ADAPTING MB-CDI TO TURKISH: THE FIRST PHASE[*]

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I . INTRODUCTION

The MacArthur-Bates Communicative Development Inventory (MB-CDI) is a scale designed to assess the language development of children between 8 and 30 months via caregiver reports (Fenson et al., 2000). It is a standardized tool first developed in English and then adapted to 37 languages, providing a good database for carrying out cross-linguistic studies (Bleses, Vach, Slott, Wehberg, Thomsen, Madsen, & Basboll, 2008) It provides age and gender norms for normal development and is proposed to function as a screening device for identifying language delay and disorders. The assessment is based on mothers' reports obtained through the use of a checklist or interview, depending on the educational levels of the mothers.

The MB-CDI has two forms for different levels. The first form is designed for children between 8 and 15 months and it assesses both comprehension and production of early words and gestures. The second form is designed for children between 16 and 30 months and assesses only production. However, the second form also has a grammar section to evaluate the extent of acquisition of inflectional morphology and complexity of sentence structures.

1.1 Aim

The aim of the project reported on here is to construct the Turkish adaptation of the MB-CDI (Türkçe İletişim Gelişimi Envanteri- TİGE). This naturally requires the adaptation of

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the inventory to Turkish, an agglutinating language that deviates in structure from those languages that the inventory has already been adapted.to.

II. METHOD

2.1 The adaptation process
Prior to the adaptation process, the researchers focused on the following issues grouped under two headings:
a) issues regarding language structure
b) issues regarding caregivers.

2.1.1. Issues regarding language structure:
Turkish is an agglutinating with rich morpholgy that is acquired quite early. The question is whether the complex inflectional morphology that is typical of age 2;6 can be captured in the "sentences and grammar" section of CDI? In addition, can the caregivers really tell whether the combination of morphemes with other morphemes is productive or not?

Example (1) below from age 1;8 illustrates this complexity for nominal (case) inflections:

(1)   *ayakkabı*   'shoe'
        ayakkabı   N
        ayakkabı-sı   N-poss&3s
        ayakkabı-sı-nı   N-poss&3s-acc
        ayakkabı-yla   N-com
        ayakkabı-lar-ı-nı   N-pl-poss&3s-acc
        ayakkabı-sı-nı   N-poss&2s-acc

Example (2) illustrates the same complexity for verbal inflections:
        b*u-nnay-ı*   *dık-ay-ıy-mı-dın?*
        this-PLU-ACC come+out-CAUS-AOR-QUE-2S
        'could you take these off?'

2.1.2. Issues regarding caregivers
In order to form a representative stantardized inventory, mothers from different levels of socio-economic status need to be included in the sample. The MB-CDI in other languages is based on a sample of educated mothers. However, majority of mothers in a representative Turkish sample have less than a high school education. The question here is whether the content and format of MB-CDI will work with the less educated mothers. Another concern regarding caregivers is the presence of multiple caregivers in most households in Turkey. For example, if there are grandparents living with the family can one caregiver give a complete picture of the child's level of linguistic competence?"

2.2. Construction of Pilot Forms

In preparing the pilot forms, the methods used in the adaptation of the MB-CDI to languages such as Finnish, Italian, Hebrew, German, and Danish were applied. A pre-pilot study was carried out with 9 mothers; 6 of whom had five or less years of education. The pre-pilot study helped to streamline general instructions, formats for the presentation of the word forms ,tickable options under the questions, and to eliminate some items. Thus pilot forms of TİGE were completed.

TİGE I is designed for children between 8 and 16 months and assesses both comprehension and production of early words and verbs and gestures. The second form is designed for children between 16 and 36 months and assesses only productive vocabulary and grammatical capacity. TİGE I consists of two parts: PART I Vocabulary Checklist and PART II Actions and Gestures. TİGE II consists of two parts: Part I Vocabulary Checklist and Part II Sentences and Grammar.

2.2.1. Vocabulary section of TİGE
For the vocabulary section, the MB-CDI has been used as a guide. Vocabulary items have been extracted from 5 different child-adult interaction corpora in Turkish, covering the 8- to 36-months age range. The words have been rank-ordered in terms of frequency of occurrence across these 5 databases and the MB-CDI. The words thus gathered have been grouped into categories similar to those in the English MB-CDI. Table 1 presents the number of common items in the MB-CDI and the TİGE forms for each semantic category.

