ITEM ANALYSIS AND RELIABILITY OF THE COGNITIVE ABILITIES SCALE-SECOND EDITION: TURKISH VERSION

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ABSTRACT

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by Gokce Durmusoglu

In several parts of the world psychological assessment involves translating major cognitive tests usually from the United States and England, and standardizing them for their prospective culture. Turkey is one such culture where psychology is flourishing, but psychological assessment is just beginning. Although several tests have been translated and standardized for the Turkish culture, these tests are only for school-age children, adolescents, and adults, leaving the field of preschool assessment without options. Thus, many children arrive at elementary school without being identified as developmentally delayed and having missed important early interventions. Therefore, there is a need for a cognitive measure for Turkish preschoolers.

To address this need, this study involved translation of the Cognitive Abilities Scale-Second Edition (CAS-2) Preschool Form for 2- and 3-year-olds, into Turkish following recommended procedures, including back translation and a pilot study. To examine reliability and validity, a sample of 40 Turkish children from 24 to 47 months of age participated. The children were from middle to high socioeconomic families and attended preschools in Istanbul. Most were typically developing; a few had disabilities. Half of the children were retested in 2 weeks and 20% of the protocols were scored by an independent examiner for inter-examiner reliability.

Results suggested that the CAS-2: TV has excellent internal consistency, test-retest reliability and good inter-examiner reliability. Furthermore, item discrimination medians and item difficulty levels were all within the acceptable range. The reliability and validity values were comparable to CAS-2 values for American children. Results of item analysis suggest where modifications can be made to further improve the translation. Additional studies are needed to explore the technical adequacy of the CAS-2: TV, particularly with larger and more diverse samples. Although the CAS-2: TV cannot be used to determine cognitive functioning of young Turkish children without normative data, the results can be helpful in determining skills young children possess and which skills would be appropriate to teach next. Therefore, these results may be useful for the Turkish preschool system.

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CHAPTER I

INTRODUCTION

Interest in early childhood experiences as well as the implementation of the PL 99-457 resulted in increased attention to early intervention and primary prevention efforts in the United States. One focus in early childhood education has been the assessment of cognitive abilities for young children. The purposes of such early assessment are varied including program evaluation, curriculum planning, diagnosis of existing conditions and early identification of children with developmental delays.

Although there are many preschool screening instruments and diagnostic tests, most fail to meet minimal psychometric standards due to inadequate or underrepresented standardization samples, lack of adequate reliability and validity and poor floors and item gradients (Alfonso & Flanagan, 1999; Flanagan & Alfonso, 1995; Goodman, 1990). However, despite some problems with technical adequacy for many preschool tests, there are some cognitive measures that do meet acceptable standards for diagnostic, screening and instructional planning purposes (Bradley-Johnson, 2001).

Use of cognitive tests for preschoolers, and further development of these tests in terms of better reliability, predictive validity and updated norms is an ongoing process in the United States. Publishing companies, as well as test authors, strive to improve these measures so that they can be used reliably by psychologists in identifying problems and planning interventions for young children. However, in other parts of the world where the science of psychology is less extensively developed, psychological assessment is in the stage of translating major cognitive tests, usually from the United States and England, and trying to standardize them for their prospective culture. Turkey is one example of a

country where psychology is flourishing, but psychological assessment is still at a stage where a considerable amount of research is needed to standardize psychological tests.

Several tests and rating scales have been translated and standardized for the Turkish culture. For example, the Wechsler Intelligence Scale for Children-Revised Edition (WISC-R; Wechsler, 1974) was translated and standardized by Savasir and Sahin (1995). Test-retest reliability correlations for the Verbal, Performance and Full Scale IQ for the translated version were .97, .93, and .97 respectively (Soysal, Seven, Cinaz, Bideci, & Ayvali, 2006). The correlations between subtests ranged from .51 to .86 (Ergenc, 2000). The WISC-R became the most widely used cognitive measure for diagnostic and research purposes in Turkey. However, because of the fast pace of updates for this measure in the United States, as well as the lack of human and financial resources in Turkey, the newer versions of the test have not yet been standardized.

Another frequently used measure for assessing children, the Child Behavior Checklist (CBCL; Achenbach, 1991; Achenbach & Rescorla, 2001), has been translated in Turkey. The first version (Achenbach, 1991) was translated and standardized on a nationally representative sample of 5, 928 4- to18-year-olds (Erol & Simsek, 1997). The newer version of the CBCL (Achenbach & Rescorla, 2001) was renormed and data addressing validity were provided for new syndrome constructs (Dumenci, Erol, Achenbach & Simsek, 2004).

The Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) (Huebner, Suldo, Valois, Drane, & Zullig, 2004) was translated into Turkish by Siyez and Kaya (2008) for use in schools and mental health settings. The Turkish version of the BMSLSS was found to have a test-retest reliability correlation of .82 and an internal

consistency correlation of .89. Item-total correlations varied from .64 to .78, and results correlated highly with the Turkish version of the Children's Depression Inventory (Oy, 1991) and the Turkish version of the Piers Harris Self-Concept Scale (Ozyurek, 1983).

Numerous other rating scales have been translated and normed for the Turkish population in the fields of medicine and adult psychiatry. However, even these efforts are scarce because the process of translating the tests and obtaining an adequate norm sample is a huge undertaking that necessitates professionals educated in the field of psychology and resources in multiple institutional agencies. Furthermore, the psychological tests currently in use in Turkey only meet the needs of school-age children, adolescents and adults, leaving an untapped and underdeveloped field of preschool assessment. Due to the lack of cognitive instruments for preschoolers, there are many children who continue to elementary school without being identified as having developmental delays and who miss important early interventions. Therefore, there clearly is a need for a cognitive measure for preschoolers in Turkey.

Test Translation

Translating psychological tests for use in another culture is a difficult undertaking. Because the terminology and language used in original versions of tests are difficult to translate, it is important for test developers to provide instructions written in simple and concise terminology so that future translation can be accomplished (Brislin, 1970).

There are many reasons why translating tests is difficult and why numerous procedures are necessary to obtain a good translation and useful data in support of validity of the results (Bracken & Barona, 1991). First, test directions are frequently

loaded with technical terms that are difficult to translate. Second, practitioner-produced translations rarely yield equivalent meanings across languages (Brislin, 1980). The level of difficulty can increase or the meaning can change if tests are simply translated. Third, the underlying constructs assessed by the translated tests may not be universal across cultures (Van de Vijver & Poortinga, 1982). Fourth, the content assessed on tests can differ in importance across cultures or languages (Fouad & Bracken, 1985). Fifth, examinee test taking behaviors and orientation towards test instructions and procedures may vary from one culture to another (Butcher & Pancheri, 1976). Sixth, until recently, standard translation procedures have been lacking against which the equivalence of translations and constructs across cultures and languages can be judged (Brislin, 1970; Bracken & Fouad, 1987; Bracken, et al., 1990). Because of these potential threats to test translations, careful attention to the procedures used in translating tests for use in different cultures is necessary.

Considerations in Selecting Tests for Translation

Werner and Campbell (1970) offered five basic recommendations to facilitate a quality test translation. They suggested that (1) test items should consist of simple sentences; (2) pronouns should be avoided in test instructions and items; instead nouns should be repeated; (3) test items should not contain metaphors; (4) the passive tense in test directions and items should be avoided; and (5) hypothetical phrasing in test directions and items should be avoided. Thus, a test chosen for translation should have these characteristics to ensure a quality translation that is equivalent across cultures in terms of validity.

Other researchers have emphasized additional points for test translation and construction. Keston and Jimenez (1954) emphasized that examinees in cross-cultural assessments are often better in receptive than expressive language. Therefore, valid assessments should limit expressive language demands and focus on receptive language. Further, Knapp (1960) recommended that translated tests should be *power* oriented rather than *speeded*, i.e., the time factor should be avoided as much as possible and the focus should be on the content. Finally, Nida (1964) and Spilka (1968) both suggested that the test materials and topics that are simple and familiar to examinees and examiners across cultures cause tests to be more easily translated than more insensitive, less familiar materials and topics.

Procedures in Test Translation

For a successful translation of a test from its source language to another target language multiple steps are necessary. In addition to the translation issues noted above, Bracken and Barona (1991) suggested specific steps to ensure that translated test forms are very similar to their source language versions.

Source to Target Language Translation

The first step in the test translation and validation process is to make a preliminary translation of the test from its source language to the target language. The translation should be completed by a translator who is bilingual and sufficiently familiar with the concepts and the formal language used in the test manual and on the record forms (Bracken & Barona, 1991). Test translators should not try to make the test "as easy as possible" or "more easily understood" than the source language version. Instead,

according to Bracken and Barona (1991), they should attempt to provide a translation with a structure and format as similar to the source language as possible, while keeping the cultural uniqueness of the target population in mind.

Blind Back-translation

Blind back-translation is a standard method for translating an instrument from one language to another (Brislin, 1970). This method is recommended by many scholars as the "gold" standard (Behling & Law, 2000; Chang, Chau, & Holroyd, 1999; Hyrkas, Appelquist-Schmidlechner, & Paunonen-Ilmonen, 2003) for test translation. Brislin (1970) described a three-step process in which the material in a test is translated from the original language to the target language by a bilingual person, translated back to the original language by a second bilingual person, and then the two versions are compared to develop the final product.

The individual who conducts the back-translation should have no prior knowledge of the test being translated (Bracken & Barona, 1991). If the back-translator is familiar with the scale in its source language, the back-translation might be influenced by that information. The back-translation should be compared with the original version of the test in terms of grammatical structure, comparability of the concepts, level of word complexity and overall similarity in meaning, wording and format. The back-translator also should be well-educated, bilingual and somewhat familiar with general psychoeducational concepts.

Translation-Back-Translation Repetition

Brislin (1970) emphasized that translation and back-translation should be repeated as needed to decrease any differences between the original version and the back-translation. Having other translators do the translation/ back-translation is thought to help note different problems.

Bilingual Review Committee

Once the original form and back-translated form are as similar as they can be, the translated version should be reviewed by a bilingual multi-regional committee (Bracken & Barona, 1991). Feedback from this committee can ensure that the translation is appropriate for examinees regardless of their region of origin. According to Bracken and Barona (1991), the committee reviews the test instructions and test items to determine whether the translation is well worded, whether modifications are needed or whether region-specific words might be inserted to ensure that the translation is understood by all examinees. Another committee goal is to determine whether there are any items that are not culturally fair or biased and replace any such items with more appropriate items.

Pilot Testing

Once culturally unfair items have been adjusted, the translated scale can be pilot tested and any needed adjustments made. This stage requires that a trained psychologist, fluent in the target language, administer the scale to several examinees from different social and economic backgrounds as well as different geographic regions. The examiner should attend to any words or instructions that do not evoke a response. If examinees look confused, angry, or are uncooperative, these reactions may indicate translation

problems. The review committee should explore reasons for the inappropriate examinee responses and make any adjustments needed (Bracken & Barona, 1991).

Basic Considerations in the Use of Translated Tests

Although the procedures discussed above are necessary for valid test translations, by themselves they are not enough. Other important psychological, linguistic and cultural variables also must be considered. Bracken and Barona (1991) suggested that the following points require consideration to ensure that the translation is complete.

Language

Issues related to language become important not only in cultures with heterogeneous populations, but also in homogeneous populations due to differences in accents or dialects. Therefore, examiners need to be fluent and knowledgeable in their own language. To pronounce test items correctly and recognize acceptable responses from examinees from different geographic regions, examiners need to be trained adequately (Bracken & Barona, 1991).

Another important language-related issue is the difficulty level of the test vocabulary. Some words vary in difficulty when translated and thus, the sequence of the difficulty level of items may be negatively affected. Barona and Barona (1987) gave the following example:" The word *edifice* is a relatively difficult word in English, whereas its Spanish translation *edificio* is a relatively easy term". Therefore, caution must be taken to ensure that the level of difficulty of words is equivalent across languages.

Cultural Influences

Specific experiences of individuals from other cultures can have a considerable influence on their educational, emotional and language development. Therefore, it is crucial to consider examinee cultural and individual differences in addition to language, in the translation process (Bracken & Barona, 1991).

Some cultural influences include beliefs, customs, values, religion and generational status of individuals. For example, Turkish children are taught not to give the correct answer unless explicitly asked to respond to avoid showing off. Thus, if test instructions are not explicit enough, a Turkish child, regardless of age, would be more likely to remain silent. In this situation, despite a well-translated test, an examiner might conclude incorrectly that the examinee lacked knowledge. Therefore, the various culture-specific aspects of test taking and test administering behaviors should be considered and integrated in the translation process.

As noted in the above, test translation is a difficult multi-step process that warrants considerable effort. In addition, selection of an appropriate test for translation is another important factor that determines whether the end product will be useful or not. For this project, the Cognitive Abilities Scale-Second Edition (CAS-2; Bradley-Johnson & Johnson, 2001) was chosen for translation into Turkish to address the lack of Turkish preschool measures. Without such measures it is often difficult or impossible to identify children whose development is delayed and provide appropriate intervention. Another reason for selecting the CAS-2 is that it has good psychometric qualities and is useful for both diagnosis and instructional planning for young children.

The Cognitive Abilities Scale-Second Edition (CAS-2)

The Cognitive Abilities Scale (Bradley-Johnson, 1987) was introduced over a decade ago as an innovative, research-based test for assessing young children's cognitive development. One of the primary goals for the Cognitive Abilities Scale (CAS) was to provide a test that would be sensitive to the needs of 2- and 3-year-old children. For example, the CAS addressed what Bagnato and Neisworth (1994) suggested are the most frequently cited problems with most traditional tests that contribute to unreliable assessment, a child's language deficits and tests' rigid standardized procedures (Bagnato & Neisworth, 1994). The CAS has been revised (Bradley-Johnson & Johnson, 2001) and is now a norm-referenced measure of intelligence for children from 3 months through 3 years of age that provides information useful for instructional planning as well.

The CAS-2 was chosen for translation and adaptation for several reasons. First, the test is recent and the only measure for children 0-3 with good predictive validity and reliability data provided by age level (HaileMariam, 2004). Second, for children who cannot or will not speak or vocalize, or cannot be understood if they do, there is an option of using either a vocal or nonvocal score that circumvents expressive language problems. Third, the test items are based on research and the manual describes the content validity of each item in detail. Fourth, the information gathered from the assessment makes it possible to plan instruction and link assessment to intervention. Finally, the CAS-2 is designed for easy administration by having the instructions printed on the protocol, and the child-friendly test materials allow examiners to focus on the child and help to evoke children's optimum performance. Considering that the CAS-2 addresses the concerns regarding technical adequacy of cognitive measures for young children noted by Alfonso

and Flanagan (1999), and defines the construct of intelligence in such a way as to link assessment and educational outcomes, the test seems to be a useful option as a cognitive measure for young children.

