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**VALIDITY AND RELIABILITY STUDY OF THE GREENSPAN SOCIAL
EMOTIONAL GROWTH CHART (GSEGC) FOR INFANTS AGED 24-30 MONTHS**

Greenspan Sosyal-Duygusal Gelişim Çizelgesi'nin (GSDGÇ) 24-30 Aylık Çocuklar için

Geçerlik ve Güvenirlik Çalışması

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ABSTRACT

This study aimed to conduct the Turkish adaptation of the GSEGC (Greenspan Social Emotional Growth Chart) for 24-30 month-old infants and assess its' validity-reliability. GSEGC was developed by Greenspan (2004) as a screening tool for 0-42 months aged children in order to inspect the social-emotional functions. The sample consisted of 240 mothers who were residing in city center of Kayseri and had 24-30 months old children. Regarding the validity studies of the assessment tool, the language validity was checked, content validity was carried out by submitting it to the opinion of seven experts. In order to test the difference between the scores obtained from the assessment tool in the month ranges within the scope of construct validity, the infants were divided into groups of; 24-25, 26-27, 28-30 months. Ankara Developmental Screening Inventory was used for criterion validity. The analysis revealed significant difference in months. In order to assess whether or not the assessment tool yielded consistent time-dependent results, the tool was administered to 28 children again with 1.5-2 weeks interval and statistically significant, positive correlation was found. It has been concluded that the GSEGC is a valid-reliable assessment tool for evaluating social-emotional growth of 24-30 months aged Turkish infants.

Keywords: Evaluation of social-emotional growth, Scale adaptation, Social-emotional growth, Validity-reliability.

ÖZ

Bu çalışma, GSEGC'nin (Greenspan Social Emotional Growth Chart- Greenspan Sosyal-Duygusal Gelişim Çizelgesi) 24-30 aylık bebekler için Türkçe uyarlamasını yapmayı ve geçerlilik-güvenirliğini değerlendirmeyi amaçlamıştır. GSEGC, Greenspan (2004) tarafından 0-42 aylık çocukların sosyal-duygusal işlevlerini incelemek amacıyla bir tarama aracı olarak geliştirilmiştir. Örneklemi Kayseri il merkezinde ikamet eden ve 24-30 aylık çocuğu olan 240 anne oluşturmuştur. Değerlendirme aracının geçerlilik çalışmaları ile ilgili olarak dil geçerliliği kontrol edilmiş, yedi uzmanın görüşüne sunularak içerik geçerliliği gerçekleştirilmiştir. Yapı geçerliliği kapsamında değerlendirme aracından alınan puanların ay aralıklarında farklılığını test etmek için bebekler; 24-25, 26-27, 28-30 ay gruplarına ayrılmıştır. Ölçüt geçerliliği için Ankara Gelişim Tarama Envanteri kullanılmıştır. Analiz, aylarda önemli bir fark ortaya koymuştur. Ölçme aracının zamana bağlı olarak tutarlı sonuçlar verip vermediğini değerlendirmek için çizelge 28 çocuğa 1.5-2 hafta arayla tekrar uygulanmış ve istatistiksel olarak anlamlı, pozitif korelasyon bulunmuştur. GSEGC'nin 24-30 aylık Türk bebeklerinin sosyal-duygusal gelişimini değerlendirmek için geçerli-güvenilir bir değerlendirme aracı olduğu sonucuna varılmıştır.

Anahtar kelimeler: Geçerlik-güvenirlik, Ölçek uyarlama, Sosyal-duygusal gelişim, Sosyal-duygusal gelişimin değerlendirilmesi.

