frequency of technology use and its reflection on children. For example, Yengil et al. (2019) investigated children's frequency of technology interaction and highlighted the influence of parents' usage habits on children. In this context, a specialized scale is needed to determine children's digital addictions. However, some studies have focused on digital/computer game addiction, one category of digital addiction. Budak and Işıkoğlu (2022) developed valid and reliable scales to measure digital game addiction tendencies in early childhood and determine parents' guidance strategies. In another study, Budak and Işıkoğlu (2023) revealed the effects of strategies parents implement to detect and prevent digital game addiction risks. This study aimed to determine the relationship between parents' strategies and children's digital game addiction levels. Ünsal and Ulutaş (2019) investigated the psychometric properties of a computer game addiction scale developed for preschool children, revealing the extent to which digital game addiction can be observed in this age group. Darga (2021) examined the effect of digital games children play at home on parental behavior, showing that such interactions shape children's digital consumption habits. The 'Problematic Media Use Measure' scale developed by Domoff et al. (2019b) represents a parent-report scale measuring children's media addiction levels. The scale's validity was established, presenting criteria for media addiction in children. This study serves as an important tool for assessing potential addiction risks associated with children's media use during the preschool period. Although these studies address different research areas and methods related to digital addiction in the preschool period, they share common themes including parental influence, digital game addiction, screen media addiction, problematic media use, and psychometric analyses. However, differences between studies reveal diversity among subcategories and methodological approaches related to digital addiction. While these differences enable the development of a more comprehensive and versatile understanding of digital addiction, they also emphasize the need to develop specialized scales targeting digital addiction detection in the preschool period.

Digital media use's effects on children's developmental processes are also important. According to Canseven et al. (2021), digital addiction associates with some of the children's physical and cognitive skills. Research demonstrates that digital addiction negatively affects children's developmental abilities. Additionally, Kaya (2021), emphasizing digital literacy's importance, proposes teaching methods for healthy interaction with technological tools and digital media. In this context, an early childhood addiction scale could contribute to developing programs aimed at instilling healthy digital habits. Therefore, accurate assessment of preschool children's digital addiction risks can provide important information for both families and educators. The digital addiction scale developed for preschool children represents a critical tool both for determining risks related to children's developmental processes and enabling parents and educators to develop effective strategies. Such a scale may lay the groundwork for future generations to develop healthy technology use habits by monitoring digital addiction acquisition processes at early stages.

The current scale was developed to understand how digital addiction manifests during the preschool period and provide a reliable assessment tool guiding parents and professionals. This scale makes an important contribution to the literature by enabling assessment of digital addiction levels in 5-6-year-old preschool children, facilitating early

interventions, and preventing potential risks that may emerge in later years. A unique aspect of the digital addiction scale developed for preschool children is that children can respond to this scale directly. In this regard, the scale's importance and advantages can be listed as follows:

The digital addiction scale's direct completion by children emphasizes the importance of a child-centered approach. When children can express their own experiences and feelings, they can communicate their emotions and thoughts more clearly. Obtaining information about children's digital media use from their own perspective provides more authentic and genuine data than external assessments by parents and teachers.

Early detection of digital addiction tendencies is critically important for preventing potential negative effects on children's developmental processes. By administering this scale to children and having them express their own experiences, teachers, parents, and researchers can accurately analyze children's relationships with digital media using this data.

Children's ability to respond directly to this scale may also facilitate data collection. In assessments based on parent or teacher observations, cognitive biases and subjective judgments may influence results. However, when children express their own experiences and perceptions, more accurate and reliable data may emerge.

Identifying digital addiction in early childhood is critically important for preventing potential developmental risks (Shonkoff & Phillips, 2000). This developed scale enables a comprehensive assessment of children's digital addiction behaviors through Excessive Use, Inability to Quit, Unconscious Use, and Uncontrolled Use dimensions. In this context, this study's primary purpose is to develop the 'Digital Addiction Scale for Preschoolers (DASP)' and to determine its validity and reliability.

2. Method

2.1. Research Model

The survey model, one of the quantitative research types, was used in this research. Survey research provides an opportunity to quantitatively describe trends, attitudes, and perceptions generally observed in the population by analyzing data collected from samples (Creswell & Creswell, 2017). In this research, the survey model was also used to measure children's digital addiction.

2.2. Participants

The study group was determined using criterion sampling within the purposive sampling framework. Criterion sampling involves selecting individuals for the study group based on predetermined criteria (Palinkas et al., 2015). Considering children's cognitive development levels, being between 5 and 6 years of age and demonstrating typical development were defined as the inclusion criteria, and data were collected from children who met these criteria. Following the criteria proposed by Tabachnick and Fidell (2007) and DeVellis (2014), sample sizes of approximately 200 are considered adequate, 300 are good, 500 are very good, and 1,000 or more are excellent. Accordingly, these benchmarks were taken into consideration in determining the sample size of the present study. In this context, a total of 361 children (172 boys and 189 girls; M_{age} : 5.6 years) participated in the study, including 65 children involved in the pilot testing phase who were also incorporated into the exploratory factor analysis (EFA) sample ($n = 204$), while data for the confirmatory factor analysis (CFA) were collected from a different, independent sample of 157 children. Additionally, 50 children participated in criterion validity testing.

2.3. Scale Development

The Digital Addiction Scale for Preschoolers (DASP) was developed as part of the research. During this process, relevant literature and similar addiction scales were reviewed (Budak & Işıkoğlu, 2022; Domoff et al., 2019b; Griffiths, 2005; Young, 1998). In accordance with the research purpose, an item pool was created that considered the developmental characteristics of 5-6-year-old children. In the literature, digital addiction has been examined within dimensions including excessive use, inability to quit, unconscious use, and uncontrolled use. Accordingly, items were created for all these dimensions. Initially, 65 items were included in the Digital Addiction Scale for Preschoolers (DASP). To establish content validity, expert opinions were obtained from a panel of five specialists, including three experts in early childhood education and two experts in educational measurement and evaluation. Experts were asked to evaluate each item on relevance, clarity, and developmental appropriateness. Overall, the experts indicated that the items were appropriate for the intended age group and that no major revisions were necessary. Initially,

children were planned to respond to scale items using smiley, neutral, and sad face stickers. However, based on expert feedback, a Likert-type scale format was deemed appropriate. Following recommendations, children were planned to respond to items using small, medium, and large star stickers. Children responded to each item using a three-point Likert-type format represented by small, medium, and large star stickers. The small star indicated low agreement/low frequency (score = 1), the medium star indicated moderate agreement/frequency (score = 2), and the large star indicated high agreement/high frequency (score = 3). Prior to data collection, children were provided with standardized explanations and practice examples to ensure understanding of the response format.

