

## Caregiver input in English and Korean: use of nouns and verbs in book-reading and toy-play contexts\*

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### ABSTRACT

This study investigates structural and pragmatic aspects of caregiver input in English and Korean that relate to the early development of nouns and verbs. Twenty mothers in each language were asked to interact with their one-and-a-half-year-old children in two contexts: book-reading and toy-play. Overall, English-speaking mothers use more nouns than verbs, and focus more on objects than on actions. In contrast, Korean-speaking mothers provide a balanced treatment of nouns and verbs, and focus on objects and actions to a similar degree. A significant context effect indicates that whereas English-speaking mothers emphasize nouns in both contexts, Korean-speaking mothers do so only in the Books context. In the Toys context, they provide more verbs and focus more on actions. These data suggest that systematic comparisons of caregiver input within and across different contexts provide a richer and more accurate account of the variability that can occur across languages and cultures.

### INTRODUCTION

Until recent years, the role of caregiver input in shaping the composition of children's early lexicons was thought to be minimal. Of particular relevance to this paper is the claim that nouns are universally acquired earlier than

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verbs (Gentner, 1982). According to this claim, although languages may vary in structure, all children acquire more nouns than verbs – a noun-bias – in their early productive lexicon. Gentner (1982) proposes that this is because object concepts encoded by nouns are cognitively more accessible and thus easier to acquire than action concepts encoded by verbs and other predicates. More recently, Caselli, Bates, Casadio, Fenson, Fenson, Samderl & Weir (1995) provided support for this view. They reported that even when the input languages are structurally different (e.g. word order, morphology), such as Italian and English, children learning these languages show similar lexical compositions, namely, noun-bias. From these data, they conclude that the early stage of lexical development is guided largely by universal cognitive and biological predispositions. In this view, then, language-specific input does not play much role in the early stages of language development.

However, recent studies on Korean, Chinese and Tzotzil (Choi & Gopnik, 1995; Tardif, 1996; de León, 1997) challenged the universality of noun-bias as well as the minimal role of input. More specifically, Choi & Gopnik (1995) found that, contrary to the claim of a universal noun-bias, Korean children acquire AS MANY VERBS AS NOUNS during the single-word period. Tardif (1996) reported that children learning Chinese actually acquire MORE verbs than nouns. De León (1997) reported a pattern similar to Chinese in young learners of Tzotzil, a Mayan language. Early acquisition of verbs in these languages suggests that verbs are cognitively accessible to children from early on, and that the perceptual and structural saliency of verbs inherent in these target grammars may play an important role in shaping early lexical composition. These studies thus suggest language-specific grammar and caregiver input as possible sources for crosslinguistic variation in the acquisition of nouns and verbs.

In various domains of language, there is a growing body of evidence that caregiver input influences children's early language. In the semantic/pragmatic domain, Barrett, Harris & Chasin (1992) found a close relationship between the initial use of the first 10 words by children and the most frequently occurring maternal use of the same words (see also Ninio 1992). Pine, Lieven & Rowland (1997) found a relation between formal properties of mothers' speech, such as clarity of word boundary, and the percentages of common nouns and unanalysed phrases in children's early vocabularies. Choi & Bowerman (1991; see also Bowerman & Choi, 1994; Bowerman, de León & Choi, 1995) showed that children acquire language-specific spatial semantics of the input language from the single-word period.

In the domain of nouns and verbs, empirical studies of caregiver input have just begun. Only a few studies have been reported so far, but they suggest some specific grammatical and pragmatic aspects in the caregivers' speech to influence children's early lexical composition. Tardif, Shatz & Naigles (1997) compared the degree of saliency of nouns and verbs in

caregivers' spontaneous speech in three languages: English, Chinese, and Italian. They report that caregivers in Chinese differ from both English and Italian in several domains of grammar such as frequency of nouns and verbs, their position in the utterances and degree of morphological variation. For example, Chinese-speaking caregivers provide verbs more frequently than English- and Italian-speaking caregivers do, and they tend to place verbs at the ends of utterances whereas English- and Italian-speaking caregivers do not. They also found that verb morphology is simpler in Chinese than in the other two languages. Gelman & Tardif (1998) propose that such language-specific properties in the input may explain the early acquisition of verbs in Chinese. However, in their study, the data came from naturally occurring situations at home, and therefore context was not controlled. In naturalistic data, contexts are likely to differ across recording sessions, caregiver-child pairs, and cultures.

There is evidence that different contexts may generate different types of input for nouns and verbs even within the same language. Goldfield (1993) examined mothers' input in various aspects similar to Tardif *et al.*'s study (i.e. frequency, saliency, and morphological variation) in English-speaking families in two contexts: toy and non-toy play. This allowed an examination of whether maternal uses of nouns and verbs differ as a function of context. At the same time, she followed the children's lexical development to examine whether it correlates with the input provided in these contexts. The results showed that the frequency and saliency of nouns and verbs differed significantly between the two contexts: overall, mothers used more nouns but fewer verbs in the toy context than in the non-toy context. She also found a positive relation between lexical development and caregiver input in the toy play context (but not in the non-toy play context).

The Goldfield study tells us that in order to understand crosslinguistic differences in lexical composition, systematic studies of caregiver input in different languages should be conducted across different contexts. Only a few such studies are reported to date. Choi & Gopnik (1995; Gopnik & Choi, 1995) examined the proportion of nouns and verbs in caregivers' speech during toy play in English and Korean. They found that Korean-speaking mothers produce significantly more verbs than English-speaking mothers. These differential patterns in caregivers' input in English and Korean paralleled the different patterns of early vocabularies in children learning the two languages. However, the study examined only one context, and its analysis was limited to the overall frequency of nouns and verbs. Gelman & Tardif (1998) compared caregivers' input in book-reading and toy-play contexts in English and Chinese. They found differences in the proportion of nouns and verbs in caregivers' speech between the two languages and between contexts. Overall, English-speaking mothers provided more nouns than Mandarin-speaking mothers, whereas Mandarin-speaking mothers

provided more verbs than English-speaking mothers. There was also a context effect: mothers in both groups produced more nouns than verbs in the books context but they showed the reverse pattern in the toys context. However, in that study, the books context highlighted objects (i.e. pictures of objects with no actions depicted) whereas the toys context highlighted actions (e.g. blocks, toys that mechanically move). These stimuli may have prompted mothers to provide more nouns in the books context and more verbs in the toys context.

The present study systematically compares caregivers' input between two languages, English and Korean. As discussed earlier, children acquiring these languages have been reported to develop different patterns of lexical composition from the single word period (Choi & Gopnik, 1995): English learners show a noun-bias but Korean learners do not. To assess the extent to which caregivers' input relates to these early lexical patterns, caregivers' speech to children are collected in two contexts, book-reading and toy-play, with stimuli that are relatively neutral in terms of highlighting objects and actions (see Methods below). Two main questions are addressed in this study. First, how do Korean- and English-speaking mothers differ in their use of nouns and verbs both structurally and pragmatically? Secondly, what differences are there between the two contexts in the way that the caregivers use nouns and verbs, and are there crosslinguistic differences? Answers to these questions will shed light on our understanding of the relation between input and developmental patterns for nouns and verbs, and more generally, our understanding of the effect of input on language acquisition.

