

ORIGINAL ARTICLE

Validity and Reliability Study of the Turkish Version of the Self-Regulation Assessment Scale for Early Childhood*

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Ethical Statement

This research was carried out after obtaining approval from the "Çanakkale Onsekiz Mart University Rectorate Graduate Education Institute Ethics Committee" and official permissions (Scientific Research Ethics Committee's Decision No. 09/26 dated 13.07.2023). Each stage of the study was carried out in accordance with research and publication ethics.

Funding Information

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Conflict of Interest

No conflict of interest is present in the conduction or the reporting of this study.

ABSTRACT

The assessment of children's self-regulation skills in early childhood is important in terms of revealing their social, emotional and academic situations, distinguishing those at risk and taking precautions. The aim of this study is to create the Turkish form of the Self-Regulation Assessment Scale for Early Childhood (SASEC) developed by Boyer (2023) and to determine its validity and reliability for children aged 36-72 months. Data from the Turkish form of the scale were obtained from the evaluation of the self-regulation skills of 313 children (36-72 months) in preschool education institutions in various districts of Istanbul. According to the analysis results, SASEC has a single-factor structure. The factor loadings of the scale items vary between 0.760 and 0.853. The results show that the Cronbach's Alpha value of the 12-item scale is 0.95. The scale is used with a scale rating guide that allows the child's attitudes and behaviors to be evaluated. A high score from the scale indicates that the child has good self-regulation skills; a low score indicates the child's inadequacy in self-regulation skill.

Keywords: Early childhood, preschool education, child development, self-regulation, scale adaptation.

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INTRODUCTION

Self-Regulation Skills

Self-regulation skills which depend on executive function processes in children, can be observed from an early age (Berger, 2011; Blair, 2016; Finders et al., 2021; Gagne & Nwadinobi, 2018; Keown et al., 2020; Zelazo et al., 1997; Zelazo et al., 2013). Children in early childhood experience difficulties coping with a variety of situations. They develop some strategies with the planned and conscious control skills they acquire over time to cope with these situations they encounter. Children direct their internal thought processes and regulate their behavior with these skills, which are defined as self-regulation skills (Bronson, 2000; Calkins & Fox, 2002; Çelik & Kamaraj, 2020).

Self-regulation skills vary depending on the language skills they acquire in the early years, the family's level of education, the children's developmental level, and the various supports provided to the children (McClelland et al., 2007; McCoy, 2019; Montroy et al., 2016; Savcı, 2023). Self-regulation skills in children vary depending on genetic and environmental factors external environment and internal needs, and self-regulation skills over time (Kızıldağ, 2023). Parental attitudes are among these factors (Compagnoni et al., 2019). During this period, parents' attitudes towards children are important (Björk et al., 2020; Zeytinoğlu et al., 2017). Parents' oppressive, insensitive or controlling behaviors can negatively affect children's independent coping skills. When the child rearing behaviors of families and the self-regulation skill levels of their children are examined, it can be said that this skill levels of children of oppressive parents are lower (Bayındır, 2016).

Social, Emotional and Academic Consequences of Self-Regulation Skills

Inadequacy in self-regulation in early childhood is one of the important factors that will negatively affect social and academic success in later years. The ability to month attention to an event/situation and control impulsive behaviors is seen as a prerequisite for emotional management and academic success in early childhood. Therefore, studies and training aimed at improving children's self-regulation skills are needed (Ezmeci & Akman, 2023). Importance should be given to studies that aim to develop the self-regulation skills of disadvantaged children (family, socioeconomic level, etc.) (Mistry et al., 2010).

Identifying self-regulation skills in early childhood is important in terms of gaining insight into future academic performance and taking precautions against possible negative social and academic developmental delays (Cameron Ponitz et al., 2009; Duncan et al., 2018; Gümrükçü-Bilgici & Deniz, 2021; McClelland et al., 2007; Sezgin & Demiriz, 2016). In this context, it seems that valid and reliable measurement tools are needed to scale self-regulation skills, which are an important predictor of social and academic outcomes in pre-school and later years.