Purpose of the Study

The CAS-2 consists of two forms. The Infant Form is for children from birth to age 2; the Preschool Form is for 2- and 3-year-olds. The Preschool Form was the focus of this study. The aim of the study was to develop a Turkish version of the CAS-2 (CAS-2: TV) following recommended guidelines for test translation, and to examine the test-retest reliability and internal consistency of the translated version. If a test is not sufficiently reliable, its results cannot be valid. Thus, examination of a test's reliability is particularly important. Because any measure used to make important educational decisions about children should have reliability correlations of at least .90 (Salvia & Ysseldyke, 2007), this criterion was used to evaluate reliability in this study. Based on reliability data for the CAS-2, the hypotheses were that: (1) the Cognitive Abilities Scale-Second Edition: Turkish Version (CAS-2: TV) also would have high internal consistency as evidenced by alpha coefficients of .90 or higher, and (2) the test-retest reliability of the CAS-2: TV would be .90 or higher. Reliability was examined for both ages 2 and 3, as well as for the two age groups combined.

In addition, to evaluate the quality of the translated items, traditional item analysis (i.e., item difficulty and item discrimination) was carried out and results were compared with item analysis results for the English-version of the CAS-2. Because of the translation procedures used, the hypothesis was that item analysis results for the CAS-2 would be similar to those of the CAS-2: TV.

CHAPTER II

METHOD

Participants

The participants included 19 2-year-olds and 21 3-year-olds enrolled in four preschools in Istanbul, Turkey. Thirty preschools in Istanbul were contacted and sent the Preschool Administrator Cover Letter and Consent Form (See Appendix A). Twenty of the preschool administrators replied and out of the 20, only 4 of the administrators agreed to participate in the data collection process.

The preschools were located in Istanbul, the largest city in Turkey. Two preschools were located in suburbia and the other two were in urban parts of the city. One preschool was in the European side of the city, whereas three of the preschools were on the Asian side. All the preschools were private and the owners granted permission for data collection. According to the preschool administrators, children in these preschools were from middle to high income and middle to high socioeconomic status families. Children who participated in the study were typically developing children as well as children with developmental delays who had adequate vision, hearing and muscle coordination to enable them to respond to the test items.

The demographic characteristics of the participants are shown in Table 1. Of the 41 participants who took the test, 40 completed the test. One child was not able to complete the test despite assistance from the teacher. This child had developmental disabilities. He was noncompliant and had a hard time following instructions. An approximately equal number of boys and girls participated, and about half were 2-year-olds and half 3-year-olds. All participants as well as their parents were of the same

ethnicity, Turkish. None of the children understood or spoke English. Only one child was bilingual and she spoke both Turkish and German. In terms of the parents' education, they were well educated; about half of the mothers and half of the fathers had completed 4 years of college. Over half of the mothers and 44% of the fathers spoke English. Thirty-five of the children were typically developing. Based on information shared by parents of the children before testing, one child was cognitively impaired, one had epilepsy, one had a language impairment, and another had pervasive developmental disorder.

Table 1. Demographic Characteristics of the Sample ($N = 40$)

Characteristics	Percentage of the Sample
Gender	
Boys	47.5
Girls	52.5
Age in Months	
24-35	47.5
36-47	53.5
Ethnicity	
Turkish	100
Residence	
Urban	100
Educational Attainment of Mother	
Less than high school	7.5
High school	30
2-year college	10
4-year college	52.5
Educational Attainment of Father	
Less than high school	5
High school	30
2-year college	12.5
4-year college	50
Mother's knowledge of English	
Speaks English	57.5
Does not speak English	42.5
Father's knowledge of English	
Speaks English	44
Does not speak English	56

Instrument

Cognitive Abilities Scale-Second Edition (CAS-2)

The Cognitive Abilities Scale-Second Edition (CAS-2; Bradley-Johnson & Johnson, 2001) is a norm-referenced test of intelligence for children from 3 months through 3 years of age. The test has two forms: an Infant Form for children from 3 through 23 months of age and a Preschool Form for ages 24-47 months. Results can be used to aid in eligibility decisions for special education services as well as to plan individualized instruction. Both forms yield an overall General Cognitive Quotient (GCQ; mean = 100, standard deviation = 15) based on performance on all of the test items. Both forms also have a Nonvocal Cognitive Quotient (NCQ) to describe overall cognitive skills excluding performance on vocal items. The NCQ is suitable for children who cannot talk, will not talk or vocalize during testing, or whose speech cannot be understood. Results also can be described as percentiles or age equivalents. Materials include an examiner's manual, a record book for each form, a one-page sheet for the Handwriting section, *Mikey's Favorite Things* book (which can be given to 2- and 3-year-olds at the end of the testing to take with them as a coloring book), and a toy kit. To aid instructional planning, on the record forms the age at which at least 75% of children in the norm sample passed each item is indicated. Also, to ease administration, all instructions are printed on the Record Forms.

The CAS-2 is an individually administered test. Only the Preschool Form will be reviewed because it was the form used in this study. Administration of the Preschool Form varies from about 20 to 30 minutes depending on a child's age and willingness to participate.

The Preschool Form consists of five areas: Oral Language, Reading, Mathematics, Handwriting and Enabling Behaviors. Oral Language is made up of 30 items that tap receptive and expressive language skills. Understanding position words, expressive or receptive vocabulary, expressive or receptive use of pronouns or regular plurals (+*s*), word endings (-*ing*), possessives, and noun-verb combinations are assessed.

Reading includes 16 items that measure book handling, use of pictures in books, and knowledge of letter names and sounds.

Mathematics has 22 items that measure concepts such as *big* and *empty,* meaningful counting, sequencing of objects by size, matching numbers with quantities, and number recognition.

Handwriting has 6 items that require the child to either copy figures from pictures, or if unsuccessful, to imitate copying the figures. All figures are components of letters. Pencil grip and posture also are considered.

Enabling Behaviors consists of 14 items that tap memory for related and unrelated words and verbal and physical imitation.

The CAS-2 was normed on 1,106 children from 27 states. Data were collected from October, 1997 to August, 1999. Demographic characteristics of the sample were similar to US Census data in terms of gender, race, ethnicity, residence, geographical distribution and educational background of parents. Children with disabilities were included in the sample (1% were cognitively impaired and 5% had physical impairments). The sample included 305 2-year-olds and 265 3-year-olds. Data were stratified by age for geographic distribution, gender, race, ethnicity and residence. Norm tables are set up in 3-month intervals.

Internal consistency data are presented in 6-month intervals for 24 through 47 months. The correlations ranged from .88 to .94. Standard errors of measurement range from 4 to 5 for quotients.

Test-retest correlations for 2-year-olds were .96 for the GCQ and .98 for the NCQ; for 3-year-olds the correlation for the GCQ was .94 and .the correlation for the NCQ was .92. The retest interval was 2 weeks.

Inter-scorer reliability was evaluated with three examiners and data are presented by age level. The correlation was .99 for both age 2 and 3.

For content validity, items were based on research suggesting that the skills are relevant to cognitive development in young children. A detailed section in the manual addresses the content validity of each item. Items were selected on the basis of their relevance to later academic performance, particularly for the Preschool Form. Three considerations were made in test development. First, the test is playful and engaging toys are used to maximize children's willingness to participate. Second, no items are timed. According to the manual, timed items take the examiner's attention away from the child and do not seem to contribute unique information about children's performance. Third, items are grouped to ease administration and aid in instructional planning. Item analysis was used to select items that discriminate well. Finally, logistic regression was conducted to evaluate any possible item bias for girls vs. boys, African American vs. non-African American, and Hispanic vs. non-Hispanic American children. Based on the analysis, it was not necessary to eliminate any items.

To evaluate concurrent validity, the GCQ and NCQ were used to compare CAS-2 results with the Bayley Scales of Infant Development-Second Edition (Bayley, 1993).

Correlations were .82 and .86 respectively for the Preschool Form. CAS-2 Preschool Form results also were compared with the Pictorial Test of Intelligence-Second Edition (French, 2001) and correlations were .67 (GCQ) to .80 (NCQ). CAS-2 Preschool Form results, when compared to the Wechsler Preschool and Primary Scale-Revised (Wechsler, 1989), correlated at .77 (GCQ) and .87 (NCQ).

The predictive validity of the CAS-2 preschool was examined in a recent study (Swanson, Bradley-Johnson, Johnson, & Rubenacker-O'Dell, 2009). Children were initially tested with the CAS-2 when they were between the ages of 2-2 to 3-10, and retested on average 72 months later with the Wechsler Intelligence Scale for Children-Third Edition (Wechsler, 1991). When retested the children's ages ranged from 7-10 to 9-4. Retesting was done by different examiners who were blind as to the children's performance during the initial testing. The correlation between the two tests was .58, and when corrected for restricted range of the sample the correlation increased to .72. Thus, the test predicted children's performance well over about a 6-year period.

The construct validity of the CAS-2 is suggested by mean scores that increase with age. Also, a comparison of group means for both genders and for European-American, African-American, and Hispanic-American children is within the average range. As expected, means for children with physical impairments are in the average range, and those for children who were cognitively impaired in the below average range. Finally, in a study with 3-year-olds, CAS-2 scores were shown to correlate well with achievement test results for the Test of Early Reading Ability-Second Edition (Reid, Hresko, & Hammill, 1989) and the Test of Early Mathematics Ability-Second Edition (Ginsburg & Baroody, 1990).

In summary, the norm group appears to include a nationally representative sample of children. The inclusion of children with disabilities is a positive feature. Test-retest reliability appears very high and data are provided by age level. The educational importance of each item is addressed and extensive validity data tend to support the measure.

Translation Process

When preparing the translation, as many of the recommended procedures for preparing an accurate and useful translation were followed as possible. Table 2 describes these procedures and how each was addressed in this study.

Table 2. Steps in Test Selection and Translation

Steps in Test Selection and Translation	Procedures Used
Source to target language translation	The bilingual researcher completed the original translation from English to Turkish.
Blind back translation	A bilingual psychologist, who was not familiar with the instrument, completed the blind back translation. One back translator was used.
Translation back-translation repetition	The researcher revised the translation based on problems noted in the back translation. Because only a few problems were noted, only one back translation seemed to be necessary.
Bilingual review committee	This was not possible to carry out for this project.
Pilot testing	Pilot testing with three children was completed and additional revisions were made based on the children's responses.

Table 3. Description of CAS-2 in terms of Test Translation Criteria

Test Translation Criteria	Description of CAS-2
Items should consist of simple sentences	Except for memory items, only one or two-word responses are required.
Pronouns should be avoided	Few pronouns were required.
No metaphors	No metaphors were used.
Passive tense in directions and items should be avoided	Items are all worded in active tense.
Limit expressive language demands	Children can respond in receptive format for most of the questions.
Items should not be timed	No items are timed.
Items should be universal and familiar to all cultures	Most CAS-2 tasks are universal such as turning pages of a book, understanding position words and copying designs with a pencil.

The specifics of the translation were as follows. The Turkish version of the CAS-2 (CAS-2: TV) was developed by using the back-translation method as suggested first by (Brislin, 1970). I am a native bilingual Turkish speaker and I translated the original version into Turkish. During this process, some of items were modified due to cultural and linguistic differences. Following are the changes that were made during the original translation:

- For Oral Language items 22 and 24, the "coffee pot" and "coffee" were changed to "tea pot" and "tea." Turkish people drink tea in the morning and young children observe their parents drinking tea rather than coffee. Because of the resemblance of the coffee pot to a tea pot, the coffee pot toy in the test kit was retained.

- Oral Language items 23 and 24 assess knowledge of pronouns. The instructions had to be changed because in the Turkish language there is no pronoun to indicate gender such as *him* or *she*. The name of the person is used to designate gender. Therefore, the instructions were changed to "Give Ayse a cup" and "Ali wants some tea, give Ali some tea." Then, holding up the female doll, I asked, "Who is this?" and holding up the male doll, I asked, "Who is this?" This change made it possible to assess designation of gender using both the receptive and expressive procedures.
- For Oral Language item 29, the article *a* was omitted because in the Turkish language, there are no articles such as *a* or *the*. Instead, this item

was changed to assess use of the word "*one*" in a sentence. For example, in Turkish, "This is a car" is said as "This is one car" and the word *one* in Turkish does not refer to amount.

- On the Reading section item 5, the name "Toby" in the story was changed to "Ahmet" which is a common male Turkish name.

- Reading items 7-16 were modified. Turkish is not phonetic and the letters are read as they are written. Therefore, giving the sounds for letters is not relevant. Based on this linguistic difference, items 8, 10, 12, 14 and 16 that assess the ability to give letter sounds were omitted. However, to keep the number of items the same as on the CAS-2, more letters to be named were added. These letters were chosen because they appear frequently in the language. The following letters were added to replace the omitted letter sound items: *D, K, N, R, Y*. Also, the letter *F* for item 13 was replaced with the letter *P* because *F* does not appear frequently in print in Turkish.

- On the Handwriting section, the word *Zoom!* that is used as the examiner draws the symbol was changed to *Vizzt!* which is a Turkish expression equivalent to *Zoom* in English.

- On the Enabling Behaviors section, the sentences that assess memory were first translated literally. However, due to the structural and grammatical differences between Turkish and English languages, major changes were required for the translation. When the sentences were translated literally, the number of words in the English and Turkish sentences was different. The reason is that in Turkish pronouns such as *I* and *we* and words depicting tenses such as *was, can,* and *are* are added to the verb and the verb is located at the end of the sentence. Because of this difference, the Turkish sentences were much shorter than their English counterparts when translated. To keep the number of words in the sentences similar and maintain the logic of this section, extra words were added to the Turkish sentences, some of the tenses were changed or some words were substituted. Easy and frequently used words by young children were chosen. For example, for Question 8a, the sentence "The bird can fly" is translated as "Kus ucabilir" and is a two-word sentence instead of a four word sentence. Therefore, it was changed to" Kus cok hizli ucar" which translates as "The bird flies fast". In this example, the tense was changed and another word was added. Similar changes were made for almost all sentence pairs.

Next, the test was back translated into English by another native bilingual person who was one of the psychologists for the preschools that participated in the study.

Finally, the results of the back translation were compared with the English version and some modifications were made to the items as indicated below.

- For Oral Language, the Turkish word *bardak* was changed to *fincan. Bardak* means glass and *fincan* means *cup.*
- For Mathematics items 10 and 11, the Turkish translation of *different* was modified from *baska* to *farkli.*
- For Oral Langugage items 4 and 6, the Turkish word *rampa* that means *ramp* was changed to *yokus* which is a better Turkish translation of the word. *Rampa* is a direct translation, but it was unlikely to be familiar to young children.

