

Early word learning by Turkish-Dutch bilinguals: Cognitive or linguistic dominance?

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Abstract. Maguire, Hirsh-Pasek, and Golinkoff (2006), following suggestions by Gentner and Boroditsky (2001) and Snedeker and Gleitman (2004), have offered to develop a comprehensive approach to early word learning instead of only focusing on syntactic classes, such as noun or verb. According to them, any word which represents perceptually accessible concepts, rather than only nouns or verbs, can be learned earlier than other word categories with abstract or relational concepts. Taking a broader view, Maguire *et al.* (2006) propose an amalgamation, called the SICI (Shape, Individuation, Concreteness, Imageability) continuum to understand the concepts of words acquired early by children. Xuan and Dollaghan (2012) investigated the perceptual and cognitive characteristics of the first fifty words in Mandarin-English bilingual children's early lexicon with regard to the features of the SICI continuum and concluded that cognitive and perceptual constraints were not salient enough to explain children's early word learning. In line with this background and extending the results of Xuan and Dollaghan's (2012) study involving Mandarin-English bilingual children, we investigated the nature of the most frequent words in Turkish-Dutch bilingual children's early lexicon in terms of the SICI features. The data in this study were collected using the Turkish and Dutch adaptations of the CDI from 48 Turkish-Dutch bilingual children in Flanders. The most frequent words in the children's Dutch and Turkish lexicon were determined and were grouped in line with the features of the SICI continuum. The results shows similarity with the findings of Xuan and Dollaghan (2012), indicating not only the effect of perceptual and cognitive mechanisms but also the interaction of linguistic features on early word learning.

Keywords: SICI continuum, Turkish-Dutch, early lexical development, reference, predicate, grammar

Introduction

Related literature on monolingual children's language development reveals some common developmental patterns in the composition of the early lexicon. These have also been confirmed in various studies of different monolingual populations. Of these, the most commonly found pattern among different languages is the trajectory from reference (nouns) to predication (verbs and adjectives), to grammar (closed-class items). Bates, Marchman, Thal, Fenson, Dale, Reznick, and Reilly (1994) studying English speaking children, Stolt, Haataja, Lapinleimu, and Lehtonen (2008) studying Finnish speaking children, Caselli, Bates, Casadio, Fenson, Sanderl, and Weir (1995) studying Italian children, Kern (2007) studying French speaking children, and Eriksson and Berglund (1999) studying Swedish speaking children, provide parallel data through different adaptations of the MacArthur Communicative Development Inventory (CDI). Bassano (2000) and Türkay (2009) presented similar results using naturalistic data in French and Turkish, respectively. In Bassano's longitudinal study, a shift from nouns to predicates and to grammar was also observed in Türkay's naturalistic longitudinal study that involves five Turkish children. Although all the above-mentioned languages show different language characteristics, the developmental trajectory is common in the early lexical composition of children in all these languages. The developmental change from common nouns to predicates, and then to closed-class items, is also in line with Gentner's (1982) and Gentner's and Boroditsky's (2001) revised cognition-based approach). According to the universal noun advantage view proposed by Gentner (1982), children's early lexicon is made up of nouns, representing concrete objects. Verbs and verb-like items are acquired later as they require a cognitively complex task for children to accomplish.

Maguire *et al.* (2006), following suggestions by Gentner and Boroditsky (2001) and Snedeker and Gleitman (2004) have offered to develop a comprehensive approach into early word learning, instead of only focusing on syntactic classes such as noun or verb. According to them, neither nouns nor verbs, but any word which represents perceptually accessible concepts can be learned earlier than other word categories with abstract or relational concepts. Taking a broader view, Maguire *et al.* (2006) propose an amalgamation to understand the concepts of the early acquired words by children, called the SICI continuum. The SICI is an acronym representing four factors; shape, individuation, concreteness and imageability. According to Maguire *et al.* (2006), it is possible to develop a broad perspective into children's early word learning using SICI, where not only one feature of the continuum is considered, because related literature is full of different terms, and operational definitions are rather opaque. They also add that there is indefiniteness among the factors in terms of the weight they carry in the continuum. All four factors seem equally important in order to grasp the meaning of how the SICI continuum of concepts works (Figure 1):