This study was prepared by taking into account the results of the above-mentioned researchs. The main purpose of this study is to present a valid and reliable scale that can evaluate the self-regulation levels of children in early childhood. In this study, the following question was sought to be answered; Is the Self-Regulation Assessment Scale for Early Childhood (SASEC) adapted into Turkish a valid and reliable scale?

METHOD

Research Design

This research includes a scale adaptation study. For this purpose, firstly Exploratory Factor Analysis (EFA) was conducted. Then Confirmatory Factor Analysis (CFA) was performed.

Setting and Participants

The research was conducted in pre-school education institutions affiliated with the Ministry of National Education (MNE) in Küçükçekmece, Avcılar, Bakırköy, Ümraniye and Gaziosmanpaşa districts of Istanbul. Teachers in these schools evaluated the self-regulation levels of children (36-72 months) who continue their preschool education with SASEC in the 2023-2024 academic year. These children were selected from schools in districts with different quality of life indices. The districts where the children's schools are located are districts with different quality of life according to the "quality of life index" (demographic structure, economic structure, education, social life and environment, infrastructure and transportation, etc.) (Şeker et al., 2022).

In addition, the views of school principals and teachers were also considered when selecting districts and schools. The average age of the children in the SASEC sample is 59.79 months. 27 teachers evaluated the self-regulation of children in these preschools. The professional experience of these teachers varies between 1 year and 24 years.

Table 1. Demographic characteristics

Variables	Groups	Frequency	Percentage	Cumulative percentage
Gender	Girl	157	50.2	50.2
	Male	156	49.8	100
	Total	313	100.0	
Age group (month)	36-59 month	101	32.3	32.3
	60-72 month	212	67.7	100
	Total	313	100.0	
Pre-school education period (year)	1 year	228	72.9	72.8
	2 year	78	24.9	97.8
	3 year	7	2.2	100
	Total	313	100.0	
Number of siblings	She/he has no siblings	114	36.4	36.4
	1 or 2 siblings	171	54.6	91.1
	3 siblings	23	7.3	98.4
	4 or more siblings	5	1.6	100
	Total	313	100.0	
Type of school	Kindergarten within primary or secondary school	143	45.7	45.7
	Independent kindergarten	116	37.1	82.7
	Private kindergarten	54	17.2	100.0
	Total	313	100.0	
Mother's job	Housewife	190	60.7	60.7
	Self-employed	69	22.0	82.7
	Civil Servant	35	11.2	93.9
	Worker	14	4.5	98.4
	Unknown	5	1.6	100.0
	Total	313	100.0	

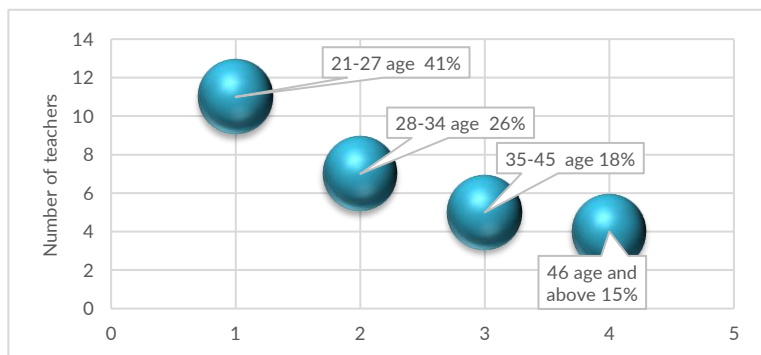
Table 1 continued

Father's job	Self-employed	213	68.1	68.1
	Civil Servant	43	13.7	81.8
	Worker	45	14.4	96.2
	No specific profession	5	1.6	97.8
	Unknown	7	2.2	100.0
	Total	313	100.0	

According to Table 1, 157 of the children are girls (50.2%); 156 are boys (49.8%). 101 (32.3%) are in the 36-59 month group and 212 of the children (67.7%) are in the 60-72 month group. It is seen that 228 of the children (72.9%) received only 1 year of preschool education; 78 (24.9%) received 2 years, and 7 (2.2%) received 3 years of preschool education. It is seen that 114 (36.4%) of the children had no siblings, 171 (54.6%) had 1 or 2 siblings, 23 (7.3%) had 3 siblings, and 5 (1.6%) had 4 or more siblings (Table 1).