A pilot study with 3 children was conducted to evaluate how the Turkish children would react to the test items and to fine tune the instructions. The major change was for Oral Language items 23 and 24. The male doll which represents an African American male was replaced with a white male with black hair and mustache which was more representative of a typical Turkish male figure. Young Turkish children are not familiar with African Americans and the reactions of children in the pilot study confirmed that they were confused with the male doll. For example, when the children were shown the African-American doll, instead of focusing on the question, they asked who this doll was and why he had a black face. Although they were able to answer the question for the female doll correctly, they did not answer the question about the male doll correctly.

Procedure

Once the preschools from which the sample was drawn were identified, parent cover letters describing the study, along with permission forms, were sent to the administrators of the preschools (See Appendices B and C). The administrators distributed the consent forms to the parents. Parents who were interested in having their

child participate contacted the researcher and sent the signed persmission form. Once the signed permission form was received, an appointment was made with the parent of the child to conduct the testing in the child's preschool.

Testing was conducted in the child's classroom. The child's teacher provided a space in the corner of the classroom with a child-size table and chairs. The researcher was accompanied by the psychologist of the preschools during the testing sessions. The psychologist provided assistance by redirecting the children who were not being tested. During the testing of some children, either a parent or a teacher observed the testing session if they anticipated that the child might be noncompliant, reluct to participate, or shy. The teachers who observed the testing session were granted permission by the parent to be present. The observers sat close to the child but did not face the child so as to minimize interaction. When needed, the observers assisted the researcher with understanding the child's language, evoking the child's cooperation or assisting in physical needs such as nose blowing or taking the child to the bathroom. At the conclusion of the test, the participating child was given a small toy for his or her participation. After the testing was over, the researcher let the children who did not participate in the study play with the toys she brought. This helped to prevent excessive interest towards the toys during testing. The test took approximately 20-45 minutes to administer depending on the age and cooperation of the child.

The parents of the children were paid $5 for allowing their child to participate. The money was paid in cash following the testing session and a receipt was signed by to the parent indicating that they received the payment. The parents were provided with the payment regardless of their child's performance or regardless of whether the child was

able to finish the testing. The parents also received a written summary of the skills their child demonstrated and the skills that would be appropriate for them to practice next. This report was shared only with the parent and not with the teachers and school administrators.

Ten children at each age level were administered the test two weeks later to examine the test-retest reliability for the CAS-2: TV. The children were chosen randomly. The same test was given to the same children by the same examiner in the child's classroom to ensure that all the conditions were the same. The parents of the children who participated in retesting sessions received an additional $5 for their child's second participation. This money was paid in cash and a receipt was signed by the parent indicating that the money was received. The child also received a second small toy for his or her participation.

To examine inter-examiner reliability, 20% (n =8) of the protocols were scored independently by another psychologist. The researcher trained a clinical psychologist, who was the psychologist for one of the preschools in which the research was conducted. This person was taught how to administer and score the test by the researcher before the study started. This psychologist scored the protocols of the three children with whom the pilot testing was conducted so that she could practice scoring. Scoring errors were corrected by the researcher and the scoring procedure was practiced for mastery. This psychologist then observed the testing session as the tests were administered to the children by the researcher and independently scored eight of the protocols. The protocols to be scored by the second examiner were chosen randomly. Half of the protocols were selected from the original testing session and half from the retesting sessions. Half of the

children whose protocols were scored by the second examiner were 2-year-olds and half of them were 3-year-olds. Similiarly, half of the children were boys and half of the children were girls.

CHAPTER III

RESULTS

To compare results for this sample of Turkish children with the CAS-2 U.S. norms, their raw scores were converted to quotients using the CAS-2 norm tables. Means and standard deviations were calculated for the General Cognitive Quotient (GCQ) and Nonvocal Cognitive Quotient (NCQ) using the total sample as well as for the data for 2-year-olds and for 3-year-olds. Results appear in Table 4. These children performed well within the average range for both types of scores for both age levels.

Results of a one-way ANOVA indicated that the NCQ, which did not require the children to speak, was significantly higher than the GCQ, $F(1, 78) = 4.25$, $p = .04$. Also, the standard deviation for the GCQ was more than twice as large as the standard deviation for the NCQ, indicating considerably more variability in results when speech was required.

Table 4. Means and Standard Deviations (*SD*) of CAS-2: TV Using U.S. Norms

	Mean (*SD*)	
	GCQ	NCQ
Overall ($N = 40$)	95 (30)	106 (12)
2-year-olds ($n = 20$)	94 (35)	106 (13)
3-year-olds ($n = 20$)	97 (25)	106 (11)

GCQ: General Cognitive Quotient; NCQ: Nonvocal Cognitive Quotient

Cronbach's (1951) coefficient alpha was used to assess the internal consistency reliability of the CAS-2: TV items. Results are presented in Table 5 along with correlations for the original CAS-2 norm sample for American children. Correlations for the total sample of Turkish children for the GCQ and NCQ exceeded .90, the minimum for acceptable

reliability. This was true for the correlations for each age level also. These coefficients indicate that CAS-2: TV is an internally consistent measure for 2 and 3-year-old children. CAS-2: TV correlations were very similar to internal consistency results for the American sample, except for 3-year-olds where the correlations for the U.S. sample were somewhat lower.

To evaluate inter-examiner reliability, 8 protocols scored independently by the researcher and the Turkish examiner were compared on an item-by-item basis. Percent agreement was determined by the formula of agreements divided by total number of items, multiplied by 100. The mean percent agreement for the two examiners was high at 97%.

Table 5. Coefficient Alphas for CAS-2: TV

Type of Score	Overall for Turkish Sample	Overall for U.S. Sample	2-year-olds in the Turkish Sample	2-year-olds in the U.S. Sample	3-year-olds in the Turkish Sample	3-year-olds in the U.S. Sample
General Cognitive Quotient	.97	.94	.96	24-29 mos=.94; 30-35 mos= .94	.96	36-41 mos=.93; 42-47 mos=.93
Nonvocal Cognitive Quotient	.94	.90	.93	24-29 mos=.93; 30-35 mos=.90	.93	36-41 mos=.88; 42-47 mos=.89

The standard error of measurement (SEm) was calculated to determine the degree of error that surrounds a particular child's score. Table 6 shows the SEm for both age levels. Data for the CAS-2 U.S. norm sample are presented also. Compared with the U.S. norm sample, the SEm for the Turkish sample is larger for the GCQ and lower for the NCQ.

Table 6. Standard Error of Measurement for CAS-2: TV

Type of Score	Turkish 2-year-olds	U.S. 2-year-olds	Turkish 3-year-olds	U.S. 3-year-olds
General Cognitive Quotient	7	24-29 mos = 4; 30-35 mos = 4	5	36-41 mos = 4; 42-47 mos = 4
Nonvocal Cognitive Quotient	3	24-29 mos = 4; 30-35 mos = 5	2	36-41 mos = 5; 42-47 mos = 5

The Pearson Product Moment Correlation was used to evaluate the test-retest reliability of the CAS-2: TV over a 2-week period. The resulting coefficients are reported in Table 7, along with the means and standard deviations for each testing. For the total sample and for each age level, the correlation between the first and second testing exceeded the minimum of .90 for acceptable reliability for both the GCQ and NCQ. These data indicate that CAS-2: TV results are very stable over time at age 2 and age 3. These correlations are similar to those for the CAS-2 where correlations ranged from .92 to .98.

Table 7. Test-Retest Reliability Coefficients for CAS-2: TV Quotients

CAS-2-TV Quotients	First Testing		Second Testing		
	M	*SD*	*M*	*SD*	*r*
Overall (*n*=20)					
GCQ	100	11	103	11	.96
NCQ	106	9	108	9	.97
2-year-olds (*n*=10)					
GCQ	98	11	99	12	.98
NCQ	105	10	105	10	.97
3-year-olds (*n*=10)					
GCQ	101	11	106	10	.97
NCQ	108	8	110	7	.99

GCQ: General Cognitive Quotient; NCQ: Nonvocal Cognitive Quotient

Traditional item analysis, including item difficulty and item discrimination, was carried out. Item difficulty describes the percentage of children who pass a particular item, suggesting whether the item is too easy or too difficult. Anastasi and Urbina (1997) indicated that an average difficulty should be approximately 50% and percent of difficulty should be fairly widely dispersed. According to Brown, Wiederholt, and Hammill (2009) a distribution from 15% to 85% is typically considered acceptable. The median percentage of item difficulty for the total Turkish sample is acceptable at 58%. This result indicates that overall the CAS-2: TV items were of moderate difficulty for the Turkish preschool children. Table 8 shows the median item difficulty for the overall sample and for each age group for both the CAS-2: TV and the original CAS-2. Although the median item difficulties for each age level are within an acceptable range, for 2-year-old children, the median item difficulty was 37% suggesting that the items were somewhat difficult for these children. The median item difficulty for 3-year-old children was 76%, suggesting that the items were somewhat easy for the older children.

The median percentages of difficulty were similar for the Turkish and U.S. samples, but somewhat higher for the Turkish sample.

Table 8. Median Percentages of Difficulty for the Turkish and U.S. Samples

Sample	Median Item Difficulty Turkish Sample	Median Item Difficulty U.S. Sample
Entire Sample	58%	48%
2-year-olds	37%	30%
3-year-olds	76%	63%

Tables 9, 10, and 11 describe the percentages of children who passed each test item for the Turkish children taking the CAS-2: TV and the U.S. norm sample for the CAS-2. Table 9 describes results for the overall samples, and Tables 10 and 11 describe these data for each age level. Data for the U.S. sample were provided by the test authors.

Out of the 88 test questions, item difficulty was within the acceptable range of 15 to 85% for 58 questions for the Turkish sample. Thirty questions were either too easy or too difficult, yielding percentages below 15% and above 85%. Sixteen questions had item difficulties above 85% indicating that they were too easy for the participants; 14 questions yielded item difficulties below 15% indicating that they were too hard for the participants.

Table 9. Item Difficulty Percentages for the Entire Sample

Item	Percent Passing: Turkish Sample	Percent Passing: U.S. Sample	Item	Percent Passing: Turkish Sample	Percent Passing: U.S. Sample
OL1	100	99	R15	0	18
OL2	60	69	R16	0	7
OL3	90	74	M1	100	98
OL4	95	95	M2	78	80
OL5	93	80	M3	78	80
OL6	100	91	M4	78	70
OL7	53	58	M5	73	62

Table 9. (continued)

OL8	48	64	M6	75	58
OL9	63	79	M7	63	55
OL10	75	40	M8	60	42
OL11	83	93	M9	58	29
OL12	70	93	M10	30	31
OL13	75	88	M11	33	40
OL14	73	80	M12	58	53
OL15	85	90	M13	48	48
OL16	43	74	M14	48	47
OL17	68	81	M15	55	43
OL18	68	65	M16	45	27
OL19	70	85	M17	18	16
OL20	58	68	M18	33	23
OL21	60	53	M19	30	15
OL22	68	13	M20	13	15
OL23	28	8	M21	20	15
OL24	30	14	M22	25	13
OL25	80	75	H1	98	94
OL26	53	74	H2	93	20
OL27	85	75	H3	55	25
OL28	65	75	H4	45	26
OL29	55	65	H5	43	17
OL30	35	20	H6	38	0
R1	73	78	EB1	93	94
R2	95	91	EB2	93	93
R3	93	83	EB3	93	90
R4	68	50	EB4	98	90
R5	38	41	EB5	98	89
R6	10	33	EB6	98	87
R7	0	18	EB7	80	80
R8	3	8	EB8	60	71
R9	3	20	EB9	45	63
R10	0	6	EB10	23	54
R11	3	14	EB11	0	47
R12	0	4	EB12	0	24
R13	0	15	EB13	0	22
R14	0	3	EB14	55	63

OL = Oral Language M = Math R= Reading
H = Handwriting EB = Enabling Behaviors

Table 10. Item Difficulty Percentages for 2-year-old Children

Item	Percent Passing: Turkish Sample	Percent Passing: U.S. Sample	Item	Percent Passing: Turkish Sample	Percent Passing: U.S. Sample
OL1	100	99	R15	0	10
OL2	37	59	R16	0	3
OL3	84	62	M1	100	97
OL4	95	92	M2	63	68
OL5	84	69	M3	63	68
OL6	100	87	M4	58	56
OL7	37	36	M5	58	46
OL8	42	46	M6	58	43
OL9	47	66	M7	47	39
OL10	63	29	M8	37	22
OL11	74	89	M9	32	11
OL12	74	90	M10	11	12
OL13	74	81	M11	16	23
OL14	63	76	M12	47	35
OL15	79	84	M13	26	29
OL16	26	61	M14	26	35
OL17	53	74	M15	26	26
OL18	58	56	M16	16	10
OL19	58	75	M17	0	6
OL20	32	59	M18	5	6
OL21	58	38	M19	11	6
OL22	68	8	M20	5	2
OL23	16	4	M21	5	4
OL24	16	10	M22	5	3
OL25	74	62	H1	95	92
OL26	21	64	H2	84	17
OL27	74	60	H3	26	6
OL28	53	66	H4	16	7
OL29	37	52	H5	16	1
OL30	16	7	H6	5	0
R1	68	74	EB1	89	90
R2	89	86	EB2	89	88
R3	89	82	EB3	89	83
R4	53	31	EB4	95	86
R5	16	23	EB5	95	83
R6	0	22	EB6	95	79
R7	0	9	EB7	68	67
R8	0	4	EB8	37	52
R9	0	12	EB9	21	41
R10	0	3	EB10	0	29
R11	0	7	EB11	0	23

Table 10. (continued)

R12	0	1	EB12	0	10
R13	0	9	EB13	0	7
R14	0	1	EB14	26	46

OL = Oral Language M = Math R= Reading
H = Handwriting EB = Enabling Behaviors

Table 11. Item Difficulty Percentages for 3-year-old Children

Item	Percent Passing: Turkish Sample	Percent Passing: U.S. Sample	Item	Percent Passing: Turkish Sample	Percent Passing: U.S. Sample
OL1	100	99	R15	0	25
OL2	81	79	R16	0	10
OL3	95	87	M1	100	99
OL4	95	97	M2	90	92
OL5	100	90	M3	90	93
OL6	100	95	M4	95	85
OL7	67	81	M5	86	78
OL8	52	83	M6	90	74
OL9	76	93	M7	76	72
OL10	86	52	M8	86	63
OL11	90	97	M9	48	46
OL12	67	97	M10	48	50
OL13	76	96	M11	48	56
OL14	81	85	M12	67	72
OL15	90	96	M13	67	68
OL16	57	87	M14	67	59
OL17	81	88	M15	81	59
OL18	76	75	M16	72	44
OL19	81	96	M17	58	27
OL20	81	77	M18	58	40
OL21	62	69	M19	48	24
OL22	49	19	M20	19	27
OL23	38	11	M21	33	25
OL24	43	19	M22	43	24
OL25	86	89	H1	100	96
OL26	81	85	H2	100	22
OL27	95	92	H3	81	44
OL28	76	85	H4	71	46
OL29	71	79	H5	67	32
OL30	52	32	H6	67	1
R1	76	83	EB1	95	98
R2	100	97	EB2	95	98

Table 11. (continued)

R3	95	83	EB3	95	97
R4	81	70	EB4	100	95
R5	33	59	EB5	100	95
R6	19	44	EB6	100	94
R7	0	27	EB7	90	92
R8	5	11	EB8	81	90
R9	5	29	EB9	67	86
R10	0	8	EB10	43	79
R11	5	21	EB11	0	72
R12	0	6	EB12	0	39
R13	0	21	EB13	0	38
R14	0	5	EB14	81	82

OL = Oral Language M = Math R= Reading
H = Handwriting EB = Enabling Behaviors

Item discrimination was calculated using the point bi-serial index. Each item on the test was compared with the General Cognitive Quotient. Results for item discrimination describe how well an item discriminates among examinees in terms of the behavior the test purports to measure. Pyrcak (1973) suggested that indexes of .35 or higher are acceptable, but Anastasi and Urbina (1997) noted that indexes of .20 are sometimes sufficient. Table 12 depicts the median item discriminating powers for each age group. These results demonstrate that the items have the capacity to differentiate among the examinees in terms of the construct that the CAS-2: TV was designed to measure.