2.4. Data Collection

Data collection occurred during the fall semester of the 2024-2025 academic year. Before collecting the data, ethical approval was obtained from the Ethics Committee of the Sivas Cumhuriyet University Rectorate Educational Sciences Research Proposal Ethics Evaluation Board, dated April 30, 2023, with decision number E-50704946-100-290374. After obtaining necessary ethics committee and ministry approvals, information about the research was provided by visiting official independent kindergartens and primary schools in a Central Anatolian province in Turkey. 'Voluntary Participation Forms (Parental Permission Forms)' and 'Child Information Forms' were distributed to teachers. Teachers contacted children's families to forward these forms and collected them after completion. Children whose parents permitted participation were individually interviewed to confirm their willingness to participate, and the scale was administered to those who consented. The scale was administered face-to-face to children in a quiet environment in a classroom at school.

The 65-item draft scale was administered face-to-face to 65 children for pilot testing. During the pilot study, item analysis was conducted by examining corrected item-total correlations and item discrimination indices. Items with corrected item-total correlation coefficients below .30 were considered weak and were removed from the scale in line with commonly accepted psychometric criteria. In addition, items that failed to discriminate between participants adequately were excluded (DeVellis, 2014; Field, 2018). Based on these criteria, a total of 40 items were removed following the pilot administration. Subsequently, data were collected from 204 children using the second draft of the 25-item scale. An additional 10 items that did not correspond to the factor structure or showed cross-loadings were removed. Data were collected again from 157 children to confirm the structure identified through exploratory factor analysis. Then, the DOBE scale (Budak & Işıkoğlu, 2022) and the DASP scale were co-administered to 50 children to test criterion validity. The DOBE scale used in this study is a valid and reliable instrument developed by Budak and Işıkoğlu (2022) to assess children's tendencies toward digital game addiction in early childhood. Data collection lasted approximately three months.

2.5. Data Analysis

Following data collection with the draft scale form, construct validity studies were conducted. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed within the scope of construct validity. Before conducting the EFA, the analysis requirements were examined, including sample size, multivariate normality, missing data, and outliers. Examining these requirements helps reduce potential problems resulting from EFA (Çokluk et al., 2021). All EFA procedures were performed using SPSS 26. After testing EFA assumptions, EFA with Varimax rotation was conducted to determine the scale's factor structure and item distributions. To verify the EFA model, new data were collected, and CFA was performed in Jamovi 2.6 (Gallucci & Jentschke, 2021). Following CFA, fit indices were examined. Correlation analysis was performed for criterion validity. To assess the scale's reliability, Cronbach's alpha coefficients were computed for the subscales.

3. Findings

This section presents evidence of the scale's construct validity in terms of its operations. Cronbach's alpha reliability coefficients were also examined. Findings Related to Exploratory Factor Analysis (EFA) The Kaiser-Meyer-Olkin (KMO) test was performed to assess sample adequacy, yielding a KMO value of 0.812. Field (2000) stated that KMO values should be at least 0.50, while Leech et. al. (2008) noted that KMO values between 0.80-0.90 indicate "good" sample adequacy. Thus, the study's sample size was good for EFA. Bartlett's Sphericity Test was applied to assess the

homogeneity of variances and a statistically significant result was obtained ($\chi^2(105)=594.613$, $p<.05$). This result indicates that the correlations between the items are sufficient for factor analysis.

Missing data and outlier analyses were performed, confirming the absence of such values. After testing EFA assumptions, analysis commenced to determine the scale's factor structure and item distributions. Various approaches exist for determining factor structures in EFA. The Kaiser method and Cattell method represent two such approaches. Kaiser (1960) proposed that the number of factors with eigenvalues greater than 1 determines the number of factors. Cattell (1966) facilitates the determination of factor number by displaying factors on a scree plot. Thompson (2004) noted that Cattell's method is more effective than Kaiser's for determining scale factors. The current study employed both methods to determine the scale's factor structure.

The factor structure of the scale is presented in Table 1.

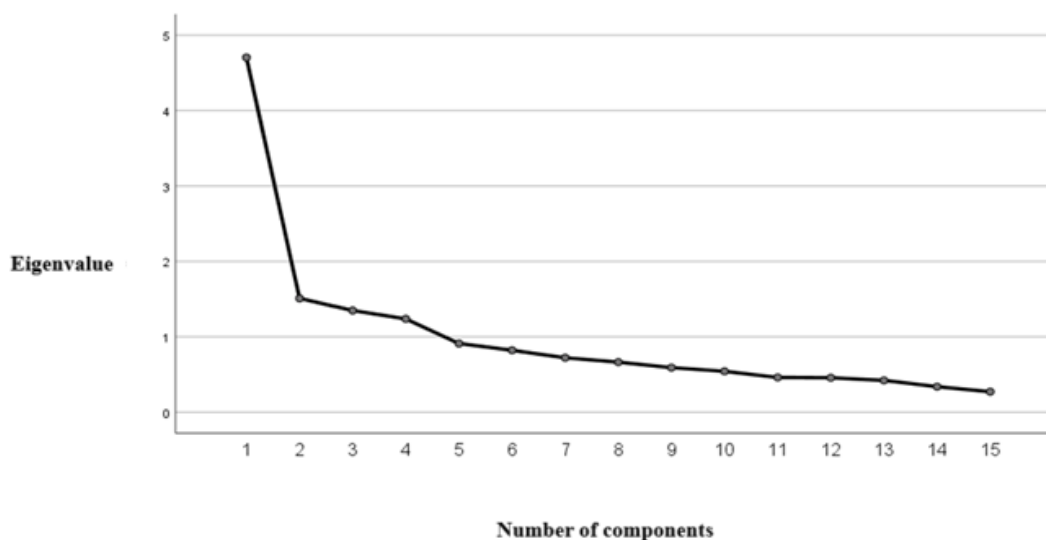
Table 1. The Factor Structure of The Scale

