Educational Sciences: Theory & Practice • 14(2) • 682-692

www.edam.com.tr/estp
DOI: 10.12738/estp.2014.2.1682

Adaptation of the Kaufman Survey of Early Academic and Language Skills to Turkish Children Aged 61 to 72 Months*

Özgün UYANIK[a]
Afyon Kocatepe University

Adalet KANDIR[b]
Gazi University

Abstract

The aim of this research is s to adapt and apply t the Kaufman Survey of Early Academic and Language Skills (K-SEALS) to Turkish children in the city of Ankara. In the study, a descriptive screening model was used. The population of the study consisted of children who showed normal developmental characteristics and who were enrolled at public preschools. These public preschools were located in the central districts of Ankara under the auspices of the Ministry of National Education. The stratified sampling method was used for the study, and the sample consisted of 423 children aged 61 to 72 months. Validity and reliability studies were conducted based on the data provided by the adaptation of the K-SEALS test. Accordingly, ten items that were found to be inadequate in distinguishing language and academic skills among individuals were removed. The results of a confirmatory factor analysis showed that the majority of the items suggested that the one-dimensional factor structure of a combination of Early Academic and Language Skills was generally found to represent a one-dimensional factor structure. Kuder Richardson (KR-20) values were evaluated for the reliability of the test scores in the applied groups. The fact that KR-20 values were found to be between .852 and .982 revealed that the internal consistency of the test was high; furthermore, test-retest values were found to vary between .783 and .939 which indicated that the test had a consistent structure over time. Therefore, the results of the K-SEALS were considered to be valid and reliable for the Turkish children in our sample.

Key Words

Early Academic Skills, Early Childhood Education, Kaufman Survey of Early Academic and Language Skills (K-SEALS), Language Skills, Preschool Education.

Today, in parallel with rapidly growing technological advances, there is a tremendous need for individuals who are both academically successful and competent at languages. It has been widely acknowledged that language and academic foundations are established during the early years, which is a critical period in terms of development.

The development of language skills starts from birth and includes the comprehension of verbal language,

* This study is based on Özgün UYANIK's master thesis titled "Adaptation of Kaufman Survey of Early Academic and Language Skills for 61-72 Month Old Turkish Children within Ankara Sample" under the supervision of Assoc. Prof. Adalet KANDIR.

a **Özgün UYANIK, Ph.D.,** is a research assistant of Early Childhood Education. Her interests include early academic and language skills, early childhood education curriculum, and cognitive abilities. *Correspondence:* Afyon Kocatepe University, Education Faculty, Department of Early Childhood Education, Afyonkarahisar, Turkey. Email: ozgunuyanık@hotmail.com

b Adalet KANDIR, Ph.D., is a professor of Early Childhood Education. Contact: Gazi University, Education Faculty, Department of Early Childhood Education, Ankara, Turkey. Email: akandir@gmail.com

self-expression with words, and practice of verbal and non-verbal means of social communication. Language skills are classified as listening, speaking, reading, and writing in the order of attainment under sets of receptive and expressive skills. Of these, listening and reading constitute the receptive language skills set, while speaking and writing constitute the expressive language skills set (Gordon & Browne, 2011, p. 429; Heffelfinger & Mrakotsky, 2006, p. 51; Kandır et al., 2012, p. 21). These language skills, in the order they are attained in early years, have an important role in children's exploration of the environment and the outside world, their sharing of knowledge, their communication with other individuals, and their gaining of academic skills (Browne, 2007, p. 3; Kandır et al., 2012, p. 6; Üstün, 2007, p. 16). Therefore, a child's preschool years are critical for learning these skills. During the preschool period, literacy skills (such as verbal language, knowledge of the alphabet, phonological awareness, recognition of a spoken word, and pre-writing studies) (Morrow & Gambrell, 2004; Neuman & Dickinson, 2002) and mathematical skills (such as mathematical concepts, recognition, naming, matching, comparison, grouping, sorting, numbers, operations, modeling, geometry, spatial logic, measurement, and charting) are the first academic skills acquired (Charlesworth & Lind, 2007; Eliason & Jenkins, 2003; Ezell & Justice, 2005; Jackman, 2005).

The acquisition of language skills is the key step for children's acquisition of academic skills (Browne, 2007, p. 2; Riley, 2006, p. 9). The acquisition of language skills provides the necessary basis for readiness for literacy skills by means of vocabulary, reasoning the relationship between verbal and non-verbal language, phonemes, phonological awareness, alphabet knowledge and reasoning, ordering, and making generalizations using these elements (Albrecht & Miller, 2004, pp. 292-293; Pullen & Justice, 2003, p. 94). According to some studies, early language skills affected reading comprehension and sentence analysis skills at the fourth and seventh grade level (Dickinson & Tabors, 1991), reading comprehension in Turkish classes at the elementary school level (Cömert, 2000), and phonological awareness (Poe, Burchinal, & Roberts, 2004). Furthermore, evidence shows that there is a strong relationship between early literacy skills and early mathematics development (Purpura, Hume, Sims, & Lonigan, 2011); Grimm (2008) also suggested that early literacy skills are vital for mathematics achievement.

Academic and language skills acquired during preschool development are listed within the basic objectives of all levels of education (Milli Eğitim Bakanlığı [MEB], 2005, 2011a, 2011b, 2013). These skills, which are likely to develop through play-based activities stemming from the natural curiosity and ability to explore that are inherent in young learners, will form the basis of children's entire academic life.

In order to foster preschoolers' development of academic and language skills, it is necessary to provide a social environment that includes a developmentally-appropriate curriculum, as well as a physical atmosphere of suitable materials and interactions between the child, peers, and adults. Studies such as those by Zembat and Yurtsever (2002), Yayla (2003), and Şimşek Bekir (2004) in the area of language teaching, Young-Loveridge (2004), Erdoğan (2006), and Sarıtaş (2010) in the area of mathematics education, and Chapman, Tunmer, and Prochnow (2000), Diamond, Gerde, and Powell (2008), Edmonds, O'Donoghue, et al. (2009) and Justice et al. (2010) in the area of early literacy skills have all reported that children use language better and show more success in mathematics, reading and writing under desired conditions where developmentally appropriate curriculum is followed and the teachers provide a physical atmosphere with social interaction and suitable materials.