INTRODUCTION

As a social being, the human endeavor to be in harmony with the environment throughout the life. This adaptation effort, which begins immediately after birth (Atli & Baran, 2019; Başal, 2004; Berk 2005; Kandır & Alpan, 2008; Matson, Matson & Rivet, 2007; Saarni, 2001; Saltalı, 2013), helps the individual to develop sensitivity to the rules and obligations of group life, as well as living in harmony with other individuals (Atay, 2011; Ömeroğlu et al., 2015). Social growth is defined as a dynamic process in which an individual learns the knowledge, skills, and values which are necessary to establish effective relationships with others and develops social adaptation skills. A life-long pattern chain starting from birth (Sanson, Hemphill & Smart, 2004; Şengül & Yükselen, 2015; Yurtsever Kılıçgöl, 2015) are the changes that the individuals go through (Gülay & Akman, 2009). Emotional growth results from maturity and learning. Emotions have a significant role in establishing social ties. Social growth and emotional growth, which constitute the foundation of social growth, are two areas of development that interact with one another (Kandır & Alpan, 2008). Emotional reactions are significant stimuli in social development while they emerge as a consequence of the effect of a certain item, condition, or event. Therefore, social-emotional growth is often expressed together in the literature (Buluş & Samur, 2017; Demir, 2016; Küçüküran & Keleş, 2019a; Şahin, 2012). Social-emotional growth can be defined as the ability of the child to express himself, control his emotions, and be in harmony with himself and his environment (Saarni, 2001; Şahin, 2012). The healthily progress of social and emotional growth, which deeply affects human life, dates back to childhood. The child who is able to sustain the social-emotional growth stages in the early years in a safe way establishes positive relationships with the people around him in the subsequent years (Şengül & Yükselen, 2015).

The presence of determined and consistent behaviors in the process of satisfying the basic needs of the baby, whose basic sense of trust begins to take shape with birth, is critical in the development of his confidence in his environment. The interaction between caregivers and the baby is the foundation of the sense of trust (Orçan, 2008). The fact that the person or individuals in charge of the baby's care satisfy such needs in a timely and sincere manner ensures the formation of basic trust in the baby and also helps the baby to emotionally relax. In other words, the quality of the emotional relationship established between the person who is responsible for the care of the baby improves in proportion to how they respond to each

other's feelings (Şahin, 2012). Also, infants learn to express their own emotions by observing and monitoring how adults express their emotions (Meggit, 2012).

The formation of a safe bond between the baby and the mother, or the adult who assumes the caring for the baby, is also important in laying the foundations for social growth (Şahin, 2012). This trust also shapes the overall perception that will be developed toward the outside world in the future (Gülay & Akman, 2009). The extent of the attachment relationship in the early years gives clues to the future life of the individual. Therefore, individuals who learn to trust themselves and others with safe attachment at an early age feel safer in their relationships. A relationship that relies on healthy sensitivity and positive response between the mother, father and child at an early age results with a protective and improving bond formation for the child (Çimen, 2000; Orçan, 2008). In other words, positive interaction between the parent and the child, as well as the experiences gained by the child in different environments and individuals during the periods following the birth play a decisive role in social growth (Kotil, 2010). Moreover, the sensitivity to the care of the infant and satisfaction of his needs contributes to the social and emotional growth of the infant.

It is crucial for the individual to establish and maintain healthy social relationships with those around them. Therefore, it is critical to assess the social-emotional growth traits of children, particularly those in their early years, to support the child's social-emotional interaction with peers and adults within this framework and to understand the traits of this period (Şengül & Yükselen, 2015). It is also critical for parents to be good observers of their children's social-emotional growth traits from an early age, and to give them knowledge on how to behave towards their children in particular situations, in order to identify problematic behaviors (Ainsworth & Bowlby, 1991). It is therefore essential for the parents to be aware of the social-emotional growth traits of their children based on their age.

All the social-emotional behaviors a person will exhibit in the future are shaped by an attachment relationship established with the mother of the child or other caregivers during infancy. The positive feelings experienced between the caregiver and the infant make it easier to cope with conditions such as fear and anxiety. This attachment is a two-way relationship involving both the mother and her infant. The newborn requires a caring figure, from nutrition to cleaning to satisfy many of his living needs. Many factors such as the caregiver's sensitivity, maternity behavior, and sensitivity care skills affect attachment (Küçükturan & Keleş, 2019b; Mangelsdorf & Wong, 2009). It is stated that children should be focused on their social and emotional growth in order to become decent adults and to boost their academic achievement and adaptation in the future (Dalkılıç, 2014; Humphrey, Curran,

Morris, Farrell & Woods, 2007; Humphrey et al., 2008; Kaya & Tuna, 2008; Seven, 2008; Şentürk, 2007; Zeidner, Roberts & Matthews, 2002). Despite the fact that there have been few studies on the subject, it appears that the number of studies on the social-emotional growth of infants aged 12-36 months is limited (Alpan, 2006; Dışıklı, 2007). Because of these mentioned reasons, assessment of the social-emotional growth of infants by valid and reliable tools in regard to their culture has an utmost importance. Although some assessment tools evaluate the development in different areas of early childhood as a whole, there are no assessment tools that focus on social-emotional growth and assess social-emotional growth, especially in the early years. The aim of this study is to adapt the Greenspan Social-Emotional Growth Chart for the 24-30 months aged infants and assess its validity-reliability within this context.