Table 1. Number of vocabulary items that appear in the corresponding subcategories of TIGE and MB-CDI vocabulary checklists for the two forms:

Subpart of MB-CDI / TİGE	N of items TIGE I	N of items CDI I	N of items TIGE II	N of items CDI II
1.Sound Effects & Animal Sounds	16	12	16	12
2.Animals	22	36	43	43
3.Vehicels	8	9	15	14
4.Toys	9	8	25	18
5.Food & Drink	50	30	76	68
6.Clothing	21	19	41	28
7.Body Parts	19	20	30	27
8.Small Household Items	31	36	43	50
9.Furniture & Rooms	25	24	32	33
10.Outside of Home	28		43	31
11.Places to go	16	27	27	22
12. People	27	20	39	29
13. Games and Routines	35	19	44	25
14. Actions Words	120	55	166	103

15.Descriptive Words	30	37	63	63
15.Words about Time	9	8	13	12
16.Pronouns	14	11	24	25
17.Question words	9	6	13	7
18.Locatives	13	11	22	26
19.Quantifiers	10	8	26	17
20.Helping Verbs	-	-	-	21
21.Connecting words	-	-	8	6

2.2.2 Actions and Gestures section of TİGE I
This section of the scale asks about the following categories of action and gesture found to be typical of 8 to16 month old infants.

A. First communicative gestures (TIGE I: 14 vs. CDI I: 12)
B. Games and routines (TIGE I: 8 vs. CDI I: 6
C. Actions with objects (TIGE I: 17 vs. CDI I: 17)
D. Pretending to be a parent (TIGE I: 13 vs. CDI I: 13)
E. Imitating adult actions (TIGE I: 16 vs. CDI I: 15)
F. Pretend objects (TIGE I: 1 vs. CDI I: 1)

2.2.3. Grammar section of TİGE II

In the grammar section of TİGE II, both nominal and verbal morphology were exemplified. In addition, some examples of complex constructions such as adverbial clauses with converbs or nominalized forms, sentential complements and the passive form of the verb were added. The grammar section thus consists of five subsections:

a) How Children Use Words
Five items that ask if the child uses words to refer to: (1) past events and non-present people, (2) future events, (3) non-present objects (4) absent possessors of objects, and understands reference to (5) location of absent objects.

b) Word Endings: Verb and Noun inflections
A. Six items that ask whether the child produces the following inflections:
1. Present-progressive -yor   7. Verbal negation –ma
2. Past/completive aspect -di   8. First person possessive -im
3. Evidential –miş   9. Dative -e
4. Aorist -ar   10. Locative -de
5. Future -cak   11. Accusative –den
6. Yes/no question marker –mi

c) Word and morpheme combinations
Three items that ask for evidence for the beginning of grammar:
B. Has child started to combine words?, e.g., 'mommy sit', 'daddy come', 'ball throw', 'water give'
C. Has child started to add morphemes to words? e.g., this-ACC, fall-PAST, fall-PROG

D. What are the child's longest 3 utterances

The interviewer /mother is asked to terminate the interview if the mother's anwers to questions to B and C are "no"

d) Word Forms

E.& F. Further questions that ask for evidence in inflectional morphology:
  - Questions exemplifying nominal case endings
    - *baba-dan* **father-ABL**   *masa-dan* **table-ABL**
  - Questions exemplifying verbal inflections
    - *gel-miş-ti* **come-PERF-PAST**   *aç-mış-tı* **open-PERF-PAST**
    - *gel-me-di* **come-NEG-PAST**   *aç-ma-dı* **open-NEG-PAST**

e) Complex Constructions

G. Further questions that ask for evidence in complex syntax:
  - Two word combinations
  - Infinitive   (*V-mEk*)
  - Conjunction   (*ile* 'and/with*')*
  - Converb   (*V-ince* 'cause-effect/ sequence')
  - Purposive   (V-*sIn diye* 'for … to*')*
  - Nominalized verb plus postposition (*V+NOM+ Case sonra* 'temporality')
  - Converb   (*V-erken* 'simultaneity')
  - Converb   (*V-ip* 'sequence')

III. THE PILOT STUDY

3.1 Data Collection

Seventeen psychology students were trained as field researchers. The pilot forms of the TİGE I and TİGE II questionnaires were administered to a total of 91 mothers of three different levels of education (eight years or less, high school, universty or more) from 4 different cities: Istanbul, Eskişehir, Adana, and Ankara. A questionnaire designed to obtain demographic information, and information about child care practices and cognitive-linguistic stimulation at home was also administered. The distribution of the sample to cities and age groups is presented in Table 2.