When examined by school type, 143 of the children (45.7%) received kindergarten within primary or secondary school, 116 of the children (37.1%) received independent kindergarten, 54 of the children (17.2%) received private kindergarten. Of the children's mothers, 190 (60.7%) are housewives, 69 (22.0%) are self-employed, 35 (11.2%) are civil servants, and 14 (4.5%) are workers. 213 (68.1%) of the children's fathers are self-employed, 43 (13.7%) are civil servants, 45 (14.4%) are workers, and 5 (1.6%) do not have any specific profession. When the ages of the teachers who evaluated the self-regulation levels of these children are examined, it is seen that 41% are 21-27 age, 26% are 28-34 age, 18% are 35-45 age and 15% are 46 age and above. The ages and percentages of teachers who evaluated the self-regulation levels of these children are given in Figure 1.

Figure 1. Age of teachers



Data Collection Tools

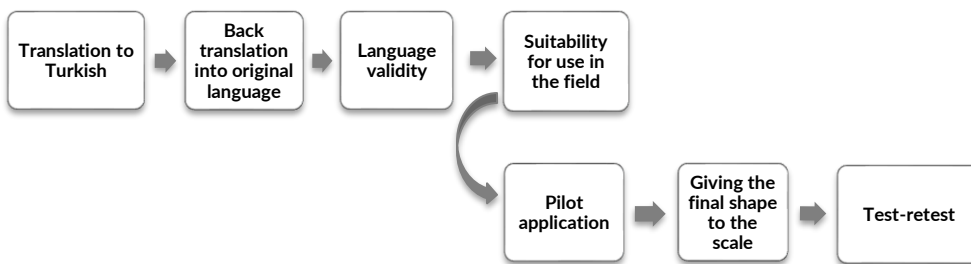
The Turkish form of SASEC, scale rating guide, and child, family, and teacher demographic information forms were used in the study. SASEC was developed by Boyer (2023). The development of SASEC was conducted through an exploratory sequential mixed method. Interviews with adult participants formed the qualitative basis of SASEC. Scale items were prepared to measure the behaviors of children in early childhood at various levels of complexity and their ability to initiate, change, and stop given activities when necessary. A rating guide containing verbal frequency expressions and their operationalized definitions was also created to rate the scale items. Children's behavior was also assessed through video recordings. Additionally, official documents of the school were also included in the study. The quantitative component of

the research was completed by analyzing the data obtained from the evaluation of 147 children (3-5 years old) by their teachers. SASEC's Bartlett's sphericity test result of the scale is statistically significant ($p < 0.001$). The Kaiser-Meyer-Olkin (KMO) value is 0.943 and Cronbach's Alpha coefficient of the scale is 0.990. The scale, which has 12 items, has a single factor (Boyer, 2023).

The author who developed SASEC, which was decided to be adapted to Turkish, was contacted. After obtaining the necessary adaptation permission for the SASEC study from the author, the translation was carried out separately by 5 people who are fluent in English and Turkish. These translation forms obtained were compared with each other. The scale and the scale item rating guide were translated into English and re-evaluated. At this stage, the suitability of the scale and scale rating guide for Turkish and its use in pre-school education were examined by 1 associate professor of educational sciences and 2 master's degree graduates of educational sciences, 1 professor of pre-school education, 1 associate professor of pre-school education, 2 pre-school education master's degree graduates and 3 pre-school teachers. As a result of these studies, the scale rating guide was shortened and rearranged under the guidance of keywords that would form the general framework of the original form to ensure ease of use in the field.

A preliminary study was conducted using the revised scale form. Ethics committee approval from the university and research permissions from the MNE and preschool education institutions affiliated with the MNE were obtained. Studies were conducted using this scale form, scale rating guide, child, family and teacher demographic information forms in schools where research permission was obtained. Teachers who will evaluate the children in these schools have been identified and information about the practice has been provided. These self-regulation assessment forms were given to teachers and collected back from them after completion. Data from 313 children received from teachers were included in the analysis. Three weeks after this study, a group of teachers from the same study group filled out the scale forms again for the children. Scale adaptation stages are given in Figure 2.