Since English and Korean have very different grammars, the structural differences involving nouns and verbs in the two languages allow us to make some predictions about the kinds of input English- and Korean-speaking mothers will provide. First, the word order of the two languages differs. In English, it is subject-verb-object, thus nouns often occur in the salient sentence-final position. In contrast, in Korean, the canonical word order is subject-object-verb, and thus, verbs typically occupy the sentence-final position. Secondly, in English, core arguments, namely subject and object nouns, are obligatorily expressed in the sentence. In Korean, core arguments are often deleted in spoken discourse when they have been mentioned previously, i.e. when they are given/old information (Clancy, 1997). In these cases, verbs can occur alone as complete sentences. One can predict, then, that nouns are more salient (and more frequently provided) in English input compared to Korean input, whereas verbs are more salient in Korean input. The two languages also differ in morphological properties. In English, verbs can occur either in bare form (e.g. *I can play*) or with tense/aspectual suffixes (e.g. *play-ed*, *play-ing*). In contrast, in Korean, verbs obligatorily inflect in tense as well as mood/modality, and therefore never occur in bare form (e.g. *mek-ess-ci*, eat-Past-Modal). Modal inflections vary in form and convey

different types of discourse-pragmatic meanings, such as new/old information or shared/non-shared information (Lee, 1991). Thus, morphological complexity is likely to be higher but more consistent in Korean input compared to English input. If 'simpler' morphology enhances acquisition of word stems (Goldfield, 1993), then Korean learners may be at a disadvantage compared to English learners especially for the acquisition of verbs. But these predictions must be tested against data.

In addition to structural differences, we need to consider cultural differences as the two languages are spoken in different cultures. Culture is an important aspect to consider especially when we regard language acquisition as part of a socialization process (e.g. Heath, 1983; Clancy, 1986, 1995; Schieffelin & Ochs, 1986). Clancy (1986, 1995) has amply demonstrated how mother-child interactions differ in Japanese- and English-speaking cultures and how these differences reflect cultural aspects of the two societies. The present study which systematically compares mother-child interactions in English- and Korean-speaking families may reveal some differences between the two cultures. One hypothesis is that mothers may be more aware of their tutorial role (e.g. teaching names of objects) in a book-reading context than in a toy-play context, and such awareness may be higher in a western society – particularly in middle class families (Heath, 1983) – than in an eastern society. If this is the case, we will find that English-speaking mothers focus more on object labelling than Korean mothers do. A pragmatic and discourse analysis of caregivers' input in the present study will evaluate such hypothesis.

#### METHOD

##### *Subjects*

Twenty English-speaking (E) mothers and 20 Korean-speaking (K) mothers and their children participated in the study. The children's ages ranged between 1;5 and 1;8 with averages of 1;6.4 in English (10 girls, 10 boys) and 1;6.18 in Korean (11 girls, 9 boys). The participants were carefully screened to ensure as monolingual a background as possible. All English-speaking mothers were monolingual and spoke only English to their children. All Korean-speaking mothers recently moved from Korea to Southern California with their family (either because the whole family immigrated or because their husbands were pursuing graduate studies in the U.S.) and spoke only Korean to their children. Korean immigrant/student families typically form rather closed communities and only Korean is spoken in the stores and churches within the community. In this way, much of the Korean culture is preserved in their home life. The Korean children in the study were cared for solely by parents and other family members who spoke only Korean in the

home. The socioeconomic status of both Korean and English-speaking mothers were largely from mid-low to middle class.

### *Materials*

Two sets of stimuli, toys and books, were used to elicit mothers' input. Playing with toys and reading books are activities that mothers and children in both cultures engage in together and are thus familiar to them. Furthermore, language-learning may take place in these situations (Goldfield, 1993; Ratner & Bruner, 1978). Each set of materials was chosen on the basis of their neutrality in motivating mothers to talk about objects or actions. That is, the toys and books used in this study contained elements that would prompt mothers to talk about either objects or actions.

The book set consisted of two wordless books which showed unrelated pictures, one on each page. One was called 'The Farm Picture Book' (Amery & Cartwright, 1988). In this wordless book, each picture showed different people and animals doing something at a particular place (e.g. a picture of people and animals all doing something near a pig pen; another picture depicting a scene at a pond). The other was a modified version of 'the ABC book' (Eastman, 1974). In this book, each page showed a picture of either an animal or a person doing a particular action, e.g. a bird riding a bike, Santa Claus riding a sleigh. In the original version, each page had a phrase at the bottom describing the picture (e.g. 'bird on bike'), a letter of the alphabet in the top corner, and the list of alphabet on the side. In the modified version, all three parts (i.e. the bottom/top corners and side of each page) as well as the cover page with the title were removed. Thus, the modified version of this book was wordless. In these two books, both the objects and actions in each picture are presented as new information. This ensured that mothers and their children had the choice to focus either on the objects or the actions depicted.

The toy set consisted of a miniature house with separable entities (tables, beds, chairs, a kitchen sink, a kitchen cabinet, a toilet, a bathtub, a car) and figures (mother, father, a boy, and a girl). The toy house also included a garage, a garbage can and a basket for basketball, all of which were attached to the sides of the house. It also had a swimming pool and a picnic table attached to the back of the house. Thus, the toy stimuli contained objects that could be associated with many everyday activities.

### *Procedure*

The following procedure was used for both English and Korean. The mother and child sat down (either on chairs or on the floor) in any position they wanted. The books were always given first followed by the toys. (Our

pilot study had shown that when the toys were given first, the children did not want to stop playing with them.) For each context (Books or Toys), once the mother and child settled down and showed readiness, the mother was given five minutes to interact with her child. As will be shown in the Results section, sampling of five minutes was sufficient to obtain mean numbers of utterances ranging from 80 to 116 across contexts and languages.

The mother was asked to 'read with' (for Books) or 'play with' (for Toys) her child as she would normally do. Throughout this time period, the mother and child maintained their interest in the materials. The experimenter was in the same room with the mother and the child but did not interfere with the interaction between them. All sessions were videotaped.

All the sessions were conducted in the language of the mother by a native speaker of that language. The English data were collected in a small playroom in a laboratory at the University of California at Berkeley. The Korean data were collected in Southern California (in the San Diego and Los Angeles areas) in the children's homes. Data collection took place at home for Korean largely because the mothers could not drive or did not have any means of transportation to come to the lab. The recording setting was arranged so that it was as similar as possible to that of the sessions in English: the mother and child sat side by side in a quiet room, and the recording proceeded without any distraction or interruption. Also, as in the English case, the video camera was present in the room.

### *Coding*

All maternal utterances were transcribed from the videotaped data. Adopting the general coding scheme used by Goldfield (1993), the following types of utterances were excluded from the analysis: partially intelligible utterances, exclamations (e.g. *wow, oh, yay*), utterances and sentence fragments that contained no nouns or verbs (e.g. *thank you, very good, hello, yes, no, okay*), and an occasional nursery rhyme recitation. For all the remaining utterances, three levels of coding were performed: lexical, morphological and pragmatic.

*Lexical coding.* The lexical coding identified all nouns and verbs in each caregiver's utterance. The category of noun included common nouns (e.g. *ball, cow, girl, fun* in English and translation-equivalent words in Korean), proper names (e.g. *Santa Claus* in English and Korean), and kinship terms (e.g. *mommy* in English, *emma* 'mommy' in Korean). These nouns were used either as arguments (i.e. subject, object, or oblique) of a clause or predicate nominals with the copula *-i-*, such as *chayk* 'book' in *ikes-un chayk-i-ta*, this-Topic book-Copula-Modal, 'This is (a) book.' (The copula *-i-* is not realized phonetically when the predicate nominal ends with a vowel, e.g. *ikes-un say-ta*, this-Topic bird-Modal.) These nouns were further categorized into object nouns and non-object nouns based on previous studies of children's

lexical composition (Lieven, Pine & Dresner Barnes, 1992; Bloom, Tinker & Margulis, 1993; Nelson, Hampson & Kessler Shaw, 1993; Tardif, *et al.*, 1997). Object nouns included all nouns that referred to animate and inanimate entities (e.g. *ball, cow, girl*). Non-object nouns included words that described activities or states (e.g. *fun, a bath*), abstract nouns (e.g. *word, time*), locative nouns (e.g. *front, top*). All pronouns, as well as uses of the child's name by the mother to get the child's attention, were excluded from the analysis of nouns.