Table 12. Median Discriminating Powers for CAS-2: TV

CAS-2: TV Values	Median Item Discrimination			
Type of Score	Turkish sample: 2-year-olds	U.S. sample: 2-year-olds	Turkish sample: 3-year-olds	U.S. Sample: 3-year-olds
General Cognitive Quotient	.43	24-29 mos = .33; 30-35 mos = .33	.46	36-41 mos = .35; 42-47 mos = .38

CHAPTER IV

DISCUSSION

The need for appropriate assessment measures for the assessment of children has long been a pervasive problem in Turkey. Although there are some instruments that have been translated and adapted to the Turkish culture, they are scarce and geared toward school-aged children. Therefore, tests are lacking to assess the skills of young children. Because of this need, this study aimed to translate the CAS-2 preschool version into Turkish (CAS-2: TV) and to examine the reliability and results of traditional item analysis of the translation.

CAS-2 is a reliable and valid intelligence test for children ages 3 months to 47 months in the United States (Bradley-Johnson & Johnson, 2001). The test met nearly all criteria suggested for a translation: the items use simple sentences, the test does not use metaphors and no items are timed, the active voice is used throughout, limited expressive language is required, and most items are familiar to most cultures.

During translation, to avoid cultural bias, all American terms, names and expressions were replaced with Turkish names, and expressions. A pilot study with three children was conducted and results led to useful cultural adaptations. In terms of test translation, it is suggested that the translators have knowledge of two languages, cultures, subject matter and testing principles, that blind back translation is used, and that teams of translators are employed (Bracken & Barona, 1991). All of these conditions were met in this study except for the team of translators which was not employed due to financial and time constraints.

Another important issue is that verbatim translations are not sufficient. Rather than doing a literal translation of the items, the author, a school psychologist, tried to ensure that the cognitive skills the test intended to assess were addressed. Also, the author, whose native language is Turkish, attempted to use expressions and terminology that young children who are native speakers would use.

The sample of 40 Turkish children ranged in age from 24 to 47 months. The children were from middle to high SES families and attended preschools in the urban and suburban parts of Istanbul, Turkey. Most were typically developing; a few had disabilities.

Compared with the CAS-2 norms for the American sample of children, the mean scores for the Turkish children were somewhat lower on the General Cognitive Quotient (GCQ) ($M = 95$ vs. $M = 99$ for the American sample) and somewhat higher on the Nonvocal Cognitive Quotient (NCQ) ($M = 106$ vs. $M = 100$ for the American sample). Also, for the Turkish children a significant difference was evident between their GCQ of 95 and their NCQ of 106. Thus, when the children did not have to speak to indicate their answers, their performance was significantly higher. The standard deviation was more than twice as large for the GCQ (30) as for the NCQ (12). Thus, their performance was more highly variable when speech was required also. These results suggest that items that required speech may have been somewhat more difficult on the CAS-2: TV and items that did not were somewhat easier than items on the CAS-2 were for the American children. The results may reflect concerns about the translation or about the particular sample used in this study. As discussed later, based on the item difficulty results, it appears that the translation was likely to be the influential factor.

Internal consistency reflects the degree of homogeneity among items within a test (Sattler, 2008). The more test items relate to each other, the smaller the error will be in the test. If test items are not closely related to each other, they are likely to measure different constructs. The hypothesis about internal consistency was that coefficient alphas for the total sample and for the two age levels would be acceptable and reach at least .90. Results indicated that the coefficient alphas of the total sample, 2-year-olds and 3-year-olds for the General Cognitive Quotient as well as the Nonvocal Cognitive Quotient were above .90. These results were similar to the coefficient alphas for the U.S. sample on the CAS-2. Thus, good homogeneity among items was found for both versions of the test. The CAS-2: TV correlations confirm the hypothesis about internal consistency. However, because the study was only conducted with an urban and suburban population, who were middle to high SES, the internal consistency of this test for subgroups of the Turkish population such as rural children or children from less well educated families remains to be examined.

The standard error of measurement (SEm), which determines the degree of error that surrounds a particular child's score, was calculated for both age levels. Compared with the U.S. norm sample, the SEm for the Turkish sample was larger for the GCQ (7 for 2-year-olds and 5 for 3-year-olds for the Turkish sample vs. 4 for the U.S. 2- and 3-year-olds) and lower for the NCQ (3 for 2-year-olds and 2 for 3-year-olds for the Turkish sample vs. 5 for the U.S. 2- and 3-year-olds). A larger SEm indicates that the confidence interval within which a child's true score lies will be greater and that there is a greater chance of error related to the nature of the test.

Test-retest reliability describes the stability of test results over time (Sattler, 2008). Results indicated high reliability for both age levels for the GCQ and NCQ. This result suggests that, like the CAS-2 for American children, the CAS-2: TV is a very stable instrument for the Turkish children. Despite overall good stability results, there was an interesting finding regarding the differences in standard deviations from first to the second testing. When only half of the children were retested, the standard deviation for the General Cognitive Quotient decreased. Despite random assignment of the children who were retested, few children with disabilities were selected. Therefore, when the low GCQ scores were not included, the standard deviation dropped and there was less variability of the GCQ scores.

Inter-examiner reliability also was strong. The 97% agreement between the two examiners was similar to that found for the original CAS-2 (99%).

Item difficulty was examined as part of item analysis. Items with difficulty levels below 15% and above 85% do not discriminate well among examinees. However, some questions with item difficulties above 85% were needed on the test to keep young children interested and willing to participate in the testing situation.

Hypotheses as to why questions with item difficulties of less than 15% or greater than 85% might have occurred are discussed in the following information. Comparisons with item difficulties for the CAS-2 are noted as well. This information seems to suggest where translation concerns exist due to cultural or language differences.

Oral Language questions 1, 4, and 6 were very easy for both Turkish and American children. These questions require the child to show understanding of position words *in, up,* and *down.* The ease of these items is intended to aid in building rapport

with the child. Questions 3 (*together*) and 5 (top) were within the acceptable range for U.S. children, whereas they were too easy for the Turkish sample. The position words in these questions were very commonly used by young children, perhaps more frequently used than in English. Therefore, most Turkish children were able to answer these items correctly.

For Reading, items 7 through 16 that assessed naming letters had item difficulties below 15% and are considered too difficult for Turkish children. However, 5 of 11 of these items had acceptable item difficulty levels in the U.S. sample. This difference may result because Turkish children are not taught to name letters until kindergarten. Parents and preschool educators are advised to refrain from teaching this skill to preschool children. Learning to name letters and learning to read are relatively easy tasks because Turkish is read the way it is spelled. Educators in Turkey are beginning to use phonetic methods but are in the transitional phase and therefore, they do not want the children to be confused by different teaching methods. Therefore, most of the Turkish children did not name the letters and received 0 points on these items. Instead of considering the items as too difficult, it would be better to consider these items as irrelevant for Turkish preschoolers at this time. Once letter names and phonics are taught more often in Turkish preschools, these items may be more relevant for these children.

Questions 2 and 3 on the Reading Area were too easy for Turkish children. Question 2 requires the child to turn pages in a book and Question 3 requires the child to point two objects in the book that are named by the examiner. These are basic pre-reading skills and can help to maintain children's attention for this section of the test. Turning

book pages was easy for American children also, but pointing to pictures had an acceptable item difficulty for American children.

Nearly all items on the Mathematics section had acceptable item difficulties for both Turkish and American children. Question 1 was too easy for both groups of children. Because this is the first question for this section, it is intended to be easy to help with rapport for the child. The question was answered correctly by all children in both samples.

Mathematics item 20 was too difficult for the Turkish children, but had an acceptable level of difficulty for American children. This item requires the child to give a specified number of links to the examiner from a pile of ten links. The difference in percentage of difficulty for the two samples on this item might be the cultural difference in nonverbal gestures. In Turkey, if someone opens their hand and holds it toward the other person, this gesture signals continued giving of the objects to the other person until that person closes his or her hand. Therefore, per the instructions, the examiner held out her hand and the children continued giving the links until there were none left. Once this cultural difference became apparent, the examiner asked the children to put the links in a box instead of her hand. However, this modified procedure was only used for 10 children. Among those 10, 5 were able to answer correctly and the remaining 5 were too young to give a correct answer to this question. This result suggests that the gesture used for this question needs to be changed because it is culturally biased for Turkish children.

Handwriting questions 1 and 2 were very easy. These questions are based on observations of the child while holding a pencil and trying to draw. They are scored as incorrect only if a child uses incorrect writing posture, refuses to hold a pencil or uses a

fist to hold the pencil. There is a considerable difference between the Turkish and U.S. sample in terms of question 2 which assesses the ability to hold the pencil correctly (93% vs. 20%). Also, although the remaining items had difficulty levels within the acceptable range, they were easier for Turkish children than American children (range 38-55% vs. 0 to 26%). These items require copying various figures that are part of letters, e.g., a circle and vertical line. Penmanship is a highly valued skill both at home and at preschool in Turkey. Therefore, most children arrive at preschool having learned these skills and get ample opportunities to practice this skill early in the preschool years. Because the participants were selected from preschools, they all had had a chance to learn and demonstrate these skills. Therefore, more Turkish children passed these items.

Similar to the U.S. norm sample, Enabling Behaviors questions 1 through 6 were too easy. These questions require vocal and physical imitation by children and they assess willingness to imitate rather than precise imitation. The reason why most of the children in both cultures performed well on these questions is that the items only require willingness to imitate. Most children are willing to interact with an examiner particularly when interesting toys are involved. Also, Turkish children are raised to be compliant with authority figures such as elders and teachers. Therefore, except for a couple of children who did not have adequate verbal skills or who had disabilities, nearly all children in the sample were willing to try to imitate both gestures and words.

Enabling Behaviors items 11, 12 and 13 had item difficulty percentages of 0 for Turkish children, whereas in the U.S. sample, these questions had acceptable item difficulty levels. These questions required children to repeat sentences of increasing length to assess auditory memory skills. Because of the grammatical and structural

differences between the English and Turkish languages, translation and adaptation of the sentences was problematic. In the Turkish language, words that depict a tense such as *do, will* or *is,* as well as pronouns such as *I* are added to the end of the verb. Because of this difference, some sentences that can be said with three words in English require only two words in Turkish. To keep the number of words to be repeated for each item the same across the CAS-2 and the CAS-2: TV, extra words were added to the sentences in Turkish. Although, easy, commonly-used words were used when translating and adapting the sentences, the additional words may have created more difficult items for these children. Perhaps using shorter sentences but with the incorporation of tense or pronouns in the words would have resulted in sentences with difficulty levels more similar to the English sentences.

Thus, based on examination of the item difficulties, it is not surprising that the Turkish children received somewhat lower GCQ results (which required speech on some items) and somewhat higher NCQ results than American children did on the CAS-2. The 4-point mean difference in GCQ results might be explained by the fact that Turkish children received 0 points on the letter naming items because they had not been taught this skill in preschool, and the auditory memory items may have been more difficult than the items were in English for the American children. The 6-point mean difference on the NCQ might be explained by the greater emphasis on handwriting in the Turkish culture than in the American culture. However, considering these differences, it is surprising how similar the overall results were on the test for these two groups of children.

Item discrimination refers to the degree to which an item differentiates among examinees in terms of the overall construct being measured (Anastasi & Urbina, 1997).

Item discrimination results indicated that the CAS-2: TV items correlated well with overall results. Item-total correlations exceeded Anastasi and Urbana's suggestion of a minimum of .35 for ages 2 and 3. Correlations were .43 and .46 respectively.

Besides providing norm-referenced scores, CAS-2 provides information that can assist in planning individualized instruction. Based on results for the CAS-2: TV I wrote reports for the parents describing each child's strengths and skills that would be appropriate to practice next. Some parents chose to share the report with the teachers or psychologists to help them with teaching the skills to their child. I was contacted by the school administrators, school psychologists and also by the parents themselves regarding feedback and questions about the reports. The administrators and the school psychologists all indicated that the feedback they received from the parents was very positive. The consensus was that the reports were detailed, informative and very useful. Some parents contacted me further for specific questions about the reports. Most of the questions were regarding how to teach the skills that their children needed next. Also, there were few questions about recommendations for referrals for services. Because I have not lived and practiced in Istanbul over a long time, I did not feel informed enough to make appropriate referrals, therefore, I directed the parents to the school psychologist of the preschools their child attended.

This study was conducted with 40 preschool children. The number of participants was relatively low and did not allow conducting more complex analysis such as logistic regression to examine possible item bias, which may be helpful. The reason for the low number of participants was the fact that only four out of 30 preschools contacted agreed to participate in the study. In Turkey, especially, after recent incidents that involved

foreign agencies reporting educational and human rights issues to the Turkish government, educational institutions became more hesitant to participate in research that is being conducted in foreign countries as opposed to research conducted by Turkish universities.