Figure 2. Scale adaptation stages



RESULTS AND DISCUSSION

Exploratory Factor Analysis and Confirmatory Factor Analysis and reliability analyses of the scale were performed. SPSS 26.0 package program and Jamovi 2.6.13 program with SEMLj module were used in the analyzes (Gallucci & Jentschke, 2021). The data of the scale were collected at once (313 children) and factor analyses were performed by creating two separate data sets with random selection (Orcan, 2018). EFA and CFA were performed with 12-item SASEC. At first, sample adequacy was determined. For this purpose, the KMO coefficient was obtained. In addition, Bartlett's Sphericity test values were also considered (Table 2).

Table 2. Results of the tests

Test		Value
KMO Coefficient		0.937
Bartlett's Sphericity Test	Chi-square	2036.129
	Degree of freedom	66
	<i>p</i>	0.000

The analysis results show that the KMO coefficient of the scale is 0.937 and the Bartlett test of sphericity is statistically significant ($\chi^2=2036.129$; $SD:66$; $p<.001$) (Table 2). When the analysis results are examined, it is seen that the total eigenvalue of SASEC is 7.893, it explains 65.773% of the total variance (Table 3) and is a single factor (Figure 3). The factor loadings of the scale vary between 0.760 and 0.853. The Average Variance Extracted (AVE) value of the scale is 0.724 (Table 4).

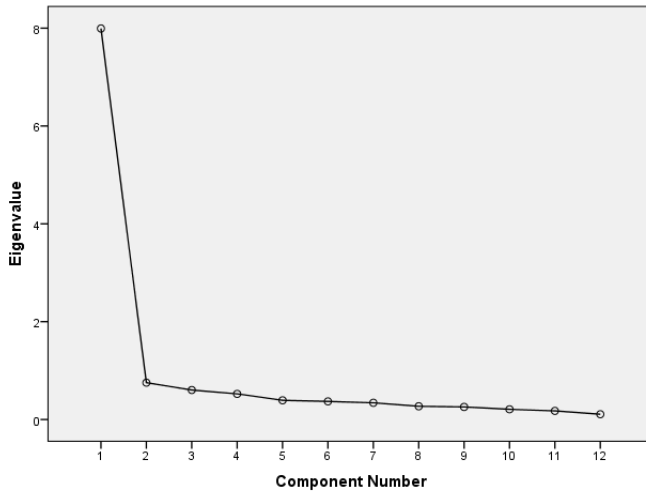
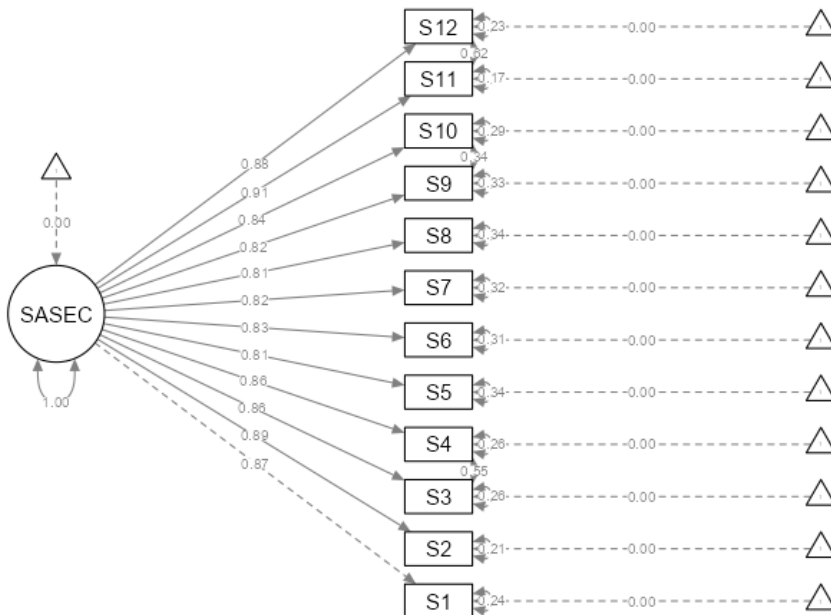
Table 3. Total variance analysis of scale

