

# Descriptive Content Analysis of Scale Development Studies in Preschool Education between 2018-2023 Years in Turkey

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**Abstract:** *The purpose of this research is to identify the situation through content analysis of scale development studies conducted by Turkish researchers in the field of preschool education. Thus, the overall trend of scale development research in preschool education was established. This research is a document analysis study. The documents studied are national and international articles published by Turkish preschool teachers. These articles were content-analyzed. Scale studies conducted between 2018 and 2023, which encompass preschool education, educators, parents, and preschool resources, were searched. In total, 63 article studies were included in this content analysis. For data collection, a data collection form was prepared for content analysis, inspired by the 'Publication Classification Form' which was used to conduct a detailed scanning process. According to findings of the research, the scale of development studies (63 %) conducted in pre-school education, largely in 2018, with two authors, was larger than that of adaptation studies. The majority of studies (49%) were published in the Turkish database TR ULAKBİM, with a focus on the social-emotional domain (16%) and science-education (67%). It was found that the descriptive method was preferred as the research method, that children were the majority of the sample (38%), that the sample size was chosen between 201 and 500, and that factor analysis and descriptive analysis were employed as analysis methods.*

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## **Introduction**

**D**EVELOPMENT should be considered holistically, with each developmental domain holding a crucial place in a child's overall well-being. The preschool period is a stage that encompasses children from birth to the age of 6. The preschool period is highly significant for children to acquire a variety of skills in terms of physical, cognitive, social, emotional, and self-regulation aspects (Uluyurt, 2012). During this period, children lay the foundation for their personality development by transferring the skills and achievements they acquire to their adulthood. Preschool education takes on the responsibility of nurturing and enhancing a child's curiosity, thinking, and learning skills (Senemoğlu, 1994). The majority of an individual's personality and character development occurs during early childhood (Senemoğlu, 2004). Through preschool education, children lay the foundation for the formation of their own identity, become aware of their skills and responsibilities, and progress towards becoming happy individuals in the future (Acun and Erten, 1993). When looking at children's development, it appears to be multidimensional, including social-emotional, cognitive, physical, language, and self-regulation skills. The preschool period is a stage where a child's holistic development is rapid, and they are most receptive to the stimuli in their environment. The quality and adequacy of stimuli available to children are related to their exploration, learning levels, and learning speed (Ministry of National Education (MoNE) 2013). Preschool education programs have been shown to provide significant benefits for both children and their families in research studies (Organisation for Economic Co-operation and Development (OECD), 2010: 294). The primary aim of preschool education programs is to maximize children's holistic development, interactions, and positive behaviors. Preschool programs should include activities such as language, drama, science, art, play, music, language, socialization, emotional development, and more (Eurodice, 2010). The positive effects of preschool education continue throughout an individual's entire life (Barnett, 2008; Dickinson and Porche, 2011).

As the world changes and develops, individuals' needs also evolve. The theoretical hypotheses put forth in educational research studies should be substantiated through empirical investigations. The increasing diversity of research conducted to meet individuals' needs and provide education holds significant importance (Kayahan and Koca, 2004). Therefore, the development and adaptation of scales aimed at researching children's holistic development are crucial in assessing the levels of their development. The screening of developed or adapted scales that not only focus on a single developmental domain but encompass all areas of development in a

descriptive study will prove to be efficient for early childhood researchers and facilitate their work in terms of accessibility.

To understand the quality and effectiveness of the education provided, it is essential to thoroughly examine the program, the competence of teachers in their respective fields, school staff, family, and the environment from various perspectives (Güçhan Özgül, 2011). It is imperative to design the environments for children's holistic development, growth, and learning based on the preschool period in the best and highest quality way possible (Koçyiğit, 2007). When examining research on teaching, the applicability of hypotheses in studies should be supported by experimental research. To ensure scientific and objective quality in research, appropriate statistical tests and scales are required. Scales are used to display the mathematical properties and symbols of measurement results in studies (Turgut and Baykul, 2012). The increasing number of studies necessitates the classification of research according to specific characteristics, enabling the formation of a particular perspective (Bartan and Şahin, 2017). It is crucial to prioritize scientific research with the aim of meticulously reviewing studies and examining them according to established criteria, in order to create high-quality education programs that are relevant to contemporary society and researchers (Tarman, Güven, and Aktaşlı, 2011). When analyzing the existing studies, it is observed that research on the preschool period is often limited to specific domains such as the field of science, art education, social-emotional development, or drama. Comprehensive content analyses encompassing the preschool period and addressing both scale development and adaptation are notably lacking in the literature. For example, Özpır and Mantaş (2018) conducted content analyses of articles related to preschool science education. The increasing interest in the preschool period in recent years has led to a growth in the number of scientific studies, primarily due to scale development and adaptation efforts. To establish a systematic perspective, researchers have been motivated to define specific criteria and compile studies conducted in light of these criteria. This will enable future researchers to have a clearer understanding of which scales have been developed in recent years and what needs exist. Through this work, researchers will have the opportunity to examine more recent studies more quickly. In summary, it can be said that content analyses play a crucial role in reaching scientific research more efficiently and with stronger evidence (Aydoğdu, 2015).