The category of verb included main verbs (e.g. *eat, put, like* in English, *mek-* 'eat', *cohaha-* 'like' in Korean) of a clause (infinitival or full clause) and all verbs in a serial verb construction in Korean (e.g. *ttwui-e ka-* run-Connective go 'go by running'). (Serial verb construction constituted an average of 3% of the total utterances in Korean mothers' speech samples.) The verb category excluded all auxiliary verbs (e.g. *will, gonna* in English; *po-* 'try to', *noh-* 'leave', an auxiliary verb denoting resultative aspect in Korean). In addition, various forms of the copula (*to be* in English and *i-* in Korean) in the two languages were excluded because (1) most often they simply fulfill the grammatical function of naming entities (e.g. *this is a book*), and (2) their frequency cannot be compared across the two languages since, as mentioned earlier, the copula form, *-i-*, in Korean is often phonologically not realized, whereas in English it is always present (in either full or contracted form). Furthermore, Goldfield found that in English the copula occupied a disproportionately large number of all maternal verb tokens and therefore eliminated them from some of her analyses. General attention-getting one-word utterances with verbs like *look!* (or *watch!*) in English and *pwa!* 'look/watch' in Korean were also excluded from the analysis because they only served the pragmatic function of getting the child's attention rather than referring to an action.

All verbs included in the analysis were further categorized into action verbs, stative verbs and mental verbs. Action verbs included all verbs that refer to an activity (e.g. *eat, put* in English, *mek-* 'eat', *kki-* 'put X tightly in/on/around Y' in Korean). Stative verbs in English were verbs denoting psychological or physical state, such as *want, like, need, be fascinated, looks like*. In Korean, stative verbs included verbs such as *ippu-* 'be pretty' and *masiss-* 'be tasty' that inflect in tense and modality, and serve as main verb of a clause (Choi & Gopnik, 1995). Mental verbs included verbs denoting mental states (e.g. *think, know, remember* in English, *al-*, 'know', *sayngkakna-* 'remember' in Korean).

Onomatopoeic words such as *bow-wow* in English and *mengmeng* 'bow-wow' in Korean were excluded from analysis since they are neither nouns nor verbs. However, when these words were used with an explicit morphological marker that clearly indicates membership as a noun or verb, they were coded as such and thus were included in the analysis. For example, *mengmeng* in

Korean is an onomatopoeic word referring to the sound of dog's barking. However, it can be used as a noun with a nominal case marking, e.g. *mengmeng-ika mwe hae?*, bow-wow-Nominative what do, 'What is the bow-wow doing?' It can also be used as a verb with the derivational (deverbal) suffix *-hata* 'do', as in *mengmeng-ha-n-ta* bowwow-do-Present-Modal '(It is) barking'. In the present study, the former use of *meng-meng* was coded as a noun, and the latter as a verb. Similarly, in English, when the onomatopoeic word had a determiner, e.g. *a/the meow*, it was coded as a noun. And when it had a tense marker, e.g. *it meow-ed*, it was coded as a verb.

*Morphological coding.* The morphological coding measures the degree to which mothers use different types of inflectional morphemes (suffixes in both languages) on nouns and verbs. The more different suffixes are used, the more complex the morphology is. For this coding, the following bound morphemes were coded as inflectional morphemes in each language.

In English, noun inflections included the zero form (e.g. *cow-o*), plural *-s* (e.g. *cow-s*) and possessive *'s* (*cow-'s* milk), and irregular plural forms (e.g. *children*). Verb morphology included the zero form, and all tense/aspect/number markers, e.g. present progressive *-ing*, third person singular present *-s*, past tense *-ed*, and past participle *-en*.

In Korean, noun morphology included all nominal case markers, such as the subject marker *-ka/-i* (*so-ka* 'cow-Subject'), topic marker *-(n)un* (*so-mun*, 'cow-Topic), object marker *-(l)ul* (*so-lul*, 'cow-Object), and indirect object marker *-ey(key)* (*so-ey(key)* 'cow-Indirect Object'), as well as the plural marker, *-tul*. Verb morphology includes all tense/aspect and modality markers that are suffixed to the verb: present tense *-(n)un*, past tense *-(e)ss*, and the obligatory verb-final modal markers *-e*, *-ci*, *-ta*. These modal markers express various evidential (e.g. direct evidence vs. hearsay) and epistemic (e.g. new vs. old knowledge) meanings (Choi, 1991, 1995; Lee, 1991).

*Pragmatic coding.* The purpose of pragmatic coding is to measure the type of communicative intention that the mothers promote in their utterances. For this coding, a whole utterance was taken as a unit, and each utterance was coded as one of three types: object-oriented, action-oriented, or other (Choi & Gopnik, 1995). An object-oriented utterance is one that encourages the child to focus on an object or entity. Such an utterance could be a labeling statement (e.g. *This is a rabbit* (English); *ike thokki-ya* this rabbit-Modal (Korean)), a question asking the object name (e.g. *What is it?* (E); *ike mwe-ya?* this what-Modal (K)), or a command asking the child to look at the entity specifying the object label (e.g. *Look at the rabbit* (E); *thokki po-a* rabbit look-Modal (K)). An activity-oriented utterance is one that encourages the child to focus on an action or state. This kind of utterance could be a statement describing an impending or completed action (e.g. *You put it in* (E); *neh-e* put:in (K)), a question asking the child about an action/state (e.g. *What is she doing?* (E); *yay mwe ha-e?* she what do (K)) or a command asking the child

what to do (e.g. *Put the car in the garage* (E); *cha chako-ey neh-e* car garage-Loc put:in (K)).

*Reliability.* Using the coding scheme described above, one main coder who was bilingual in English and Korean coded all the transcripts. An additional native Korean-speaking rater coded all the Korean data, and an additional native English-speaking rater coded all the English data based on the coding scheme manual. The inter-rater reliability for all of the above coding was high, ranging between 88% and 99% in English and Korean. The main coder's scoring was used in all cases.

### *Analyses*

Three types of analysis were performed: frequency of nouns and verbs, frequency of pragmatic utterance type, and morphological complexity. The frequency of nouns and verbs was measured in terms of their proportion per utterance in each context, and was analysed in several ways: (i) their overall frequency (i.e. in all utterances), (ii) their frequency in short utterances (i.e. one- and two-word utterances), and (iii) their frequency in the final position in multi-word utterances. Frequency of pragmatic utterance type was assessed for each mother by calculating the percentage of each type of utterance (object- and action-oriented) from the total number of utterances provided in a given context. Finally, morphological complexity was analysed by examining the average number of different inflections on nouns and verbs.

### RESULTS

The present study focuses on two kinds of comparisons in mothers' use of nouns and verbs: differences between the two language groups and between the two contexts. Thus, for each of the three analyses listed above, a series of repeated measures ANOVAs was conducted to assess overall patterns in the two languages, first with the two contexts collapsed and then separately by context. In these analyses, language (English, Korean) was the between-subjects variable, and word class (nouns vs. verbs), context (books vs. toys) and pragmatics (object-oriented vs. action-oriented) were within-subjects variables. When interactions occurred, follow-up analyses were conducted with one-way ANOVAs to assess differences in the between-subjects variable (i.e. language) and with repeated measures two-way ANOVAs to assess differences in the within-subjects variables (i.e. word class, context, pragmatics). In these follow-up analyses, the alpha level was protected at 0.025 (for two-way interactions) and 0.0125 (for three-way interactions). Thus, for follow-up analyses, only the F values are reported for significant findings.

