

Individual differences in early Japanese vocabularies and the influence of maternal speech

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INTRODUCTION

Since Gentner's (1982) claim that nouns are universally predominant in children's early vocabulary due to perceptual and semantic factors, there have been a considerable number of investigations into this issue. While a noun bias has been clearly confirmed in the speech of English-speaking children (Bates & al., 1994, Goldfield & Reznick, 1990; Lieven, Pine & Barnes, 1992; Tardif, Shatz & Naigles, 1997), studies concerning Mandarin (Tardif, 1996; Tardif, Shatz & Naigles, 1997; Sandhofer, Smith & Luo (2000) and Korean (Choi & Gopnik, 1995; Gopnik & Choi, 1995) report a clear prevalence of verbs for children acquiring these languages.

Explanations point to language-typological factors that promote a verb-focused input. Pro-drop languages like Mandarin and Korean allow the occurrence of utterances consisting of verbs alone. SOV languages, like Korean, present the verb in a sentence-final position. Both factors allow for a higher saliency of verbs (Slobin, 1973). Also uninflected verbs, as in Mandarin, should facilitate the acquisition of verbs (Tardif, Shatz & Naigles, 1997). Furthermore, the semantic distribution of word classes can favor verbs. For example, Korean prefers verbs for the encoding of spatial relations and actions, whereas in English, locative prepositions carry the meaning (e.g. Kor.: *ipta* [put on (clothes)] and *sseuta* [put on (a hat)] vs. Engl.: (*put*) *on* ; Choi & Bowerman, 1991; Gopnick & Choi, 1995).

Languages which contain one or more of these verb promoting factors, can be expected to foster a verb-bias in the early vocabulary. However, studies concerning Japanese, a pro-drop SOV language similar to Korean, arrive at different results. Ogura (2000), Ogura, Murase, Yamashita & Mahieu (1999), Sakurai (1999), and Yamashita (1999) report a clear noun bias in Japanese. Our previous studies found noun-biased as well as balanced vocabulary children

(Miyata, Naka, Oshima-Takane & Nisisawa, 1999; Oshima-Takane, Naka & Miyata, 1997). Yamashita (1999), who used maternal report for her study about the earliest words acquired by Japanese children, found a noun bias but also a rather high proportion of verbal nouns (e.g.: *nainai* [allgone]) in the first 20 words, but only a few verbs.

In fact, there are studies reporting a noun-bias also for Korean children (Au, Dapretto & Song, 1994; Pae, 1993), or a balanced vocabulary (Kim, McGregor & Thompson, 2000). Partially, these differences can be traced back to the sampling method. As Pine (1992) and, more recently, Pine, Lieven, & Rowland (1996) have shown, vocabulary checklists can result in a relative overestimation of the number of common nouns in comparison to other word classes in the child's early vocabulary. The "commonsense maternal beliefs of the language as a referential system" (Pine, 1992:84) apparently makes mothers remember and mention nouns rather than other word classes and may cause a overrepresentation of nouns in their reports.

This sampling effect could explain the different results of Au & al. (1994) and Pae (1993), who used maternal checklists, and Choi & Gopnik (1995) and Gopnik & Choi (1995), who analyzed observational data, but it does not explain the noun-bias of Japanese children, because all studies mentioned above (except Yamashita, 1999) were based on observational data. Up to now there has been no report of a verb-biased child similar to the Korean children, which, given the high similarity of Korean and Japanese, is an astonishing fact.

In fact, the relation between language typology and the actual form of the input is less straightforward than it appears to be. Ideally, one would expect the input to be clearly verb-biased in the case of verb-focused languages, and to be noun-biased in the case of noun-focused languages. The reality seems to be more complex. In the case of Italian, Tardif & al. (1997) found a noun bias in the input for types, and a verb bias for tokens, whereas Camaioni & Longobardi (1999) reported a clear verb bias. For Korean, Gopnik & Choi (1995) report that their Korean mothers produced 0.61 verbs per utterance, but only 0.29 nouns. In contrast, English-speaking American mothers displayed no difference between verbs and nouns (0.51 verbs vs. 0.46 nouns per utterance). Also Kim, McGregor, & Thompson (2000) report a verb-bias for their Korean-speaking mothers. Choi (2000) examines the influence of the speech situation. She reports a balanced vocabulary in the case of free-play but a noun bias for Korean

mothers in a picture book setting. English-speaking mothers showed a noun-bias in both contexts. Ogura (2002) reports similar results for Japanese. Her mothers used more verbs than nouns in a toy setting, but used clearly more nouns and less verbs in a book reading setting. This points to the variation in the speech of the mothers. In other words, it is obviously possible that, according to the situation, speech style may change from a verb-focused to a more noun-focused one, within the same language.

These differences seem to be influenced by culture. Overall, it appears that American-English mothers tend to focus more on noun teaching than Japanese or Korean mothers. For example, Fernald & Morikawa (1993) showed that, in similar situations, Japanese mothers use more social routines but less noun teaching utterances than English-American mothers. Similarly, Korean mothers present more utterances depicting an activity and less labeling utterances than American mothers (Kim, McGregor & Thompson, 2000).