## **Purpose of the Study and Research Questions**

In this section the purpose of the study and the research questions were presented. Studies related to the preschool period have been on the rise, and as a result, there has been a growing interest in the development and

adaptation of scales encompassing the preschool period. The purpose of this research is to identify the situation through content analysis of scale development studies conducted by Turkish researchers in the field of preschool education. Thus, the overall trend of scale development research in preschool education was established. When examining scale studies covering the preschool period, it is evident that content analyses are primarily conducted in a unidirectional manner, focusing on specific domains such as preschool children, parents, preschool teachers, prospective preschool teachers, books related to the preschool period, and the like. Content analyses are mainly conducted separately for areas like art, social-emotional development, science, or mathematics. This study, however, aims to provide a content analysis of scale development and adaptation studies related to the preschool period and the entire preschool period itself, covering the scale studies conducted between 2018 and 2023. Turkish researchers' publications on preschool education in both national and international journals were examined in terms of the type of scale studies, the indexes in which they were indexed, the subject of the study, the methodology, data collection tools, sample size and sampling, and data analysis methods.

In this study, the following research questions were addressed:

1. What is the distribution of preschool scale development publications by years?
2. What is the number of authors in publications covering pre-school education in Turkey in the last 6 years?
3. In publications that encompass preschool education in Turkey, what are the frequently investigated topics in the last 6 years?
4. In publications encompassing the preschool period and education in Turkey, what are the frequently used research methods in the last 6 years?
5. In publications related to preschool education and the preschool period in Turkey, what are the frequently utilized sampling methods and sample sizes in the last 6 years?
6. In publications concerning preschool education and the preschool period in Turkey, what are the commonly adopted data analysis methods in the last 6 years?
7. In publications on preschool education and the preschool period in Turkey, what are the types and proportions of scale studies in the last 6 years?
8. In publications on preschool education and the preschool period in Turkey, what are the indexes and their proportions in which articles were indexed in the last 6 years?

## **Research Method**

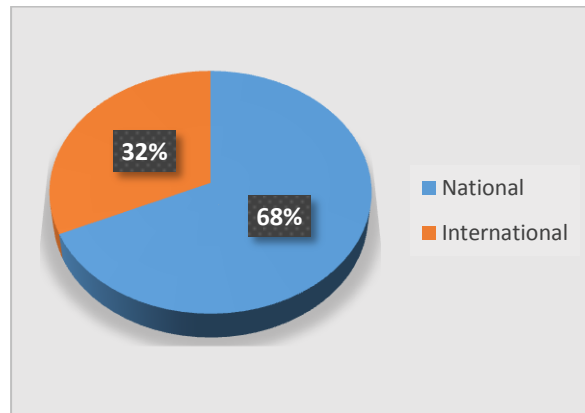
In this section the research method and its subsections; data collection process, data collection tools and data analysis process; for this study were presented. This research is a document analysis study. The documents studied are national and international articles published by Turkish preschool teachers. These articles were content-analyzed. Content analysis is a technique widely used in the social sciences. Content analyses are particularly beneficial in preventing the oversight of critical aspects in research, allowing for a more comprehensive examination (Neuman, 2017, p. 468). The scale development and adaptation studies that were taken into consideration and examined in this research comprise articles published in national and international journals in Turkey, as well as master's and doctoral theses. These studies were analyzed using content analysis. Content analysis is designed to generate unbiased, objective inferences from studies (Kondracki, Wellman, Fada, & Amundson, 2002). The primary purpose of content analysis is to systematically reduce the overwhelming abundance of information, making it more visible (Tavşancıl and Aslan, 2001, p. 48). In this study, content analysis was systematically conducted in accordance with the research questions.

### ***Data Collection Process***

In this content analysis study, when selecting article studies, online databases of national and international journals were searched. The databases for this study are Google Scholar, National Council of Higher Education Thesis Center in Türkiye, Dergipark, Researchgate, Proquest, Academia, Adudspace, Sources from Universities in Türkiye, E- Resources at Harran University, EJER, Openaccess.hku. Scale studies conducted between 2018 and 2023, which encompass preschool education, educators, parents, and preschool resources, were searched. In total, 63 article studies were included in this content analysis (**Figure 1**). These studies were categorized as either scale development or scale adaptation. In recent years, research and scale studies, especially related to education and preschool education, have seen an increase in interest. To understand the types of scales that have been studied in recent years, a search was conducted for the last six years up to the present day.