MATERIAL AND METHOD

The sample group of this study, consisted of 240 mothers with 24 to 30 months aged infants who were born mature and were not diagnosed with any type of disability. The participants were registered at family health centers in city center Kayseri in 2017. 240 mothers with infants aged 24-30 months were contacted in order to collect data for the validity and reliability study. When determining the sample size, the “Sample Sizes for 0.05” values determined by Yazıcıoğlu & Erdoğan (2004) and the sample size to be attained based on the number of items were used as a reference, according to Cohen (1988). The sample size is important for reliable predictions of relationships. It is stated that a sample of 200 would be adequate in general for reliable factors; this number may be lowered by half in instances when the number of factors is limited and clear, but it would be beneficial to work with large samples in order to produce favorable outcomes (Atli 2019; Kline, 1994). Therefore, 240 mothers with infants aged 24-30 months were contacted in order to get better results from the validity and reliability study of the Greenspan Social-Emotional Growth Chart.

Ethical Considerations

To form the sample group of the study, an application was filed to the Family Health Directorate in City Center of Kayseri with the Ethics Committee Decision no: 32 (Erciyes University, Social and Human Sciences Decision), and the necessary permissions were obtained on 30/12/2016 with the decision no 201622. Among districts located in city center of Kayseri, the districts of Anayurt, Talas, Bahçelievler and Yenidoğan were preferred as they were regarded to represent the region in terms of socio-cultural and economic aspects and had

a heterogeneous distribution. Table 1 presents the demographic characteristics of the mothers who participated in the validity reliability study of the assessment tool.

Table 1. Mothers' Demographic Characteristics (n=240)

Demographic characteristics	Group	n	%
Infant's gender	Girl	120	50
	Boy	120	50
	Total	240	100
Infant's age	24- 25 months	80	33.3
	26- 27 months	80	33.3
	28- 30 months	80	33.3
	Total	240	100
Mother's age	30 years and below	72	30
	31-40 years	163	67.9
	41-50 years	4	1.6
	51 years and above	1	0.5
	Total	240	100
Mother's education level	Primary school	-	-
	Secondary school	-	-
	High school	44	18.4
	Bachelor's degree	196	81.6
	Total	240	100

Table 1 shows that the gender and age distribution of the children was equal when the demographic characteristics of the mothers who participated in the validity-reliability study were examined. Data of the child were collected from 80 mothers for all age groups. It was determined that 67.9% of the mothers were between the ages of 31 and 40, and 81.6% had bachelor's degrees.

The demographic characteristics of the mothers and their children were collected through the "General Information Form," which was prepared by the researcher. The mothers were subjected to the "Greenspan Social-Emotional Growth Chart" in order to make the adaptation of the chart for 24-32 months Turkish infants and make the validity and reliability of the chart within the scope of the study. Furthermore, the Ankara Developmental Screening Inventory (ADSI), which was developed by Savaşır, Sezgin and Erol (1995) and takes an average of 30-45 minutes to complete depending on the child's chronological age and skills, was employed and applied within the scope of the criterion validity of the study. Thus, criterion validity, which is a method of ensuring the validity of the scale, and its' correlation with similar scales were examined (Başol & Gencel, 2013). The people who were responsible for the child's care (parents, caregivers, etc.) were posed 154 items, and answers were given as "Yes, No, I Don't Know", and the data on four developmental domains were reached, including Language-Cognitive, Fine-Motor, Gross Motor, and Social Skills-Self-Care. The correlation between the scores from the social skill-self-care subscale of ADSI and the scores

from the Greenspan Social-Emotional Growth Chart (GSEGC) were studied. ADSI data were obtained by selecting infants who participated in the study at each monthly interval.