Another limitation of the study is the geographic distribution. The sample was drawn from a well-educated population in an urban area. The participants were from an urban or suburban part of the city. The reason for this limitation was convenience on the part of the researcher and lack of resources to reach out to rural areas. Therefore, results need to be interpreted cautiously because the results may not generalize to a rural population or to children whose parents are less well educated. Based on the cultural and regional differences in Turkey, it is predicted that test-taking behaviors would be much different in the rural areas because these children often are not exposed to any tests and some of the basic skills such as holding a pencil are not taught at home as readily as in the urban population. Therefore, the prediction is that more changes and cultural adaptations in terms of test directions would have been required based on the results of this research.

Similar to the geographic status, the socioeconomic status (SES) of the children and their families is another limitation for this study. All of the children were from preschools where the families were of middle to high SES indicating that parents had a good educational level and income. Middle SES families often provide their children educational opportunities at home before they start preschool. This was evident in this study on the Handwriting Area where most of the children knew how to hold a pencil correctly and could draw simple forms such as a circle and straight line. The prediction is

that most children from lower SES families would not learn this skill until they start elementary school and that the skills taught at home would be more domestic or self-care skills. Therefore, results of this research might not be relevant for a lower SES population of children.

Finally, due to time and resource restrictions, this study focused only on the reliability of the translation of the CAS-2. While reliability information is necessary, it is not sufficient. Validity information also is needed to ensure that a test measures what is supposed to measure. Future research needs to focus on content, construct, concurrent and predictive validity of the Turkish translation of the CAS-2: TV. Because of the lack of tests for this age group, concurrent validity studies would be difficult to carry out. However, a study to examine predictive validity of CAS-2: TV can be conducted using the standardized Turkish version of the WISC-R. Children who participated in this study can be tested when they start elementary school using the WISC-R and that research can examine how the scores held up in 3-4 years. Further, construct validity studies would be beneficial with different disability groups to compare their CAS-2: TV scores with those of children without disabilities.

In summary, the study showed that the Turkish version of the CAS-2 is a reliable measure with high stability during a 2-week test-retest interval, with excellent internal consistency and inter-examiner reliability that were very similar to data for the U.S. sample. Moreover, item difficulty levels and item discrimination powers were generally within the acceptable range. Results of this study are encouraging and a good first step towards adapting the CAS-2 for the Turkish culture. Further studies are needed to explore the validity of the CAS-2: TV and studies with larger and more diverse sample sizes are

required to further compile evidence for reliability. CAS-2: TV can not be used to form any educational decisions or to determine cognitive functioning of young children without normative data for Turkish children, but results can be helpful in determining the cognitive skills young children already possess and what skills would be appropriate to be taught next. Therefore, results of this study are a good contribution to the Turkish educational system to provide useful recommendations in conjunction with teacher observation, parental rating scales and systematic direct observation.

APPENDICES

APPENDIX A

PRESCHOOL/DAYCARE ADMINISTRATORS
COVER LETTER AND CONSENT FORM

Date: Year, Month

Dear Preschool Administrator,

I am completing a research study as an initial step to develop a Turkish version of the Cognitive Abilities Scale-Second Edition (CAS-2). Results from this research will be an evaluation of the reliability of the Turkish version of the CAS-2 that may be helpful in assessing the skills of young Turkish children. Without such tests, it is difficult to identify young children whose development is delayed and provide appropriate instruction. Results from the CAS-2 help in planning instruction for children and they predict future academic success.

The data collected from this study will appear in my dissertation, which will fulfill partial requirements for my degree, Doctor of Philosophy in School Psychology, at Central Michigan University.

Your help is requested in recruiting participants for this research. The following guidelines will be used for participant selection: (a) children will be between the ages of 24 and 47 months, (b) have parents/caregivers willing to have their children tested with the Turkish version of the CAS-2.

Parents will receive a monetary compensation for their time and travel expenses. In addition, each child will receive a child-safe toy for participating. Parents also will receive a written report describing the skills their child demonstrated and skills that would be helpful to practice next with the child. No report will be given to the preschool, but parents may wish to share this report with preschool staff.

Because of the requirements for the study, I can not include children with severe visual, hearing or motor impairments. If you can assist me in locating these children, please sign the enclosed permission form and mail it in the self-addressed envelope. Once I receive that form, I will bring you copies of cover letters and permission forms to give to parents. If you have any questions or concerns please contact me at (216) 352-03-64 or you can contact my dissertation supervisor at Central Michigan University, Dr. Sharon Bradley-Johnson, at 989-774-6480.

I appreciate your time and consideration. I look forward to hearing from you and welcome the chance to work with you in the future.

Sincerely,

Gokce Durmusoglu, M.A

Ph.D Candidate in School Psychology

Central Michigan University

Consent to Participate:

I, _____, agree to assist in the study being carried out by Gokce Durmusoglu at Central Michigan University entitled, "Item analysis and reliability of the Cognitive Abilities Scale-Second Edition: Turkish Version". I will help to recruit participants for the study by providing parents with information regarding the study.

_____ _____

Signature of School Administrator Date

_____ _____

Signature of Researcher Date

APPENDIX B

PARENT COVER LETTER

Date: Year, Month

Dear Parents,

I am a doctoral student in the School Psychology Program at Central Michigan University at Mount Pleasant, Michigan, United States of America, working under the supervision of Dr. Sharon Bradley-Johnson, a faculty member of Psychology Department at Central Michigan University. I am conducting a research project for my dissertation with 2 and 3-year-old children. The goal of my study is to develop a Turkish version of the Cognitive Abilities Scale-Second Edition (CAS-2) so that it can be used to plan instruction for young children. Without such tests, it is difficult to identify young children whose development is delayed and provide appropriate instruction. Results from the CAS-2 help in planning instruction for children and they predict future academic success.

Because your child is between 24 and 47 months old, your child is eligible to participate in this study and I would appreciate your assistance. If you would be willing to help with this project, please read and sign the enclosed form and return it in the self-addressed envelope at your convenience. Your child's participation or non-participation in this study will not affect his/her daycare or preschool program. If you agree to allow your child to participate, I will send you a summary report describing skills your child demonstrated on the test and skills that would be appropriate to practice next with him/her. Information collected will be kept confidential and results will not be given to the daycare/preschool program.

I would appreciate your help and hope you will be willing to allow your child to participate in my study. Thank you for your time and cooperation.

Sincerely,

Gokce Durmusoglu, M.A.

Ph.D Candidate in School Psychology

Central Michigan University

APPENDIX C

PARENT PERMISSION/CONSENT FORM

Title of Project: Item analysis and reliability of the Cognitive Abilities Scale-Second Edition: Turkish Version

Investigators: Gokce Durmusoglu & Dr. Sharon Bradley-Johnson

Phone: (216) 352-0364 and (989)774-6480

Your son/daughter is invited to participate in a research project because he/she is between 24 to 47 months old. Information below will help you make an informed decision on whether or not to allow your child to participate. If you have any questions about the project, please ask.

The purpose of this project is to develop a Turkish version of the Cognitive Abilities Scales-Second Edition (CAS-2) which is an intelligence test for children 2- and 3-years-old that was developed in United States. Considering the lack of intelligence tests for young children in Turkey, our goal is to assess the reliability of this test for the Turkish population. If you agree to allow your child to participate in this study, you will be asked to bring your child to the daycare center/preschool that your child attends on the date agreed by you and the researcher. Then the researcher will administer the Turkish version of the CAS-2 to your child in his or her classroom. You are welcome to be present in the room with your child while he/she is being tested.

The test takes approximately 20-30 minutes to administer, but the time may vary depending on your child's age and cooperation. Half of the children in the study will be retested to examine the reliability of the test. The children to be retested will be selected randomly and the test will be administered two weeks after the initial

administration in the same classroom. You are welcome to be present in the room with your child while he/she is being retested.

You will receive a summary report describing the skills your child demonstrated and the skills that would be appropriate to practice next. This information will not be shared with the preschool staff and will only be shared with you.

The information from this study will appear in my written dissertation, which will fulfill the partial requirements for the degree, Doctor of Philosophy in School Psychology. Your participation will help us develop the Turkish version of an intelligence test for young children.

You will be provided a compensation of $5 for your child's participation. The money will be paid in cash and you will be provided with a receipt upon receiving the money. If your child was selected to be retested, you will receive an additional of $5 for the retesting session. This money will also be paid in cash and you will be provided with a receipt upon receiving the money. Your child will also receive a small toy gift for his/her participation.

Parental responsibilities for this study will include:

(1) Allowing the researcher to give an intelligence test to your child. The test will take approximately 20-30 minutes to complete. You may be in the room with your child for the testing session along with the researcher.

(2) Bringing your child to the daycare/preschool on the designated day.

(3) If your child was selected for retesting, allowing the researcher to give an intelligence test to your child two weeks after the first administration and bringing your child to the daycare/preschool on the designated day.

Any information obtained during this study that could identify you or your child will be kept strictly confidential. Background information about your child will be used only to describe the children in the project. The information may be published in scientific journals or presented at scientific meetings but the names of parents and children will be kept strictly confidential. Children will be given a code name to use for any records in the study and the key for the code will be kept in a locked cabinet and destroyed upon completion of the study. At any time in the study you may withdraw your child and all information collected on your child will be destroyed immediately.

Participation is voluntary. No known discomfort or risk is involved for children participating. Children typically enjoy the test materials. If any procedure for the study is changed, you will be informed and your consent obtained for the revised procedure.

If you agree to let your child participate, please complete and return the attached forms as soon as possible. You can mail the forms in the self-addressed envelope. You will be given a signed and dated copy of this form to keep. If you have any questions, please ask them. If you have additional questions later, we will be happy to answer them. Questions or concerns can be directed to the researchers:

Gokce Durmusoglu, M.A. (216) 352-0364

Sharon Bradley-Johnson, Ed.D. (989) 774-6480

Further questions can be brought to the attention of the Human Subject Protection Coordinator (IRB office) at 989-774-6777.

Thank you very much for your help with this project.

Consent to Participate:

I understand the purpose of the study and issues around consent. I have read the above information and agree to participate in this study and allow my child to participate. I have received a copy of this consent form for my own records.

Name of Parent(s) or Guardian: _____

Date: _____

Phone Number of Parent(s) or Guardian: _____

Address of Parent(s) or Guardian: _____

Signature of Parent(s) or Guardian: _____

Child's Name: _____ Birth Date: _____

Examiner's Name: _____ Examiner's Qualifications: _____

In my judgment, the parent is voluntarily and knowingly giving informed consent to participate in this research study.

Name of Researcher: Date:

_____ _____

Signature of the Researcher: Date:

_____ _____

APPENDIX D

BACKGROUND INFORMATION FORM

Child's date of birth: _____

Child's age: ____

Parent who is completing the form: Mother: ____ Father: ____

Child's gender:

Girl ____ Boy ____

Child's race/ethnicity:

Turkish ____ Other ____

Does your child speak English? Yes _____ No _____

Mother's race/ethnicity:

Turkish ____

Other ____

Mother's education:

Less than high school ____

High school graduate ____

2-year college graduate ____

4-year college graduate ____

Masters/Ph.D____

Father's race/ethnicity:

Turkish ____

Other ____

Father's education:

Less than high school ____

High school graduate ____

2-year college graduate ____

4-year college graduate ____

Masters/Ph.D____

Does the mother speak English? Yes ___ No ___

Does the father speak English? Yes ___ No ___

Address: _____

Phone number where you can be reached (please include area code):

_____

Best time to call: _____

APPENDIX E

THE TURKISH TRANSLATION OF COGNITIVE ABILITIES SCALE-SECOND EDITION (CAS-2: TV)

CAS-2 Cevap Kitapçığı

Cognitive Abilities Scale-Second Edition (CAS-2): Bilişsel Yetiler Testi-İkinci Versiyonu'nun Tűrk Tercűmesi

Okulöncesi Formu: 24-47 ay arası

Bölűm 1: Kimlik Bilgileri

Çocuğun İsmi _____ Kız □ Erkek □

	Yıl	Ay	Gűn	
Test Tarihi	____	____	____	Testi Verenin Adı:
Doğum Tarihi	____	____	____	Testi Verenin Mesleği: _____
Yaşı	____	____	____	Ebeveynlerin Adı: _____
Yaşı (Ay olarak)			____	Yuvanın Adı: _____
				Şehir: _____

Bölűm 2: Puanlar

	Ham Puan	Yűzde	Yaş Eşliği	Puan	SEM	Güven Aralığı	Puan Ranjı
Genel Bilişsel Puan	____	____	____	____	____	____	____ ile ____
Sözel Olmayan Puan	____	____	____	____	____	____	____ ile ____

Bölüm 5. Soruların Puanlanması

Not: Her çocuk 1. sorudan başlayacak. Bu test için taban veya tavan yok. Her sorunun yanında bulunan parantez içindeki yaşlar her soru için tüm gruptaki çocukların %75 veya daha fazlasının doğru cevap verdiğini göstermektedir.

Alan 1. Dil

1-10 arasındaki soruların yönergeleri: Sözel (0,1) SO (0,1)

Yer bildiren kelimeler: Eğer gerekirse her soru bir kere tekrarlanabilir.

1. Halkayı ve kutuyu açık tarafı üste gelecek şekilde masaya koy. Halkayı işaret et. Şöyle de, "Bu bir halka. Halkayı kutunun içine koy." Eğer çocuk halkayı kutunun içine koyarsa puan ver. (24 ay) Sözel ___ SO___

2. Masanın üzerinde kutuyu ters çevir ve çocuğa halkayı ver. Şöyle de, "Halkayı kutunun altına koy." Eğer çocuk halkayı kutunun altına koyarsa puan ver. (36 ay) Sözel____ SO____

3. İki kutuyu aralarında üç parmak mesafe olacak şekilde masanın üzerine koy. Şöyle de, "Kutuları birbirine doğru it." Eğer çocuk kutuları birbirine doğru iterse veya kutuları yanyana getirirse puan ver. (37 ay) Sözel ___ SO___

4. Masanın üzerine kutuyu kapalı kısmı ve delik yanı üste gelecek şekilde koy. Rampanın kenarını kutunun delik kenarına yerleştir. Çocuğa oyuncak arabayı ver. Şöyle de, "Arabayı yokuştan yukarı çıkar." Rampayı işaret et. Eğer çocuk arabayı rampadan yukarı çıkarırsa puan ver. (24 ay) Sözel ___ SO___

5. Arabayı kutunun üzerinde bırak. Şöyle de, "Arabanın tepesine elini değdir. " Eğer çocuk arabanın tepesine elini değdirirse puan ver. (30 ay) Sözel ____ SO____

6. Şöyle de, "Arabayı yokuştan aşağı indir." Eğer çocuk arabayı yokuştan aşağı indirirse puan ver. (24 ay) Sözel ___ SO___

7. Arabayı ve kutuyu çocuğun önüne koy. Şöyle de, "Arabayı kutunun etrafında sür." Eğer çocuk arabayı kutunun etrafında yolun ¾ "ünü kapsayacak şekilde sürerse puan ver. (39 ay) Sözel ___ SO___

8. Kutuyu masanın üzerine koy and çocuğa oyuncak arabayı ver. Şöyle de, "Arabayı kutunun yanına koy." Eğer çocuk arabayı kutunun herhangi bir yanına koyarsa puan ver (sağa veya sola koyması fark etmez). (38 ay) Sözel_____ SO_____

9. Arabayı kutunun yanına koy. Şöyle de, "Arabayı kutudan uzağa koy, uzaklaştır." Eğer çocuk arabayı kutudan uzaklaştırırsa puan ver. (30 ay) Sözel _____ SO _____

10. Arabayı masanın üzerine koy. Çocuğa bir halka ver. Şöyle de, "Halkayı arabanın önüne koy." Eğer çocuk halkayı arabanın önüne koyarsa puan ver. (47 ay) Sözel _____ SO _____

11-20 arasındaki soruların yönergeleri (0-1-2)

İsimler: İlk önce ifadeli yöntem için 10 adet kelime kartını kullanın. Tüm sorular ifadeli olarak test edildikten sonra çocuğun cevap vermedigi soruları kavrayıcı yöntemle test edin.