Children's academic and language skills should be evaluated during the early years in different environments and using various tools of measurement, in order to make arrangements to ensure future development and to enhance children's academic success from the preschool level onward. One measurement tool to assess children's academic and language skills is the K-SEALS, which was developed by Kaufman and Kaufman (1993) in the USA. K-SEALS is important in that it is a psycho-educational measurement tool providing valuable information about young children's academic and language skills, problems arising from individual differences, and identification of problematic skills. K-SEALS is used to assess academic and language skills of children at preschool centers, first grades, Head Start schools, and special education centers (Kaufman & Kaufman, 1993, p. 3). In the literature, there are many studies that have used K-SEALS for various settings. These works examine diverse topics such as learning activities carried out with parents (Haney & Hill, 2004), literacy environments of children (Constantine, 2004),

parenting styles and communication with parents (Roopnarine, Krishnakumar, Metindoğan, & Evans, 2006), children with chronic illness and low birth weight (O'Shea, Washburn, Patricia, Nixon, & Goldstein, 2007), children with attention deficit and hyperactivity disorder to find out the relationship between cognitive, motor, and academic skills (Friedman-Weieneth, Harwey, Youngwirth, & Goldstein, 2007), at-risk children and educational programs (Salaway, 2008), the impact of culture on Indian-Caribbean immigrant children's amount of play and academic success (Roopnarine & Jin, 2012), and the relationship between inter-parental conflict, hyperactivity, and aggression in children together with their academic achievement (Harvey, Fischer, Weineth, Hurwitz, & Sayer, 2013). With reference to the conclusions drawn from such studies, it was reported that remedial actions were undertaken, such as making necessary home and school arrangements, and developing educational programs for parents, teachers and children.

Studies in Turkey utilizing K-SEALS include the "Peabody Picture Vocabulary Test" by Katz, Önen, Demir, Uzlukaya, and Uludağ (1974) "Mean Length of Utterance" by Ege, Acarlar, and Güleryüz (1998), "Boehm Basic Concepts Test" by Sucuoğlu, Büyüköztürk and Ünsal (2008), "Numbers and Operation Concepts Test for Children Aged 5-6" by Aktaş-Arnas, Deretarla, and Sığırtmaç (2003), "Recognition of Geometrical Shapes Test" by Aslan (2004), and "Early Learning Skills Scale" by Başaran (2006). For the purpose of evaluating literacy skills, however, there is much less research available. Some examples of studies include "61-72 Month Old Children's Reading and Writing Skills Test" by Yazıcı (2010), "Print Awareness Assessment Checklist" by Şimşek (2011), "Phonological Awareness Skills Checklist" by Turan and Akoğlu (2011), and "Early Childhood Phonological Sensitivity Scale" by Sarı and Aktan Acar (2013). Development is a whole process, and early language, literacy, and mathematics skills are interrelated, indicating that these skills must be seen as a whole when developing a curriculum for young learners (Browne, 2007, p. 2; Riley, 2006, p. 9). All in all, the literature lacks a study evaluating a measurement tool that assesses both academic and language skills together, although there are tools for evaluating language, mathematics, and literacy skills separately. It is of great importance to holistically assess children's academic and language skills, then develop these skills as a whole with valid and reliable instruments. For this reason, this study aims to adapt the K-SEALS a widely-used test in the USA, to Turkish children, and to carry out validity and reliability processes to enable future studies that seek to investigate and develop early academic and language skills.

Method

Sample

The sample for the general screening model consisted of 1,269 children, showing normal development, aged 61 to 72 months attending official preschools operating under the Ministry of Education during the 2008-09 academic year in the central city of Ankara, Turkey. The sample was generated using a stratified sampling method (Neuman, 2007; Wanderstoep & Johnston, 2009) on the lower, middle, and upper socio-economic and cultural levels of the different families and children from the schools located in six districts of the city, according to the criteria determined by the Directorate of National Education. A statistically-appropriate total number of 423 girls and boys formed the sample for this research.

Data Collection Tools and Implementation

General Information Form: A general information form developed by the researcher consisting of 10 items was used to gather personal data from the children, including gender, number of siblings, and length of attendance at preschool. These forms were filled out by the researcher using the individual records kept at the preschools.

Kaufman Survey of Early Academic and Language Skills: This tool was developed in 1993 by Alan S. Kaufman and Nadeen L. Kaufman of the American Guidance Service. Designed for children aged 36 to 83 months, the test assesses early language, cognitive ability, and early academic skills (Kaufman & Kaufman 1993, p. 1).

The content organization of the K-SEALS initially introduced in Turkey is given below. A brief summary of descriptions of the K-SEALS sub-tests, scales, and Early Academic & Language Skills composite is as follows:

Sub-tests: ***Vocabulary sub-test***: In this sub- test, the child defines the names of objects or their movements by pointing or naming This sub-test consists of 40 items.

Numbers, Letters, and Words Sub-test: This sub-test aims to test the child's ability to point to the correct number or object, as a sign of mastering counting and numerical concept knowledge. This sub-test consists of 40 items.

Pronunciation Screening Sub-test: This sub-test aims to test the child's ability to pronounce the most common names of objects and movements. This sub-test consists of 20 items.

Language Skills Scales:

Expressive Language Skills Scale: This scale is comprised of the items in the Vocabulary sub-test and the Numbers, Letters, and Words sub-test. Children, using their expressive skills, name objects, describe pictures, count, and answer basic mathematical operations with the help of verbal definitions of the objects' properties. The scale consists of 40 items.

Receptive Language Skills Scale: This scale covers the items in the Vocabulary and Numbers, Letters, and Words sub-tests, both of which aim to test the child's knowledge in vocabulary and verbal concepts. Children show their receptive skills by pointing to letters and words, and exhibit their knowledge of numerical concepts by pointing to correct visual stimuli. The scale consists of 40 items.

Early Academic Skills Scales:

Number Skills Scale: This scale includes the items in the Numbers, Letters, and Words sub-test. During this process, children recognize numbers, count, show their knowledge of numerical concepts such as "the smallest" or "half," and solve numerical problems. The Number Skills Scale can be applied only to children between 61-83 months. The scale consists of 20 items.