Greenspan Social-Emotional Growth Chart

Greenspan Social-Emotional Growth Chart, developed by Greenspan (2004) as a screening tool for 0-42 aged months children, is an assessment tool which is used to control over the child's social-emotional functions, set goals for early intervention, identify social-emotional problems, and assess a child's social-emotional abilities in researches. The data for the validity and reliability study of the tool were obtained from a total of 456 children in the United States. The age groups for which validity and reliability studies were conducted were 0-3 months (n=89), 4-5 months (n=54), 6-9 months (n=51), 10-14 months (n=56), 15-18 months (n=50), 19-24 months (n=53), 25-30 months (n=53), and 31-42 months. The Cronbach's alpha coefficient was calculated for the reliability studies of the assessment tool, and all alpha values were found above the expected reliability coefficient. A standardized sample was used to calculate Cronbach's Alpha coefficients for internal consistency. Total Growth Score coefficients range from 0.83 to 0.94, while Sensory Processing Score coefficients vary between 0.76 to 0.91. The validity of the scale was examined reviewed based on the construct validity. According to the results, it was accepted that the items were suitable for the target age ranges, the children could demonstrate the skills in the item, and the item was appropriate for the target age range (Greenspan, 2004).

The scale consists of a total of 35 items and is filled out by parents, educators, or other caregivers to assess how the child displays his abilities to satisfy his needs, how he behaves with his or her feelings, what he thinks, and how he communicates. By reading all of the items on the scale, the person who will fill it out evaluates the extent to which the children display such behaviors. The sample group of this study consisted of 240 mothers with infants aged 24 to 30 months in city center of Kayseri in 2017 and Greenspan was applied to these mothers to assess their infants' development. The items are rated on a six-point Likert-type scale based on how frequently the behaviors are observed. Each item is scored as [0] "I was unable to assess", [1] "never", [2] "sometimes", [3] "fifty-fifty", [4] "mostly", and [5] "always. A total score for social-emotional growth is obtained for each child as a consequence of using the assessment tool. The caregiver should mark the appropriate option. It takes around 10 minutes to complete the scale. The number of items that need to be filled out increases in proportion to the child's age (Greenspan, 2004). For example, for a baby aged 4-5

months, it begins with filling out the first question and ends with the thirteenth. Table 2 presents the distribution of the items in the scale by age group.

Table 2. Distribution of the Items in the Greenspan Social-Emotional Growth Chart by Age Group

Emotional stages	Age (By Months)	Items
Stage 1 Exhibits growing self-regulation and interest in the world	0-3 months	1-11
Stage 2 Engages in relationships	4-5 months	1-13
Stage 3 Uses emotions in an interactive purposeful manner	6-9 months	1-15
Stage 4a Uses a series of interactive emotional signals or gestures to communicate	10-14 months	1-17
Stage 4b Uses a series of interactive emotional signals or gestures to solve problems	15-18 months	1-21
Stage 5a Uses symbols or ideas to convey intentions or feelings	19-24 months	1-24
Stage 5b Uses symbols or ideas to express more than their basic needs	25-30 months	1-28
Stage 6 Creates logical bridges between emotions and ideas	31-41 months	1-35

According to the scores obtained by using the assessment tool, a child's attainment of social skills can be rated as *full mastery*, *emerging mastery*, and *possible challenges*. The full mastery means that the child has competency and mastery of the necessary skills, the emerging mastery means that more effort is necessary, additional assessments may be required if the child does not make progress, and possible challenges mean that additional assessment and intervention may be required for the child to fully attain necessary skills (Greenspan, 2004).

DISCUSSION

The findings of the study were interpreted under two headings; the Validity Study for the Greenspan Social-Emotional Growth Chart and the Reliability Study for the Greenspan Social-Emotional Growth Chart.

Validity Study for the Greenspan Social-Emotional Growth Chart

In the present study, the language validity of the Greenspan Social-Emotional Growth Chart was first performed. Adaptation is the process of making an assessment tool, which is developed in a foreign language and has a proved reliability and validity, usable by conducting a validity-reliability assessment in another language and culture. Therefore, it is emphasized that it is required; to ensure linguistic and cultural harmony in all the items included in the assessment tool, to preserve the equivalence of the scale, to involve the experts in the field and linguists into the process, and to preserve standardization by forming a common opinion (Seçer, 2015).

The Greenspan Social-Emotional Growth Chart was first translated from English into Turkish by two translators who have an excellent command of the field and language and then

back translated from Turkish into English by two different translators. Consistency between translations was examined and the assessment tool was put into final form.