### ***Data Collection Tools***

For data collection, a data collection form was prepared for content analysis, inspired by the 'Publication Classification Form' (Sözbilir, Kutu, and Yaşar, 2012), which was used to conduct a detailed scanning process. The form included categories such as whether the electronic document was a thesis or an article, the title of the article or thesis, the number of authors, the type of



**Figure 1. National/International Scale Development Studies in Preschool Education.**

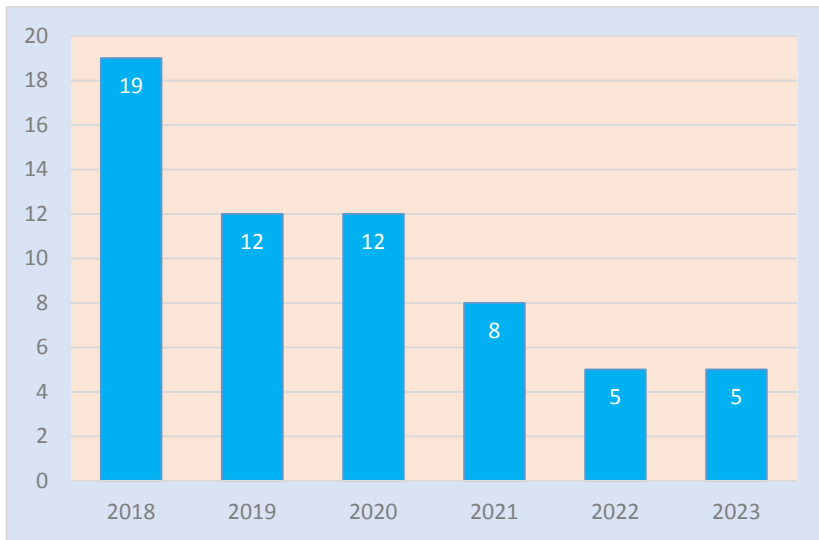
the study, whether the journal publication was national or international, information about the journal, journal index, study field, research method, data collection tools, information about the sample, and data analysis method. The study exclusively included works related to the preschool period and education. In the form, researchers directly filled in the information as available, without general sub categorization.

### ***Data Analysis Process***

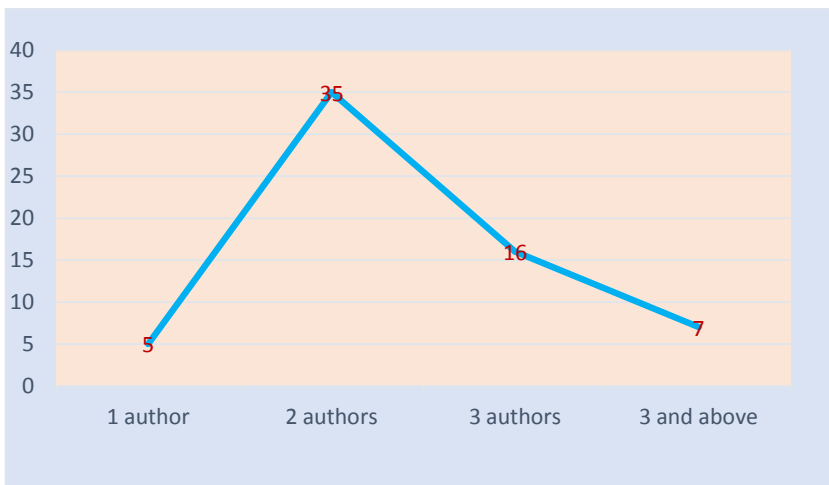
A comprehensive search was conducted by both researchers to ensure the reliability of the scanning process. In cases where there was uncertainty about certain studies, the researchers came together to discuss and conduct further in-depth research, reaching a consensus and providing a sound solution. The authors worked collaboratively to classify the studies. The data obtained for content analysis were recorded in an online database, creating a platform accessible to both researchers at any time for their work. In the prepared table, the researchers checked for any missing data or instances where a single study may have been recorded multiple times. After the necessary checks, content analysis of the data was performed, and the percentages and frequencies were presented in tabular form in the study.

### **Findings**

This section presents the results of a content analysis of articles in Turkey from 2018 to 2023 that focus on the development and adaptation of scales related to early childhood education. As doing this; number of the authors, type of the scale studies, indexed journals for articles, scale development



**Figure 2. Distribution of Preschool Scale Development Publications by Years.**



**Figure 3. Number of Authors Involved in the Studies.**

issues, research methods employed, sample and sample sizes and used analysis methods were given in this section. The findings are presented in a descriptive manner with the aid of tables and graphs. Titles have been created considering the research questions while presenting the findings and information is provided under these titles.



In this study, a total of 63 publications related to scale development and adaptation in articles concerning the early childhood period by Turkish researchers were examined through content analysis methods over the past six years.

### ***Distribution of Publication by Years***

Upon examining the **Figure 2** above, it is revealed that the number of preschool scale development publications has decreased from 2018 to 2023.