In comparable situations, cultural factors may influence a reaction; for example, a mothers preference for naming an animal in a picture book rather than describing the action, may lead to a focus on objects rather than on actions, and subsequently to a more frequent use of nouns than of verbs. In this sense, the analysis of speech acts, especially whether they focus on objects or on actions, could provide information going beyond that of mere frequency. We think that the language presentation might be a determining factor in the development of a noun or a verb bias. For example, the isolated presentation of nouns and verbs should be more effective for vocabulary acquisition than their use within the context of a sentence, simply because it is more salient and easier to perceive (Slobin, 1985). Frequent labeling and eliciting of labels in a salient way should lead the attention of the child to the names of objects and help him or her to acquire more nouns, while frequent labeling of actions should do the same for verbs.

Goldfield (2000) classified the utterances of American-English mothers towards their children, according to whether they elicited or reinforced a verbal response or a non-verbal (behavioral) response, or described objects or activities. Each category was further divided into 11 sub-categories. She found that the mothers queried and reinforced mainly nouns, but rarely verbs ("what is this" versus "what is he doing"). Nonverbal elicitation, on the other hand, was predominantly used for activities ("turn the handle this way"). Thus for nouns

active verbalization was encouraged, while for verbs comprehension (and nonverbal acting out) sufficed. It is possible that this might be different for mothers of other cultural backgrounds, such as Korean or Japanese. Because Korean and Japanese mothers are said to focus substantially more on verbs, this might be reflected in their speech acts as well. Specifically, it is possible that they use more descriptions of activities and more verbal elicitations of verbs. Fernald & Morikawa (1993) reported cultural differences between Japanese and American mothers, with American mothers tending to teach the names of things, while Japanese mothers focused more on social expressions.

One has to keep in mind, though, that a cultural tendency is not to be found in every individual mother. Our hypothesis is that the individual differences we found in the early vocabulary of Japanese children (Miyata, Naka, Oshima-Takane & Nisisawa, 1999) correspond to the different speech styles of their mothers. Similar differences can be seen in the published data of individual children. For example, a recalculation (calculation of the n/v ratio of the accumulative vocabulary) of the data given in Gopnick & Choi (1995:508) shows that 4 of 9 Korean children have a slightly verb-biased vocabulary (AN: n/v ratio 1.19; MK: 1.05; TJ: 1.23; YJ: 1.02) while the other 5 children are noun-biased (JY: 1.53; JS 2.00; SN: 1.50; SA: 3.0; YN: 3.07), despite an early verb spurt reported for almost of the children (except for SA and YN). This span between noun-biased and slightly verb-biased vocabularies resembles the Japanese data analyzed in our study mentioned above (Miyata & al., 1999). One of our aims in the present study is to see whether this kind of individual variation corresponds to different biases in the maternal input. Does a noun-biased mother have a noun-biased child, or are both facts more or less independent, as Ogura's (2002) data suggest? Does a noun or verb bias in the children and their mothers persist or are there changes over the time?

In order to explore these questions, we observed four children (two boys and two girls), and their mothers, in a longitudinal study lasting from the children's first words until their 2nd birthday. We wanted to see whether Japanese children are basically noun-biased, as reported in the literature; whether there are different types of children or whether the noun bias could be explained as a matter of development; and whether there were changes in the degree of an eventual noun bias. We also wanted to see whether the input provided by the mothers would change over time, and how eventual

differences between the children could be attributed to the speech of their mothers. We chose the format of naturalistic observation at the children's homes. A comparable set of toys and books was available to all children, but the choice was left to the children and their mothers in order to obtain a more naturalistic picture of the communication style between them, including their preferred topics and games.

We measured frequency of nouns and verbs in terms of types and tokens, and coded the way of presentation (isolated or embedded) as well as the kind of speech act. For this, we simplified Goldfield's (2000) classification system by combining the most frequently found speech acts sub-category for each main category, contrasting the use and the demand of verbalization for actions (verbs) and objects (nouns). In order to exclude differences in the developmental pace as a cause for differences in an eventual noun or verb bias, we examine the size and composition of the whole vocabulary produced, and screen the grammatical development with the help of MLU, number of particles and morphological variation and complexity.

Morphological indices like MLU in morphemes (MLUm) are closely connected with the morphological development of the verb and the number of verbs. A child who produces many verb tokens scores automatically higher on MLUm, because the verb always appears with an inflectional ending. Nouns are on the average lower in morphological complexity because Japanese has no gender or number agreement and the eventual plural or honorific affixes are acquired later. We therefore add MLUw (MLU in words) and the number of different syntactic and final particle types as verb-independent measures. A combination of these measures will allow us to compare the developmental pace of the children.

METHOD

Four mothers and their first-born children, two boys and two girls, were recorded for 60 minutes every 2 months at their home over a time span of 10 months (1;2 - 2;0, 6 sessions). The mothers were instructed to engage their children in talk, using various kinds of toys and picture books. The actually amount of time spent with each toy or book was left up to the mothers. The number of words and utterances and the MLU range is given in Table 1.