The assessment tool, which was translated into Turkish under the content validity, was presented to seven experts who have been working in the fields of child development, preschool education, and infancy. Experts were asked to evaluate the suitability of each item on the scale for its purpose in terms of the social-emotional growth, the age group in which they worked, and Turkish culture as “appropriate, partially appropriate, or not appropriate,” and to compare it with the original version and write down their opinions in the “Remarks” section. Suggestions from all experts for each item were evaluated and necessary revisions were made and the assessment tool was finalized. The Lawshe’s technique was employed for the content validity of the assessment tools based on expert opinions.

In the Lawshe’s technique, the Content Validity Ratio (CVR), which is calculated to assess the content validity by collecting expert opinions, was used to determine if or not the items on the scale represent the field to be assessed (Çam & Baysan Arabacı, 2010). The Content Validity Index (CVI) is a test statistic obtained from the means of item decided to be included in the scale (Lawshe, 1975). The Content Validity Index (CVI) is calculated by taking the means of the total CVRs of the items (Yurdugül, 2005). However, there may be the Content Validity Index (CVR) > Content Validity Index (CVI) in studies with a limited number of experts (5-9). In this case, Kappa statistics are used to make decisions on whether or not items included in the scale are consistent. The formula for the content validity rate is given below.

$$KGO = \frac{N_G}{N/2} - 1$$

CVR: Content validity ratio

NG: The number of experts who have commented on an item as “necessary/appropriate”

N: The total number of experts who have commented on an item.

Given that the opinions of seven experts about the assessment of the assessment tools were taken, the acceptable CVR value for content validity is 0.99. (Veneziona & Hooper, 1997). CVR is a criterion developed to test if the item is statistically significant. The Kappa values of the items were also reviewed in this context, and the formula is provided below.

$$\text{Kappa} = \frac{\left(\frac{N_G}{N}\right) - P_c}{1 - P_c}$$

The concordance of expert opinion was indicated to be “good” for the relevant item when the Kappa value is between $[0.60 \leq \text{Kappa} \leq 0.74]$, and “excellent” when the Kappa value is $[\text{Kappa} \geq 0.75]$ (Fleiss, 1971; Yurdugül & Bayrak, 2012). Table 3 displays the content validity results of the Greenspan Social-Emotional Growth Chart.

Table 3. Results for the Content Validity of Greenspan Social-Emotional Growth Chart According to the Lawshe’s Technique

Item No.	EXPERT OPINIONS			CVR	KAPPA
	Appropriate	Partially appropriate	Not appropriate		
1	7	0	0	1.00 ⁺	1.00 ^{**}
2	7	0	0	1.00 ⁺	1.00 ^{**}
3	7	0	0	1.00 ⁺	1.00 ^{**}
4	7	0	0	1.00 ⁺	1.00 ^{**}
5	7	0	0	1.00 ⁺	1.00 ^{**}
6	7	0	0	1.00 ⁺	1.00 ^{**}
7	7	0	0	1.00 ⁺	1.00 ^{**}
8	7	0	0	1.00 ⁺	1.00 ^{**}
9	7	0	0	1.00 ⁺	1.00 ^{**}
10	7	0	0	1.00 ⁺	1.00 ^{**}
11	7	0	0	1.00 ⁺	1.00 ^{**}
12	7	0	0	1.00 ⁺	1.00 ^{**}
13	7	0	0	1.00 ⁺	1.00 ^{**}
14	7	0	0	1.00 ⁺	1.00 ^{**}
15	7	0	0	1.00 ⁺	1.00 ^{**}
16	7	0	0	1.00 ⁺	1.00 ^{**}
17	7	0	0	1.00 ⁺	1.00 ^{**}
18	7	0	0	1.00 ⁺	1.00 ^{**}
19	7	0	0	1.00 ⁺	1.00 ^{**}
20	7	0	0	1.00 ⁺	1.00 ^{**}
21	7	0	0	1.00 ⁺	1.00 ^{**}
22	6	0	1	0.75 ⁺	0.84 ^{**}
23	7	0	0	1.00 ⁺	1.00 ^{**}
24	7	0	0	1.00 ⁺	1.00 ^{**}
25	6	0	1	0.75 ⁺	0.84 ^{**}
26	7	0	0	1.00 ⁺	1.00 ^{**}
27	7	0	0	1.00 ⁺	1.00 ^{**}
28	7	0	0	1.00 ⁺	1.00 ^{**}
29	7	0	0	1.00 ⁺	1.00 ^{**}
30	6	0	1	0.75 ⁺	0.84 ^{**}
31	7	0	0	1.00 ⁺	1.00 ^{**}
32	7	0	0	1.00 ⁺	1.00 ^{**}
33	7	0	0	1.00 ⁺	1.00 ^{**}
34	7	0	0	1.00 ⁺	1.00 ^{**}
35	7	0	0	1.00 ⁺	1.00 ^{**}