Letter and Word Skills Scale: This scale covers the letter recognition and word reading items in the Numbers, Letters, and Words sub-test. The Letter and Word Skills scale can be applied only to children between 61-83 months. The scale consists of 20 items (Kaufman & Kaufman, 1993, p. 3).

Early Academic and Language Skills Composite: The items in the Vocabulary sub-test and the Numbers, Letters, and Words sub-test comprise the Early Academic & Language Skills Composite. The composite consists of a total of 80 items.

The K-SEALS consists of three sub-tests and four scales related to the items in the sub-tests, together with the Early Academic & Language Skills Composite.

The reliability and validity results of the test conducted on 1,000 children aged 36 to 83 months in the United States gave the following results: an average reliability coefficient of .94 for the Early Academic and Language Skills composite, .88 for the Vocabulary sub-test, .94 for the Numbers, Letters, and Words sub-test, .89 for the Articulation Survey sub-test, .90 for the Expressive Language Skills scale, .90 for the Receptive Language Skills scale, .81 for the Number Skills scale (valid for children aged 60 to 83 months), and .94 for the Letter and Word Skills scale. For the test-retest reliability, the coefficients were .94 for the Early Academic and Language Skills composite, .87 for the Vocabulary sub-test, .92 for the Numbers, Letters, and Words sub-test, .90 for the Articulation Survey sub-test, .93 for the Expressive Language Skills scale, .90 for the Receptive Language Skills scale, .91 for the Number Skills scale, and .88 for the Letter and Word Skills scale (Kaufman & Kaufman, 1993, p. 62).

Administration of the Test: The test was conducted on children who volunteered to participate in the study after obtaining the necessary permissions from the Directorate of National Education. By following each step in the guidelines given in the test booklet, the test was administered by the researcher in a quiet and comfortable environment in the children's preschools with an emphasis on establishing rapport with each child. The researcher started with a sample item in order to inspire confidence and give the child an idea about the forthcoming process. During the administration of the test, a picture for each item was shown to the child and the instructions were read aloud. One (1) point for each correct answer and zero (0) points for each incorrect answer were marked on the test form. If the child gave five consecutive wrong answers for the items in the Vocabulary sub-test and the Numbers, Letters, and Words sub-test, the researcher interrupted the test and moved on to the other sub-test. During the Pronunciation Screening sub-test, a picture of the item was shown to the child and the instructions were read aloud. If the child pronounced the name of the object accurately, the researcher marked one (1). In the case of incorrect pronunciation, the researcher pronounced the word accurately and asked the child to pronounce it again for a second chance. The implementation of the entire test took between 15 and 25 minutes for each child. The raw score for each sub-test was considered to be the total number of correct answers. Children who refused to respond to the items during any phase of the test were excluded immediately. The individual tests were carried out in the morning when the children were more likely to be more attentive.

Data Collection Process

To determine the extent to which an abstract concept can be accurately measured in the context of what the scale is intended to measure, the K-SEALS was pre-administered to 60 randomly-selected children aged 61 to 72 months. Subsequently, the test was administered to 423 children aged 61 to 72 months attending preschools in the sample group.

In order to statistically-test rater reliability, an early childhood educator observed how the researcher administered the test. The researcher then provided a training session on K-SEALS guidelines before the educator practiced the guidelines on five children, to gain experience. Finally, from among 423 children, the test was administered to 60 randomly-selected children by the educator following the same guidelines.

In the final phase, for the purpose of measuring statistical test-retest reliability, K-SEALS were re-administered five months later to 60 randomly-selected children from among the study group.

Data Analysis

The distributions of the children's demographic information were analyzed, and the frequency and percentage values were calculated using the SPSS 12.0 program whereby item distributions of expert view evaluation forms were presented as median, mode, minimum, and maximum values.

To test the internal consistency of the test scores obtained by the K-SEALS, Kuder Richardson-20 (KR-20) reliability was applied because the responses to the test items were either 1 or 0. In addition, the relationship between the scores obtained from the test items and the total score of the test were calculated by the correlation of the item with the total score.

To analyze the construct validity of the K-SEALS, each sub-test skill scale, and the Early Academic and Language Skills composite was accepted as a one-dimensional construct, and confirmatory factor analyses were conducted using the maximum likelihood method from the LISREL 8.71 program. The confirmatory factor analysis was conducted to determine the amount and strength of each item's relationship with its dimension, and to determine the amount of explained and unexplained variance as a result of this relationship. Goodness-of-fit indexes were used to determine whether the identified structure was adequately defined. The statistical techniques of chi-square, goodness of fit index (GFI), comparative fit index (CFI), and incremental fit index (IFI) were used as goodness-of-fit indexes. As a result of this analysis, *t* values were used to calculate whether or not each item reliably represented the sub-dimension.

To test the internal consistency of the test scores obtained at the same time, Kuder Richardson-20 (KR-20) reliability was calculated using the Statistica 8.0 program. The correlation values regarding the relationships among sub-tests, skill scales, the composite of the K-SEALS, and the entire test were also calculated using the SPSS 12.0 program. The SPSS 12.0 program was used while assessing test-retest reliability, and while calculating the relationship between the two score sets obtained by administering the test twice to the same group at regular intervals. It was also used when analyzing the reliability of the scores given by two or more independent observers regarding the skill levels of multiple children. To assess the reliability of raters (inter-rater consistency), the relationship between the two score sets was calculated with the Pearson correlation coefficient.

Findings

Content Validity

The English version of the K-SEALS was adapted to the Turkish language while adhering to the original survey. The adaptation studies of the K-SEALS used in the research were achieved as follows:

First Stage: In the process of adapting the K-SEALS to Turkish, the test items were first translated into Turkish by three English-language experts based on the back-translation technique. Next, the items were translated into English using the back-translation technique by three English-language experts who were different from the first group and independent from one another. An expert equally proficient in Turkish and English compared the translations and confirmed the consistency between the English and Turkish translations. The test as translated into Turkish was analyzed by two Turkish-language experts, and after making necessary changes regarding sentence structure, expressions, and comprehensibility, the final version of the Turkish test was generated.