Table 1. Total number of utterances, words and MLU range for the four children and their mothers

Child's name	Child utterances				Maternal utterances	
	No. of Utt.	No. of Words	MLUw range	MLUm range	No. of Utt.	No. of Words
Mic	1992	2421	1.01-1.41	1.03-1.84	7070	18293
Tat	1901	2567	1.00-1.78	1.03-2.31	7485	19293
Too	1872	2258	1.00-1.79	1.00-2.47	5268	12881
Maj	1825	2350	1.02-1.40	1.12-2.05	4763	9957

The data was transcribed in Japanese CHAT format (MacWhinney, 2000; Oshima, MacWhinney, Sirai, Miyata & Naka, 1998) following WAKACHI98 (Miyata & Naka, 1998). The transcribed data was sound-linked (Sonic, MacWhinney, 2000) and provided with tags containing word-class and morpheme information using JMOR (Naka & Miyata, 1999), the Japanese version of the CHILDES morphemicization program MOR (MacWhinney, 2000). Song texts and commercials, as well as utterances directed to the investigator were excluded, while book reading was included.

Data Analysis

A. Children's speech

- 1) Type and token frequencies were calculated for the following word classes: Common nouns (e.g. *tsukue* [table], *otete* [hand]) excluding formal nouns (*keishikimeishi*) and proper nouns; full verbs (e.g. *taberu* [eat]) excluding copula, existence verbs *iru* and *aru*, as well as *suru* [do] and *naru* [become]; verbal nouns (e.g. *nenne* [sleep], *benkyoo* [study]); verbal adjectives (e.g. *oishii* [tasty]) and adjectival nouns (e.g. *kiree* [beautiful]). Types were defined by the stem (e.g.: *taberu* [eat-PRES] and *tabechatta* [eat-COMPL-PAST] would constitute one type and two tokens). Type frequencies were counted accumulative.
- 2) Noun/verb ratio was calculated for both types and tokens as the number of nouns divided by the number of verbs. An equal frequency would result in a N/V ratio of 1.00.
- 3) Morphosyntactic measures

- a) MLU in words and morphemes. The MLU calculation followed the procedure described in Miyata (1999). The definition of words is based on WAKACHI98 (Miyata & Naka, 1998), and the definition of morphemes followed JMOR (Naka & Miyata, 1999).
- b) Number of types of particles: case (e.g. *ga* [NOM]), topic (e.g. *wa*), focus (e.g. *mo*), quotation (e.g. *to*), conjunctive (e.g. *kara*), and final particles (e.g. *yo*).
- c) Verb inflection variety index: number of different combinations of inflectional morphemes for verbs (e.g.: *kakenakatta* [write-POT-NEG-PAST], *kaketa* [write-POT-PAST] were counted as two different combinations)
- d) Average morphological complexity: average number of inflectional morphemes per verb on the base of all tokens (e.g.: *kakenakatta* [write-POT-NEG-PAST] and *kaketa* [write-POT-PAST] would result in an average morphological complexity of 2.5)

B. Caregivers' speech

- 1) Type and token frequencies (same procedure as described in A 1).
- 2) Noun/verb ratio (same procedure as described in A 2).
- 4) Percentage of verbs and nouns occurring in single-word versus multi-word utterances.
- 5) Speech act coding (simplified version of Goldfield, 2000:509). A subset of 300 continuous maternal utterances for each session (a total of 7.200 utterances) was coded for the following 7 categories:
 - a) description of an object (e.g.: *kore wa wanwan da* [this is a doggie])
 - b) description of an action (e.g.: *gohan tabeteiru yo* [he is eating])
 - c) elicitation of a verbal response queering a noun (e.g.: *kore nani?* [what is this?])
 - d) elicitation of a verbal response queering a verb (e.g.: *nani yatteiru?* [what is she doing?])
 - e) elicitation of a non-verbal response, as eliciting the pointing for an object (e.g.: *wanwan doko?* [where is the dog?])
 - f) elicitation of a non-verbal response, as eliciting an action (e.g.: *dashinasai!* [put it out!])
 - g) not applicable

RESULTS

A. Children's Speech

1. Vocabulary Analysis

When we compared the average noun/verb ratio for types (accumulative) for each of the four children, we found two strongly noun-biased children (Mic: n/v ratio 6.46; Tat: 3.74), one mildly noun biased child (Too: 2.10), and a balanced child (Maj: 1.03) (compare Fig. 1).