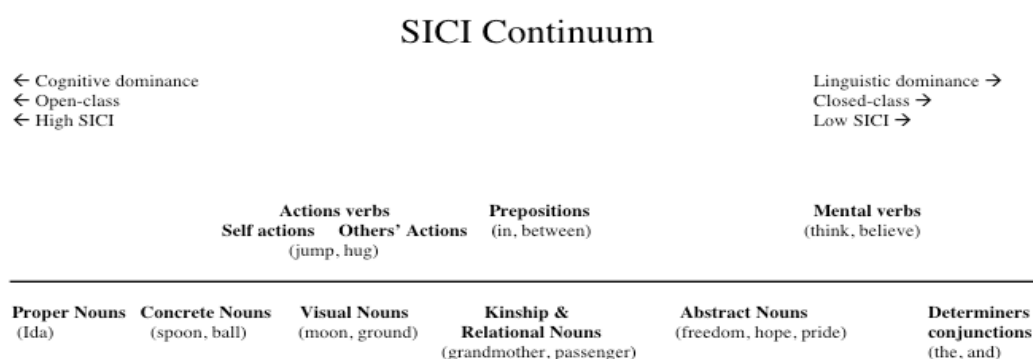


Figure 1. The SICI continuum (Maquire *et al.*, 2006:57)

- S is for shape: some verbs are linked to certain shapes and result in fast mapping in children's early word learning in experimental studies. Objects are definitely representative of the shape factor, but verbs can also be put into this scale in line with how much shape consistency they show. For example, *dancing* is easier in terms of shape than *thinking* (Maguire *et al.*, 2006:18).
- I is for individuation: Maguire *et al.* (2006) here refer to Gentner and Boroditsky's Division of Dominance (2001). In their continuum, there are two ends. At the cognitive end, there are objects which are easy to individuate, namely open-class-category words, and at the linguistic continuum, there are items which are mostly related to language, namely the closed-class category. Gentner and Boroditsky (2001) propose that verbs are at the more difficult end of the continuum and they are harder to acquire than nouns.
- C is for concreteness and I is for imageability: Maguire *et al.* (2006) say that concreteness and imageability have been used interchangeably in the literature. For 'imageability' and 'concreteness', they refer to the definition given by Paivio, Yuille, and Madigan (1968). According to them, 'imageability' is to what extent the word is easy to link to a sensory mental image and 'concreteness' is the ability to see, hear and touch something.

The authors sum up the interaction of the four factors as follows:

'words can be thought of as falling on a continuum that characterizes the reliability and consistency of their shape. The ease with which they can be distinguished from other items in the scene (individability); whether they can be observed in the world at all and whether they are manipulable (concreteness); and how readily they yield a mental image for adults (imageability)' (Maguire *et al.*, 2006:22-23).

Against this background, Xuan and Dollaghan (2012) investigated the perceptual and cognitive characteristics of the top 50 words in Mandarin-English bilingual children's early lexicon with regard

to the features of the SICI continuum and concluded that cognitive and perceptual constraints were not salient enough to explain children's early word learning. In our study, we would like to concentrate on a new bilingual group, Turkish-Dutch bilinguals, with a similar perspective to that of Xuan and Dollaghan (2012) and formulate the following research questions:

1. To what extent are the most frequent words in the Turkish-Dutch bilingual children's early lexicon compatible with the features of the SICI continuum?
2. Are there commonalities between the Turkish and Dutch lexicon of these bilingual children in terms of the SICI features?

Method

Participants

The parents of 48 children participated in the study. They were given the Turkish and Dutch version of the MacArthur-Bates Communicative Development Inventory: Words and Sentences (M-CDI-II) and once they were given some explanations about completing the inventories, they were invited to fill these in independently. Seventeen children were from one-parent-one-language families, and 31 children were from families with monolingual Turkish parents. The children's ages ranged from 1;05 to 2;11 ($M=27.2$ months). Twenty-four of the children were girls and 24 of them were boys.