Factors	Eigenvalue	Total variance explained (%)	Total variance (%)
1	2.937	19.580	19.580
2	2.148	14.319	33.899
3	1.901	12.671	46.570
4	1.814	12.092	58.662

When Table 1 is examined, it is seen that the eigenvalue number of the scale greater than 1 is 4. It can be said that the scale consists of 4 dimensions (factors) within the scope of the Kaiser method. In addition, it was determined that the 4 dimensions included in the scale explained 58.662% of the total variance. It was determined that the first dimension explained 19.580% of the total variance, the second dimension explained 14.319% of the total variance, the third dimension explained 12.671% of the total variance. The fourth dimension explained 12.092% of the total variance.

To determine the number of factors using the Cattell method, the scree plot was also examined. The scree plot is shown in Figure 1.

Figure 1. Scree Plot



When Figure 1 is examined, it is evident that the components after the 5th point do not contribute sufficiently to the variance, and the slope plateaus after that point. When determining the number of factors, the lines between the points on the graph, up to the point where the slope begins to plateau, provide information about the number of factors (Gorsuch, 1974). This supports the result obtained from the Kaiser method and shows that the scale consists of 4 dimensions.

After determining the factor structure of the scale, the factor distribution of each item and the factor load values are presented in Table 2.

Table 2. Factor Distribution of The Scale Items

Items	F1	F2	F3	F4	Item-Factor- Total Test Correlation	Item-Total Correlation	Cronbach's Alpha if Item Removed
M8	0.680				.610	0.551	0.821
M9	0.753				.527	0.464	0.826
M13	0.586				.558	0.604	0.817
M16	0.497				.486	0.533	0.822
M18	0.688				.530	0.473	0.825
M19	0.665				.599	0.579	0.819
M28		0.543			.319	0.316	0.835
M31		0.722			.479	0.559	0.82
M32		0.813			.602	0.485	0.825
M10	0.308		0.688		.414	0.343	0.834
M17			0.790		.512	0.321	0.835
M30			0.564		.354	0.544	0.821
M20	0.305			0.650	.458	0.443	0.827
M21				0.778	.507	0.380	0.831
M26				0.733	.378	0.290	0.836

When Table 2 is examined, there are 6 items in the dimension of 1, and the factor loads of these items vary between 0.497 and 0.753; there are 3 items in the dimension of 2, and the factor loads of these items vary between 0.543 and 0.813; there are 3 items in the dimension of 3, and the factor loads of these items vary between 0.564 and 0.790; it is observed that there are 3 items in the dimension of 4, and the factor loads of these items vary between 0.650 and 0.778. It is considered good if the factor loads of the substances are higher than 0.45 (Field, 2018). It is observed that the substances numbered M10 and M20 settle in more than one dimension. In the literature, it is stated that the difference between the factor loads of substances settled in more than one dimension should be greater than 0.1, and the value in at most one factor should be greater than 0.32 (Çokluk et. al., 2021). The difference between the factor loads of the substances settled in more than one dimension should be greater than 0.1. In this context, when the difference between the factor loads of the dimensions in which the relevant substances were settled was examined, it was determined that this difference (M10 and M20>0.1) was greater than 0.1. In addition, since the factor load values of these substances in the additional dimensions in which they are located are less than 0.32, which is the limit value, these substances were not determined as boarding substances and were left on the scale.

It was determined that the factor total test correlation values of the items included in the scale ranged between 0.319 and 0.610, and the item total test correlation values ranged between 0.290 and 0.604. Although it was found that the item total test correlation value of M26 was low from the items included in the scale, it was determined that the removal of the relevant item from the scale did not change the Cronbach Alpha value, but the item was not removed from the scale because it contributed to the scale.

After the exploratory factor analysis, the placement of the items in the dimensions was completed, and each dimension was named. The naming of the dimensions and the state of placement of the items in the dimensions, and the explained variance values are included in Table 3.

Table 3. Distribution of Items in The Scale According to Dimensions

Dimensions	Items	Explained variance
Inability to quit (D1)	M8	19.580
	M9	
	M13	
	M16	
	M18	
	M19	
Uncontrolled use (D2)	M28	14.319
	M31	
	M32	
Excessive use (D3)	M10	12.671
	M17	
	M30	
Unconscious use (D4)	M20	12.092
	M21	
	M26	
Total		58.662

When Table 3 is examined, the dimension ‘Inability to quit’ is D1, consisting of 6 items. The dimension ‘Uncontrolled use’ is D2, consisting of 3 items. The dimension ‘Excessive use’ is D3, consisting of 3 items. The dimension ‘Unconscious use’ is D4, consisting of 3 items.

In order to determine the relationship between the factor structures of the scale, correlation analysis was performed. The results of the correlation analysis are presented in Table 4.

Table 4. The Results of the Correlation Analysis

Dimensions	D1	D2	D3	D4	Scale total
Inability to quit	1.000	0.475**	0.450**	0.397**	0.875**
Uncontrolled use	0.475**	1.000	0.368**	0.330**	0.715**
Excessive use	0.450**	0.368**	1.000	0.201*	0.666**
Unconscious use	0.397**	0.330**	0.201*	1.000	0.621**
Scale total	0.875**	0.715**	0.666**	0.621**	1.000

** p< 0.01 * p<0.05

When Table 4 is examined, it is seen that there is a significant and positive relationship between the factors included in the scale.