To anticipate the results, three major patterns emerged from the analyses.

(1) Frequency analyses: (i) Nouns and verbs: overall (i.e. when the two contexts are collapsed), English-speaking (hereafter abbreviated as E) mothers produce significantly more nouns than verbs, but Korean-speaking

(hereafter abbreviated as K) mothers produce the two types of words with same frequency. Thus, overall, E mothers' input shows an emphasis on nouns, but K mothers' input does not. Analyses by context show that E mothers consistently use more nouns than K mothers in both contexts. Conversely, K mothers consistently use more verbs than E mothers. These patterns are repeated when only salient nouns and verbs (i.e. nouns and verbs in short utterances) are analysed. As predicted, in the sentence-final position, E mothers use nouns more than verbs, whereas K mothers use more verbs than nouns.

(ii) Pragmatic focus: overall, E mothers produce more object-oriented utterances than activity-oriented utterances, whereas K mothers produce the two types with the same frequency. Analyses by context show that E mothers consistently use more object-oriented utterances than K mothers do in both contexts. Conversely, K mothers produce more activity-oriented utterances than E mothers do in both contexts.

(2) Morphological complexity: K mothers produce more varied morphology than E mothers do for both nouns and verbs. The crosslinguistic difference is larger for verbs than for nouns. Thus, Korean input provides higher degree of morphological complexity than English input, especially in verbs.

(3) Effects of context: in all of the above analyses, the crosslinguistic differences are significantly more pronounced in the Toys context than in the Books context. In the Books context, both groups of mothers show the same pattern of using more nouns than verbs as well as producing more object-oriented than action-oriented utterances. However, in the Toys context, whereas E mothers continue the same pattern as in the Books context, K mothers show the reverse pattern. That is, in the Toys context, K mothers use more verbs than nouns, and more action-oriented than object-oriented utterances.

I now describe each of these findings in more detail. I begin with a summary of total number of utterances (that are included in the analysis) in each context in the two languages. In the Books context, E and K mothers produced 101.4 (s.d. = 22.9, range: 67-144) and 116.8 (s.d. = 33.8, range: 65-188) utterances respectively in the Books context. In the Toys contexts, E and K mothers produced averages of 80.1 (s.d. = 25.4, range: 45-123) and 94.8 (s.d. = 32.6, range: 49-161) utterances respectively in the Toys context. A repeated measures  $2 \times 2$  ANOVA with language (English, Korean) as a between-subjects variable and context (Books, Toys) as a within-subjects variable shows a main effect only of context ( $F(1, 38) = 24.11, p < 0.001$ ): Mothers in both languages provide more utterances in the Books context than in the Toys context. Differences between the two languages were not significant ( $F(1, 38) = 3.32, p = 0.076$ ), but, as indicated by the above averages, there was a tendency for Korean mothers to provide more

utterances than English-speaking mothers in both contexts. There was no interaction between language and context ( $F(1, 38) < 1.0$ ).

*Overall proportions of nouns and verbs : token analysis*

*Books and Toys contexts combined.* The overall proportions of nouns and verbs in the two contexts combined show a representative pattern of mothers' input across different contexts. Figure 1a shows the overall mean proportions of noun and verb tokens per utterance. A  $2 \times 2$  ANOVA with repeated measures on the second factor showed a significant interaction between word class (nouns, verbs) and language (English, Korean) ( $F(1, 38) = 34.47, p < 0.001$ ). As shown in Fig. 1a, E mothers produce more nouns

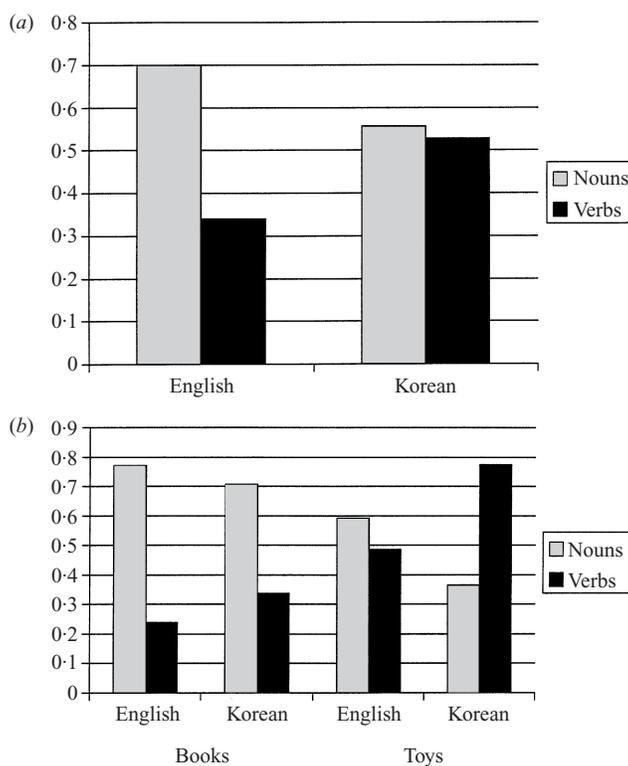


Fig. 1. (a) Mean proportion of nouns and verbs (tokens) per utterance in English and Korean: Books and toys combined. (b) Mean proportion of nouns and verbs per utterance: *Books vs. Toys context*.

than verbs ( $F(1, 19) = 83.08$ ), whereas K mothers produce the same proportion of nouns and verbs ( $F(1, 19) = 0.8, p = 0.5$ ). Also, E mothers provide more nouns than K mothers ( $F(1, 38) = 12.8$ ), and K mothers provide more verbs than E mothers ( $F(1, 38) = 35.6$ ). These data are also shown in the upper part of Table 1 with standard deviations.

TABLE 1. *Mean proportions of noun and verb tokens per utterance in mothers' speech in English and Korean*

Context	Word class	English M (s.d.)	Korean M (s.d.)
Books & Toys combined	Nouns	0.606 (0.112)	0.556 (0.138)
	Verbs	0.341 (0.100)	0.527 (0.095)
Books	Nouns	0.772 (0.123)	0.708 (0.166)
	Verbs	0.238 (0.103)	0.339 (0.104)
Toys	Nouns	0.593 (0.167)	0.366 (0.164)
	Verbs	0.486 (0.136)	0.775 (0.165)

*Books vs. Toys context.* Figure 1b shows the proportions of nouns and verbs by context. A  $2 \times 2 \times 2$  ANOVA with repeated measures on the last two factors showed a three-way interaction involving language, word class and context ( $F(1, 38) = 19.16, p < 0.001$ ). As shown in Fig. 1b, E mothers provide more nouns than K mothers ( $F(1, 38) = 12.8$ ), while K mothers provide more verbs than E mothers ( $F(1, 38) = 35.86$ ). In the Books context, both E and K mothers provide more nouns than verbs ( $F(1, 38) = 194.18$  for English;  $F(1, 38) = 57.25$  for Korean). In the Toys context, E mothers continue to provide more nouns than verbs although the difference did not reach significance ( $F(1, 19) = 4.22, p = 0.05$ ). In contrast, K mothers show the opposite pattern from that in the Books context. They provide more verbs than nouns ( $F(1, 19) = 52.50$ ). These data show that whereas E mothers provide more nouns than verbs in both contexts, K mothers do so only in the Books context. In the Toys context, K mothers provide more verbs than nouns. The lower part of Table 1 shows these data with standard deviations.