Second Stage: Expert opinions were sought to determine the content the test is intended to measure or the degree of balanced representation of certain areas, and to determine the quantitative and qualitative competence in measuring the

supposed behavior (feature) (Colton & Covert, 2007; Neuman, 2007). To obtain expert opinions on content validity and content compatibility with the Turkish culture, the original test form of the K-SEALS and the Turkish translation were presented to a total of ten scholars: four child development specialists from different universities, three Turkish language experts from different universities, one education sciences expert, one assessment and evaluation expert, and one specialist in classroom teaching.

The researcher, with a copy of the test and the evaluation form on which each item of the test was assessed for content validity, conducted one-on-one meetings with the ten experts and received their evaluations. The experts were asked to review the items of the K-SEALS in terms of compliance with the aims of the research, clarity, and comprehensibility. Furthermore, the experts were asked to state their views regarding the alteration, amendment, and removal of items if deemed necessary. In addition, the experts were asked to rate the items of the test on a three point Likert scale ("Appropriate," "Not Appropriate," or "Changeable") in accordance with the Turkish culture.

Third Stage: The items evaluated as appropriate by the consensus of the experts were transferred to the Turkish version of the test without change. The items that needed changing according to the experts were analyzed by the researcher, and necessary changes were made based on the feedback. When mode, median, minimum, and maximum values of the expert opinions were examined, it was observed that although the median values of each item ranged between 1 (Appropriate) and 3 (Changeable), the mode took on a value of 3 (Changeable) only for item 30 (1%) of the Numbers, Letters, and Words sub-test and a value of 1 (Appropriate) for all other items (99%).

Fourth Stage: According to the expert opinions, when the test was translated from English to Turkish, items 21, 22, 25, 30, 33, and 39 in the Numbers, Letters, and Words sub-test of the K-SEALS failed to completely measure what the test was intended to measure. As a result, the researcher conferred with four scholars who specifically study language development and literacy skills in the fields of Turkish child development and preschool education. In addition, the researcher obtained the opinions of experts regarding the rules and objectives that determined the selection of the respective foreign words in the translation. Taking into consideration the opinions of the experts and the purpose and rules of preparation of the test items in the user's guide of the test, the wording was changed in items 21, 22, 25, 30, 33, and 39 in the Numbers, Letters, and Words sub-test. The wording of the items was revised by one Turkish-language expert and one preschool childhood education specialist. In addition, to confirm the appropriateness of the revisions, the four scholars specializing in language development literacy skills who were previously consulted were revisited, and their opinions on the revised wording were obtained.

The original Articulation Screening sub-test was intended to measure how accurately the most frequently used seven consonants (*t, n, r, s, d, l*, and *m*) of the English language were pronounced (Kaufman & Kaufman, 1993, p. 3). In this context, the frequencies of the words that were translated to Turkish in the Articulation Survey sub-test of the K-SEALS indicated that some letters were repeated too often while others were not used at all. To adapt the test to Turkish children while adhering to the criteria of the original test, the research on Turkish letter frequencies was examined as follows: The F keyboard, intended for easy typing in Turkish, was designed by Yener (1956) based on an investigation of the letter frequencies of 29,934 root words in the spelling dictionary of the Turkish Language Association (Turk Dil Kurumu [TDK]) conducted in 1951. Consequently, the frequencies of 29 letters in the Turkish alphabet were determined. The results revealed that the seven most frequently used consonants in the 29,934 root words were *k, m, l, t, r, n,* and *s*. When adapting the Articulation Survey sub-test of the K-SEALS for Turkish children, the outcome of the TDK research was considered, and all of the letters except *j* were measured in at least one position. From among the most frequently used Turkish consonants, the letters *k*, *l*, *r*, and *s* were arranged in three positions (at the beginning, middle, and end of a word), and the letters *m*, *t*, and *n* were arranged in two positions (*m* at the beginning and in the middle, *t* at the beginning and in the middle, and *n* in the middle and at the end). This approach ensured that two consonant sounds (*t, r*) and two vowels (*u, a*) were adjacent in the same syllable when the sub-test was revised. In addition, the test was finalized and prepared for pre-administration after one Turkish-language expert and one preschool childhood education specialist evaluated whether the new words were appropriate for the vocabularies of preschool children.

Fifth Stage: To determine the extent to which an abstract concept can be accurately measured in the context of what the scale is intended to measure (Colton & Covert, 2007, p. 65), the K-SEALS was pre-administered to 60 children aged 61 to 72 months who were students at the Zubeyde Hanim Preschool operating under the Ministry of National Education in the Ankara Provincial Directorate of National Education.

As a result of pre-administration, the items of the K-SEALS were analyzed, and the reliability coefficient (KR-20 = 0.90) and item total correlations were found to be adequate for the entire test. As a result of item analysis, the total item correlation and KR-20 value were found to be high for the majority of the items. After pre-administration, the necessary adjustments were made to finalize the test for the identified sample group for test validity and reliability analysis. Subsequently, the test was administered to 423 children aged 61 to 72 months who were attending preschools in the sample group.

Construct Validity and Reliability

To assess the construct validity of the study, each sub-test, skill scale, and Early Academic and Language Skills composite was regarded as a one-dimensional structure, and confirmatory factor analysis was applied to each structure.

Confirmatory factor analysis was conducted to indicate whether the factor structure was a valid model. An examination of the related literature demonstrated the lack of consensus about which fit indices should be used, and it was recommended that a combination of more than one fit index be used. The recommended indices were the chi-square fit test (X^2), the chi-square and degrees of freedom ratio (X^2/sd), the root mean square error of approximation (RMSEA), the goodness-of-fit index (GFI), and the comparative fit index (CFI). A calculated ratio of X^2/sd smaller than 5, values of GFI, CFI, AGFI, NFI, and NNFI higher than 90, and RMR and RMSEA values smaller than .05 indicated a perfect model data fit. In addition, a GFI value larger than 0.85, an AGFI value larger than 0.80, and RMR and RMSEA values smaller than 0.10 were acceptable lower limits for the model data fit (Marsh, Balla & McDonald, 1988, pp. 391-410; Schermelleh-Engel & Moosbrugger, 2003, pp. 23-74; Segars & Grover, 1993, pp. 517-525).