### ***Number of the Authors***

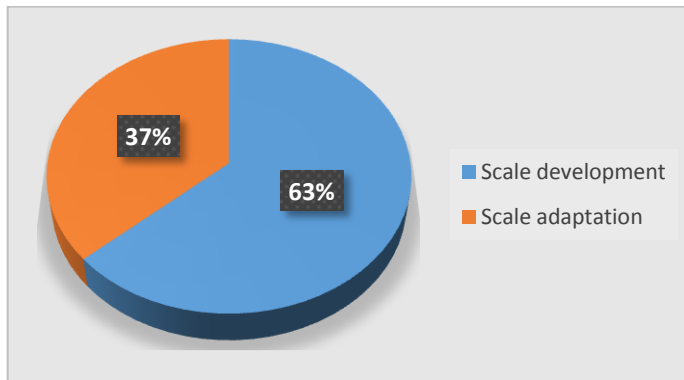
**Figure 3** shows the number of authors in publications covering pre-school education in Turkey in the last 6 years. As can be seen in **Figure 3**, it was discussed that studies were mostly conducted with 2 authors ( $f = 35$ ), and later studies were conducted with 3 authors ( $f = 16$ ). It has also been observed that, although rare, studies have been conducted with 1 author ( $f = 5$ ) and 3 or more authors ( $f = 7$ ).

### ***Type of Scale Studies***

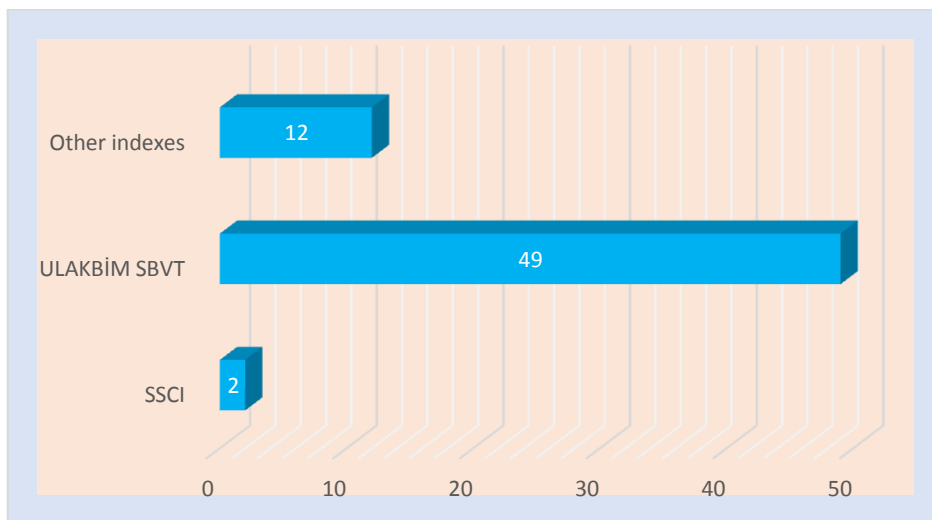
**Figure 4** shows the type of scale development studies in preschool education. In this study, when the types of scale studies in articles related to the early childhood period from 2018 to 2023 were examined, it was revealed that out of 63 articles, 40 were focused on scale development, and 23 were dedicated to scale adaptation. When looking at scale adaptation and development studies related to the early childhood period between 2018 and 2023, it is revealed that the most commonly utilized data collection instrument, which was used in 63 articles, is the “Likert” data collection tool. All scale studies were done by Turkish authors.

### ***Indexed Journals for Articles***

**Figure 5** shows the distribution of scale development studies in preschool education according to indexes. When the article studies related to the early childhood period from 2018 to 2023 are examined, it is evident that articles have been published in SSCI, ULAKBİM SBVT, and other indexes. ULAKBİM SBVT is a national index developed by Turkish Academic Network and Information Center for Social Sciences. ULAKBİM is most prominently featured in the scale development and adaptation studies, with 49 articles, while SSCI is represented in 2 articles focusing on scale development and adaptation. Other indexes are also present in 12 articles dedicated to scale development and adaptation studies.



**Figure 4. Type of Scale Development Studies in Preschool Education.**



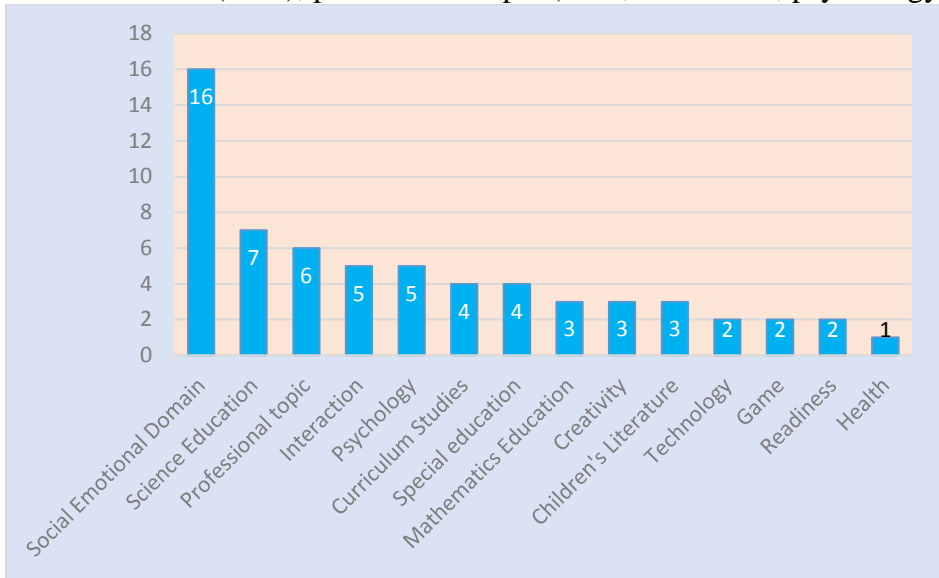
**Figure 5. Distribution of Scale Development Studies in Preschool Education According to Indexes.**