Table 2. Distribution of the pilot sample by city and age target child age

Age (months)	Istanbul	Ankara	Eskişehir	Adana	Total
8-16	13	10	6	8	37
16-30	28	7	9	10	54
Total	41	17	15	18	91

The education level of the mothers' can be summarized as in Table 3

Table 3. Distribution of the pilot sample by level of education of mothers

	TIGE I		TIGE II	
Level of Education	Frequency	%	Frequency	%
8 years or <	12	21	23	25
High school	20	34	29	31
University	26	45	40	43

3.2 Analysis

After an analysis of the pilot data about 100 words were eliminated from each form. In removing words from the forms, the following criteria used by Fenson et al. (2000) were considered:

- To include words that vary by age of acquisition
- To include words that show developmental trends
- To avoid some very-late-to-appear words
- To avoid some very-early-to-appear words
- To avoid words with strong regional biases
- To maintain a balance across various semantic categories

a) Age of acquisition

A word was considered "acquired" in a certain age group if it was reported to be produced by 40% of children in that age group. Six age groups were created by merging monthly intervals into longer intervals of three months, as seen in Table 4.

Table 4. Distribution of subjects to merged age groups used as basis for determining age of acquisition of a word

Group	Age (months)	N
1	16-18	11
2	19-21	25
3	22-24	24
4	25-27	16
5	28-33	16
6	34-36	

b) Age-related trend of words

A 4-way coding system was used to indicate the age-related trends of words:

Strong trend ++: the word shows a consistent increase by age across the 5 age groups

Trend +: the word shows an increase across age groups, but also a slight drop in one age group

No trend -: the word appears with a constant frequency or shows a decrease across age groups
Uncertain ?: the word shows a couple or more drops

Using the above citeria, the following patterns were observed for the 812 words in our pool:

34% of words (277) show a **strong trend**
56% of words (451) show a **trend**
7% of words (56) show **no trend**
3% of words (28) are **uncertain**

d) Late-to Appear Words
Less than 8% of children are reported to produce the following words:

Şirin 'cute, pretty'   *Sirk* 'circus'   *Tiyatro* 'play/theatre'
Diye 'so that',   *ileride* 'ahead'   *Geride* 'in-the-back'
Yabancı 'foreign/er'   *Çiftlik* 'farm',   *Tepesinde* 'on-top-of'

e) Early-to-appear words
More than 90% of the children use the following words

Dede 'grand daddy'   *Baba* 'daddy'   *Hav* 'woof'
Anne 'mother'   *Alo* 'hello' on the phone

After these analyses the questionnaire was revised again and a third mini- pilot study was run before it was given its final form.

V. THE STANDARDIZATION SAMPLE

Data will be collected in the four cities mentioned above. The sample is planned to consist of about 3,000 mothers with a child aged between 8 to 36 months. The target child is the one learning Turkish as one of his/her native languages. Mothers are going to be selected from randomly chosen neighborhoods of different socio-economic composition, to reflect the nation-wide distributions of educational levels of women-at-the-age-of-fertility.

Proposed subsamples in the 4 cities: Around 3,000 mothers in total
Istanbul (population 12 million):   = 1700 mothers
Ankara (population 4 million):   = 700 mothers
Adana (population 2 million):   = 400 mothers
Eskişehir (population 1 million):   = 200 mothers

Twenty nine age groups have been identified to represent the ages between 8 and 36 months. (As both TİGE I and TİGE II will be applied to 16 months, this age group is divided into two groups). The number of interviews per age group have been calculated

according to the targeted number to be included in the sample in each city and according to the education level of mothers. For each age group, 30 %, of mothers will be chosen among those with primary education (0-5 years), 50 % of mothers will be chosen among those who have high school education (6-11 years), and 20% will be chosen among mothers who have high education (11 years and above). Table 5 presents the distribution of the sample by city and mother's level of education.

Table 5. The Distribution of the sample by city and mother's education level

City	Total Sample	The number of children in each age group	The distribution of the number of children in each age group according to the mother's education level.		
			Primary Education	Secondary Education	High Education
İstanbul	1700	60	18	30	12
Ankara	700	24	8	12	6
Adana	400	14	4	7	3
Eskişehir	200	10	3	5	2
Toplam	3000	108	33	54	23

The data collection has been launched and 561 surveys have already been conducted
Data collection is continuing and data entry processess are under way.

VI. ACTION PLAN

The data collection process is planned to be completed before the mid of 2010. Upon completion, we will analyze the data by examining the distribution of children into percentiles for acquisition of vocabulary and grammar, separately presented for male and female children. This will provide norm data which can be used to assess cases in the future. In addition, the data can be used for cross-language comparisons, such as the one conducted in Bleses et al., 2008.

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