As a result of the confirmatory factor analysis conducted to test the eight-factored model of the K-SEALS, items 1, 2, 5, 6, 7, 8, and 9 in the Vocabulary sub-test and items 1, 4, and 5 in the Numbers, Letters, and Words sub-test were answered correctly by all of the children in the sample. Because these items failed to provide factorization with other items under any dimension, they were excluded from the analysis. Accordingly, the data were reanalyzed after removing these items. When the ten excluded items were examined, it was observed that the items were answered easily by all of the children aged 61 to 72 months in the sample because the original form of the test was designed for children aged 36 to 83 months.

Confirmatory factor analysis results regarding the sub-tests, skills scales, and Early Academic and Language Skills showed that the aforementioned structures met the required conditions. To test the extent of measurement accuracy for the features that were intended to be measured, an item-total score correlation and a K-20 reliability analysis were performed. The literature suggests that individuals are successfully distinguished when the item-total correlation is larger than .30. Item values between .20 and .30 can be included in the test when necessary or are revised, and item values below .20 are included in the test. In addition, a reliability coefficient having a minimum value of .70 is generally accepted as adequate for the reliability of test scores (Fraenkel & Wallen, 2009, p. 157; Nunnaly & Bernstein, 1994, p. 265).

The reliability results indicated that all of the items and the item-total correlation coefficient had high levels of reliability, whereas the KR-20 reliability coefficient was .971. Because the variance of items 1, 2, 5, 6, 7, 8, and 9 in the Vocabulary Survey sub-test and items 1, 4, and 5 in the Numbers, Letters, and Words sub-test of the K-SEALS was calculated as "0," the correlation of these items could not be calculated. Therefore, these ten items were excluded from the test.

After conducting validity and reliability statistics for adapting the original 100-item K-SEALS for Turkish children, a 90-item test was generated after removing ten items in total: seven from the Vocabulary Survey sub-test and three from the Numbers, Letters, and Words sub-test.

A reliability analysis of the K-SEALS found that KR-20 reliability coefficients of the sub-tests, skill scales, and the Early Academic and Language Skills composite of the test had a high degree of reliability.

The sub-tests, skill scales, and the Early Academic and Language Skills composite of the K-SEALS were analyzed using the LISREL model standardized analysis values and *t* values. The

majority of the items were over the critical value of 1.96, and accordingly, the standardized regression coefficients took on values between .00 and .98. Although the items having smaller *t* values than the critical value of 1.96 did not represent significant *t* values, they were not excluded from the test because these items generated significant *t* values relative to the other sub-tests, skill scales, and Early Academic and Language Skills composite. In addition, the research aimed to retain its current structure regarding the nature of the measured variable. Accordingly, one-dimensional factor structures for the sub-tests, skill scales, and the Early Academic and Language Skills composite were confirmed, and it was observed that the majority of the items in the sub-tests, skill scales, and the Early Academic and Language Skills composite generally represented the one-dimensional factor structure.

To find out the nature of the relationship between the sub-tests, skills scales, and Early Academic & Language Skills, the Pearson correlation coefficient was calculated (Büyüköztürk, Çokluk, & Köklü, 2010, p. 91; Colton & Covert, 2007, p. 78). The K-SEALS internal correlation results revealed that the relationships between the Vocabulary sub-test, the Numbers, Letters, and Words sub-test, and the Articulation Survey sub-test, and the scales of Expressive Language Skills, Receptive Language Skills, Number Skills, and Letter and Word Skills associated with these sub-tests were significant at the $p<.01$ level.

To assess the correlations between the scores obtained by two administrations of the test to the same group at regular intervals, there was a five-week interval between the first and second administrations. The high correlation between the two administrations indicates that the test was reliable and has a stable structure over time (Colton & Covert, 2007, p. 79; Wanderstoep & Johnston, 2009, p. 64). The test-retest reliability for the K-SEALS sub-tests, skill scales, the Early Academic and Language Skills composite, and for the entire test was significant at the $p<.01$ level.

The outcome of rater reliability, which examines the reliability of the scores given by two or more independent observers regarding the skill levels of the children, indicated that the correlation coefficient was high among the test administrators, which emphasizes the reliability of the test (Colton & Covert, 2007, p. 81). The correlation values of rater reliability for the K-SEALS sub-tests, skill scales, the Early Academic and Language Skills composite, and for the entire test were significant at the $p<.01$ level.

Discussion

Since development is universal and the development of language and academic skills are interrelated and parallel to each other, cultural diversity in development can be considered trivial (Bee & Boyd, 2009; Senemoğlu, 2012). A psychological scale developed for one specific culture can also be used for different cultural groups because of recent technological advances and the rapid spread of knowledge across cultures. In addition, all the tests which aim to assess the development and skills of preschoolers follow the same principle: from simple to complex, and near to distant. High validity and reliability results were evident in the case of adapting the K-SEALS to Turkish children since the K-SEALS possesses the characteristics of a developmental screening test.

When preschoolers interact with well-informed and educated people, deal with objects and situations both at home and school, draw new conclusions and novel meanings from previously-learned concepts, establish cause and effect relationships among a set of events, question things and learn through hands-on methods, and learn joyfully as if playing a game, their language and academic skills develop tremendously, contributing to them being successful learners throughout life (Kandır, Özbey, & İnal, 2010; Mclachlan, Fleer, & Edwards, 2013; Wood, 2013).

Language and academic skills develop simultaneously, and are interrelated concepts affecting an individual's whole life; they are of vital importance for academic success (Browne, 2007; Riley, 2006).

In the light of the studies carried out so far, it is highlighted that early language and academic skills affect the later academic experience and all the developmental domains (Baroody, 2000; Chapman, Tunmer, & Prochnow, 2000; Cömert, 2000; Dickinson & Tabors, 1991; Jalongo & Sobolak, 2011; Poe et al., 2004; Purpura et al., 2011; Sarama, Lange, Clements, & Wolfe, 2012).

The aim of this study was to adapt the K-SEALS a widely-used test in the USA, to Turkish children, and carry out the validity and reliability process for enabling forthcoming studies investigating the development of early academic and language skills. The items of the K-SEALS were analyzed, and the reliability coefficient and item total correlations were found to be adequate for the entire test. The total item correlation and KR-20 value were found to be high for the majority of the items as a result of item analysis.