Data Collection Tools

M-CDI-II was used as a data collection tool in the study. CDI has two forms: CDI-I Infant Form (Word and Gestures) addressing children from 8 to 16 months, and CDI-II Toddler Form (Words and Sentences) addressing children from 16 to 30/36 months. In this study, we only focus on CDI-II Toddler Form. Table 1 gives detailed information about the Turkish (CDI-TR) (Aksu-Koç, Küntay, Acarlar, Maviş, Sofu, Topbaş, & Turan, 2009) and the Dutch (CDI-DT) adaptation of CDI (Zink & Lejaegere, 2002).

Table 1. CDI Toddler Form Description

	Toddler Form	
	CDI-TR	CDI-DT
Lexical categories	21	22
Total words	711	702

Data Analysis

To perform the frequency analysis, we tallied the percentage of children who used the words in Dutch and Turkish and prepared a list of the most frequent Turkish and Dutch words. Due to the ties at the 50th rank, 52 Turkish words and 56 Dutch words were categorized in the children's lexicon.

Table 2. Most frequent 52 Turkish words and their CDI categories

word	English	CDI category	%
<i>baba</i>	'daddy'	people	97
<i>anne</i>	'mummy'	people	93
<i>dede</i>	'grandpa'	people	89
<i>balon</i>	'balloon'	toys	77
<i>su</i>	'water'	food and drink	77
<i>abi</i>	'brother'	people	77
<i>alo</i>	used answering the phone	games and routines	77
<i>kaka</i>	used for the need to go to toilet	games and routines	77
<i>araba</i>	'car'	vehicles	75
<i>bebek</i>	'baby'	people	75

<i>hop</i>	sound effect of jumping	sound effects/animals	72
<i>ham</i>	sound effect of eating	sound effects/animals	70
<i>bebek</i>	'babydoll'	toys	70
<i>abla</i>	'elder sister'	people	68
<i>baybay</i>	'good-bye'	sound effects/animals	68
<i>muz</i>	'banana'	food and drink	66
<i>uf</i>	sound effect of being in pain	sound effects/animals	62
<i>at</i>	'horse'	animals	62
<i>süt</i>	'milk'	food and drink	62
<i>ayakkabı</i>	'shoes'	clothing	62
<i>kendi ismi</i>	the child's own name	people	62
<i>teyze</i>	'maternal aunt'	people	62
<i>düt</i>	sound effect of a car	sound effects/animals	60
<i>köpek</i>	'dog'	animals	60
<i>kuş</i>	'bird'	animals	60
<i>ayak</i>	'foot'	body parts	60
<i>otur*</i>	'sit down'	action words	60
<i>şışt</i>	sound effect of warning	sound effects/animals	58
<i>top</i>	'ball'	toys	58
<i>çay</i>	'tea'	food and drink	58
<i>burun</i>	'nose'	body parts	58
<i>mama</i>	'food'	food and drink	58
<i>yok</i>	'no/absent'	games and routines	58
<i>balık</i>	'fish'	animals	56
<i>kedi</i>	'cat'	animals	56
<i>ekmek</i>	'brood'	food and drink	56
<i>et</i>	'meat'	food and drink	56
<i>çorap</i>	'socks'	clothing	56
<i>el</i>	'hand'	body parts	56
<i>göz</i>	'eye'	body parts	56
<i>çiş</i>	used for the need to go to toilet	games and routines	56
<i>ver*</i>	'give'	action words	56
<i>acı</i>	'bitter'	descriptive words	56
<i>cıss</i>	warning of danger	sound effects/animals	54
<i>elma</i>	'apple'	food and drink	54
<i>ev</i>	'house'	places to go	54
<i>anneanne</i>	'maternal grandma'	people	54
<i>babaanne</i>	'paternal grandma'	people	54
<i>evet</i>	'yes'	games and routines	54
<i>acı (canı) *</i>	'to have pain'	action words	54
<i>at *</i>	'throw away'	action words	54
<i>op *</i>	'kiss'	action words	54