*Object nouns and action verbs.* In the next analysis, the proportions of object nouns and action verbs as described in the coding section above are examined. A predominant number of nouns and verbs per utterance were object nouns and action verbs in both E and K, and non-object nouns and non-action verbs constituted frequencies of less than 0.01 per utterance. This means that mothers in both language groups predominantly use concrete nouns and verbs in their speech to young children in these two contexts. In fact, a second set of ANOVAs using only object noun and action verb tokens

show the same results as our first set of ANOVAs that included all types of nouns and verbs: E mothers use more object nouns but less action verbs than K mothers do across the two types of context, and the differences are more pronounced in the Toys context than the Books context. In the remainder of the study, all nouns and verbs are entered into analysis following Goldfield (1993).

#### *Type analysis*

Unlike token analysis, type analysis reveals the degree of lexical diversity in the mothers' speech. That is, type analysis can tell us the degree to which the mothers used different nouns and verbs. Table 2 shows the proportions of

TABLE 2. *Mean proportions of noun and verb types per utterance in mothers' speech in English and Korean*

		English	Korean
Books	Nouns	0.351 (0.107)	0.257 (0.090)
	Verbs	0.143 (0.052)	0.157 (0.049)
Toys	Nouns	0.273 (0.098)	0.127 (0.054)
	Verbs	0.210 (0.042)	0.246 (0.061)

noun and verb TYPES per utterance in each context. The higher the value the more diverse the mothers' lexicon is. In both contexts, interactions of language and word class were found ( $F(1, 38) = 10.33, p < 0.001$  in the Books context,  $F(1, 38) = 44.00, p < 0.001$  in the Toys context). In the Books context, both E and K mothers produce more noun types than verb types. However, E mothers produce more noun types than K mothers. As for verbs, no significant differences were found between the two groups of mothers. In the Toys context, the pattern differs for the two languages: whereas E mothers continue to produce more noun types than verb types, K mothers show the reverse pattern, producing more verb types than noun types. Furthermore, E mothers again produce more noun types than K mothers do. These type data show the same pattern as the token data in that E mothers emphasize nouns in both Books and Toys contexts whereas K mothers show differential patterns in the two contexts. They provide more noun types in the Books context but more verb types in the Toys context.

One cautionary remark should be made in interpreting the results of crosslinguistic comparisons in this section. Although the differences did not reach statistical significance, there was a tendency for Korean mothers to provide more utterances than English-speaking mothers in each context ( $F(1, 38) = 3.32, p = 0.076$ ). Studies on type/token (and type/utterance) ratios have shown that higher token (or utterance) numbers may systematically

result in lower values of ratios and conversely lower token numbers may result in higher values (Richards & Malvern, 1996, 1997). Applying these findings to the present study, it means that overall, English-speaking mothers may have relatively less lexical diversity and Korean mothers may have relatively more lexical diversity than are indicated in Table 2.

*Proportions of salient nouns and verbs : nouns and verbs in short utterances*

Now, let us look at the proportions of salient nouns and verbs, namely, those in one- and two-word utterances. Words in short utterances have high saliency since they are produced either by themselves (in one-word utterances) or in the initial or the final position of an utterance (in two-word utterances). Goldfield (1993) found that these words have a special status in the input to children (see also Slobin, 1973; Tardif *et al.*, 1997) in that the frequency of these words correlated with children's early lexical development in English.

*Books & Toys contexts combined.* First, to obtain an overall pattern, the two types of context (Books and Toys) are collapsed for the first set of analyses. The data are shown in the upper part of Table 3. A  $2 \times 2$  ANOVA with

TABLE 3. *Mean proportions of nouns and verbs (tokens) per utterance in short utterances (i.e. one and two-word utterances)*

Context		English M (s.d.)	Korean M (s.d.)
Books & Toys combined	Nouns	0.442 (0.127)	0.386 (0.129)
	Verbs	0.072 (0.028)	0.305 (0.097)
Books	Nouns	0.543 (0.155)	0.544 (0.157)
	Verbs	0.034 (0.038)	0.149 (0.067)
Toys	Nouns	0.373 (0.166)	0.241 (0.166)
	Verbs	0.137 (0.069)	0.468 (0.178)

repeated measures on the second factor showed an interaction between language and word class ( $F(1, 38) = 26.62, p < 0.001$ ). As can be seen in Table 3, E mothers provide more nouns than verbs ( $F(1, 19) = 168.04$ ), whereas K mothers use an equal proportion of nouns and verbs in their short utterances ( $F(1, 19) = 2.89, p = 0.11$ ). Note that the same pattern was shown when the proportions of all nouns and verbs were analysed for the entire database.

*Books vs. Toys context.* For a more detailed analysis, context was entered as a factor in a  $2 \times 2 \times 2$  ANOVA with repeated measures on the last two factors (see Table 3). A three-way interaction involving language, context and word class ( $F(1, 38) = 28.69, p < 0.001$ ) reveals that nouns and verbs

TABLE 4. *Mean proportions of nouns and verbs (tokens) per utterance in the final position of two- and multi-word utterances*

Context		English	Korean
Books & Toys combined	Nouns	0.468 (0.127)	0.116 (0.046)
	Verbs	0.076 (0.134)	0.370 (0.076)
Books	Nouns	0.546 (0.149)	0.169 (0.064)
	Verbs	0.061 (0.048)	0.245 (0.096)
Toys	Nouns	0.404 (0.155)	0.057 (0.050)
	Verbs	0.117 (0.063)	0.500 (0.129)

have different crosslinguistic patterns depending on the context. To understand the nature of this interaction, follow-up analyses of simple interaction effects were conducted for each word class. The analysis of nouns showed an interaction between language and context ( $F(1, 38) = 6.43$ ): In the Books context, E and K mothers provide the same proportion of nouns in short utterances, but in the Toys context, E mothers provide more nouns than K mothers ( $F(1, 38) = 7.83$ ). The analysis of verbs also showed an interaction between language and context ( $F(1, 38) = 24.98$ ). K mothers use more verbs than E mothers do for both contexts ( $F(1, 38) = 44.91$  for Books,  $F(1, 38) = 59.67$  for Toys), but the difference in the Toys context was much larger than in the Books context. Overall, then, crosslinguistic differences are more apparent in the Toys context than in the Books context in the analysis of short utterances: E mothers produce more nouns than K mothers in the Toys context (but not in the Books context), and K mothers produce more verbs than E mothers, particularly in the Toys context.

#### *Nouns and verbs in two- and multi-word utterances*

As is well known, words in utterance-final position have higher saliency compared to those in medial position, and perhaps even to those in initial position (Slobin, 1973). Since word order is SOV in Korean but SVO in English, we expect that K mothers would place verbs in utterance-final position more often than E mothers do. This prediction is borne out in the present study as shown in Table 4. Table 4 shows the proportions of nouns and verbs in utterance final position in two- and multi-word utterances.

*Books and Toys contexts combined.* When the two contexts are collapsed, a significant interaction between language and word class was found ( $F(1, 38) = 287.17, p < 0.001$ ): Overall, E mothers produce more nouns ( $F(1, 38) = 134.92$ ) and fewer verbs ( $F(1, 38) = 248.75$ ) than K mothers do. Also, E mothers produce more nouns than verbs ( $F(1, 38) = 157.66$ ), whereas K mothers produce more verbs than nouns ( $F(1, 38) = 134.10$ ) in the final position of an utterance. The magnitude of the significance suggests that the

noun-final feature (i.e. SVO) in English and the verb-final feature (i.e. SOV) in Korean are fully grammaticized structural aspects in the two languages.