İfadeci Yöntem: Her kelime kartını teker teker gösterin. Şöyle deyin, "Bu nedir?" Eğer çocuk nesnenin adı yerine bir kategori adı söylerse (mesela.,elma yerine meyva derse), şöyle deyin, " Ne çesit?" Her doğru adlandırılan resim için 2 puan verin.

Kavrayıcı Yöntem: Üç kelime kartını gösterin (bir adet sorunun sorduğu kartın resmi ve iki adet gelişigüzel seçilmiş kelime kartı resmi). Şöyle deyin, "Bana _____'yı göster (çocuğun daha önce ifadeci yöntemle sorulurken bilemediği resmin ismini söyleyin)." Her denemeden sonra üç kartın yerini değiştirin. Gelişigüzel seçilen resimler ifadeci yöntemle test edilirken bilindiyse sormayın, ancak daha önceden bilinemediyse sorun.

Her kelimeyi en fazla 4 kere test edin. Eğer bir kelime için üç doğru cevap alındıysa, o kelime için 1 puan verin.

Not: Her soru için en fazla alınabilecek puan 2'dir, sorular hem 2 hem 1 olarak puanlanamaz. Her soru doğru olarak isimlendirilmişse 2 puan alır, eğer çocuk resme

doğru olarak işaret ettiyse 1 puan alır, veya çocuk resmi isimlendirmemişse veya doğru olarak işaret etmemişse 0 puan alır. Eğer bu kısım sözel olmayan şekilde puanlandırılmışsa, çocuk en fazla 1 veya 0 puan alabilir.

	Resim	Puan verilebilecek ifadeler	Sözel (0, 1, 2)	SO (0, 1)
11.	Bisiklet (24 ay)	bisiklet	_____	_____
12.	Elma (24 ay)	meyva derse ne çeşit diye sor	_____	_____
13.	Kuş(24 ay)	kuşcuk, serçe	_____	_____
14.	İnek (24 ay)	möö, inek	_____	_____
15.	Gözlük (24 ay)	güneş gözlüğü, gözlük	_____	_____
16.	Çekiç (26 ay)	alet derse ne çeşit diye sor	_____	_____
17.	Ördek (26 ay)	ördekçik, ördek	_____	_____
18.	Çekçek (26 ay)	çekçek	_____	_____
19.	Çorap (26 ay)	çorap	_____	_____
20.	Böcek (26 ay)	uçuç veya uğur böceği	_____	_____

21-24 Arasındaki Soruların Yönergeleri Sözel (0, 1, 2) SO (0,1)

Zamirler: Her soru ilk önce ifadeci yöntemle test edilecektir. Eğer çocuk doğru cevap verirse, bir sonraki soruya geçin ve o soru için ifadeci yöntemi kullanin. Eğer ifadeci yöntemle test ederken çocuk herhangi bir soruyu yanlış cevaplarsa veya cevaplayamazsa, o zaman hemen o zamiri kavrayıcı yöntemle test edin. Çocuğu yönlendirecek veya ipucu verecek el kol hareketlerinden kaçının. Yönergeleri başka kelimeler kullanarak tekrarlamayın. Eğer gerekirse, her soru bir kere tekrarlanabilir. Her soru için en fazla 2 puan alınabilir. Sorular hem 2 hem1 olarak puanlanamaz. Eğer çocuk

zamiri söylerse 2 puan alır, eğer çocuk zamiri işaret ederse 1 puan alır, eğer çocuk zamiri söyleyemez veya işaret edemezse 0 puan alır. Eğer herhangi bir soru sözel olmayan şekilde puanlandırılıyorsa, çocuk en fazla 1 puan alabilir.

21. (İfadeci) Çocuğa bir fincan ver. Kendine de bir fincan ver. Fincanları masanın űzerine koy ve şöyle de, "Birisi sana, birisi bana." Kendi fincanına işaret et ve şöyle de, "Bu fincan kimin?" Eğer çocuk seni gösterirse, şöyle de, "İşaret etme, söyle bana." Eğer çocuk "senin fincanın" veya" senin" derse, 2 puan ver. (26 ay) Sözel ____

(Kavrayıcı) Şöyle de, "Senin fincanın nerde?" Eğer çocuk fincanını gösterirse 1 puan ver. SO ____

22. (İfadeci) Çocuğun fincanını işaret et ve şöyle de, "Kim bu fincandan içecek?" Eğer çocuk işaret ederse, şöyle de, "Işaret etme, söyle bana." Eğer çocuk "ben" derse 1 puan ver. Eğer çocuk "beni" derse puan verme. (25 ay) Sözel _____

(Kavrayıcı) Çocuğa çaydanlığı ver. Şöyle de, "Ben biraz çay istiyorum" Bu sorunun söyleyişini değişirmeyin çűnkű burda çocuğun ben zamirini anlayıp anlamadığı ölçűlecektir. Eğer çocuk senin fincanına çay koyarsa 1 puan ver. SO ____

23. (İfadeci) Masanın űzerine iki oyuncak bebeği koy. Şöyle de, "Bu Ali (erkek olan bebeği göstererek), bu Ayşe (kız olan bebeği göstererek)". Ayşe olan oyuncak bebeğin yanına fincanı koy. Şöyle de, "Hangi bebeğin fincanı var?" Eğer çocuk işaret ederse, Şöyle de, "Gösterme, sadece bana hangi bebegin fincanı oldugunu söyle." Eğer çocuk "Ayşe'nin" derse, 2 puan ver. Eğer çocuk, "bebeğin" veya "onun" derse, puan verme. (32 ay). Sözel _____

(Kavrayıcı) Çocuğa kaşığı ver. Şöyle de, "Ayşe kaşığı istiyor." Eğer çocuk kaşığı Ayşe bebeğe verirse 1 puan ver. SO ____

24. (İfadeci) Ali olan oyuncak bebeğe fincanı ver. Şöyle de, "Fincanı kime verdim?" Eğer çocuk işaret ederse, "Gösterme, söyle." Eğer çocuk "Ali'ye" derse, 2 puan ver. Eğer çocuk "bebeğe" veya "ona" derse, puan verme. (32 ay) Sözel ____ (Kavrayıcı) Şöyle de, "Ali'ye çay ver lütfen". Eğer çocuk Ali olan bebeğe çay verirse 1 puan ver. SO___

25-30 Arasındaki Soruların Yönergeleri: Sözel (0, 1)

Sözdizimi: Soruları 0 veya 1 olarak puanlayın. Bu kısım için sözel olmayan puanlama yapılamaz.

25. Çocuğun konuşması arasında isim-fiil birleşimini kullanıp kullanmadığını not edin (mesela.,"baba git."). Eğer konuşma sırasında gözlenmemişse, çocuğun ebeveynine veya ögretmenine, bu türlü isim-fiil birleşimini kullanmasını gerektirecek sorular sormasını söyleyin. Mesela, "Annen (baban) ne is yapar?" Eğer çocuk herhangi bir isim-fiil birleşimi kullandıysa puan ver. (33 ay). Sözel ___

26. Çocuğa 2 adet fincan göster. Şöyle de, "Bu bir fincan". Sen de elinde bir fincanı tut. Sonra, iki fincanı da elinde tut ve şöyle de, "Bunlar nedir?" Eğer çocuk "fincanlar" derse 1 puan ver. (37 ay) Sözel ___

27. Koşan çocuğun resmini göster. Şöyle de, "Bu çocuk ne yapıyor?" Eğer çocuk "koşuyor", "yürüyor" derse veya şimdiki zaman kullanarak söyledigi herhangi bir fiil için puan ver. (34 ay) Sözel ___

28. Çocuğun annesinin veya babasının giydigi bir kıyafeti işaret et, mesela ayakkabılarını. Şöyle de, "Bunlar kimin ayakkabıları?" Eğer çocuk " annemin" veya "babamın" derse 1 puan ver. (32 ay) Sözel ____

29. Eğer çocuk konusması sırasında " bu bir ayakkabı", " bu bir kedi" gibi sayı bildiren kelimeler kullanıyorsa puan ver. (34 ay) Sözel ____

30. Şöyle de, "Nasil elini yıkıyorsun göster bana." Eğer gerekirse şöyle de, "Başka nasıl yıkıyorsun veya başka neler yapıyorsun yıkarken?" Eğer çocuk el yıkarken yapılan faaliyetleri mantıklı bir sırada söylerse 1 puan ver (mesela.,"suyu aç, sabunu al, elini yıka, elini kurula, yemek ye.") Sırası önemli (>47 ay) Sözel ____

Alan 2: Okuma

Puanlama: Her soru 1 veya 0 diye puanlanacaktır. Sözel (0,1) SO (0,1)

1. Çocuğa kitabı ters olarak ver. Şöyle de, "Kitabı okuyabileceğin hale getir." Eğer çocuk kitabı düz okunabilecek hale getirirse 1 puan ver. (26 ay) Sözel ____ SO ____

2. Şöyle de, "Sayfayı çevir." Eğer çocuk sayfaları çevirirse puan ver (tüm kitabı çevirirse puan verme) (26 ay) Sözel ____ SO ____

3. Kitabın 3.ve 8. sayfalarını kullanarak şöyle de, "Kuşu göster. Şimdi de saksıdaki çiçeği göster." Eğer gerekirse soruları birer kere tekrarlayabilirsin. İki resmi de doğru olarak gösterirse puan ver. (25 ay) Sözel _____ SO ____

4. Kitabın 4. Sayfasını göster, şöyle de, "Bu sayfada neler oluyor anlat bana" Resmi işaret et". Eğer çocuk bir kelimeyle anlatırsa, şöyle de, "Biraz daha anlat. Neler oluyor burda?" Eğer çocuk iki kelimeli sözcük-fiil birleşimli cümleler kullanırsa puan ver. (41 ay) Sözel _____

5. Şöyle de, "Dinle. Şimdi bir hikaye anlatacagım. Ahmet'in köpeği evden kaçmış. Ahmet cok üzülmüş. Her yerde köpeğini aramış. Birgün Ahmet bahçede oynarken bakmış, köpeğini görmüs. Köpeği eve gelmiş. Dur. Şöyle de, "Şimdi sen anlat hikayeyi. Ne olmuş hikayede?"Eğer hikayeden en az bir olayı anlatırsa (mesela.,köpek eve geldi), puan ver. Eğer hikaye anlatılırken çocuk dinlemezse, dikkatini vermezse, durun ve bu soru için 0 puan verin. (44 ay) Sözel ___

6. Bir kağıda büyük harfle A yaz. Şöyle de, "Bu hangi harf?" Eğer çocuk harfi doğru bilemezse, çocuğun isminin ilk harfini büyük harfle yaz. Şöyle de, "Bu hangi harf? Bu harfin adı ne?"Eğer çocuğun isminin ilk harfi A ile başlıyorsa, ikinci deneme için B harfini kullan. Soruyu gerekirse tekrarla. Eğer çocuk harfi doğru bilirse puan ver. (47 ay) Sözel ____

7-16 Arasındaki Soruların Yönergeleri: Sözel (0,1)

Çocuğa üzerinde M harfi olan kartı göster. Şöyle de, "Bu M harfi. Sonra çocuğa kartları teker teker göster ve şöyle de, "Bu hangi harf?" Cevabı bekle. Her doğru adlandırılan harf için 1 puan ver.

7. S harfini adlandır (>47 ay) Sözel ___
8. D harfini adlandır (>47 ay) Sözel ___
9. T harfini adlandır (>47 ay) Sözel ___
10. K harfini adlandır (>47 ay) Sözel ___
11. N harfini adlandır (>47 ay) Sözel ___
12. R harfini adlandır (>47 ay) Sözel ___
13. Y harfini adlandır (>47 ay) Sözel ___
14. P harfini adlandır (>47 ay) Sözel ___

15. C harfini adlandır (>47 ay) Sözel ___

16. L harfini adlandır (>47 ay) Sözel ___

Alan 3: Matematik

Puanlama: Her soru 1 veya 0 diye puanlanacaktır. Sözel cevap gerektiren sorularda çocuk telaffuz yanlışı bile yapsa puan verin.

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1. Masaya 4 halkayı ve boş kutuyu koy. Şöyle de, "Bűtűn halkaları kutuya koy." "Bűtűn" kelimesini bastırarak söyle. Eğer çocuk 4 halkayı da kutuya koyarsa puan ver. (24 ay)

   Sözel ____ SO ___

2-9 Arasındaki Soruların Yönergeleri (0, 1)

Her soruyu dört kere sorun. Her seferinde malzemelerin yerini değiştirin. Sadece en son denemeden sonra çocuğa geribildirimde bulunun. Eğer çocuk 4 denemenin 3.de doğru bilirse puan verin.