3.1. Findings Regarding Confirmatory Factor Analysis (CFA)

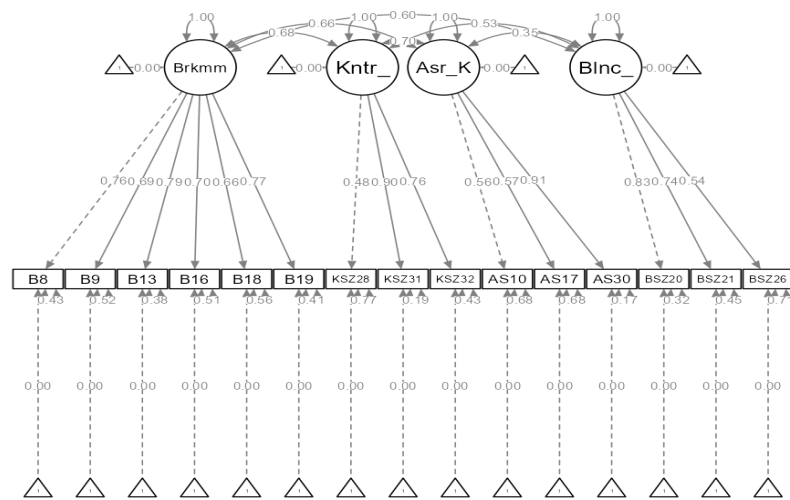
Confirmatory factor analysis is a technique used to test the validation of a predefined model (Çokluk et. al., 2021). In addition, confirmatory factor analysis can be used as a complement to each other with exploratory factor analysis in the scale development process (Erkuş, 2014). Confirmatory factor analysis is also used to confirm the theoretical structure (Maruyama, 1997). In this context, the aim of this study is to evaluate the structure validity in confirmatory factor analysis (Floyd & Widaman, 1995) and to analyze the dimensions in the context of the relationships between the variables (Kline, 2005).

In the current study, confirmatory factor analysis was performed on the four-dimensional structure obtained as a result of the EFA using the semlj package in the Jamovi 2.6 program. Brown (2015) states that it would be appropriate to examine the RMSEA, SRMR, CFI and NNFI (TLI) compliance indices while examining the CFA results. Within the scope of this research, other compliance indices encountered in the literature have also been reported. The compliance index values and acceptable and perfect boundary values obtained within the scope of the research (Kline, 2005; Schermelleh-Engel et. al., 2003; Thompson, 2004) is included in Table 5.

Table 1. Confirmatory Factor Analysis (CFA) Results

Compliance indices	Acceptable boundary	Perfect boundary	Scale compliance indices	Results
χ^2 / df	$2 < \chi^2 / df \leq 3$	$0 \leq \chi^2 / df \leq 2$	1.039	Perfect
RMSEA	0.05- 0.08	0.00- 0.05	0.017	Perfect
SRMR	0.05- 0.08	0.00- 0.05	0.08	Acceptable
NFI	0.90 and above	0.95 and above	0.954	Perfect
IFI	0.90 and above	0.95 and above	0.998	Perfect
CFI	0.90 and above	0.97 and above	0.998	Perfect
GFI	0.85 and above	0.90 and above	0.962	Perfect
AGFI	0.85 and above	0.90 and above	0.939	Perfect
TLI	0.90 and above	0.95 and above	0.998	Perfect
PNFI	0.50- 0.90	0.95 and above	0.763	Acceptable
PGFI	0.50- 0.90	0.95 and above	0.599	Acceptable

When Table 5 is examined, it is seen that the values of the compliance indices belonging to the scale are within the acceptable. As a result, it can be said that the compliance indices obtained as a result of confirmatory factor analysis of the measurement tool consisting of 15 items are good and applicable.

Figure 2. Confirmatory Factor Analysis (CFA) Measurement Model of The Scale

3.2. Findings Regarding Criteria Validity

In order to determine the criteria validity of the Digital Addiction Scale for Preschoolers (DASP), the Digital Game Addiction Tendency Scale (DOBE), developed by Budak and Işıkoğlu (2022), which was filled in by parents on behalf of children because there was no scale that collected data directly from children, was used. The scale developed within the scope of the current research covers the structure measured on the DOBE scale. Also, this scale was developed with a sample of Turkish children, as in the current study. Therefore, the DOBE scale was used to determine the validity of the criteria. In order to determine the validity of the criterion, the DOBE scale and the DASP scale were applied together to 50 children. As a result of the application, the correlation coefficient was calculated as 0.42. Schober et. al. (2018) state that the correlation value between 0.40 and 0.69 indicates a moderate relationship. This situation shows that there is a decent positive relationship between the scales. The fact that the reliability value is lower than the expected level can be explained by the fact that digital addiction is a general concept and covers the concept of digital game addiction. As a result, it can be said that the scale developed is a valid measurement tool for determining children's digital addictions.

3.3. Findings Regarding Reliability Analysis

While calculating the reliability values of the Digital Addiction Scale for Preschoolers (DASP), Cronbach's Alpha reliability values belonging to the sub-dimensions of the scale were calculated. Table 6 shows the results of the Cronbach Alpha reliability values belonging to the general and sub-dimensions of the scale.

Table 2. Digital Addiction Scale for Preschoolers (DASP) Reliability Analysis Results

Dimensions	Number of items	Cronbach Alfa	AVE	CR
Inability to quit	6	0.797	0.53	0.87
Uncontrolled use	3	0.650	0.54	0.77
Excessive use	3	0.616	0.49	0.73
Unconscious use	3	0.636	0.51	0.75
Total	15	0.836	0.71	0.94

As seen in Table 6, the Cronbach's alpha value for the total scale was 0.836, with values of 0.797 for the 'Inability to quit' dimension, 0.650 for the 'Uncontrolled use' dimension, 0.616 for the 'Excessive use' dimension, and 0.636 for the 'Unconscious use' dimension. The relatively lower Cronbach's alpha values for the 'Uncontrolled use', 'Excessive use', and 'Unconscious use' subscales were expected. This situation can be explained by the small number of items (3 items) in these dimensions (Cortina, 1993). The fact that the total scale's internal consistency coefficient was above the threshold of 0.70 indicates that the scale is reliable (Fraenkel et. al., 2012).