The Pearson correlation coefficient among the sub-tests and scales was found to be significant at $p<.01$. All the sub-tests and scales within the survey established a homogeneous structure at measuring academic and language skills. In addition, since the Pearson correlation coefficient was positive and high, the items sampled similar skills and the test had high internal consistency. As a result of validity and reliability studies of the K-SEALS in the United States, the correlation values among the sub-tests were found to be between .620 and .760 (Kaufman & Kaufman, 1993, pp. 63-64). These values were similar to those found in the adaptation of the survey to Turkish children.

The test-retest reliability for the K-SEALS sub-tests, skill scales, the Early Academic and Language Skills composite, and for the entire test were significant at the $p<.01$ level. Reliability coefficients of the sub-tests, skill scales, the Early Academic and Language Skills composite, and for the entire test were high and were of more or less similar values. This result showed that the survey consistently measured the same structure. Test-retest values resulting from validity and reliability studies carried out in the United States were found to be between .870 and .940 (Kaufman & Kaufman, 1993, p. 63). These values were found to be between .783 and .939 as a result of the same process carried out in Turkey, which are close to the values found in the USA.

The correlation values of rater reliability for the K-SEALS sub-tests, skill scales, the Early Academic and Language Skills composite, and for the entire test were significant at the $p<.01$ level, and all were close in value. This means that the correlation coefficient was high among the test administrators, which emphasizes the reliability of the K-SEALS.

According to the validity and reliability study results of the K-SEALS conducted on 423 children between the ages of 61 and 72 months attending preschools in the Ankara sample, test results were valid and reliable, indicating that the survey can be used as a valid and reliable instrument. Since the survey is intended to be used for the evaluation of children's early language and academic skills, it can enable educators to make necessary decisions regarding educational programs for skills development and success within all developmental domains.

Other studies carried out using the K-SEALS (Constantine, 2004; Friedman-Weieneth et al., 2007; Haney & Hill, 2004; Harvey et al., 2013; O'Shea et al., 2007; Roopnarine et al., 2006; Roopnarine & Jin, 2012; Salaway, 2008) within various disciplines such as early childhood education, child development, special education, and medicine aimed to investigate how factors such as a child's literacy environment, social development, parental activities and parenting styles, chronic diseases, low birth weight, and attention deficit and hyperactivity disorder affect children's academic and language skills, and how these factors are related to each other. These studies found that the K-SEALS provided reliable assessment results when used together with other various scales investigating factors such as social skills, parenting styles, chronic diseases, and attention deficit and hyperactivity disorder.

It is likely that the use of the K-SEALS in studies carried out in Turkey will y improve the measuring power of the survey. The validity and reliability studies of the K-SEALS were conducted only on preschoolers between the ages of 61 and 72 months. These studies can also be performed on children between the ages of 36 and 60 months, as well as 72 and 83 months. A norm study of the K-SEALS for the ages of 36 to 83 months can be conducted, and new norms appropriate for Turkish children can be generated. The K-SEALS can be used in future studies in the fields of special education, elementary education, speech and language pathology, psychology, medicine, audiology, guidance and counseling, education, and health administration. All in all, the K-SEALS is intended to assist early childhood educators in evaluating 61 to 72 month old children's early academic and language skills, and in planning the teaching and learning process appropriately.

References/Kaynakça

Aktaş-Arnas, Y., Deretarla, E. ve Sığırtmaç, A. (2003). 5-6 yaş çocuklar için sayı ve işlem kavramları testi geçerlilik ve güvenirlik çalışması. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *12*(12), 147-157.

Albrecht, K., & Miller, L. G. (2004). *The comprehensive preschool curriculum*. Beltsville: Gryphon House.

Aslan, D. (2004). *Anaokuluna devam eden 3-6 yaş grubu çocuklarının temel geometrik şekilleri tanımalarının ve şekil ayırt etmede kullandıkları kriterlerin incelenmesi* (Yüksek lisans tezi, Çukurova Üniversitesi, Sosyal Bilimler Enstitüsü, Adana). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Baroody, A. J. (2000). Does mathematics instruction for three- to five-year-olds really make sense? *Young Children, 55*(4), 61-67. Retrieved from http://ehis.ebscohost.com/ehost/

Başaran, N. (2006). *Erken öğrenme becerilerini değerlendirme aracının tokat örnekleminde 48-66 aylık Türk çocuklarına uyarlanması* (Yüksek lisans tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Bee, H. ve Boyd, D. (2009). *Çocuk gelişim psikolojisi* (çev. O. Gündüz). İstanbul: Kaknüs Yayınevi.

Browne, A. (2007). *Teaching and learning, communication, language and literacy*. Great Britain: Paul Chapman Publishing.

Büyüköztürk, Ş., Çokluk, Ö. ve Köklü, N. (2010). *Sosyal bilimler için istatistik* (5. bs.). Ankara: Pegem Akademi.

Champman, W. J., Tunmer, E. W., & Prochnow, E. J. (2000). Early reading-related skills and performance, reading self-concept, and the development of academic self-concept: A longitudinal study. *Journal of Educational Psychology, 92*(4), 703-708. doi: 10.1037/0022-0663.92.4.703

Charlesworth, R., & Lind K. K. (2007). *Math & science for young children* (5th ed.). Clifton Park, NY: Thomson Delmar Learning.

Colton, D., & Covert, R. W. (2007). *Designing and constructing instruments for social research and evaluation*. San Francisco: John Wiley & Sons Inc.