2. En bűyűk ve en kűçűk bardağı masaya yanyana koy ve bardakları işaret et. Şöyle de, "Bűyűk bardağı göster." Eğer çocuk 3 sefer de bűyűk bardağı gösterirse puan ver. (32 ay)

   Sözel ___ SO___

3. En büyük ve en küçük bardağı masaya yanyana koy ve bardakları işaret et. Şöyle de, "Küçük bardağı göster." Eğer çocuk 3 sefer de küçük bardağı gösterirse puan ver. (29 ay) Sözel ____ SO ____

4. Masaya içinde 10 halka olan kutuyu ve boş bir kutuyu koy. Şöyle de, "Hangi kutu boş?" Eğer çocuk boş olan kutuyu 3 sefer de seçerse puan ver. (38 ay) Sözel ____ SO _____

5. Masaya içinde 10 halka olan kutuyu ve boş bir kutuyu koy. Şöyle de, "Hangi kutu dolu?" Eğer çocuk boş olan kutuyu 3 sefer de seçerse puan ver. (39 ay) Sözel ____ SO ____

6. Bir uzun bir de kısa sarı kurşun kalemi masaya dik olarak tut. Şöyle de, "Uzun kalemi göster." Eğer çocuk 3 sefer de uzun kalemi doğru olarak gösterirse puan ver. (43 ay)

   Sözel ____ SO ____

7. Bir uzun bir de kısa sarı kurşun kalemi masaya dik olarak tut. Şöyle de, "Kısa kalemi göster." Eğer çocuk 3 sefer de kısa kalemi doğru olarak gösterirse puan ver. (43 ay) Sözel _____ SO _____

8. Beş adet halkayı bir grup olarak, 2 adet halkayı bir grup olarak masanın üzerine koy. Şöyle de, "Hangi tarafta daha çok halka var?" Eğer çocuk 5 halkalı kümeyi 3 sefer de seçerse puan ver. (44 ay) Sözel ___ SO___

9. Beş adet halkayı bir grup olarak, 2 adet halkayı bir grup olarak masanın üzerine koy. Şöyle de, "Hangi tarafta daha az halka var?" Eğer çocuk 2 halkalı kümeyi 3 sefer de seçerse puan ver. (46 ay) Sözel ___ SO___

10-11 Arasındaki Soruların Yönergeleri (0, 1)

Her deneme için şöyle de, "Bu kalemler aynı mı farklı mı?" "Aynı" için sarı kalemleri kullanın."Farklı" için sarı ve sarı olmayan kalem kullanın. Eğer çocuk "aynı"yi 3 kere doğru bilirse puan verin. Eğer çocuk "farklı"yi 3 kere doğru bilirse puan verin.

Denemeler: ___ aynı___ farklı___farklı___aynı___aynı___farklı___aynı___farklı

10. Aynı (>47 ay) Sözel _____

11. Farklı (>47 ay) Sözel _____

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12. Şöyle de, "Kaç yaşındasın? Parmaklarınla göster." Eğer çocuk sözel olarak söylerse, şöyle de, "Evet, şimdi de parmaklarınla göster ." Eğer çocuk doğru sayıda parmağı gösterirse puan ver. Eğer gerekirse tekrarla soruyu. (44 ay) Sözel _____ SO _____

13. Şöyle de, "Bir, iki, üç, dört, beş, Şimdi sen say." Eğer çocuk beşe kadar sayarsa puan ver. Eğer gerekirse tekrarla. (43 ay) Sözel _____

14. Dört bardağı kullanarak (bardaklar ters duracak şekilde) kule yap. Kuleyi işaret et ve şöyle de, "Bak". Çocuğa dört bardağı gelişigüzel sırayla ver. Şöyle de, "Şimdi sen yap. Bunlarla kule yap."Eğer çocuk 4 bardakla en büyükten en küçüğe doğru sıralayarak bir kule yaparsa puan ver. Eğer gerekirse soruyu tekrarla. (47 ay) Sözel _____ SO _____

15. Balıkların olduğu resmi masaya koy. Küçük balık resmi kartlarını sayılarına göre büyük balık resmi kartının altına yerleştir ve şöyle de, "Bir balığın altına bir balık, iki balığın altına iki balık, bir balığın altına bir balık, iki balığın altına iki balık." Küçük balık kartlarını kaldır, karıştır ve çocuğa ver. Şöyle de, "Şimdi sen yap."

Eğer çocuk küçük kartları büyük kartın altına doğru olarak eşleştirirse puan ver. (46 ay) Sözel _____ SO _____

16. Topların olduğu resmi masaya koy. Şöyle de, "Şimdi bunu sen yap." Çocuğa topların olduğu küçük resim kartlarını karışık sırada ver. Eğer gerekirse teşvik et. Eğer çocuk küçük top kartlarını büyük kartın altına doğru olarak eşleştirirse puan ver. (46 ay) Sözel _____ SO _____

17. Çocuğa üzerinde 2 yazan kartı göster. Şöyle de, "Bu kaç?" Sonra, üzerinde 5 olan kartı göster ve şöyle de, "Bu kaç?" Eğer çocuk iki sayıyı da doğru olarak bilirse puan ver. (>47 ay) Sözel ____

18. 4 tane halkayı masaya yatık olarak sıra halinde koy. Şöyle de, "Kaç tane halka var burda? Say halkaları."Cevap için bekle. Tüm halkaları topla ve sonra 2 tane halkayı çocuğun önüne yatık olarak koy. Şöyle de, "Kaç tane halka var burda? Say halkaları." Eğer çocuk halkaları sayarken elini halkalara değdirmiyorsa (bire bir sayma), şöyle de, "Sayarken halkalara elini koy." Eğer çocuk 4 halkayı ve 2 halkayı doğru olarak sayarsa puan ver. (46 ay) Sözel _____

19. Şöyle de, "Bir, iki, üç. Sonra hangi sayı gelir?" Cevap için bekle. Sonra, şöyle de, "İki, üç, dört. Sonra hangi sayı gelir?" Eğer çocuk her iki soruyu da doğru bilirse puan ver. Çocuk doğru cevabı verdikten sonra başka sayılar söylerse bile puan verin. (>47 ay) Sözel ____

20. Çocuğun önüne 10 tane halka koy. Şöyle de, "Bana dört halka verir misin?" İki elin açık olarak ellerini çocuğa doğru uzat. Cevap için bekle. Çocuğun verdigi halkaları halka kümesinin içine geri koy. Şöyle de, "Şimdi üç halka ver." İki elin

açık olarak ellerini çocuğa doğru uzat. Eğer çocuk iki sefer de doğru sayıda halka verirse puan ver. (>47 ay) Sözel_____ SO _____

21-22 Arasındaki Sorular için Yönergeler (0, 1)

Masanın üzerine gelişigüzel olarak 1'li, 2'li, 3'lü ve 4'lü halka grupları koy. Her doğru eşleştirme için puan ver.

21. Çocuğa üzerinde 2 olan kartı ver ve şöyle de, "Bu kart ile eşleşen halka grubunu bul." Çocuk seçimini yaptıktan sonra kartı kaldır. (>47 ay) Sözel _____ SO _____

22. Çocuğa üzerinde 1 olan kartı ver ve şöyle de, "Bu kart ile eşleşen halka grubunu bul." (>47 ay) Sözel _____ SO _____

Alan 4: El Yazısı

Puanlama: 3 ile 6 arasındaki sorular Elyazısı Sayfasındadır. Bu bölümün puanlandırılması bu testin el kitapçığının 10. sayfasında bulunmaktadır. Sözel ve sözel olmayan puanlama için 1. ve 2. sorular sadece 0 ve 1 olarak puanlandırılır; 3 ile 6 arasındaki sorular 0, 1, veya 2 olarak puanlandırılır.

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1. 3 ile 6 arasındaki soruları uygularken çocuğun oturma ve yazma şeklini gözlemleyin. Eğer çocuk genelde dik olarak oturup, yazı yazmadığı eliyle kağıdı tutuyorsa 1 puan verin. Eğer çocuğun duruşu bozuk veya yazmayı reddediyorsa 0 puan verin. (24 ay) Sözel _____ SO _____

2. Bu soru 3 ile 6. soruları yaparken gözlemlenerek puanlanacaktır. Eğer çocuk kalemi parmakları arasında tutuyorsa ve elinin içinde tutmuyorsa 1 puan verin.

Eğer çocuk kalemi tutmayı reddediyorsa veya kalemi elinin içinde yumruk yaparak tutuyorsa 0 puan verin. (35 ay) Sözel ____ SO ____

3-6 Arasındaki Soruların Yönergeleri (0, 1, 2)

Çocuğa Elyazısı Sayfasını verin. Şöyle deyin, "Birşeyler çizmeni istiyorum. Bunun aynısını çiz. Buraya çiz". Çocuğun çizmesini istediğiniz şekli ve nereye çizmesi gerektiğini gösterin. Çocuk her şekli çizdikten sonra şeklin doğruluğuna bakın. Eğer çocuk herhangi bir şekli doğru olarak çizmediyse, şöyle de, "Bak ben nasıl çiziyorum." Şekli yavaşça çizerken çocuğun sizi dikkatlice seyretmesini teşvik edin. Dik ve yatay çizgileri çizerken, şöyle deyin, "Vızzt!". Şöyle deyin, "Şimdi sen çiz." Eğer çocuk şekli ilk seferde doğru çizerse 2 puan verin. Eğer çocuk şekli siz çizdikten sonra sizinkini taklit ederek çizerse 1 puan verin.

3. Daireyi çizdi=2 (42 ay) Daireyi taklitle çizdi=1 Yanlış çizdi/cevap yok=0 Sözel ___ SO___

4. Dik çizgiyi çizdi=2 (37 ay) Dik çizgiyi taklitle çizdi=1 Yanlış çizdi/cevap yok=0 Sözel ___ SO___

5. Yatay çizgiyi çizdi=2 (42 ay) Yatay çizgiyi taklitle çizdi=1 Yanlış çizdi/cevap yok=0 Sözel ___ SO___

6. Artı işaretini çizdi=2 (45 ay) Artı işaretini taklitle çizdi=1 Yanlış çizdi/cevap yok=0 Sözel ___ SO___

Eğitim ve gözlem açısından, çocuğun kalemi kurşunundan 2 parmak uzaklıkta tutup tutmadığını not edin:

☐ Evet ☐ Hayır

Alan 5. Öğrenmeyi Kolaylaştıran Hareketler

1-3 Arasındaki Soruların Yönergeleri (0, 1)

Sözel Taklit: Çocuğun şu kelimeleri tekrarlamasını iste, "yaprak", "gövde", "zıplayan", "hoplayan", "hayvan". Şöyle de, "Dediğimi tekrarla, _____." Gerekli cevabı almak için gereken oyuncakları kullan (çicek, top, oyuncak). Mesela, "zıplayan" kelimesini söylerken masada topu birçok kere zıplat, "Hoplayan" kelimesini söylerken oyuncağı masada "zıp zıp" diyerek zıplat. Yaprak veya gövde kelimelerini söylerken çiceği göster. Hayvan kelimesini söylerken oyuncak hayvanı göster. Her kelime bir defa tekrarlandığı zaman 1 puan ver. Her kelime için 3 deneme yapılabilir. 3 deneme için en fazla 5 kelime kullanılabilir. Burda ölçülen kelimeleri söyleyebilmesinden çok kelimeleri taklit etme isteği. Eğer telaffuz hataları varsa bile söylenilen kelimeye yakın ve anlaşılan kelimeler söylerse puan verilir.

	1	2	3	
a. Yaprak	_____	_____	_____	(26 ay) 1. Sözel ___
b. Gövde	_____	_____	_____	(26 ay) 2. Sözel ___
c. Hoplayan	_____	_____	_____	(26 ay) 3. Sözel ___
d. Zıplayan	_____	_____	_____	(26 ay)
e. Hayvan	_____	_____	_____	(26 ay)

4-6 Arasındaki Soruların Yönergeleri (0, 1)

Fiziksel Taklit: Şu hareketleri yapın: kulak memesini çekmek, yanağı sevmek, burnunu buruşturmak, boyna dokunmak, başın tepesine dokunmak. Şöyle deyin, "Bak bana." Sonra hareketlerden birini yapın. Sonra, Şöyle deyin, "Şimdi sen yap aynısından."

Eğer çocuk hareketi bir kere yaparsa 1 puan verin. Her hareket için 3 deneme yapılabilir. 3 deneme için en fazla 5 hareket kullanılabilir. Burada ölçülen hareketi taklit etme isteği. Eğer çocuk yapılan harekete benzer bir hareket yapıyorsa puan verilir.

	4	5	6	
a. Kulak memesi	_____	_____	_____	(26 ay)
1. Sözel ___ SO ___				
b. Yanak	_____	_____	_____	(26 ay)
2. Sözel ___ SO ___				
c. Burun	_____	_____	_____	(26 ay)
3. Sözel ___ SO ___				
d. Boyun	_____	_____	_____	
e. Baş	_____	_____	_____	

7-13 Arasındaki Soruların Yönergeleri (0, 1)

Hafıza: Asağıdaki maddeler çeşitli cümleler. Eğer çocuk ilk cümleyi doğru olarak tekrarlarsa, puanı verin ve bir sonraki soruya geçin. O maddedeki ikinci soruyu sormayın. Eğer çocuk o maddedeki ilk cümleyi doğru olarak tekrarlayamazsa, o zaman o maddedeki ikinci cümleyi sorun. Cümleleri söylerken heyecanlı ve bol ifadeli olun. Eğer çocuk bir maddedeki iki cümleyi de doğru olarak tekrarlayamazsa o zaman bu kısma devam etmeyin ve bu bölümdeki geri kalan soruları sormayın. Her cümleyi söylemeden önce çocuğun dikkatinin sizde olduğundan emin olun. Eğer çocuk bir maddedeki herhangi bir cümleyi doğru olarak tekrarlarsa 1 puan verin.

7. a. Dediğimi tekrarla, "Sütü çok severim." (32 ay) Sözel ___

   b. Dediğimi tekrarla, "Bu kalem benim."

8. a. Dediğimi tekrarla, "Ev resmi çizmeyi severim." (35 ay) Sözel ___

   b. Dediğimi tekrarla, "Kuş cok hızlı uçar."

9. a. Dediğimi tekrarla, "Balık denizde çok hızlı yűzer." (37 ay) Sözel ___

   b. Dediğimi tekrarla, "Arkadaşımla top oynamayı çok severim."

10. a. Dediğimi tekrarla, "Bahçede kosmayı ve zıplamayi çok severim." (42 ay)

    Sözel ___

    b. Dediğimi tekrarla, "Kedi tasından sűt içmeyi çok sever."

11. a. Dediğimi tekrarla, "Okulda defterime gűzel yazı yazmayı çok severim." (44 ay)

    Sözel ___

    b. Dediğimi tekrarla, "Kırmızı balık denizde yukarı aşagı hep yűzer."

12. a. Dediğimi tekrarla, "Kırmızı bisikleti ile sokakta bir saat gezmeye gitti (47 ay)

    Sözel ___

    b. Dediğimi tekrarla, "Okuldan sonra arkadaşlarımla bahçede top oynamayı çok severim.

13. a. Dediğimi tekrarla, "Sabah ekmek, süt ve yumurta almak için bakkala gitti (>47 ay)

    Sözel ___

    b. Dediğimi tekrarla, "Sokaktaki büyük köpeğin üzerinde siyah ve beyaz noktaları vardı.