### ***Scale Development Issues in the Study***

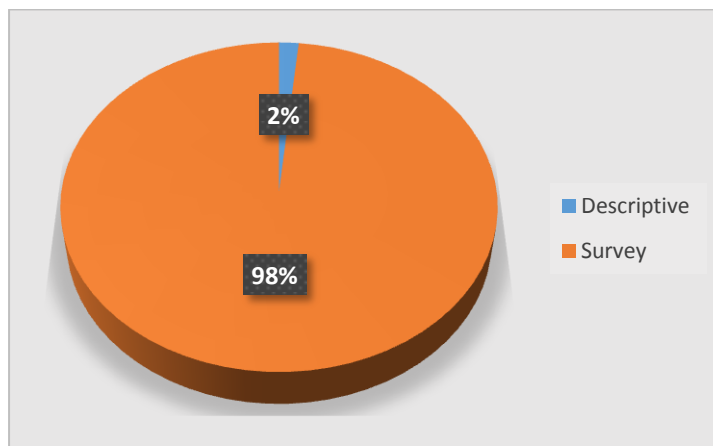
**Figure 6** provides the themes created about scale development issues in the articles as a result of the content analysis. When looking at **Figure 6**, it is evident that studies related to the early childhood period cover a wide range of different fields. Thus, 14 themes were created.

**Table 1** contains the codes for the study subject under each theme. As can be seen in **Table 1**, it was determined that the most studied topics

were related to the social emotional domain (f = 16) and later studies on, science education (f = 7), professional topic (f = 6, interaction, psychology (f



**Figure 6. Themes of Scale Development Issues in Preschool Education.**

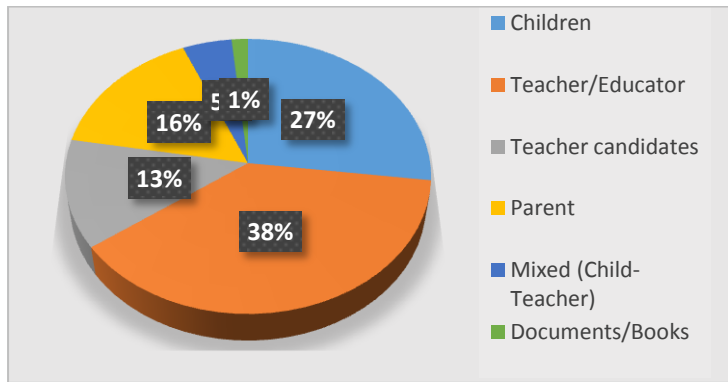


**Figure 7. Research Methods in Preschool Education.**

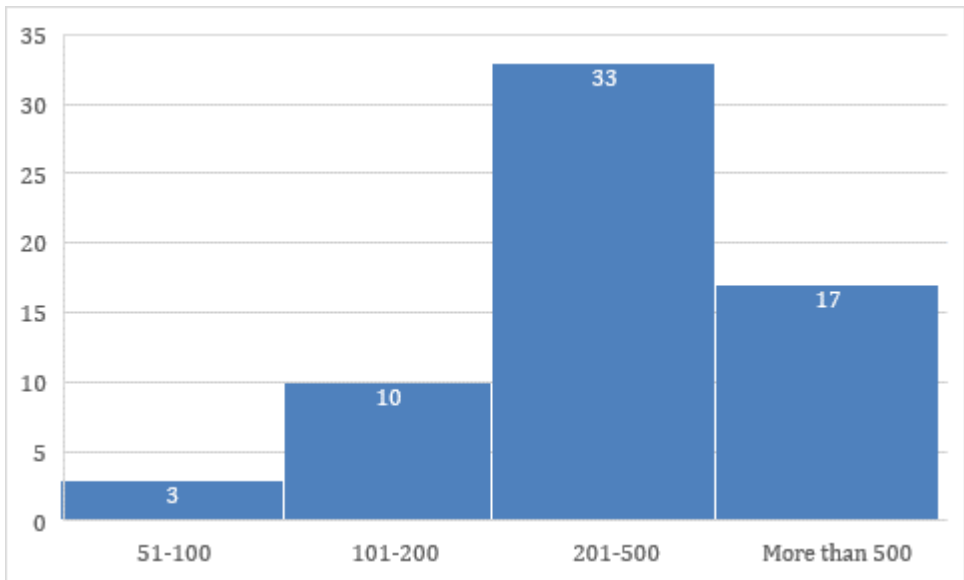
= 5), curriculum studies, special education (f = 4), mathematics education, creativity, children’s literature (f = 3), technology, game, readiness (f = 3) and health (f = 1) were followed respectively. The topics studied in scale development in preschool education can be examined in detail in **Table 1**.