The AVE (Average Variance Extracted) value for the total scale was calculated as 0.71, with values of 0.53 for the 'Inability to quit' dimension, 0.54 for the 'Uncontrolled use' dimension, 0.49 for the 'Excessive use' dimension, and 0.51 for the 'Unconscious use' dimension. The CR (Composite Reliability) value for the total scale was 0.94, with values of 0.87 for the 'Inability to quit' dimension, 0.77 for the 'Uncontrolled use' dimension, 0.73 for the 'Excessive use' dimension, and 0.75 for the 'Unconscious use' dimension.

To satisfy the convergent validity condition, the AVE value should be greater than 0.40, the CR value should be greater than 0.70, and the CR value should be greater than the AVE value (Gökalp, 2021; Psaila & Wagner, 2007). When evaluating the results obtained from the scale, it is observed that the scale's CR value is greater than its AVE value (CR=0.94, AVE=0.71, CR>AVE). This finding indicates that the scale also meets the condition for convergent validity.

4. Discussion, Conclusion and Recommendations

The present study provides comprehensive evidence supporting the validity and reliability of the Digital Addiction Scale for Preschoolers (DASP). Construct validity was established through both exploratory and confirmatory factor analyses. The EFA results revealed a clear four-factor structure: Inability to Quit, Uncontrolled Use, Excessive Use, and Unconscious Use, which accounted for 58.662% of the total variance, with all factor loadings exceeding the recommended threshold. This structure was further confirmed by CFA, which yielded excellent fit indices ($\chi^2/df = 1.04$, RMSEA = .017, CFI = .998, TLI = .998), indicating strong structural validity. In addition, significant and positive correlations among the subdimensions and between each subdimension and the total scale score provided further support for construct validity. Reliability analyses also yielded satisfactory results, with the total scale demonstrating high internal consistency ($\alpha = .836$) and acceptable reliability coefficients across subdimensions. Moreover, convergent validity was supported by AVE and CR values meeting recommended criteria, indicating that the scale reliably captures the underlying construct of digital addiction in early childhood.

A low correlation was found between the Digital Game Addiction Tendency Scale (DOBE) and the Digital Addiction Scale for Preschoolers (DASP) ($r = .42$). When Digital Game Addiction Tendency is considered a sub-dimension of digital addiction, observing a low to moderate relationship between these two constructs is theoretically expected. While children in early childhood spend significant time in digital environments, they may also engage in other activities, such as watching videos, in addition to playing digital games, and may not always exhibit gaming behavior. This suggests that children may not develop gaming addiction despite their exposure to digital environments. These findings support the idea that the Digital Addiction Scale for Preschoolers (DASP) measures a construct related to, but distinguishable from, digital game addiction, and therefore support for its discriminant validity.

Existing scales measuring digital addiction in children present various dimensions for assessing addiction severity. Kuss and Griffiths (2012) examined digital media use through distinct dimensions, including excessive, uncontrolled, and unconscious use, while identifying addiction-related symptoms. Taş (2019) developed and tested an internet addiction scale for adolescents on a large sample, conceptualizing digital dependence through nine items: The items evaluate behaviors such as preoccupation with internet use, increased time spent online, failed attempts to reduce use, withdrawal symptoms, neglect of academic or social responsibilities, and continued use despite negative consequences. The scale serves as a reliable and valid instrument for identifying adolescents at risk of problematic internet use, making it suitable for educational, clinical, and research settings. Hawi et al. (2019) developed the Digital Addiction Scale for Children (9-12 year olds) to evaluate various digital media interactions, including gaming, social media use, and text messaging.

Notably, despite the growing body of instruments addressing screen media addiction, digital gaming addiction, and problematic media use, no scale has yet been developed specifically to comprehensively assess digital addiction in preschool populations. Within this context, the present study introduces a novel measurement tool designed for evaluating digital addiction among 5–6-year-old children, thereby addressing an important gap in early childhood assessment. However, this “first-scale” positioning should be interpreted cautiously, as the conceptual boundaries of digital addiction in early childhood remain underdeveloped and inconsistently operationalized across studies.

In early childhood research, adult reports provided by parents and teachers are widely regarded as important sources of information, particularly for constructs that are difficult to observe directly, such as addiction-related behaviors. Building on this methodological tradition, one of the contributions of the present study is the development of a child self-report measure intended to capture children’s subjective experiences of digital use. Such self-reports may offer unique access to internal states, including perceived loss of control, affective responses to restriction, and emerging compulsive tendencies that are not readily observable by adults. However, the use of self-report measures in early childhood also entails certain limitations. Item comprehensibility, interviewer effects, children’s developmental readiness to understand concepts such as time and frequency, and overall cognitive maturity may influence response accuracy. Therefore, the findings should be interpreted by considering both the strengths and the inherent developmental limitations of child self-reporting. Future research may benefit from multi-informant designs combining child self-reports with parent and teacher evaluations to provide a more comprehensive understanding of digital addiction in early childhood.

Based on our findings, several recommendations can be made. First, the implementation of digital media literacy education in early childhood settings may support the development of healthier digital habits. Second, strengthening parental monitoring and guidance may help mitigate potential risks associated with excessive digital media use. Third, the development of balanced and developmentally appropriate digital media use strategies is warranted for young children. Digital addiction poses an escalating threat to children, making early detection critically important. The rising risk of digital addiction in preschool populations underscores the necessity for valid and reliable assessment tools. In this regard, the scale developed in the present study may contribute as a promising instrument for supporting early screening and research on digital media-related behaviors, rather than serving as a definitive diagnostic or intervention tool. The scale developed in this study is limited to children aged 5–6 years. In addition, although data were collected from 361 children, this sample size was not sufficient to conduct a full standardization study. Accordingly, further research is needed to establish normative data using larger and more representative samples, particularly within Türkiye. Such studies would strengthen the generalizability and psychometric robustness of the scale across different contexts.