Soru 14 için Yönergeler (0, 1, 2, 3, 4)

Dikkat Aralığı: Çocuğa aşağıdaki kelimeleri tekrarlamasını söyleyin. Çocuk yanlış yaptığı zaman listeyi uygulamayı durdurun. Sadece kelimeler doğru şekilde ve doğru sırada tekrarlanınca puan verin. Kelimeleri okurken istekli ve canlı olun. Herhangi bir listeden en fazla sayıda doğru olarak tekrarlanan kelimeler için puan verin.

(mesela.,puan vermek için sadece bir listeyi kullanın ve en fazla tekrar edilen listeyi puanlayın). Puanlar, 0, 1, 2, 3 ve 4 olabilir.

		Doğru
11.	Liste a. kız (24 ay)	_____
	ördek-çorap (27 ay)	_____
	kedi-top-inek (38 ay)	_____
	kuş-balık-ağaç- çocuk (>47 ay)	_____

Sözel: ____

		Doğru
	Liste b. inek (24 ay)	_____
	kız-ağaç (27 ay)	_____
	çocuk -bisiklet-çorap (38 ay)	_____
	ördek-balık-top-kuş (>47 ay)	_____

Sözel: ____

	Sözel	Sözel Olmayan
12. sayfanın toplamı:	_____	_____
11. sayfanın toplamı:	_____	_____
10. sayfanın toplamı:	_____	_____
9. sayfanın toplamı:	_____	_____
8. sayfanın toplamı:	_____	_____
7. sayfanın toplamı:	_____	_____
6. sayfanın toplamı:	_____	_____
5. sayfanın toplamı:	_____	_____

4. sayfanın toplamı: _____ _____

3. sayfanın toplamı: _____ _____

2. sayfanın toplamı: _____ _____

Genel Toplam

Genel Bilişsel Ham Puan _____

Sözel Olmayan Bilişsel Ham Puan _____

Bölüm 6. Notlar ve Yorumlar

APPENDIX F

ARAŞTIRMAYA KATILIM İZIN BELGESI

Araştırmanın Adı: Bilişsel Yetiler Testi (2. Versiyonu)'nin Tűrk Tercűmesinin Geçerliliği

Araştırmacılar: Gökçe Durmuşoğlu ve Dr. Sharon Bradley-Johnson

Bağlı Olunan Üniversite: Central Michigan Üniversitesi, Mount Pleasant, Michigan, Amerika

Telefon: Gökçe Durmuşoğlu (216) 352-03-64 ve Sharon Bradley-Johnson (001) 989-774-6480

Kızınız veya oğlunuzun yaşı 24 ile 47 ay arasında olduğu için bu araştırmaya katılma hakkı kazanmıştır. Aşağıdaki bilgiler çocuğunuzun bu araştırmaya katılıp katılmaması konusunda karar vermeniz için size sunulmaktadır. Eğer aşağıdaki bilgilerle ilgili bir sorunuz varsa izin belgesini imzalamadan önce araştırmacıya sorabilirsiniz.

Bu araştırmanın amacı "Cognitive Abilities Scale-Second Edition (CAS-2)" adındaki Amerika'da 0-3 yaşındaki çocuklar için geliştirilmiş bir zeka testinin Tűrkçe'ye çevrilerek Tűrk çocukları için geçerliliğini ölçmektir. Eğer çocuğunuzun katılmasını kabul ederseniz, araştırmacıyla kararlaştırdığınız tarih ve saatte çocuğunuzu yuvaya getirmeniz gerekmektedir. Araştırmacı çocuğunuza kendi sınıfında zeka testini uygulayacaktır. Test uygulanırken çocuğunuzla beraber sınıfta oturabilirsiniz. Bu test 20 ile 30 dakika arasında sűrmektedir, fakat bu zaman çocuğunuzun yaşına ve teste göstereceği uyuma göre değişebilir. Bu araştırmaya katılan çocukların yarısı testin zaman içindeki gűvenirliliğini ölçmek için bir kere daha test edilecektir. Hangi çocukların ikinci kere test edileceği gelişigűzel olarak kurayla belirlenecektir. Kurada seçilen çocuklara iki hafta sonra tekrar aynı sınıfta, aynı test verilecektir. Bu test uygulaması sırasında da çocuğunuzla beraber aynı sınıfta oturabilirsiniz.

Test uygulaması bittikten sonra size testin sonuçlarını bildiren bir rapor gönderilecektir. Bu rapor sadece size gönderilecek ve siz istemedikçe yuva yetkilileriyle paylaşılmayacaktır. Eğer çocuğun ebeveyni yuva yetkilileriyse, bu rapor direk olarak yuva yetkililerine verilecektir. Bu testin sonucunda elde edilen bilgi ışığında çocuğunuzun bundan sonra ne tűr

bir eğitime gerek duyduğunu ve anaokuluna hazırlık olarak neler yapılması gerektiğini öğrenebilirsiniz. Test uygulaması bitince çocuğun ebeveynine 10 Lira verilecektir. Bu para eğer çocuğunuz testi yapmak istemese bile size verilecektir. Para karşılığında makbuz verilecektir. Eğer çocuğunuz ikinci kere test edilmek üzere seçildiyse, ikinci testin sonucunda ebeveyne tekrar 10 Lira verilecektir. Test uygulaması bitince her çocuğa ufak bir oyuncak hediye verilecektir.

Bu araştırma kapsamında ebeveyn veya yuva yetkililerinden beklenen faaliyetler şunlardır:

(1) Çocuğunuzu kararlaştırılan gün ve saatte yuvaya getirmek ve çocuğunuza zeka testi verilmesine izin vermek.

(2) Eğer çocuğunuz ikinci kere test edilmek için seçildiyse, kararlaştırılan gün ve saatte çocuğunuzu yuvaya getirmek ve zeka testi verilmesine izin vermek.

Bu araştırma sırasında toplanan verilen ve bilgiler tamamiyle gizli tutulacak ve kimseyle paylaşılmayacaktır. Bu araştırma sonucunda elde edilen bilgiler bilimsel dergilerde veya konferanslarda sunulabilir, ancak hiçbir çocuğun adı veya kimlik bilgileri açıklanmayacaktır. Her çocuğa bir kod adı verilecek ve araştırmanın verileri isim yerine kodlar kullanılarak işlemlenecektir. Eğer çocuğunuzun araştırmaya katılmasından vazgeçerseniz o zamana kadar toplanmış tüm veriler imha edilecek ve araştırmada kullanılmayacaktır.

Katılım isteğe bağlıdır. Uygulanan testin hiçbir yan etkisi veya zararı yoktur. Genelde çocuklar test sırasında verilen oyuncaklarla oynamayı severler. Eğer araştırma sırasında bu izin belgesinde belirtilen faaliyetlerde veya koşullarda herhangi bir değişiklik olursa size derhal haber verilecektir.

Eğer çocuğunuzun katılmasını onaylıyorsanız, aşağıdaki kısmı imzalayıp bu belgeyi yanınızda getirin. Testin yapılacağı gün, araştırmacı bu belgenin bir kopyasını size saklamanız için verecektir.

Eğer herhangi bir sorunuz veya kaygınız varsa yardımcı olmaktan mutluluk duyarız. Sorularınızı araştırmacıları arayarak sorabilirsiniz:

Gökçe Durmuşoğlu: (216) 352-03-64 Sharon Bradley-Johnson, Ed.D: (001) 989-774-6480

Yardımlarınız için çok teşekkür ederiz.

Katılım için İzin:

Bu araştırmanın amacının ne olduğunu anlıyorum. Yukarıda belirtilen tüm bilgileri okuyup gözden geçirdim ve çocuğumun bu araştırmaya katılmasına kimsenin etkisinde kalmadan ve kendi rızamla izin veriyorum. Bu izin belgesinin bir kopyası bana verilmiştir.

Ebeveyn veya Çocuğun Gözetim Hakkına Sahip Olan Kişinin Adı:

_____

Tarih:

_____

Ebeveyn veya Çocuğun Gözetim Hakkına Sahip Olan Kişinin Telefonu:

_____

Ebeveyn veya Çocuğun Gözetim Hakkına Sahip Olan Kişinin Adresi:

_____

Ebeveyn veya Çocuğun Gözetim Hakkına Sahip Olan Kişinin İmzası:

_____

Çocuğun Adı: Çocuğun Doğum Tarihi:

_____ _____

Araştırmacının Adı: _____

Gözlemlerime göre ebeveyn veya çocuğun gözetimine sahip olan kişi istekli olarak ve hiçkimsenin etkisi altında kalmadan izin vermistir.

Araştırmacının Adı: Tarih:

_____ _____

Araştırmacının İmzası: Tarih:

_____ _____

APPENDIX G

GENEL BİLGİ FORMU

Çocuğun Yaşı: _____

Çocuğun doğum tarihi: _____

Formu dolduran ebeveyn: Anne _____ Baba _____

Çocuğun cinsiyeti: Erkek _____ Kız _____

Çocuğun miliyeti:

Tűrk:_____ Diğer: _____ (belirtiniz)

Çocuğunuz İngilizce biliyor mu? Evet ___ Hayır ___

Annenin milliyeti:

Tűrk: _____

Diğer: _____ (belirtiniz)

Babanın milliyeti:

Tűrk: _____

Diğer: _____ (belirtiniz)

Annenin tahsil durumu:

İlkokul veya Ortaokul mezunu: ____

Lise mezunu:____

2 yıllık universite mezunu: ____

4 yıllık universite mezunu:____

Yűksek lisans mezunu: ____

Babanın tahsil durumu:

İlkokul veya ortaokul mezunu: ____

Lise mezunu: ____

2 yıllık universite mezunu: ____

4 yıllık universite mezunu: ____

Yűksek lisans mezunu: ____

Çocuğun annesi İngilizce biliyor mu? Evet ___ Hayır ___

Çocuğun babası İngilizce biliyor mu? Evet ___ Hayır ___

Adres: _____

Telefon numarası (alan kodunu yazın): ( )_____

Hangi saatlerde size en iyi ulaşabiliriz? _____

APPENDIX H

ANAOKULU YŐNETİCİLERİ İZİN BELGESİ

Tarih: Yıl, Ay

Sayın Anaokulu Yöneticisi,

Cognitive Abilities Scale-Second Edition (CAS-2) adındaki bir genel zeka testinin Tűrk tercűmesinin geçerliliğini ölçen bir araştırma yapmaktayım. Bu araştırma sonucunda elde edilen bilgiler ışığında bu testin Tűrk tercűmesinin Tűrk çocuklarını değerlendirmek için kullanıp kullanılmayacağı tesbit edilecektir. Bu araştırmadan elde edilen veriler, Central Michigan Üniversite'sinde Okul Psikolojisi alanında yapmakta olduğum doktora tezinde belirecektir.

Bu araştırma için katılımcı bulmakta yardımınızı talep etmekteyim. Araştırmanın gerektirdiği şartlar şunlardır: (a) çocukların yaşının 24 ile 47 ay arasında olması, (b) ebeveynlerin çocuklarına CAS-2 testinin Tűrk versiyonunu vermeme izin vermeleri.

Katılımcı çocukların ebeyevnlerine çocuklarının katkısından dolayı ufak bir űcret ödenecektir. Ayrıca her ebeyevne çocuklarının test sırasında göstermiş olduğu yetileri özetleyen bir rapor verilecektir. Ebeveyn istemedikçe bu rapor anaokulu yetkililerine verilmeyecektir. Bu araştırmanın sınırları dahilinde, aşırı derecede görsel, işitsel ve motor engeli olan çocukları çalışmaya dahil edememekteyim.

Eğer katılımcı bulmakta yardımcı olmayı kabul ederseniz, lűtfen aşağıdaki izin belgesini imzalayıp bu paketin içindeki ödenmiş zarfla postalayın. Ben bu formu aldığım zaman, size ailelere vermeniz için izin belgeleri getireceğim. Eğer herhangi bir sorunuz varsa lűtfen sorun. Bize ulaşabileceğiniz numaralar şunlardır: Gökçe

Durmuşoğlu (216) 352-03-64 veya Amerika'daki tez danışmanım Sharon Bradley-Johnson'ın telefonu (001) 989-774-6480.

Vaktiniz ve alakanız için çok teşekkűr ederim. Sizden haber almayı ve beraber çalışabilmeyi űmit ederim.

Saygılarımla,

Gökçe Durmuşoğlu, M.A.

Okul Psikolojisi Doktora Adayı

Central Michigan Üniversitesi

Katılım İçin İzin Belgesi:

Ben,_____Gökçe Durmuşoğlu'nun Central Michigan Üniversite'sinde yaptığı "Cognitive Abilities Scale-Second Edition (CAS-2) adındaki testin Tűrk tercűmesinin geçerliliği" adındaki araştırmada yardımcı olmayı kabul ediyorum. Bu araştırmaya katılımcı bulmak için bana verilen izin belgelerini anaokulumdaki ailelere dağıtmada yardımcı olacağım.

Okul Yöneticisinin İmzası	Tarih
_____	_____
Araştırmacının İmzası	Tarih
_____	_____

APPENDIX I

AİLELERE MEKTUP

Tarih: Yıl, Ay

Sevgili Ebeveynler,

Ben Amerika'da Central Michigan Üniversite'sinde Okul Psikolojisi alanında yűksek lisans yapmakta olan bir doktora öğrencisiyim. Tez danışmanım Psikoloji Bölűműnde Profesör Sharon Bradley-Johnson'dır. Tezim için 2 ve 3 yaşındaki çocuklarla bir araştırma yapmaktayım. Araştırmamın amacı Cognitive Abilities Scale-Second Edition (CAS-2) adındaki bir zeka testinin Tűrk tercűmesini geliştirip bu testin Tűrk çocukları için geçerli olup olmadığına bakmaktır.

Çocuğunuz 24 ile 47 aylık olduğu için bu araştırmaya katılmaya hak kazanmıştır. Eğer bu araştırmaya katılmak isterseniz, lűtfen zarfın içindeki izin belgesini okuyun ve imzaladıktan sonra zarfın űzerindeki adrese gönderin. Çocuğunuzun bu araştırmaya katılması anaokulundaki başarısını etkilemeyecektir. Eğer çocuğunuzun katılmasına izin verirseniz, test bittikten sonra çocuğunuzun test sırasında göstermiş olduğu yetileri ve bundan sonra göstermesi beklenen yetileri özetleyen bir rapor yollayacağım. Bu araştırma sırasında toplanan veriler gizli tutulacak ve siz istemedikçe anaokulu yetkilileriyle paylaşılmayacaktır.

Yardımlarınızdan dolayı teşekkűr ederim ve umarım çocuğunuzun araştırmama katılmasına izin verirsiniz. Vaktiniz ve alakanız için teşekkűrler.

Saygılarımla,

Gökçe Durmuşoğlu, M.A.

Okul Psikolojisi Bölűműnde Doktora Adayı

Central Michigan Üniversitesi

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