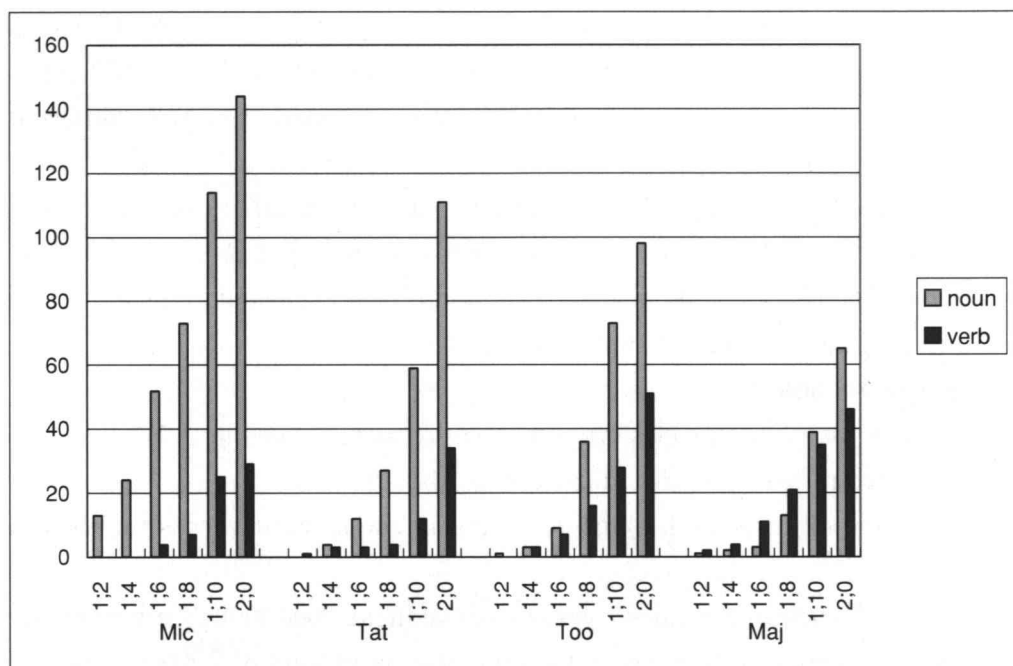


Fig. 1 Number of noun and verb types in the vocabulary of the four children (accumulative)

This strong difference is due more to the larger number of noun types for the two strongly noun-biased children, than to the slightly larger verb vocabulary of the two other children. This larger number of nouns results in a larger overall vocabulary for the three noun-biased children at the end of the observation at 2;0 (Mic: 213 types, Tat: 171, Too: 187, Maj: 149). Remarkable is the early verb bias for Maj from 1;2 to 1;8, especially in comparison to the strong noun bias of Mic in the same period. Concerning verbal adjectives, adjectival nouns and verbal nouns, all children acquire about the same number during the span observed.

2. Grammatical Analysis

In order to investigate whether these differences in the vocabulary size and composition are connected to basic differences in the developmental pace, we additionally investigated the grammatical development. The MLU in words and morphemes reveal a rather similar development for all the four children. Starting out with zero or one syntactical or final particle, all children use between 10 and 15 types at 2;0. Concerning verb inflection, differences appear in the inflection index (calculated as the number of different combinations of verb inflections). The strongly noun-biased Mic reached only a rather low verb inflection variety index of 6 at 2;0. This is partially related to her low number of verb tokens (14 tokens), as the session two months earlier shows. Here she produces 47 verb tokens, and reaches a verb inflection variety index of 8. In comparison to this, Too and Maj produce 90 and 60 verb types, and reach an inflection index of 16 and 14, respectively. The morphological complexity of verbs at 2;0 lies for all children between 1.31 and 1.47, and does not indicate a significant difference in the morphological development of the four children.

Overall, despite the differences in size of vocabulary, we did not find any indication of a significant developmental difference among the four children. All reached a comparable level at 2;0, and all showed a similar developmental jump between 1;8 and 1;10. At this time, Maj, the balanced child who possessed the smallest vocabulary, turned out to be a little ahead of the other three children. The only significant difference among the four children appears to be the size of their noun vocabulary. This difference could not be explained by a difference in the developmental speed.

B. Input analysis

1. Input frequency

When comparing the overall frequency of nouns and verbs (tokens) in the speech of the four mothers, Mic's mother displayed a strong noun bias with an n/v ratio of 2.12, Tat's mother, and also Too's, used nouns and verbs about equally (n/v ratio 1.17 and 1.06, resp.), while Maj's mother showed a slight verb bias (0.81; Figure 2).