**Table 1. Survey Topics in Preschool Education.**

<b>Social Emotional Domain</b>		<b>f</b>	<b>Psychology</b>		<b>f</b>
1	Social skills scale	1	1	Child abuse	1
2	Teachers' executive function skills of children	1	2	Adolescent and child mental health	1
3	Determining self-efficacy regarding self-regulated teaching	1	3	Psychological well-being	1
4	Measuring social behavior	1	4	Adjusting to divorce	1
5	Feelings about school scale	1	5	Working memory	1
			<i>Subtotal</i>		5
			<b>Curriculum Studies</b>		
6	Preschool teachers' beliefs in supporting self-regulation skills	1	1	Curriculum evaluation	3
			2	Curriculum literacy	1
			<i>Subtotal</i>		4
			<b>Special education</b>		
8	Social emotional well-being and psychological resilience	1	1	Candidate reporting scale for gifted children	1
9	Child depressive symptom assessment		2	Perception of gifted education	1
10	Self-efficacy of inclusive classroom teachers	1	3	STEM education self-efficacy scale for gifted students	1
11	Social skill development	1	4	The impact of integration on children with special needs	1
12	Independent learning behaviors		<i>Subtotal</i>		4
13	Determining the level of responsible behavior	1	<b>Mathematics Education</b>		
14	Anxiety-fear scale	1	1	Math skill	2
15	Self-Regulation skill	1	2	Mathematics liking scale	1
16	Responsibility training	1	<i>Subtotal</i>		3
<i>Subtotal</i>		16	<i>Subtotal</i>		3
<b>Science Education</b>			<b>Creativity</b>		
1	Science education/training self-efficacy	3	1	Creative learning environment evaluation	1
2	View on science education	1	2	Creativity in teaching	1
3	Connecting with science/nature	1	3	Tendency to think innovatively	1
4	Scientific process skills	1	<i>Subtotal</i>		3
			<b>Children's Literature</b>		
5	Self-efficacy for conducting scientific field trips	1	1	Violent language in children's literature	
<i>Subtotal</i>		7	2	Competence in using digital story tools	1
			3	Evaluation scale for illustrated story books	1
<b>Vocational Training</b>			<i>Subtotal</i>		3
1	Teacher leadership	1	<b>Technology</b>		
2	Love of profession	1	1	Children's use of technology	1
3	Measuring unemployment anxiety	1	2	Technology addiction	1
4	Teachers' attitudes towards evaluation-assessment	1	<i>Subtotal</i>		2
5	Perceptions of the flipped learning model	1	<b>Game</b>		
6	Attitude towards inclusive education	1	1	Risky games	1
<i>Subtotal</i>		6	2	Game perception	1
			<i>Subtotal</i>		2
<b>Interaction</b>			<b>Psychomotor</b>		
1	Teacher-child interaction	1	1	Gross and fine motor development	1
2	Family involvement	1	2	Determining readiness	1
3	Co-parenting scale	1	<i>Subtotal</i>		2
4	Early childhood parent media mediation	1	<b>Health</b>		
5	Teacher-student relationship scale	1	1	Post-surgery pain	1
<i>Subtotal</i>		5	<i>Subtotal</i>		1
			<i>Subtotal</i>		1
<b>Total Frequency</b>					<b>63</b>



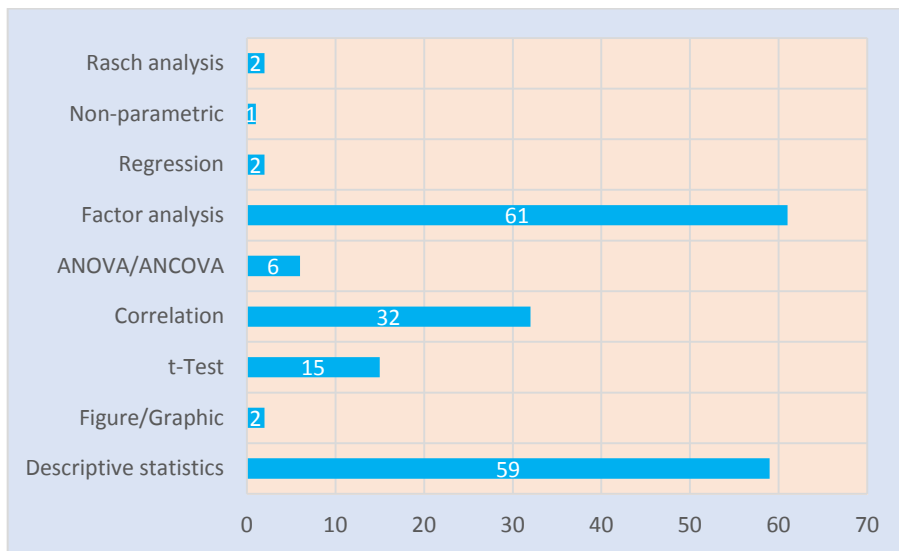
**Figure 8. Frequently Studied Samples in Studies for Preschool Education.**



**Figure 9. Frequently Studied Sample Sizes in Studies for Preschool Education.**

### ***Research Methods Employed in the Study***

**Figure 7** below presents the research methods employed in articles by Turkish researchers on scale development and adaptation in early childhood education from 2018 to 2023. When examining the research methods of the



**Figure 10. Analysis Methods Used in the Study.**

studies, it is revealed that 62 studies used the survey method, 1 study chose the descriptive method.