*Books vs. Toys context.* When context was entered as a factor, a  $2 \times 2 \times 2$  ANOVA with repeated measure on the last two factors showed a three-way interaction involving language, word class, and context ( $F(1, 38) = 6.92, p = 0.012$ ). Follow-up tests showed that, in both contexts, E mothers use significantly more nouns but fewer verbs than K mothers. In addition, whereas E mothers produce more nouns than verbs in the final position, K mothers produce more verbs than nouns in the same position. These differences were more pronounced in the Toys context than in the Books context. One explanation for the effect of context may be that in the Books context mothers often engage in object labelling, e.g. *This is a dog* (see the section on Pragmatic focus). Thus, in English, nouns occur in utterance final position more often in the Books context than in the Toys context. A similar pattern can be found in Korean: in Korean, object labelling typically involves a syntactic construction in which the noun that labels the object functions as the predicate nominal of the clause, e.g. *ike kay-ta* this book-Modal. (See the Introduction section.) In this case, the noun *kay* occupies the utterance final position. Thus, in Korean also, nouns are more present in the utterance final position in the Books context than in the Toys context (see Table 4). This may explain a smaller difference between the two languages in the proportion of nouns and verbs in the Books context than in the Toys context.

The following general patterns have emerged from the frequency analysis so far: overall, E mothers use more nouns than verbs, whereas K mothers use about an equal proportion of nouns and verbs per utterance. Crosslinguistic comparisons show that E mothers use more noun tokens and fewer verb tokens than K mothers. There is a greater emphasis on nouns by E mothers in the type analysis: they provide more lexical diversity for nouns than K mothers do in both contexts. Similar results are shown in the analysis of nouns and verbs in short utterances. Analysis by context shows that these crosslinguistic differences are significantly more pronounced in the Toys context than in the Books context. All of these data converge on the pattern of more emphasis on nouns than verbs in E mothers' speech to young children. K mothers show neither noun nor verb emphasis in their speech in overall proportions, but their patterns differ between the two contexts. Whereas they show an emphasis on nouns in the Books context, they show an emphasis on verbs in the Toys context. As far as word order is concerned, however, K mothers consistently provide more verbs than nouns in the salient utterance-final position in both contexts.

*Morphological analysis*

The degree of morphological complexity on nouns and verbs is examined in English- and Korean-speaking caregivers' input according to the coding scheme described earlier. Table 5 shows the average scores of morphological

TABLE 5. *Average number of varied inflections per noun and verb in English and Korean*

		English M (s.d.)	Korean M (s.d.)
Books	Nouns	1.16 (0.089)	1.43 (0.220)
	Verbs	1.12 (0.096)	1.54 (0.240)
Toys	Nouns	1.04 (0.040)	1.41 (0.356)
	Verbs	1.15 (0.121)	1.86 (0.358)

complexity by context and by language. These scores correspond to the average number of different morphemes (i.e. morpheme types) that the mothers use per noun and verb in each context. For example, if an English-speaking mother produces *cow*, *cow-s*, *cow's*, and *queen*, *queen-s*, then the resulting average score of complexity per noun would be 2.5 (i.e. 3 morpheme types for 'cow' and 2 morpheme types for 'queen' divided by two noun types).

A  $2 \times 2 \times 2$  ANOVA showed a main effect of language ( $F(1, 38) = 101.30$ ,  $p < 0.001$ ). As shown in Table 5, K mothers provide more varied morphology than E mothers in both contexts for both nouns and verbs. However, language also interacted with word class ( $F(1, 38) = 12.00$ ,  $p = 0.001$ ) as well as with context ( $F(1, 38) = 10.27$ ,  $p < 0.005$ ). Follow-up analyses show that E mothers provide the same degree of variation on nouns and verbs ( $F(1, 19) = 2.76$ ,  $p = 0.11$ ) whereas K mothers provide more varied morphology on verbs than on nouns ( $F(1, 19) = 17.00$ ). Furthermore, the crosslinguistic difference in morphological variation (i.e. more variation in K than in E mothers) was much larger in the Toys context than in the Books context. One explanation can be that, as discussed earlier, in Korean, a variety of inflections are available for expressing mood/modality, and as K mothers talk about various actions with different discourse-pragmatic senses in the Toys context, they use a large number of modal forms.

Thus, Korean learners hear a more varied morphology for nouns and particularly for verbs than English learners. If 'simpler' morphology is the primary determining factor for the rate of acquisition, that is, if it enhances the acquisition of word stems (Goldfield, 1993), then Korean learners are at a disadvantage compared to English learners, especially for the acquisition of

verbs. However, the earlier frequency analyses on nouns and verbs in mothers' input show that Korean learners have an advantage for the acquisition of verbs in other respects. The issue of the relation between morphology and lexical acquisition will be taken up further in the Discussion.

#### *Pragmatic focus*

In contrast with the lexical-level frequency analysis of nouns and verbs above, the following pragmatic analysis looks at the utterance as a unit and examines whether the utterance as a whole directs the child to focus on objects or actions. In other words, this analysis examines the overall communicative intent of the mother when she produces utterances. It is reasonable to hypothesize that such pragmatic factors would be relevant to the acquisition of nouns and verbs (Choi & Gopnik, 1995; Tardif *et al.*, 1997). More specifically, object-oriented utterances, such as *What is it?* or *It's a ball*, are likely to promote the acquisition of object labels, whereas action-oriented utterances, such as *What is it doing?* or *The ball is bouncing*, are likely to promote the acquisition of verbs. From the findings on frequencies presented so far, one could expect K mothers to produce more action-oriented utterances than E mothers. However, that may not be necessarily the case, since action-oriented utterances can include object names as well as action verbs. In fact, an action-oriented utterances may contain more nouns than verbs. For example, an utterance such as 'put the car in the garage' which directs the child to do something is an action-oriented utterance according to the present coding scheme, but it contains two nouns and only one verb. Thus, the mother's pragmatic intention of an utterance does not always relate to frequency of nouns and verbs.

*Books and Toys contexts combined.* Figure 2a shows the percentages of object- and action-oriented utterances in the mothers' speech in the two contexts combined. A  $2 \times 2$  ANOVA with repeated measures on second factor shows an interaction between language and pragmatic focus ( $F(1, 38) = 32.94, p < 0.001$ ). Follow-up analyses show that overall, E mothers produce more object- than action-oriented utterances ( $F(1, 19) = 50.89$ ), whereas K mothers produce the two types equally often. As expected, crosslinguistic comparisons show that E mothers produce significantly more object-oriented ( $F(1, 38) = 20.96$ ) but less action-oriented utterances ( $F(1, 38) = 38.55$ ) than K mothers.