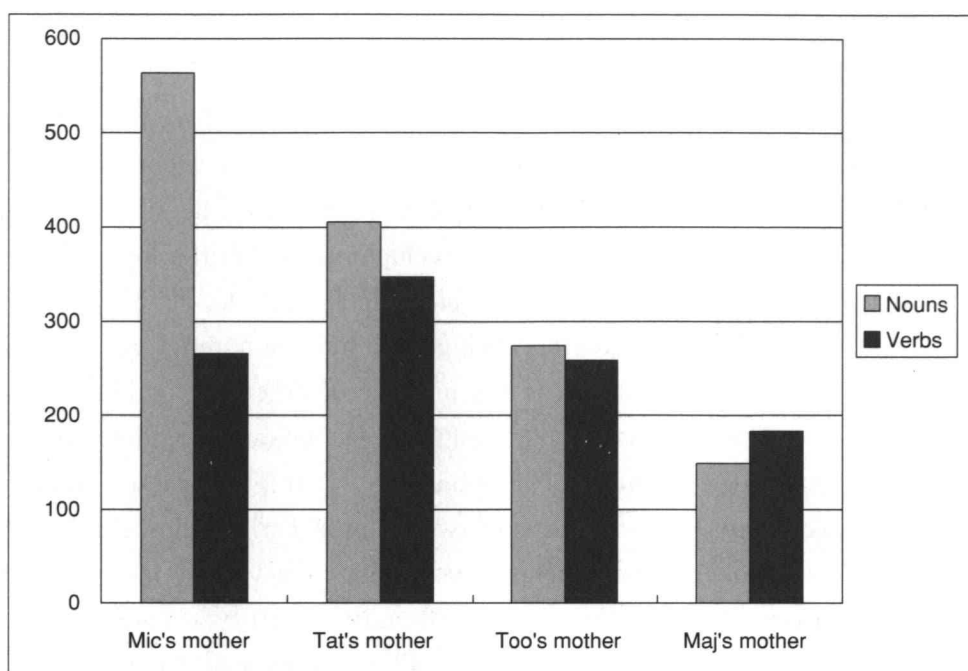


Fig.2 Average number of nouns and verb tokens per 60 minute session for the four mothers

A closer look at the single sessions showed further differences. While Mic's and Maj's mother used a rather constant number of noun and verb tokens in each session during the 10-month period, Tat's mother gradually increased the number of nouns after an initial dominance of verbs, especially between 1;2 and 1;6. Too's mother, on the other hand, used both more nouns and more verbs equally after 1;6. Note that these differences are not an artifact caused by the lower number of utterances of Too's and Maj's mother, because we calculated nouns and verbs per 100 utterances and not by time. This means that the lower number of nouns for Too's and Maj's mothers is multiplied by their lower number of utterances in the same amount of time. In other words, Too and especially Maj, probably hear a much lower number of nouns than Mic and Tat from their mothers in the course of a day.

2. Input type frequency

We also compared the overall number of types for the four mothers. Mic's and Tat's mothers used about twice as many noun types as Too's and Maj's mothers, especially Maj's. There were only rather small differences for the

number of verb types. Here also Maj's mother scored lowest again. This means that Maj and Too not only hear less nouns in terms of tokens frequency, they also hear a smaller variety of nouns than Mic and Tat.

3. Frequency of isolated nouns and verbs in the input

We next compared the proportion of nouns and verbs presented in isolation, in contrast to nouns and verbs embedded in a sentence (see Fig.3), and found clear differences between the four mothers. While Mic's mother, and to a lesser degree, Tat's mother, presented much more nouns than verbs in an isolated way, Too's and Maj's mothers both used isolated nouns and verbs to a similar degree. Maj's mother showed a tendency to present more verbs than nouns in isolation. In fact, she was the mother who used the most isolated verbs per 100 utterances. The n/v ratio of isolated items showed a noun bias for Mic's, Tat's and Too's mother, and again especially strong for Mic's mother. Maj's mother, on the other hand, showed a slight verb bias (Mic: 4.43; Tat: 2.02; Too: 1.34; Maj: 0.77).

4. Maternal frequency in relation to the children's n/v ratio

When we related the n/v ratio of overall input frequency and the n/v ratio for isolated items (see Fig. 4), we found that especially the n/v ratio for isolated items showed a correlation to the children's n/v type ratio, while the correlation to the overall tokens n/v ratio was less obvious.

Because of the small number of children investigated, it is not possible to obtain a statistically reliable result. Nevertheless the strong congruence between the isolated presentation of nouns and verbs and the noun/verb ratio of the children is a promising candidate for further statistical confirmation.

It is remarkable that the differences between the four mother are restricted to the use of nouns/objects. The only exception is the higher use of nonverbal elicitation of actions by Tat's and Too's mothers. This might be