### ***Sample and Sample Sizes in the Study***

**Figure 8** shows the frequently studied samples in studies for preschool education. When examining the samples in scale development and adaptation studies in **Table 1**, it appears that there is diversity in terms of the samples. The studies have utilized samples consisting of preschool children, educators/teachers, teacher candidates, parents/guardians, documents/books, and mixed samples of children/teachers and children/parents. Among these samples, educators/teachers constitute the largest group with a total of 24 studies. The second-largest group consists of samples of preschool children, with 17 studies in terms of sample size. In the 3rd place, there are 10 studies that utilized a sample of parents/guardians. Looking at the 4th place, it is evident that a sample of teacher candidates is represented by 8 studies. In the 5th place, a mixed sample of children/teachers is represented by 3 studies. In the 6th place, there are an equal number of samples in a mixed sample consisting of 1.

**Figure 9** shows frequently studied sample sizes in studies for preschool education. When considering the sample sizes, it becomes apparent that the majority of the samples, specifically 33 studies, fall within the range of 201-500. More than 500 samples are included in 17 studies.

There are 10 studies with sample sizes ranging from 101 to 200, and 3 studies with sample sizes ranging from 51 to 100.

## ***Analysis Methods Used in the Study***

**Figure 10** shows analysis methods used in the study. When examining scale adaptation and development studies related to the early childhood period from 2018 to 2023, it is apparent that 59 articles utilized descriptive statistics, 2 articles employed graphical and visual methods, 15 studies used t-tests, 32 studies used correlation analysis, 6 studies used ANOVA and ANCOVA, 61 studies conducted factor analysis, 2 studies used regression analysis, 1 studies employed non-parametric methods and n2 studies utilized Rasch Analysis. Some articles employed multiple analysis methods instead of just one analysis method.

## **Conclusion and Discussion**

In the research, scale development and adaptation studies related to the early childhood period are predominantly found in ULAKBİM-based indexes, accounting for 77.78 %. Only 3.17% of these studies are present in SSCI-based indexes, while 19.05% are associated with other indexes. Of the conducted studies, 43 are published in national journals, and 20 are published in international journals. This means that 68% of scale studies are indexed nationally, and 32% have international index coverage.

When examining scale adaptation and development studies related to the early childhood period, it is evident that the density of research topics primarily includes areas such as mathematics education, preschool programs, science, technology, game, social-emotional development, children's literature, and special education, among others. From this, it can be stated that there is a rich diversity in the field of study. It is also observed that cognitive development studies encompassing social-emotional development and mathematics and science are more frequently employed in scale development and adaptation research.

Data indicates a decline in the number of publications on preschool scale development between 2018 and 2023. The reason of this can be difficulties and taking more time and resources for developing or adapting a scale. The process of cross-cultural adaptation involves detailed translation and adaptation procedures to ensure the accuracy and cultural sensitivity of scales, which requires time and resources (Beaton & et al., 2000). Trends in scale development in preschool education are generally social emotional domain and science education. There can be many reasons for it. Some of them can be:

**Education Policies and Needs:** In Turkey, social-emotional development and science education are considered crucial areas in preschool education. Therefore, assessment scales are used in these areas to monitor and evaluate children's development.

**Research and Development Studies:** These scales have been developed by educators, psychologists, and researchers and adapted to meet local needs in Turkey's preschool education environment.

**Importance Given to Early Childhood Education:** The preschool period is crucial for children to develop fundamental skills and acquire social-emotional abilities. Hence, assessment scales focusing on this period are considered critical for monitoring children's overall development.

**Practitioners' Needs and Requests:** Teachers and other professionals in preschool education may require assessment scales to track children's development and guide educational strategies.

Considering the development of children in Turkey, the environment they live in, and the conditions of the century they live in, there is a significant need for these areas, or it may be due to the lack of many studies in this field.

Scale development and adaptation in preschool education involve specific considerations to ensure the validity and reliability of measurement tools tailored for young children. There are important key considerations in preschool education like:

**Developmental Appropriateness:** Ensuring that the items and scales are developmentally appropriate for preschool-aged children, considering their cognitive, emotional, and social development (Pianta & Nimetz, 1991).

**Language and Communication:** Adapting scales to be language-sensitive and suitable for young children's communication abilities, often involving simplified language and visual aids (La Paro, & Pianta, 2000).

**Observational Methods:** Utilizing observational methods alongside parent or teacher reports to capture preschoolers' behavior and development comprehensively (Howes & Ritchie, 1999).

**Cultural Sensitivity:** Ensuring scales are culturally sensitive and relevant, especially in diverse preschool settings, through adaptation and validation processes (Landry & et al., 2002).