*Books vs. Toys context.* The percentages of the two pragmatic types of utterances in each context are shown for each language in Fig. 2b. A  $2 \times 2 \times 2$  ANOVA with repeated measures on the last two factors showed a three-way interaction involving language, context, and pragmatic type ( $F(1, 38) = 18.80, p < 0.001$ ). As the figure shows, each context shows different patterns within and across languages. In the Books context, both groups of mothers have the same pattern of producing more object-oriented than activity-

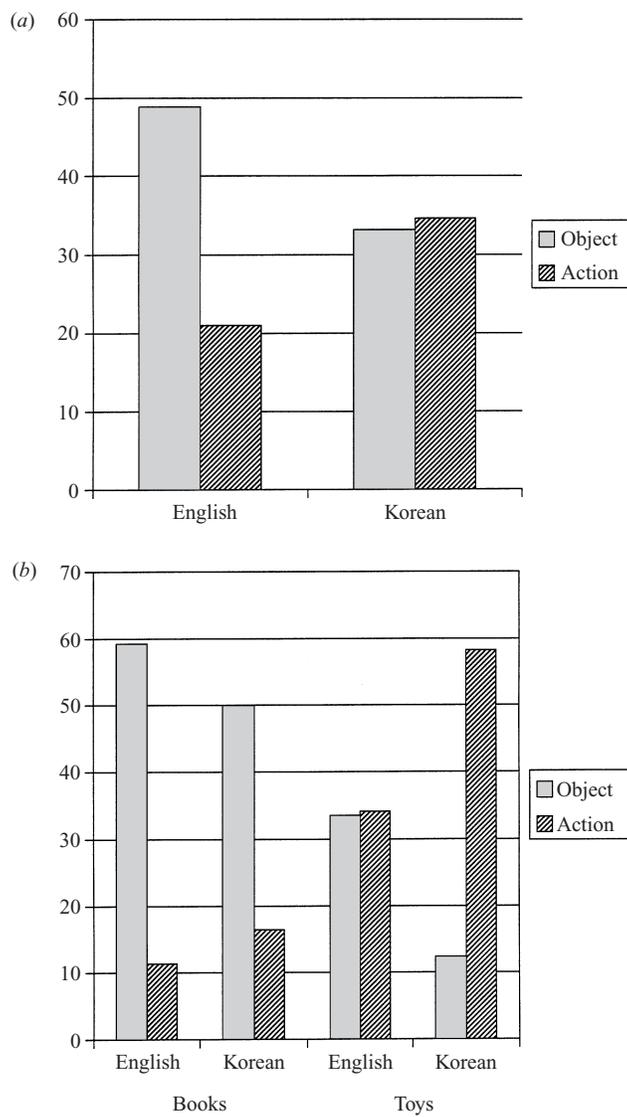


Fig. 2. (a) Percentages of object-oriented and action oriented utterances: *Books and toys combined*. (b) Percentages of object-oriented and action-oriented utterances: *Books vs Toys context*.

oriented utterances ( $F(1, 19) = 163.63$  for English,  $F(1, 19) = 68.48$  for Korean). But E mothers tend to produce more object-oriented utterances than K mothers ( $F(1, 38) = 5.26$ ,  $p = 0.027$ ). In the Toys context, the two groups show strikingly different patterns: Whereas E mothers provide

object- and activity-oriented utterances with equal frequency ( $F(1, 19) = 0.02$ ,  $p = 0.886$ ), K mothers produce significantly more action-oriented than object-oriented utterances ( $F(1, 19) = 114.59$ ).

Thus, at the pragmatic level, E mothers focus more on objects than K mothers. Conversely, K mothers focus more on actions than E mothers. However, context influences pragmatic focus in mothers' speech as well as the magnitude of crosslinguistic differences: when mothers engage in book-reading with children, both E and K mothers focus more on objects than on actions. When mothers engage in toy-play with children, they decrease their focus on objects and increase their focus on actions. Crosslinguistic comparisons show that these changes in pragmatic focus in the Toys context are much larger for K than for E mothers: K mothers provide more action-oriented utterances than object-oriented utterances, whereas E mothers provide both types of utterances equally often.

#### *Discourse-based analysis of pragmatics*

Since pragmatic aspects of utterances often relate to a stretch of discourse, this study also looked at mothers' pragmatic focus beyond the sentence level. Studies in discourse processing have shown that initial sentences are salient and important for the listener to lay out the topic and semantic organization of a discourse unit (Gernsbacher, 1990). Recall that, in the present data, both E and K mothers produce more object-oriented than action-oriented utterances in the Books context. From these data, one might expect that at the macro-structure level, the primary theme would be labeling objects. One way to assess this would be to examine the way mothers engage in discourse at the beginning of an interaction. If they open up the discourse with a series of object-oriented utterances and only later begin to talk about actions related to the objects, object-labelling could be considered the primary discourse topic. The reverse pattern (i.e. opening up the discourse with action-oriented utterances) could be interpreted as implying that action is the primary discourse topic. In this analysis, the pragmatic type of the mother's first utterance was noted, as well as the point at which she switched to the other type. In the Books context, with the exception of two K mothers, all E and K mothers started their interaction with an object-oriented utterance. Moreover, these mothers successively produced object-oriented utterances for an average of 8.6 (for English) and 7.9 (for Korean) utterances before they produced an action-oriented utterance. These data suggest that object-oriented utterances form the primary topic of discourse in the Books context for both groups of mothers. The following are typical openings of interaction in the Books context from both languages: (A: Action-oriented; O: Object-oriented)

An English-speaking mother:

*See the moo-cow? (O) See the moo-cow? (O) And there's a little boy. (O) What's inside? (O) Oh, look at all the animals. (O) There's a doggie. (O) That's a doggie. (O) And there's a horsie. (O) We see horsies. (O) Aunt Vicky rides horsies. (A).*

A Korean-speaking mother:

*yaong-i chaca po-a. yeki iss-ney yaongi. mengmengi iss-ci. mal. mal. mal-to iss-ko. appa-ka talkcang-ey ka-kaciko. talkyal kac-ko o-lyeko ha-ci. meng-mengi yeki iss-ci. talk yeki iss-ko.*

Find a meow. (O) Here is a meow. (O) Here is a bow-wow. (O) A horse. (O) A horse. (O) Here is another horse. (O) Daddy is going to the henhouse. (A) He is going to bring some eggs. (A) Here is a bow-wow. (O) Here is another chicken. (O)'.

In the Toys context, E mothers continued to introduce the discourse with object-oriented utterances: all of the E mothers except one started the interaction with a series of object-oriented utterances, although the average number of these utterances at the beginning of discourse was lower (see below). The following is an example:

An English-speaking mother:

*What's that? (O) Is that a bed? (O) Here's another bed. (O) And that's the bathroom. (O) Yeah, that's the bathroom. (O) Where should we put that (= bathroom set)? (A) Can you show Mommy the bathtub? (O).*

In contrast, most K mothers shifted their discourse organization in the Toys context and provided action-oriented utterances at the beginning of the interaction. The data show that 16 of the 20 K mothers started the interaction with action-oriented utterances, as shown in the following example.

A Korean-speaking mother:

*ppangppang tha-ko enni-hako oppa-hako ppangppang tha-ko. cip-ey tule ka polkka ilehkey hako? appa-hako enni-hako thaywue-kacko yeki tule ka poca. nehe poca. mwun yehe cwulkkey yeki tule ka pwa. ppappang tha-ko cha tha-ko ka-yaci. yolehkey tule ka-ney. ilehkey neh-ci? chimtay iss-ney.*

'Riding a car with sister and brother, riding a car. (A) Shall we go into the house like this? (A) Let's go in here with daddy and sister. (A) Let's put it in. (A) I will open the door and you go in. (A) You must go in riding in the car. (A) It goes in like this. (A) You put it in like this? (A) There is a bed. (O)'.

On average, E mothers produced 3.7 object-oriented utterances before

starting to talk about action in the Toys context. In contrast, K mothers produced only 0.8 object-oriented utterances on average before talking about action. That is, in the Toys context, K mothers initiate the interaction immediately with action-oriented utterances. The difference between E and K mothers was statistically significant ( $F(1, 38) = 15.64, p < 0.001$ ). This analysis suggests that in both Books and Toys contexts, English-speaking mothers routinely provide labeling as an initial topic of interaction. In contrast, Korean-speaking mothers shift their focus depending on the context: in a book-reading situation, they focus on labeling entities, but in toy-play situation, they focus on talking about actions.