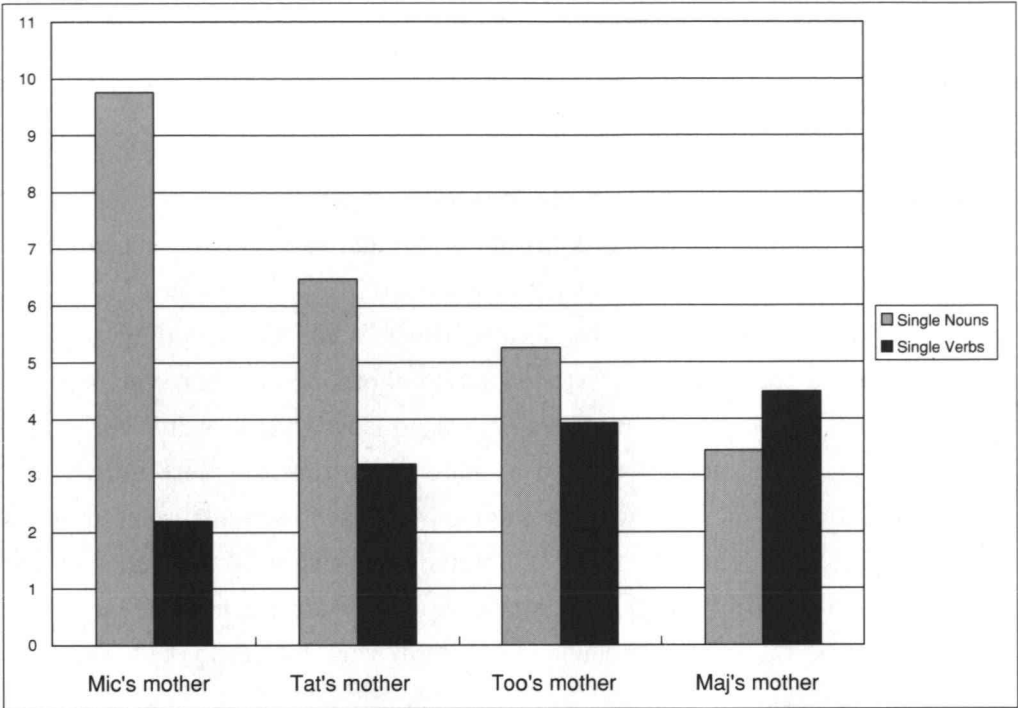


Fig. 3 Average number of nouns and verbs presented isolated (per 100 utterances)

related to a higher level of kinetic energy of the boys, which may cause their mothers to use more instructions in order to control their behavior. Besides this, the amount of action descriptions and elicitations of verbs does not differ between the four mothers.

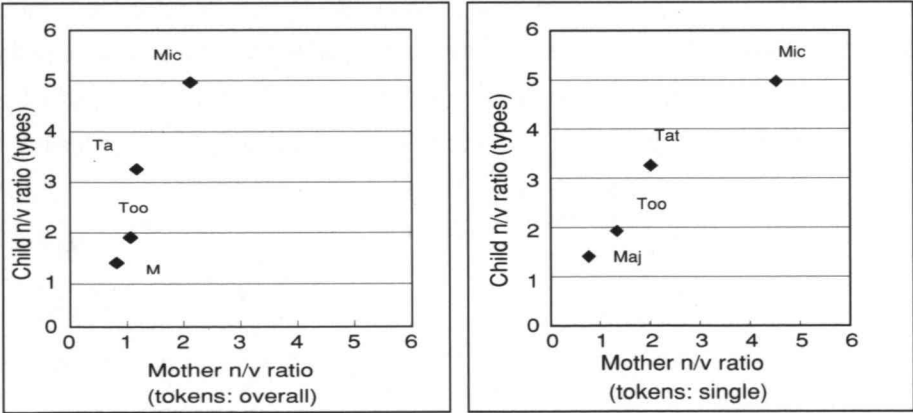
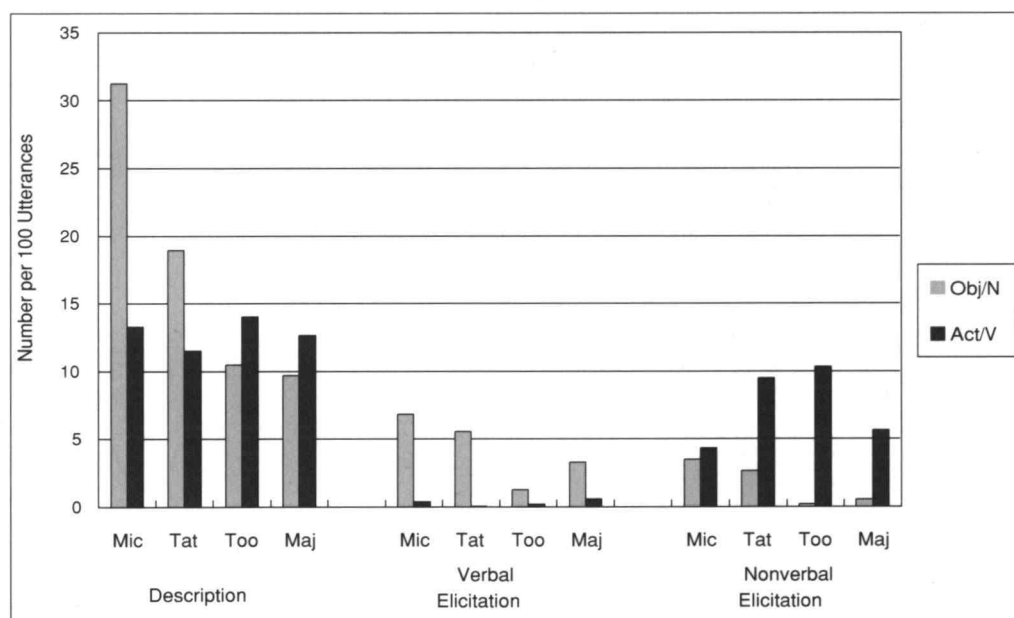


Fig. 4 The mother's n/v ratio for tokens (left) and the mother's n/v ratio for isolated presentation (right) in correlation with the n/v ratio of their children