Constantine J. L. (2004). *Relationships among early lexical and literacy skills and language-literacy environments at home and school* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No: 3157208)

Cömert, D. (2000). *Okul öncesi eğitim programlarında uygulanan Türkçe dil faaliyetlerinin ilköğretim Türkçe dersi okuma-anlamaya etkisi* (Yüksek lisans tezi, On sekiz Mart Üniversitesi, Sosyal Bilimler Enstitüsü, Çanakkale). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Diamond, K. E., Gerde, H. K., & Powell, D. R. (2008). Development in early literacy skills during the pre-kindergarten year in head start: Relations between growth in children's writing and understanding of letters. *Early Childhood Research Quarterly*, *23*(4), 467-478. doi:10.1016/j.ecresq.2008.05.002

Dickinson, D. K., & Tabors, P. (1991). Early linkages: Linkages between home, school and literacy achievement at age 5. *Journal of Research in Childhood Education, 6*(1), 30-46. Retrieved from http://ehis.ebscohost.com/ehost/

Edmonds, E., O'Donoghue, C., Spano, S., & Algozzine, R. F. (2009). Learning when school is out. *The Journal of Educational Research*, *102*(3), 213-221. Retrieved from http://ehis.ebscohost.com/ehost/pdfviewer/pdfviewer

Ege, P., Acarlar, F. ve Güleryüz, F. (1998). Türkçe kazanımında yaş ve ortalama sözce uzunluğu ilişkisi. *Türk Psikoloji Dergisi, 13*(41), 19-31.

Eliason, C., & Jenkins, L. (2003). *A practical guide to early childhood curriculum*. Ohio: Merrill Prentice Hall.

Erdoğan, S. (2006). *Altı yaş grubu çocuklarında drama yöntemi ile verilen matematik eğitiminin matematik yeteneğine etkisinin incelenmesi* (Doktora tezi, Ankara Üniversitesi, Fen Bilimleri Enstitüsü, Ankara). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Ezell, H. K., & Justice, L.M. (2005). *Shared storybook reading building young children's language & emergent literacy skills*. Maryland: Paul H. Brookes Publishing.

Fraenkel, J. R., & Wallen, N. E. (2009). *How to design and evaluate research in education* (7th ed.). New York: McGraw-Hill Higher Education.

Friedman-Weieneth, J. L., Harwey, E. A., Youngwirth, S. D., & Goldstein, L. H. (2007). The relation between 3-year-old children's skills and their hyperactivity, inattention, and aggression. *Journal of Educational Psychology*, *99*(3), 671-681. doi: 10.1037/0022-0663.99.3.671

Gordon, A. M., & Browne, K. W. (2011). *Beginnings and beyond foundations in early childhood education* (8th ed.). Belmont: Wadsworth Cengage Learning.

Grimm, K. J. (2008). Longitudinal associations between reading and mathematics achievement. *Developmental Neuropsychology, 33*(3), 410-426. doi: 10.1080/87565640801982486.

Haney, M., & Hill, J. (2004). Relationships between parent-teaching activities and emergent literacy in preschool children. *Early Child Development and Care, 174*(3), 215-228. doi:10.1080/0300443032000153543

Harvey, E. A., Fischer, C., Weineth, J. L., Hurwitz, S. D., & Sayer, A. G. (2013). Quarterly predictors of discrepancies between informants' ratings of preschool-aged children's behavior: An examination of ethnicity, child characteristics, and family functioning. *Early Childhood Research Quarterly, 28*, 668-682. Retrieved from http://dx.doi.org/10.1016/j.ecresq.2013.05.002

Heffelfinger, A. K., & Mrakotsky, C. (2006). Cognitive development. In J. L. Luby (Ed.), *Handbook of preschool mental health, development, disorders, and treatment* (pp. 45-60). New York: The Guilford Press.

Jackman, L. H. (2005). *Early education curriculum* (3rd ed.). USA: Thomsan Delmar Learning.

Jalongo, M. R., & Sobolak, M. J. (2011). Supporting young children's vocabulary growth: The challenges, the benefits, and evidence-based strategies. *Early Childhood Educational Journal*, *38*, 421-429. doi 10.1007/s10643-010-0433-x

Justice, L. M., McGinty, A. S., Cabell, Q. S., Kilday, C. R., Knighton, K., & Huffman, G. (2010). Language and literacy curriculum supplement for preschoolers who are academically at risk: a feasibility study. *Language, Speech & Hearing Service in Schools, 41*, 161-178. doi: 10.1044/0161-1461(2009/08-0058)

Kandır, A., Can-Yaşar, M., İnal, G., Yazıcı, E., Ceylan Ş., Yazıcı, Z., Çalışandemir, F., … Uyanık, Ö. (2012). *Dil etkinlikleri*. Ankara: Efil Yayınevi.

Kandır, A., Özbey, S. ve İnal, G. (2010). *Okul Öncesi eğitimde program (1): Kuramsal temeller.* İstanbul: Morpa Yayıncılık.

Katz, J., Önen, F., Demir, N., Uzlukaya, A., & Uludağ, P. (1974). A Turkish Peabody Picture Vocabulary Test. *Hacettepe Sosyal ve Beşeri Bilimler Dergisi*, *6*(1-2), 129-140.

Kaufman, A. S., & Kaufman N. L. (1993). *K-SEALS Kaufman survey of early academic and language skills: Manual*. Minneapolis: Pearson Assessments.

Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin, 103*(3), 391-410. Retrieved from http://www.fdewb.unimaas.nl/

Mclachlan, C., Fleer, M., & Edwards, S. (2013). *Early childhood curriculum, planning, assessment and implementation* (2nd ed.). New York: Cambridge University Press.

Milli Eğitim Bakanlığı. (2005). *İlköğretim programları (1-5. Sınıflar).* Ankara: PegemA Yayınları.

Milli Eğitim Bakanlığı. (2011a). *Ortaöğretim matematik dersi öğretim programı*. Ankara: Yazar.

Milli Eğitim Bakanlığı. (2011b). *Ortaöğretim Türk edebiyatı dersi öğretim programı*. Ankara: Yazar.

Milli Eğitim Bakanlığı. (2013). *36-72 aylık çocuklar için okul öncesi eğitim programı*. Ankara: Yazar.

Morrow, M. L., & Gambrell, B. L. (2004). *Using children's literature in preschool comprehending and enjoying books.* Newark, DE: International Reading Association.

Neuman, S. B., & Dickinson, D. K. (2002). *Handbook of early literacy development*. New York: Guilford Publication.

Neuman, W. L. (2007). *Basics of social research qualitative and quantitative approaches* (2nd ed.). Boston: Pearson Education Inc.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3th ed.). New York: McGraw Hill.