#### DISCUSSION

The first aim of the present study was to measure the extent to which English- and Korean-speaking mothers differ in their use of nouns and verbs in terms of frequency, morphological complexity, and pragmatic focus. The study found a number of significant differences between the two languages in all three areas. First, based on typological and structural differences between the two languages, it was predicted that E mothers would provide more emphasis on nouns than verbs and that they would provide more nouns than K mothers would. These predictions were met in the present study: across the two contexts, E mothers use more nouns than verbs in their speech to children. In contrast, K mothers produce the same proportions of nouns and verbs. Crosslinguistic comparisons indicate that E mothers provide more nouns than K mothers. K mothers, on the other hand, provide more verbs than E mothers. The same crosslinguistic patterns are shown in the analyses of salient nouns and verbs (i.e. nouns and verbs in short utterances and in sentence-final position). Second, it was predicted that the two groups of mothers would differ in pragmatic focus as it might reflect their cultural differences. This prediction was also met: overall, E mothers encourage children to focus more on objects than on actions, whereas K mothers focus on both objects and actions to a similar degree. A discourse-based analysis showed that E mothers consistently foreground object-naming as important interactional activity in both Books and Toys contexts. In contrast, K mothers change topics depending on whether it is book-reading or toy-play situation. Both structural and pragmatic analyses of the data converge on the conclusion that across contexts E mothers emphasise nouns and focus on objects whereas K mothers provide a more balanced treatment of nouns and verbs, and of objects and actions.

Early lexical compositions reported in Choi & Gopnik (1995) for English- and Korean-speaking children are remarkably similar to the patterns found in caregiver input in the present study: lexical compositions measured at children's acquisition of first 50 and 100 words showed that English-speaking

children acquire a higher proportion of nouns than verbs, thus showing a noun bias, whereas Korean-speaking children acquire about the same proportion of nouns and verbs. The similarity of lexical patterns between adults and children strongly supports the hypothesis that the developmental patterns of nouns and verbs in children's early lexicons are influenced by language-specific input (Choi & Gopnik, 1995; Goldfield, 1993; Gopnik & Choi, 1995; Tardif *et al.*, 1997). This is also in line with recent reports on young children's early sensitivity to various aspects in the caregiver input, such as caregivers' semantic/pragmatic use of words and their pattern of syntactic structures (see Introduction) (Barrett *et al.*, 1992, Choi & Bowerman, 1991; Hoff-Ginsberg, 1986; Naigles & Hoff-Ginsberg, 1998; Ninio, 1992; Pine, Lieven & Rowland, 1997).

Concerning morphological complexity, it was predicted that K mothers would provide more complex morphology than E mothers. The present study indeed found that K mothers provide more varied and thus more complex morphology on both nouns and verbs compared to E mothers. Moreover, K mothers provide more complex morphology for verbs than nouns. This is probably because Korean has a variety of inflections expressing mood and modality. These inflections encode different types of discourse-pragmatic information and are obligatory in spoken discourse (Lee, 1991; Choi, 1991, 1995). If children acquire members of a word class that has 'simpler' morphology earlier than those of a word class that has 'more complex' morphology (Caselli *et al.*, 1993; Goldfield, 1993), Korean children would be expected to learn nouns earlier than verbs and to acquire verbs later than English-speaking children.

However, as mentioned earlier, in Choi & Gopnik's data (1995), Korean children acquire both nouns and verbs in parallel and they have a higher proportion of verbs than English-speaking children from the single-word period. Furthermore, Korean children acquire verbs using modal suffixes productively in appropriate contexts from the beginning (Choi, 1997; Kim, 1997). Studies of other languages that have similar morphology on verbs have shown that children are sensitive to the semantic and pragmatic functions of such markings from early on (cf. Aksu-Koç (1988) for Turkish; Clancy (1995) for Japanese; Choi (1991, 1995) for Korean). This suggests that certain types of verb morphology do not delay acquisition. The rate of verb acquisition may also depend on the formal properties of the morphology in question. Verb stems may be readily learnable when morphology is productive, easily segmentable, and semantically transparent (Dromi, 1987). Korean has these features as it is an agglutinative language in which stems and suffixes have clear boundaries.

The relation between morphological complexity and acquisition of nouns and verbs seems to be a complex issue. (Notice also that the relation is somewhat indirect in that the issue is whether the degree of complexity in

affixal variation affects the acquisition of the stems.) It is important to note that the present study can not systematically examine the effect of morphological differences on the acquisition of nouns and verbs. This is because morphological differences are inevitably confounded with other types of differences, namely, word order and frequency. For example, verbs have more varied inflections in Korean than in English, but Korean provides verbs in the salient sentence-final position, and Korean caregivers produce verbs more frequently than E mothers do. Furthermore, the semantic information encoded in the affixes of the two languages is different in the two languages. In order to assess the differential effects of morphological complexity on acquisition, one needs to compare languages that vary only in that single aspect or to conduct experiments in which morphological complexity is systematically varied.

The present study asked whether and how a particular context affects caregivers' use of nouns and verbs. Recall that in the present study, the stimuli materials (i.e. the books and toys) were selected on the basis of their relative neutrality in motivating mothers to talk about either objects or actions. Nevertheless, the present study found a significant effect of context both within and across languages. In the Books context, both groups of mothers provide more nouns than verbs and talk more about objects than actions. The discourse-based analysis also showed that both groups of mothers frame their discourse with object labelling in the Books context. Thus, the context of book-reading seems to bias mothers across cultures to provide more object labelling (see also Gelman & Tardif, 1998). In the Toys context, however, the two groups of mothers show opposing patterns: whereas E mothers continue to produce more nouns than verbs, K mothers produce more verbs than nouns. Pragmatically, E mothers continue to focus on object labelling in the Toys context, whereas K mothers shift their discourse attention toward actions. This suggests that the context of toy-play allows more variability in caregiver input across cultures.

These contextual differences in caregiver input within and across languages point to some methodological issues concerning investigation of caregiver input patterns and comparisons between them. First, the present study suggests that generalizations on caregiver input should not be made based on just one type of context, since the patterns of input may differ from one context to another. It also suggests that systematic comparisons cannot be made across caregivers when their input data are collected in different contexts. For example, comparing caregivers' speech in naturally occurring contexts may not be adequate when the caregivers engage in different types of activities with their children.

Secondly, and perhaps more importantly, the present study suggests that more detailed and systematic ethnographic studies are needed to understand the nature of caregiver input in different cultures. As Goldfield points out

'early vocabularies will differ as a function of the kinds of context in which [mother-child] dyads frequently interact' (1993). More specifically, early lexical composition may be a function of the frequency in which the caregiver engages in different activities with her child as well as the type of those activities. Assuming that the book-reading context generally biases mothers to be in a 'tutorial' mode (i.e. object-labelling), it is possible that E mothers (especially mothers of middle class) continue such mode of interaction in the Toys context because much of their time with children occurs in a book-reading situation, and the 'tutorial' mode used in that context is carried over to other contexts, e.g. toy-play. In Korean, however, the book-reading context may not be the dominant one for mother-child interaction and so the 'tutorial' mode is less fossilized in their interaction with children. In this case, Korean mothers may show more flexibility in the kinds of input they provide in other contexts. This hypothesis needs to be tested in future research. What is clear from the present study is that in order to understand the bases for crosslinguistic differences in early lexicons and more generally in language acquisition, ethnographic studies that assess the kinds of context in which mothers interact with children, and the amount of time they spend together in each context are necessary.

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