Expert number=7
CVR=0.99
CVI=0.98

Table 3 shows the results for the content validity of the Greenspan social-emotional Growth Chart according to the Lawshe's technique. The Content Validity Ratio was found to be (CVR)= 0.75 for Item 22, Item 25, and Item 30. Based on these items, it was found as the Content Validity Ratio (CVR) > Content Validity Index (CVI). Kappa statistics were utilized to check whether or not there is a loss on an item basis. As a result of Kappa statistics, it was determined that the Kappa value of the three items was 0.84 and the Kappa value of the other items was 1.00. Therefore, since Kappa was ≥ 0.75 , it was determined that the concordance between expert opinions was "excellent," and no item was removed from the scale. Consequently, no item was not removed as a result of the analysis conducted by using the Lawshe's technique, and the content validity study was completed.

A pilot study was conducted to identify the applicability, comprehensibility, and deficiencies of the items of the Greenspan Social-Emotional Growth Chart, which was put into final form by taking expert opinions. The pilot study was conducted with the mothers of infants aged 24-30 months who achieved normal development and were reached through the snowball sampling method. A total of 28 mothers, including four from each month group, were included in the pilot study. No revisions to the assessment tool were required following the pilot study. After piloting, it was observed that mothers understood the scales, and there were no problems with the application. After piloting, scales were found to be suitable for validity and reliability practices. To test the validity of the Greenspan Social-Emotional Growth Chart within the framework of construct validity, it was examined if the scores varied by months in order to assess whether the assessment tool determines social-emotional growth differences of children by their months. In order to test the difference between the scores obtained from the assessment tool among age groups, the children were divided into three groups as 24-25 months, 26-27 months, and 28-30 months. It was examined whether or not the raw scores obtained from the assessment tool varied according to the determined age groups by month. In this context, since the distributions of the scores obtained from the overall scale were normal, they were tested for differences by month through a one-way ANOVA analysis. Table 4 shows the obtained results.

Table 4. One-way ANOVA Results for the Greenspan Social-Emotional Growth Chart based on Age Groups

	Age Group	N	\bar{X}	sd	F	p
GSEGC	24- 25 months	80	96.50			
	26- 27 months	80	115.61	2	39.57	0.00
	28- 30 months	80	115.12			

Table 4 shows that the scores obtained from the Greenspan Social-Emotional Growth Chart had a significant difference from age group by month according to the results of one-way ANOVA analysis. It was determined that there was a significant difference in social-emotional skills of children by their months. The studies by Arı & Yaban (2016), Gizir (2002), Karaoğlu & Ünüvar (2017) and Şen (2009) indicated that they also found similar findings. Therefore, according to the findings in Table 4, it is possible to assert that the Greenspan Social-Emotional Growth Chart is effective in revealing the differences among age groups by month.

The *criterion validity*, which is a method of ensuring the content validity, and its correlation with similar scales are examined (Başol & Gencel, 2013). The Ankara Developmental Screening Inventory (ADSI), which comprises four developmental domains: Language-Cognitive, Fine-Motor, Gross Motor, and Social Skills-Self-Care and is developed by Savaşır et al., (1995), was used to assess the overall development of children in the literature. Therefore, the correlation between the scores obtained from the social-self-care subscale on ADSI and the scores obtained from the Greenspan Social-Emotional Growth Chart (GSEGC) was investigated. ADSI data were obtained by selecting babies who participated in the study at each monthly interval. Since ADSI data were not normally distributed, the correlations between the total scores of the scales were calculated by the Spearman Correlation Coefficient. Table 5 shows the obtained results.

Table 5. Correlation Coefficients Between Ankara Developmental Screening Inventory and Greenspan Social-Emotional Growth Chart

ANOVA		GSEGC
	r	0.44
ADSI	P	0.02
	N	28

When the correlation between the scores obtained from Ankara Developmental Screening Inventory and Greenspan Social-Emotional Growth Chart in Table 5 was analysed, it was found that the Spearman Correlation Coefficient values were 0.44 ($p < 0.05$). In this case, it was confirmed that Ankara Developmental Screening Inventory and Greenspan Social-Emotional Growth Chart assessed similar structures. The results pointed out the validity of the Ankara Development Screening Inventory and Greenspan Social-Emotional Growth Chart based on similar scales, that is, criterion validity.