5. Maternal speech acts

We further explored the descriptions and elicitations used by the mothers towards their children (see Fig. 8). We found more descriptions of objects ("this is a N") for the mothers of Mic and Tat, and slightly more descriptions of actions ("he is V-ing") for those of Too and Maj. Verbal elicitations ("What is this?" versus "What is he doing?") were much less frequent overall, but again Mic's and Tat's mothers elicited more nouns than Too's and Maj's did. Verbs were elicited infrequently by all four mothers. Non-verbal elicitation ("Do this!" versus "Where is the N?") occurred more often for actions, and especially often for Tat and Too, the two boys. The non-verbal elicitation of objects by asking the child to point to an object, to pick it up or to select it in some other way was much more infrequent, but did occur with Mic's and Tat's mothers, while Too's and Maj's only rarely used this way of object elicitation.



"this is a dog" "what is this?" "where is the dog?"

"he is dancing" "what is she doing?" "pour it out!"

Fig. 5 Number of descriptions of objects versus actions, verbal elicitations and nonverbal elicitations of nouns versus verbs by the four mothers per 100 utterances

It is remarkable that the differences between the four mothers are restricted to the use of nouns/objects. The only exception is the higher use of

nonverbal elicitation of actions by the mothers of Tat and Too. This might be related to the boys' higher level of kinetic energy, which may cause their mothers to use more instructions to control their behavior. Besides this, the amount of action descriptions and elicitations of verbs does not differ among the four mothers.

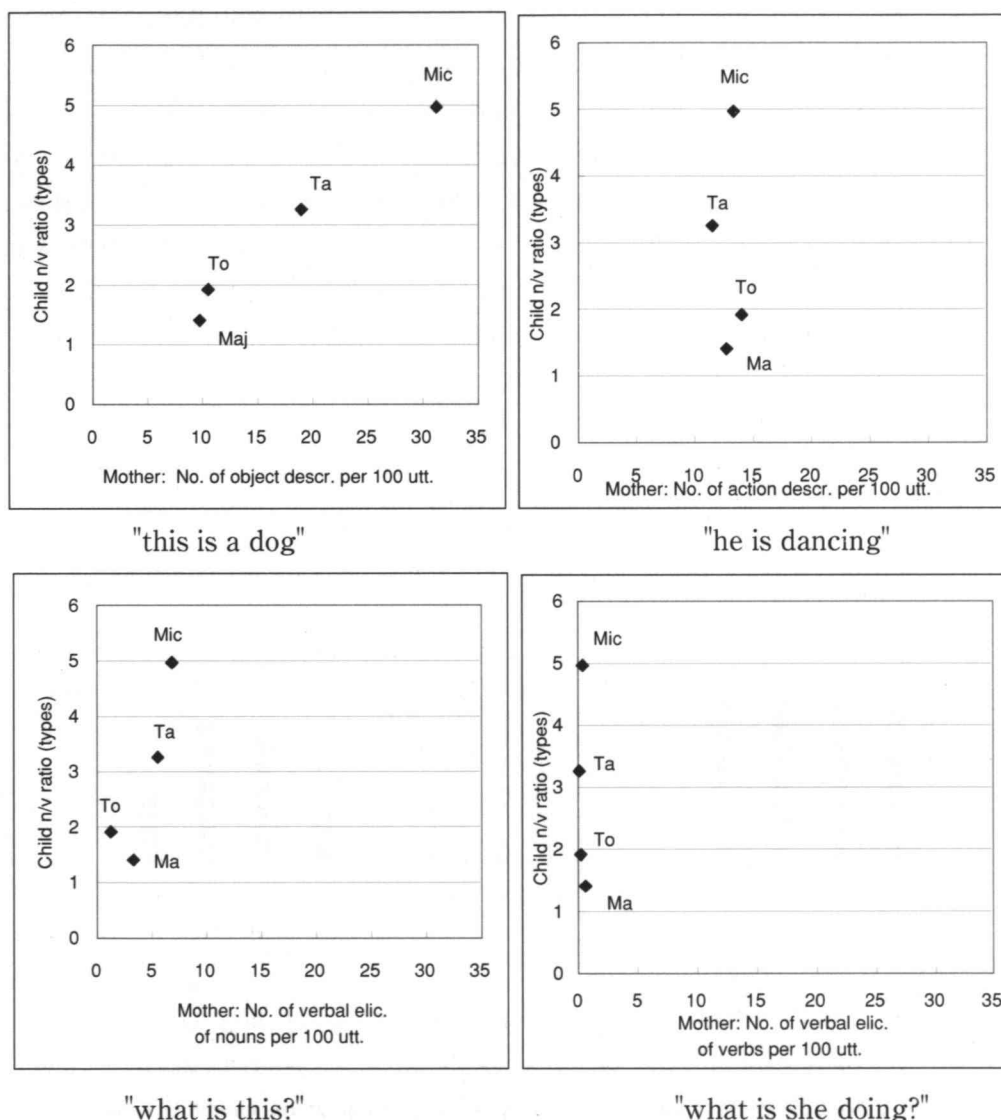


Fig. 6 Maternal n/v ratio for descriptions of objects (a) versus actions (b), verbal elicitations of nouns (c) and verbs (d) by the four mothers in relation to the n/v ratio of their children

When relating the number of different speech act types to the children's n/v

ratio, we found a correlation with the description of objects, but not with the description of actions nor the verbal elicitation s of nouns or verbs (Fig. 6a-d).