Results

We first highlighted the nouns in bold and then the verbs with an asterisk. In the list, 23 nouns were written in bold and 5 verbs were marked with an asterisk in the Turkish lexicon of the children (see Table 2) and 34 nouns were made bold and five verbs were marked with an asterisk in the Dutch lexicon of the children (see Table 3).

Table 3. Most frequent 56 Dutch words and their CDI categories

word	English	CDI category	%
<i>waf waf</i>	'woof woof'	sound effects/animals	87
<i>hallo</i>	used answering the phone	sound effects/animals	83
<i>miauw</i>	'miaow'	sound effects/animals	77
<i>mjam</i>	sound effect of 'delicious'	sound effects/animals	77

<i>auto</i>	'car'	vehicles	77
<i>bal</i>	'ball'	toys	72
<i>appel</i>	'apple'	food and drink	72
<i>au ai</i>	sound effect of being in pain	sound effects/animals	68
<i>baby</i>	'baby'	people	66
<i>dada doen</i>	'good-bye'	games and routines	66
<i>ballon</i>	'balloon'	toys	64
<i>koekje</i>	'cookie'	food and drink	64
<i>mama</i>	'food'	food and drink	64
<i>beu boe</i>	'moo'	sound effects/animals	62
<i>fiets</i>	'bicycle'	vehicles	62
<i>banaan</i>	'banana'	food and drink	60
<i>vroem broem</i>	'vroom'	sound effects/animals	58
<i>ja</i>	'yes'	games and routines	58
<i>boek</i>	'book'	toys	56
<i>water</i>	'water'	food and drink	56
<i>oog</i>	'eye'	body parts	56
<i>hallo</i>	'hello'	sound effects/animals	56
<i>kwak kwak</i>	'quack'	sound effects/animals	54
<i>oh ooh</i>	sound effect of surprise	sound effects/animals	54
<i>jas</i>	'jacket'	clothing	54
<i>schoen</i>	'shoe'	clothing	54
<i>oor</i>	'ear'	body parts	54
<i>papa</i>	'daddy'	people	54
<i>kip</i>	'chicken'	animals	52
<i>koe</i>	'cow'	animals	52
<i>blokken</i>	'blocks'	toys	52
<i>eten</i>	'food'	food and drink	52
<i>frietten</i>	'fries/chips'	food and drink	52
<i>soep</i>	'soup'	food and drink	52
<i>luier/pamper</i>	'diaper/nappy'	clothing	52
<i>neus</i>	'nose'	body parts	52
<i>water</i>	'water'	outside things	52
<i>oma</i>	'grandma'	people	52
<i>nee</i>	'no'	games and routines	52
<i>beh</i>	'baa'	sound effects/animals	50
<i>hondje</i>	'dog'	animals	50
<i>aardappel/patatjes</i>	'potatoes'	food and drink	47
<i>aardbeien</i>	'strawberry'	food and drink	47
<i>brood</i>	'bread'	food and drink	47
<i>chips</i>	'chips/crisps'	food and drink	47
<i>melk</i>	'milk'	food and drink	47
<i>naam van kind</i>	the child's name	people	47
<i>kiekeboe</i>	'peekaboo'	games and routines	47
<i>kat/poesje</i>	'cat'	animals	45
<i>haar</i>	'hair'	body parts	45
<i>hand</i>	'hand'	body parts	45
<i>telefoon</i>	'telephone'	small household items	45
<i>bad</i>	'bath'	furniture and rooms	45
<i>bed</i>	'bed'	furniture and rooms	45
<i>opa</i>	'grandpa'	people	45
<i>eten *</i>	'to eat'	action words	45