O'Shea, T. M., Washburn, L. K., Patricia, A., Nixon, P. A., & Goldstein, D. J. (2007). Follow-up of a randomized, placebo-controlled trial of dexamethasone to decrease the duration of ventilator dependency in very low birth weight infants: Neurodevelopmental outcomes at 4 to 11 years of age. *American Academy of Pediatrics*, *120*, 594-602. doi: 10.1542/peds.2007-0486

Poe, D. M., Burchinal, R. M., & Roberts, E. J. (2004). Early language and the development of children's reading skills. *Journal of School Psychology, 42*(4), 315-332. doi:10.1016/j.jsp.2004.06.001

Pullen, P. C., & Justice L. M. (2003). Enhancing phonological awareness, print awareness, and oral language skills in preschool children. *Intervention in School And Clinic*, *39*(2), 87-98. doi: 10.1177/10534512030390020401

Purpura, D. J., Hume, L. E., Sims, D. M., & Lonigan, C. J. (2011). Early Literacy and early numeracy: The value of including early literacy skills in the prediction of numeracy development. *Journal of Experimental Child Psychology, 110*(4), 647-658. doi:10.1016/j.jecp.2011.07.004

Riley, J. (2006). *Language and literacy 3-7, creative approaches to teaching*. London: Sage.

Roopnarine L. J., Krishnakumar, A., Metindoğan, A., & Evans, M. (2006). Links between parenting styles, parent-child academic interaction, parent-school interaction, and early skills and social behaviours in young children of English-speaking Caribbean immigrants. *Early Childhood Research Quarterly, 21*, 238-252. doi:10.1016/j.ecresq.2006.04.007

Roopnarine, J. L., & Jin B. (2012). Indo Caribbean immigrant beliefs about play and its impact on early academic performance. *American Journal of Play*, *4*(4), 441-463. Retrieved from http://www.journalofplay.org/sites/www.journalofplay.org/files/pdf-articles

Salaway, L. J. (2008). *Efficacy of a direct instruction approach to promote early learning* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No: 3303027)

Sarama, J., Lange, A. L., Clements, D. H., & Wolfe, C. B. (2012). The impacts of an early mathematics curriculum on oral language and literacy. *Early Childhood Research Quarterly, 27*, 489-502. doi:10.1016/j.ecresq.2011.12.002

Sarı, B. ve Aktan Acar, E. (2013). Erken Çocukluk Dönemi Fonolojik Duyarlılık Ölçeği'nin (EÇDFDÖ) geliştirilmesi ve psikometrik özellikleri. *Kuram ve Uygulamada Eğitim Bilimleri, 13*, 2195-2215. doi: 10.12738/estp.2013.4.1793

Sarıtaş, R. (2010). *Milli Eğitim Bakanlığı okul öncesi eğitim programına uyarlanmış GEMS (Great Explorations in Math and Science) fen ve matematik programının anaokuluna devam eden altı yaş grubu çocukların kavram edinimleri ve okula hazır bulunuşluk düzeyleri üzerindeki etkisinin incelenmesi* (Yüksek lisans tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Schermelleh-Engel, K., & Moosbrugger, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit. *Measures Methods of Psychological Research Online*, *8*(2), 23-74. Retrieved from http://www.cob.unt.edu/slides/paswan/busi6280/Y-Muller_Erfurt_2003.pdf

Segars, A. H., & Grover, V. (1993). Re-examining perceived ease of use and usefulness: A confirmatory factor analysis. *MIS Quarterly, 17*(4), 517-525. Retrieved from http://www.jstor.org/stable/249590.

Senemoğlu, N. (2012). *Gelişim, öğrenme ve öğretim kuramdan uygulamaya* (21. bs.). Ankara: Pegem Akademi Yayınları.

Sucuoğlu, B., Büyüköztürk, Ş. ve Ünsal, P. (2008). Türk çocuklarının temel ilişkisel kavram bilgilerinin geliştirilmesi. *İlköğretim Online, 7*(1), 203-217.

Şimşek Bekir, H. (2004). *Almanya'da okul öncesi eğitim kurumlarına devam eden 5-6 yaş grubu Türk çocuklarına uygulanan dil eğitim programının dil gelişim düzeyine etkisi* (Doktora tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü. Ankara). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Şimşek, Ö. (2011). *60-72 aylık çocukların yazı farkındalığı ve yazmaya hazırlık becerilerinin gelişiminde okuma yazmaya hazırlık programının etkisinin incelenmesi* (Doktora tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Turan, F. ve Akoğlu, G. (2011). Okul öncesi dönemde sesbilgisel farkındalık eğitimi. *Eğitim ve Bilim, 36*(161), 64-75.

Üstün, E. (2007). *Okul öncesi çocuklarının okuma yazma becerilerinin gelişimi*. İstanbul: Morpa Yayınevi.

Wanderstoep, S. W., & Johnston, D. D. (2009). *Research methods for everyday life blending qualitative and quantitative approaches*. San Francisco: Jossey-Bass A Wiley Imprint.

Wood, E. (2013). *Play learning and the early childhood curriculum* (3th ed.). London: Sage.

Yayla, Ş. (2003). *Alt sosyo-ekonomik düzeydeki ailelerden gelen 60-72 aylar arasındaki çocuklara uygulanan dil eğitim programının çocukların dil gelişimine etkisinin incelenmesi* (Yüksek lisans tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Yazıcı, E. (2010). *61-72 Aylık Çocuklar İçin Okuma Yazma Becerileri Araştırma Testi'nin geçerlilik ve güvenirlik çalışması (Ankara örneklemi)* (Yüksek lisans tezi, Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara). https://tez.yok.gov.tr/ adresinden edinilmiştir.

Yener, İ. (1956). Standart Türk klavyesinin mucip sebepleri. *Sekreter Daktilograf*, *5-6-7*, 25.

Young-Loveridge, J. M. (2004). Effects on early numeracy of a program using number books and games. *Early Childhood Research Quarterly*, *19*, 82-98. doi:10.1016/j.ecresq.2004.01.001

Zembat, R. ve Yurtsever, M. (2002, Ekim). *Beş altı yaş çocukların kelime dağarcığı gelişimine ana dil eğitim programının etkisi*. Erken Çocukluk Gelişimi ve Eğitimi Sempozyumu "Geleceğe Bakış" Kongresi'nde sunulan bildiri, Gazi Üniversitesi, Ankara.