The literature consistently demonstrates that early identification of digital addiction and the development of corresponding strategies are essential. Consequently, the scale developed in the present study may serve as a useful research instrument for assessing digital media-related behaviors in preschool children, particularly for early detection and exploratory investigations. We anticipate this instrument will contribute significantly to developing comprehensive intervention programs addressing digital addiction.

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Geniş Özet

Giriş

Dijital teknolojilerin günlük hayatımıza entegrasyonu, özellikle erken çocukluk döneminde çocukların ekranlarla etkileşimini önemli ölçüde artırmıştır (Kanada Pediatri Derneği DHTF, 2017). Akıllı telefonlar, tabletler, bilgisayarlar ve oyun konsolları gibi cihazlar, okul öncesi çocukların eğitim, eğlence ve sosyal iletişim ihtiyaçlarını karşılamada önemli bir rol oynamaktadır. Bu durum, okul öncesi dönemde çocukların bilişsel, sosyal ve duygusal gelişimi üzerinde hem olumlu etkilere hem de olumsuz sonuçlara yol açabilir (Rideout, 2017).

Okul öncesi dönem, çocukların temel bilişsel ve sosyal becerileri edindiği kritik bir gelişim aşamasını temsil eder (Shonkoff & Phillips, 2000). Bu dönemde aşırı ekran maruziyeti, dikkat eksikliği, dürtüsellik, uyku sorunları ve sosyal etkileşimin azalması gibi olumsuz sonuçlara yol açabilir (Radesky vd., 2016). Araştırmalar, özellikle 0-6 yaş grubunda aşırı dijital medya kullanımının çocukların gelişim süreçleri için bir risk faktörü oluşturabileceğini (Dünya Sağlık Örgütü [WHO], 2019) ve aynı zamanda dijital bağımlılık riskini de taşıyabileceğini göstermektedir.

Dijital bağımlılık, bireylerin dijital cihazları aşırı ve kontrolsüz bir şekilde kullanması, kullanımı bırakamaması ve bunun sonucunda günlük yaşamları üzerinde olumsuz etkilere yol açması olarak tanımlanmaktadır (Young, 1998). Okul öncesi çocuklarda dijital bağımlılık çeşitli belirtilerle ortaya çıkabilir. Örneğin, çocuklar ekranların önünde uzun süreler geçirerek sosyal etkileşimlerden uzaklaşabilir, fiziksel aktivitelere ilgilerini kaybedebilir ve oyun oynama motivasyonlarında azalma gösterebilirler (Radesky vd., 2016). Ayrıca, dijital cihazlardan ayrıldıklarında öfke nöbetleri, huzursuzluk ve sakinleşmede zorluk yaşayabilirler (Konok vd., 2017). Yaşlarına uygun olmayan içeriklere bilinçsizce maruz kalmaları, öğrenme süreçlerinde pasifliğe ve dikkat sürelerinde azalmaya yol açabilir (Christakis, 2009). Dijital bağımlılık belirtileri erken çocukluk döneminde farklı şekillerde ortaya çıktığından, bu yaş grubuna uygun ölçüm araçlarına ihtiyaç duyulmaktadır.

Mevcut dijital bağımlılık ölçekleri çoğunlukla ergenler ve yetişkinler için geliştirilmiştir (Lemmens vd., 2009; Young, 1998), ancak erken çocukluk dönemi için ölçek sayısı oldukça sınırlıdır (Domoff vd., 2019b). Okul öncesi çocuklarda dijital bağımlılık, aşırı ekran süresi, kontrole direnç ve dijital cihazlardan yoksun kalındığında huzursuzluk gibi belirtilerle ortaya çıkabilir (Radesky & Christakis, 2016). Bu belirtileri değerlendirebilecek bilimsel bir ölçüm aracının olmaması, araştırmacılar ve profesyoneller için önemli bir boşluk yaratmaktadır. Bu eksikliği gidermek için, mevcut çalışmada Young'ın (1998) dijital bağımlılık tanımı, Griffiths'in (2005) bağımlılık bileşenleri ve okul öncesi çocukların gelişimsel özelliklerine dayalı olarak dört temel boyuttan (aşırı kullanım, bırakamama, bilinçsiz kullanım ve kontrolsüz kullanım) oluşan özgün bir değerlendirme aracı geliştirilmiştir. Bu bağlamda, bu çalışmanın temel amacı 'Okul Öncesi Dönem Çocukları İçin Dijital Bağımlılık Ölçeği'ni (ODBÖ) geliştirmek ve bu ölçeğin geçerlilik ve güvenilirlik düzeylerini belirlemektir.

Yöntem

Bu araştırmada nicel araştırma türlerinden biri olan tarama modeli kullanılmıştır. Çalışma grubu, amaçlı örnekleme türlerinden ölçüt örnekleme kullanılarak belirlenmiştir. Çocukların bilişsel gelişim düzeyleri göz önünde bulundurularak "5-6 yaşında olmak" ölçütü olarak seçilmiştir. Bu bağlamda, pilot uygulama için 65, EFA için 204 ve DFA için 157 olmak üzere toplam 361 çocuk katılmıştır. Ayrıca, ölçüt geçerlilik testine 50 çocuk katılmıştır.

Araştırma kapsamında Okul Öncesi Çocuklar İçin Dijital Bağımlılık Ölçeği (ODBÖ) geliştirilmiştir. Bu süreçte ilgili literatür ve benzer bağımlılık ölçekleri taranmıştır (Budak & Işıkoğlu, 2022; Domoff vd., 2019b; Griffiths, 2005; Young, 1998). Araştırmanın amacı doğrultusunda, 5-6 yaş arası çocukların gelişimsel özellikleri dikkate alınarak bir madde havuzu oluşturulmuştur. Literatürde dijital bağımlılık, aşırı kullanım, bırakamama, bilinçsiz kullanım ve kontrolsüz kullanım gibi boyutlar altında incelenmiştir. Bu doğrultuda, tüm bu boyutlar için maddeler oluşturulmuştur. Okul Öncesi Çocuklar İçin Dijital Bağımlılık Ölçeği'ne (DASP) başlangıçta 65 madde dahil edilmiştir. İçerik geçerliliği için alan uzmanlarının görüşleri alınmıştır. Başlangıçta, çocukların ölçek maddelerine gülen yüz-nötr-üzgün yüz çıkartmaları kullanarak yanıt vermeleri planlanmıştır. Ancak, uzman geri bildirimlerine dayanarak Likert tipi bir ölçek formatı uygun görülmüştür. Öneriler doğrultusunda, çocukların maddelere küçük-orta-büyük yıldız çıkartmaları kullanarak yanıt vermeleri planlanmıştır.