When we group the most frequent words into the CDI categories, we see that lexical categories in common nouns were: animals, toys, food and drink, clothing, body parts, small household objects, furniture, rooms and vehicles. Action names and adjectives were included in predicates. Next, pronouns, question words, prepositions (in Dutch), articles and quantifiers, auxiliary and modal verbs

(in Dutch) and connecting words were grouped in the closed-class category. Lastly, names for people, games, routines and sound effects made up social words (Bates *et al.*, 1994; Caselli *et al.*, 1999; Kern, 2007; Stolt *et al.*, 2008). As illustrated in Tables 2 and 3, there were no words from the CDI closed-class category, but children used words from people, games, routines and sound effects categories. Next, we followed Xuan and Dollaghan (2012) for the SICI features analysis. Nearly half of the words (44.23 %) in the children's Turkish lexicon constituted the CDI noun category and were located towards the high end of the SICI continuum in terms of shape, individuation, concreteness and imageability, such as *muz* 'banana' and *kuş* 'bird'. Categories *Games & Routines* and *Sound Effects & Animal Sounds* were also found to be important (23%) in the Turkish lexicon. In the children's Dutch lexicon, more than half of the words (57%) belonged to the CDI noun category. The categories *Games & Routines* and *Sound Effects & Animal Sounds* constituted 26% of the words. Therefore, we can say that although words from the high end of the SICI features are seen, they do not refer to the SICI features available in the children's most frequent 50 words.

As for verbs, in the children's Turkish lexicon, there are only five verbs (*otur* 'sit down', *ver* 'give', *acı* 'to have pain', *at* 'throw away' and *öp* 'kiss'. In their Dutch lexicon, there is only one verb *eten* 'to eat'. These verbs in the children's early lexicon can be regarded as semantically heavy according to Xuan and Dollaghan (2012), carrying specific meanings, but not light verbs.

Discussion

In this study, we investigated the nature of most frequent words in Turkish-Dutch bilingual children's early lexicon in terms of the SICI features. Concentrating on the children's early lexicons individually, we can say that our findings support the results by Xuan and Dollaghan (2012). Most frequent words in the children's Dutch and Turkish lexicons are made up of words representing common nouns, but there are also a considerable number of words which do not match the SICI features, such as *Games & Routines* and *Sound Effects & Animal Sounds*. For example, when talking about the most frequent words list in terms of the SICI continuum, no emphasis is given to the people category in the study by Xuan and Dollaghan (2012), but kinship terms representing the *People* category are emphasized in the SICI continuum (see Figure 1). There is a discrepancy among the studies about the content of the *Common Nouns* category. The *People* words are sometimes grouped under the *Common Nouns* category in the CDI, while they are excluded in other studies. However, we believe that the words in the *Common Nouns* category highlight the importance of children's immediate environment and culture-specific characteristics. In the children's Turkish lexicon, there are more words from the *People* category than their Dutch lexicon. This is also the pattern observed in the study by Rinker, Budde Spengler, and Sachse (2016) with Turkish-German bilingual children. Two reasons are given for this. One is that there are more words in the Turkish language than in German in terms of family connections, and the other is that this reflects the traditional Turkish family model. In addition to that, we believe that the words in the *People* category fit the SICI features well. For example, *grandpa-grandma* refer(s) to shape, easy individuation, concreteness and imageability. Another most frequent CDI category is food and drinks, which shows the importance of basic and prominent needs in this age group.

Conclusion

We can conclude that nearly half of the most frequently used words in the Turkish-Dutch bilingual children's early lexicon are compatible with the features of the SICI continuum (44.23% in the Turkish lexicon and 57% in the Dutch lexicon) but there are a considerable number of words that are not represented by the SICI continuum. In general, we can conclude that the children's early lexicon is based on words referring to cognitive and perceptual constraints, as proposed by Gentner (1982) in terms of the SICI features, but only focusing on these perspectives may lead us to ignore the other words in the children's early lexicons. Other factors that shape the structure of children's early lexicon are their social environment and their interactions.

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