**Parent and Teacher Involvement:** Involving parents and teachers in the scale development process to ensure that the items and scales reflect their observations and concerns (Berry & et al., 2001).



The impacts of scale development and adaptation on preschool education practice and research are multifaceted and significant. Developing and adapting scales for preschool education can enhance the accuracy and reliability of assessments, leading to improved educational practices and outcomes. The importance of scale development or adaptation for the preschool period can be listed as follows:

- **Increased Assessment Accuracy:** The development of reliable and valid scales ensures that the assessment of preschool children's skills, behaviors, and development is accurate. This allows educators to identify children's strengths and areas needing support more effectively (AERA, APA, & NCME, 2014).
- **Tailored Educational Interventions:** Accurate scales help in designing targeted interventions that address specific needs of preschool children. By using data from these assessments, educators can create personalized learning plans that support each child's development (Gullo, 2005).
- **Improved Educational Outcomes:** Adapted scales that are culturally and contextually relevant contribute to better educational outcomes. They ensure that the assessments are meaningful and applicable to the children being assessed, thus improving the quality of education they receive (Maxwell, Clifford, & Guralnick, 2015).
- **Informed Policy Making:** Reliable data from well-developed scales can inform policy decisions at various levels. Policymakers can use this data to develop and implement policies that support early childhood education and address gaps in the current system (Snow & Van Hemel, 2008).
- **Advancement of Research:** Scale development and adaptation contribute to the advancement of research in preschool education. Valid and reliable scales are essential for conducting high-quality research, which can lead to new insights and improvements in educational practices (Pianta, Barnett, Justice, & Sheridan, 2012).
- **Cultural Sensitivity and Inclusivity:** Adapted scales that take into account cultural differences ensure that assessments are fair and inclusive. This is particularly important in diverse educational settings, where a one-size-fits-all approach may not be effective (Rogoff, 2003).

Additionally, it has been revealed that scale development and adaptation studies related to art have not been addressed in recent years. In areas such as physical development, game, and readiness, there is also a limited number of studies in terms of scale development and adaptation. Despite the exploration of various topics related to the early childhood period, with the exception of studies in children's literature, there have been

few scale development studies related to language development in the last six years. The reasons for this could be a subject for further research. Possible explanations may include the extensive prior work in this area or a decrease in recent attention to research in this field.

When looking at language development, it is argued that it is closely intertwined with humans and society, and it plays a significant role in the formation of fields such as culture, art, and science (Aksan, 1998). When early childhood education programs incorporate language and cognitive development, they can make a substantial contribution to the early childhood period (Aydoğan and Koçak, 2003). It can be said that early childhood education is not only important for children but also holds a significant place for their families and the society in which they live (Güven and Efe-Azkeskin, 2010). Therefore, the development and adaptation of scales are crucial for monitoring the progress and advancement of children and all individuals and fields related to children. This way, it becomes possible to swiftly and reliably assess where there are deficiencies, which aspects need further improvement, and which areas have advanced more.

When examining scale studies that encompass the preschool period, reviews have been conducted on scales related to early childhood, although these scales have predominantly taken into account only one aspect of a child's development. For example, Kay and Sağlam (2020) examined scales used to measure social and emotional development in children. The study not only covered the preschool period but also encompassed broader age groups. Additionally, the study spanned research conducted between 1987 and 2020.

Another example includes a document review of articles published in 21 different national journals between 2002 and 2013, which focused on the development and adaptation of assessment scales/achievement tests in the field of science education, specifically tailored to Turkish culture. This study conducted by Tosun and Taşkesenligil (2015) also encompassed middle and undergraduate-level research, rather than focusing solely on the preschool period.

When examining the conducted studies, it appears that there is a debate regarding whether qualitative or quantitative research is superior in the field of educational sciences (Hammersley, 1992). Descriptive surveys from quantitative studies seem to dominate the landscape in early childhood research, particularly in the last six years, as they constitute a significant majority of scale development and adaptation studies. For the sample of early childhood scale studies from the last six years (2018-2023), the participants are found to consist of educators/teachers, preschool children, parents/guardians, teacher candidates, mixed samples of children/teachers, mixed samples of children/parents, and documents/books.

The scale studies revealed that the largest samples were constituted by educators/teachers, while the smallest samples were formed by children/parents and documents/books.

Guadagnoli and Velicer (1988) argued that the absolute number of observations is a standard measure, and an adequate number of observations should typically range between 100 and 200. Aleamoni (1976) proposed that a suitable sample size for factor analysis is 400, a view supported by Guadagnoli and Velicer (1988). Comfrey and Lee (1992) categorized the absolute number of observations as follows: 50 (very weak), 100 (weak), 200 (moderate), 300 (good), 500 (very good), and 1,000 and above (excellent). When examining the scale studies, it was found that the sample sizes fell in the range of 201-500, which is from moderate to very good. There were only 3 studies with sample sizes ranging from 51 to 100, indicating very weak to weak samples. No scale adaptation and development studies were found with sample sizes of 1,000 and above or sample sizes below 50.

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