Veri toplama işlemi, 2024-2025 eğitim-öğretim yılı güz döneminde gerçekleştirilmiştir. Veri toplamadan önce, Sivas Cumhuriyet Üniversitesi Rektörlüğü Eğitim Bilimleri Araştırma Önerisi Etik Değerlendirme Kurulu'ndan 30 Nisan 2023 tarihli ve E-50704946-100-290374 numaralı etik onay alınmıştır. Gerekli etik kurul ve MEB onayları alındıktan sonra Türkiye'nin İç Anadolu bölgesindeki resmi bağımsız anaokulları ve ilkokullar ziyaret edilerek araştırma hakkında bilgi verilmiştir. Ebeveynleri tarafından araştırmaya katılmasına izin verilen çocuklarla bireysel olarak görüşülerek katılım istekleri teyit edilmiş ve geliştirilen ölçek onay veren çocuklara uygulanmıştır. 65 maddeden oluşan taslak ölçek, pilot uygulama için 65 çocuğa yüz yüze uygulanmıştır. Uygulama sonrasında, madde-toplam korelasyonları ve madde ayırt

ediciği incelenmiş ve 40 madde çıkarılmıştır. Daha sonra 25 maddeden oluşan ikinci taslak ölçek kullanılarak 204 çocuktan veri toplanmıştır. Faktör yapısına uymayan veya çapraz yükleme gösteren on ek madde çıkarılmıştır. Keşifsel faktör analizi ile belirlenen yapıyı doğrulamak için 157 çocuktan tekrar veri toplanmıştır. Ardından, ölçüt geçerliliği testi için DOBE ölçeği (Budak & Işıkoğlu, 2022) ve DASP ölçeği 50 çocuğa birlikte uygulanmıştır. Bu çalışmada kullanılan DOBE ölçeği, erken çocukluk dönemindeki çocukların dijital oyun bağımlılığı eğilimlerini ölçmek için Budak ve Işıkoğlu (2022) tarafından geliştirilen geçerli ve güvenilir bir ölçektir. Veri toplama süreci yaklaşık üç ay sürmüştür.

Taslak ölçek formu ile veri toplanmasının ardından yapı geçerliliği çalışmaları yürütülmüştür. Yapı geçerliliği kapsamında keşifsel faktör analizi (AFA) ve doğrulayıcı faktör analizi (DFA) gerçekleştirilmiştir. AFA yapılmadan önce yeterli örneklem büyüklüğü, çok değişkenli normallik, eksik veri ve aykırı değerler gibi analiz gereklilikleri incelenmiştir. AFA varsayımlarının test edilmesinin ardından ölçeğin faktör yapısını ve madde dağılımlarını belirlemek için analize başlanmıştır. AFA ile oluşturulan modeli doğrulamak için yeni veriler toplanmış ve Jamovi 2.6 (Gallucci & Jentschke, 2021) kullanılarak DFA gerçekleştirilmiştir. DFA'nın ardından uyum indeksleri incelenmiştir. Ölçüt geçerliliği için korelasyon analizi yapılmıştır. Ölçeğin güvenilirliğini analiz etmek için alt ölçekler için Cronbach alfa katsayıları incelenmiştir.

Bulgular

Geçerlik ve güvenilirlik değerlendirmeleri için önce Açıklayıcı Faktör Analizi (AFA) ardından Doğrulamalı Faktör Analizi (DFA) yapılmıştır. Güvenilirlik analizi için Cronbach alfa güvenilirlik katsayıları da incelenmiştir. Keşfedici Faktör Analizi (AFA) ile ilgili olarak örneklem yeterliliğini değerlendirmek için Kaiser-Meyer-Olkin (KMO) testi yapılmış ve 0,812'lik bir KMO değeri elde edilmiştir. Çalışmanın örneklem büyüklüğünün AFA için uygun olduğu bulunmuştur. Çok değişkenli normallik varsayımını değerlendirmek için Bartlett Küresellik Testi yapılmış ve istatistiksel olarak anlamlı sonuçlar elde edilmiştir ($\chi^2(105)=594,613$, $p<.05$). Bu, verilerin çok değişkenli normal dağılım gösterdiğini ve çok değişkenli normallik varsayımını karşıladığını göstermektedir.

Ölçekte yer alan maddelerin faktör toplam test korelasyon değerlerinin 0,319 ile 0,610 arasında, madde toplam test korelasyon değerlerinin ise 0,290 ile 0,604 arasında değiştiği belirlenmiştir. Ölçekte yer alan maddelerden M26'nın madde toplam test korelasyon değerinin düşük olduğu bulunmasına rağmen ilgili maddenin ölçekten çıkarılmasının Cronbach Alpha değerini değiştirmediği ancak ölçeğe katkı sağladığı için maddenin ölçekten çıkarılmadığı belirlenmiştir.

Ölçeğin güvenilirliği Cronbach's Alpha kullanılarak değerlendirilmiş ve 0,836 değerine ulaşılmıştır. Açıklanan toplam varyans %58,662 olarak bulunmuştur. Ölçekte yer alan 'Bırakamama' boyutu 6 maddeden; 'Kontrolsüz kullanım' boyutu 3 maddeden; 'Aşırı kullanım' boyutu 3 maddeden ve 'Bilinçsiz kullanım' boyutu 3 maddeden oluşmaktadır. Ölçeğin faktör yapıları arasındaki ilişkiyi belirlemek amacıyla yapılan korelasyon analizi sonucunda ölçekte yer alan faktörler arasında anlamlı ve pozitif bir ilişki olduğu görülmüştür. Bununla birlikte 15 maddeden oluşan ölçme aracının doğrulamalı faktör analizi sonucunda elde edilen uyum indekslerinin iyi ve uygulanabilir olduğu bulunmuştur.