Reliability Study for the Greenspan Social-Emotional Growth Chart

The term reliability is defined as the consistency of the data obtained from an assessment tool, as well as the fact that the results do not vary from practice to practice. The reliability coefficient of a scale shows the degree to which the scale is free from errors (Seçer, 2015). The reliability of the Greenspan Social-Emotional Growth Chart was examined by calculating test-retest reliability. The data for test-retest reliability were acquired from the mothers at 1.5-2-week intervals for 28 infants. The Greenspan Social-Emotional Growth Chart was applied up to Item 28 for mothers with infants aged 24-30 months who comprised the sample group. The scores acquired by repeating the form with 28 items were normally distributed. Accordingly, the Pearson Product-Moment was used to calculate the consistency of the data acquired from the use of the Greenspan Social-Emotional Growth Chart after the first and second weeks. Since there were only four infants who can be reached up to Item 28, we examined the distribution of the scores acquired from 24 items, and as the distribution deviated from normal, the Spearman's Correlation Coefficients were calculated to determine the consistency of the data collected from the first and second applications. Table 6 shows the obtained results.

Table 6. Test and Retest Reliability of the Greenspan Social-Emotional Growth Chart

Scale	Test retest reliability
GREENSPAN Social-Emotional Growth Chart	
Totally 24 items of GSEGC	.916
Totally 28 items of GSEGC	.949

Table 6 indicates that the correlation coefficients that were calculated for test-retest reliability of scores from the mother of 28 infants were significant and positive, ranging from 0.916 to 0.949. These coefficients suggested that the related scale yields consistent results over time.

CONCLUSION AND RESULT

In this study, the "Greenspan Social-Emotional Growth Chart", developed by Greenspan (2004) to assess the socio-emotional growth of children aged 0-42 months, was adapted to Turkish for infants aged 24-30 months and its' validity-reliability study was conducted. The values calculated between the two applications were found to be statistically significant for the infants who were given the Turkish form first and then the English form in the linguistic equivalence study of the Greenspan Social-Emotional Growth Chart. Also, the lack of any significant difference between the items in the Turkish and English forms

indicated that these items are not perceived as being different for either language and linguistic equivalents are provided for these items. The Content Validity Ratio was found to be (CVR)= 0.75 within the content validity of the Greenspan Social-Emotional Growth Chart. Therefore, since Kappa was ≥ 0.75 , it was determined that the concordance between expert opinions was “excellent,” and no item was removed from the scale. Under the construct validity of the Greenspan Social-Emotional Growth Chart, it was examined whether the social-emotional growth scores of infants aged 24-30 months differed by the months. As a result of validity studies, the results of the one-way ANOVA analysis revealed that the scores obtained from the Greenspan Social-Emotional Growth Chart had a significant difference according to the month groups, and the scale was effective in revealing the differences according to the month groups. It was verified that they assessed similar structures with the Ankara Development Screening Inventory under the criterion validity of the Greenspan Social-Emotional Growth Chart. According to this result, it was determined that each item on the scale was reliable. A statistically significant and positive correlation was found in a test-retest reliability study of the Greenspan Social-Emotional Growth Chart. Consequently, the findings from the Turkish linguistic equivalence, validity and reliability study of the Greenspan Social-Emotional Growth Chart, developed by Greenspan (2004) to assess the child’s social-emotional growth, indicated that the original 35-item version of the scale was a valid and reliable scale with linguistic equivalence, and can be used for assessing the social-emotional growth of infants aged 24-30 months culturally in Turkish circumstances.

- The following recommendations can be made based on the findings of this study:
- The Greenspan Social-Emotional Growth Chart can be employed in studies that involve different study groups.
- Adaptation/validity-reliability studies may be conducted for different month/age groups beginning in infancy to assess social-emotional growth.
- The Greenspan Social-Emotional Growth Chart can be adapted for children who are at risk for social-emotional growth so that early intervention programs may be designed in accordance with the findings and they can be supported in terms of growth.
- The Greenspan Social-Emotional Growth Chart, the validity and reliability of which were tested and found to be appropriate for use among Turkish infants aged 24 to 30 months, can contribute to the field by being used in descriptive and experimental studies to assess the effect of various variables.

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