SASEC item	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	%Cumulative	Total	% of Variance	%Cumulative
1	8.232	68.599	68.599	7.893	65.773	65.773
2	0.672	5.599	74.197			
3	0.610	5.084	79.281			
4	0.502	4.179	83.460			
5	0.395	3.296	86.756			
6	0.365	3.039	89.795			
7	0.285	2.372	92.167			
8	0.238	1.985	94.152			
9	0.221	1.838	95.989			
10	0.207	1.724	97.713			
11	0.175	1.455	99.168			
12	0.100	0.832	100.000			

Method: Principal Axis Factoring

Table 4. Factor loadings obtained for the scale

SASEC item	Factor Load	AVE
1	0.853	0.724
2	0.840	
3	0.838	
4	0.830	
5	0.822	
6	0.819	
7	0.802	
8	0.799	
9	0.784	
10	0.782	
11	0.775	
12	0.760	

Figure 3. Scree plot of the scale**Figure 4.** Path diagram of the scale

In the preliminary analyses performed, it was observed that there were high levels of covariances in some of the observed variables. After these examinations, modification suggestions were determined between the items of SASEC. Considering the correction indices, fit values were examined after modification with items S4-S3, S12-S11 and S10-S9. It was concluded that the RMSEA value of the SASEC (0.075) is an acceptable fit; the χ^2 /df value (2.058) shows a good fit; and the χ^2 (105) value is quite close to a good fit. The results show that the values of SRMR (0.043), CFI (0.998), AGFI (0.993), NFI (0.997), GFI (0.997) and NNFI (0.998) are also among the good fit criteria (N = 187). When the indices and

fit criteria related to the analysis results and the cut-off points are taken into consideration, all these results show that the model related to the structure of the SASEC is confirmed (Çokluk et al., 2021; Sümer, 2000; Schermelleh-Engel et al., 2003). (Figure 4).

Regarding Reliability

Three weeks after the scale application, teachers were asked to evaluate self-regulation for some children in the same group. For the test-retest Pearson correlation coefficient obtained belonging to these children in the same group is 0.75. The Cronbach Alpha coefficient of the scale is 0.95. When these results are examined, the reliability of the scale is seen (Çokluk et al., 2021; Kalaycı, 2010).

CONCLUSION AND RECOMMENDATIONS

Considering the results obtained from the study, it appears that the SASEC is a valid and reliable scale that is compatible with its original structure and can measure the self-regulation levels of children in early childhood (36-72 months). Analysis results show that SASEC adequately explains the quality it measures. The scale is a single-factor. The scale is scored as always=5 points, often=4 points, sometimes=3 points, infrequently=2 points and never=1 point. The highest score for the scale evaluation is 60, while the lowest score is 12. According to the evaluation results of the 12-item SASEC, as the child's scores increase, her self-regulation is good, while a low score indicates inadequacy.

The SASEC is a self-regulation assessment tool that can be used by early childhood educators and researchers. The scale has a scale rating guide that rates the child's attitudes and behaviors. This SASEC manual describes the child's behavior in detail, using keywords to rate scale items. This research includes data on children aged 36-72 months in schools located in districts with different quality of life according to "different quality of life indices". New studies can be conducted with children of different age groups from families with different socioeconomic status. The findings from new studies can be interpreted by comparing them with other research results.

Assessing children's self-regulation skills is important to gain insight into their future development. In order to support children at risk in social, emotional and academic areas during this period, educators should be informed about children's self-regulation skills and how to support them. Various practices should be implemented by teachers at school and at home to develop children's self-regulation skills. Educators should inform parents about their children's self-regulation levels. They can also provide parents with information about how family attitudes should be towards children's self-regulation skills.

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