Bu çalışma, okul öncesi çocuklarda dijital bağımlılığı değerlendirmek için geçerli ve güvenilir dört boyutlu bir ölçek (aşırı kullanım, kontrolsüz kullanım, bilinçsiz kullanım ve bırakamama) geliştirmeyi başarıyla tamamlamıştır. Ölçek, 0,836'lık toplam Cronbach alfa değeri ve %58,662'lik açıklanan varyans oranıyla güçlü psikometrik özellikler göstermekte ve bir ölçüm aracı olarak geçerliliğini ve güvenilirliğini doğrulamaktadır.

Tartışma, Sonuç ve Öneriler

Bu çalışma, Okul Öncesi Dönem Çocukları İçin Dijital Bağımlılık Ölçeği (ODBÖ)'nin geçerliliği ve güvenilirliği için güçlü kanıtlar sunmaktadır. Yapı geçerliliği, keşifsel ve doğrulamalı faktör analizleri ile desteklenmiştir. Keşifsel faktör analizi, toplam varyansın %58,66'sını açıklayan ve tatmin edici faktör yüklemelerine sahip dört faktörlü bir yapı (Bırakamama, Kontrolsüz Kullanım, Aşırı Kullanım ve Bilinçsiz Kullanım) ortaya koymuştur. Bu yapı, mükemmel model uyum indeksleri ($\chi^2/df = 1,04$, RMSEA = 0,017, CFI = 0,998, TLI = 0,998) gösteren doğrulamalı faktör analizi ile doğrulanmış ve güçlü yapısal geçerliliği göstermiştir. Alt boyutlar arasında ve toplam puanla anlamlı pozitif korelasyonlar, yapı ile ilgili geçerliliği daha da desteklemiştir. Güvenilirlik analizleri, toplam ölçek için yüksek iç tutarlılık ($\alpha = 0,836$) ve alt boyutlar arasında kabul edilebilir güvenilirlik göstermiştir. Yakınsak geçerlilik, önerilen kriterleri karşılayan AVE ve CR değerleri ile de desteklenmiştir.

Çocuklarda dijital bağımlılığı ölçen mevcut ölçekler bağımlılık şiddetini değerlendirmek için çeşitli boyutlar sunmaktadır. Kuss ve Griffiths (2012), bağımlılıkla ilgili semptomları belirlerken dijital medya kullanımını aşırı, kontrolsüz ve bilinçsiz kullanım gibi farklı boyutlar üzerinden incelemiştir. Taş (2019), ergenler için dokuz boyut üzerinden dijital bağımlılığı kavramsallaştıran geniş bir örneklem üzerinde bir internet bağımlılığı ölçeği geliştirmiş ve test etmiştir. Maddeler; internet kullanımıyla meşgul olma, çevrimiçi geçirilen sürenin artması, kullanımı azaltma girişimlerinin başarısız olması, yoksunluk belirtileri, akademik veya sosyal sorumlulukların ihmal edilmesi ve olumsuz sonuçlara rağmen kullanıma devam edilmesi gibi davranışları değerlendirmektedir. Hawi vd. (2019), oyun oynama, sosyal medya kullanımı ve kısa

mesajlaşma dahil olmak üzere çeşitli dijital medya etkileşimlerini değerlendiren Çocuklar İçin Dijital Bağımlılık Ölçeği'ni (9-12 yaş) geliştirmiştir.

Önemli bir şekilde, okul öncesi popülasyonlarında kapsamlı bir dijital bağımlılık değerlendirmesi için özel olarak tasarlanmış bir ölçek bulunmamakla birlikte mevcut araçlar ekran medyası bağımlılığı, dijital oyun bağımlılığı ve problemli medya kullanımına odaklanmaktadır. Bu bağlamda, mevcut çalışmanın ölçeği 5-6 yaş arası okul öncesi çocuklarda dijital bağımlılığı değerlendirmek için özel olarak geliştirilmiş ilk ölçüm aracını temsil etmektedir.

Bulgulara dayanarak öneriler şu şekildedir:

- (1) çocuklar için dijital medya okuryazarlığı eğitiminin uygulanması,
- (2) ebeveyn denetiminin artırılması
- (3) dengeli dijital medya kullanım stratejilerinin geliştirilmesi

Dijital bağımlılık, çocuklar için giderek artan bir tehdit oluşturmakta ve erken teşhis son derece önemlidir. Okul öncesi popülasyonlarında dijital bağımlılık riskinin artması, geçerli ve güvenilir değerlendirme araçlarına olan ihtiyacın altını çizmektedir. Literatür, dijital bağımlılığın erken teşhisinin ve buna uygun strateji geliştirmenin hayati önem taşıdığını tutarlı bir şekilde göstermektedir. Sonuç olarak geliştirilen ölçek, okul öncesi çocuklarda dijital bağımlılığın değerlendirilmesi ve önlenmesi için önemli bir araçtır. Bu aracın, dijital bağımlılığa yönelik kapsamlı müdahale programlarının geliştirilmesine önemli katkı sağlayacağı öngörülmektedir.

Publication Ethics Statement

This research has been approved by the ethics committee of the Sivas Cumhuriyet University Rectorate Educational Sciences Research Proposal Ethics Evaluation Board, dated 30/04/2023, with decision number E-50704946-100-290374. All rules specified in the " Directive of Scientific Research and Publication Ethics in Higher Education Institutions" were adhered to throughout the entire process, from planning and implementation to data collection and analysis. None of the actions specified in the second section of the directive, "Actions Contrary to Scientific Research and Publication Ethics," was taken. Scientific, ethical, and citation rules were adhered to throughout the writing process of this research, and no falsification of the collected data was made. This study has not been submitted for evaluation to any other academic publication.

Author Contributions

All authors contributed equally to the manuscript.

Conflict of Interest

We declare that we have no conflict of interest related to this research.