DISCUSSION

Our results showed great differences in the vocabulary acquisition between the four children observed. Two of the children, Tat, and especially Mic, showed a high n/v ratio, while the other two, Too and Maj, acquired a balanced vocabulary. Mic also possessed the largest vocabulary, while Maj had the smallest. Tat and Too's vocabularies fell between these two extreme cases. The analysis of the content of the vocabulary showed that Mic in particular knew many nouns, while she was the worst in terms of verbs. Maj, the child who knew the most verbs, knew the least nouns.

Again Tat and Too could be found between these two, with Tat acquiring more nouns and less verbs than Too. The difference was especially noticeable in terms of nouns, and to a lesser degree, with verbs. Other classifications of words were acquired about equally by the four children. The measures of grammatical development also indicated a parallel development, with the balanced children being slightly ahead. Some of their scores (the number of different combinations of inflectional verb morphemes and MLUm) were probably influenced by their higher number of verb types. Nevertheless, these differences were not substantial, and we could judge the four children as developing at a similar pace, with the only exception to that similarity being the size of their noun vocabulary.

The noun-bias of Mic and Tat corresponds to earlier results for Japanese children. The balanced vocabulary acquisition of Too and Maj, on the other hand, shows that not all Japanese children display a noun-bias, but rather that individual differences exist. These differences cannot be reduced to methodical differences (e.g.: checklist versus observation) as the data for the four children was collected and analyzed in the same way. Nor can they be due to different acquisitional stages, as the four children developed at the same pace and showed differences constantly over the whole span of 10 months.

The speech of the four mothers showed corresponding differences in the number of nouns and verbs used, which was reflected by a high n/v ratio of tokens for Mic's and Tat's mothers. Maj's and Too's mothers used significantly fewer nouns, which resulted in an equal number of noun and verb tokens. Also,

when keeping constant the number of utterances, Maj's and Too's mothers used a smaller number of nouns but an equal number of verbs. This difference multiplied itself with the overall and in each session decreasing utterance numbers for Maj's and Too's mothers, so that Too and especially Maj received a much smaller input of nouns in the same time span. This difference could be observed constantly over the whole 10-months period.

For Tat's, Too's and Maj's mothers we could also observe an initial verb bias at 1;2, which soon gave way to a noun bias or at least a balanced use. It is conceivable that Japanese mothers use a verb-focused style towards their preverbal infants, which changes to a more noun-focused style once their children start to speak. The present data which starts at a point where the children have just begin to speak, might lend some evidence to support this hypothesis.

When we look at the ways of presentation, Mic's and Tat's mothers presented many more nouns in an isolated way (e.g.: *zoosan* . [Elephant.]) than Too's and Maj's mothers. In contrast, the latter two used more verbs in isolation (e.g.: *ochita* . [has fallen down]) than the other two. This isolated presentation should be especially effective for the acquisition of new vocabulary items because the items are easier to perceive than in the context of a sentence (Slobin, 1985). The large differences in the number of isolated nouns and verbs used by the four mothers are reflected in the different vocabulary size of their children.

The classification of the maternal speech acts showed parallel results. Mic's and Tat's mothers' speech acts were clearly more noun-focused than those of Too's and Maj's. Mic's and Tat's mothers used many descriptions of objects (e.g.: *kore wa zoosan* . [this is an elephant]) while they described action (e.g.: *odotteiru yo* [he is dancing]) only to a smaller degree. Too's and Maj's mothers used about the same number of action descriptions, but clearly made less use of object descriptions. No differences over time were observed. Verbal elicitation, especially of verbs (e.g.: *nani shite iru?* [what is he doing]), was much rarer than description, but here also Mic's and Tat's mothers elicited more nouns than Too's and Maj's did (e.g.: *kore wa nani?* [what is this?]). Nonverbal elicitation again showed the same difference for objects (e.g.: *zoosan wa doko?* [Where is the elephant?]), but a different pattern for actions (e.g.: *mazete!* [Stir it!]). The instance of nonverbal elicitation of actions was higher for Tat and Too,

the two boys, while the two girls, Mic and Maj, whose scores elsewhere always represented the extremes, received half as many. We can only speculate that this might mean a higher number of behavioral corrections made necessary by the higher kinetic level of the boys.

Our results show that the two children who had noun-biased vocabulary had indeed mothers who displayed a noun-focused speech style, while the two balanced children had mothers who did not specifically focus on nouns or objects. Although it was not possible to draw statistical correlations due to the small numbers of participants in this study, we could see individual differences in the four children, which corresponded to clear differences in their mothers' speech style. We think that the problem of individual variation, although already mentioned by Tardif, Shatz, & Naigles (1997), has not been accounted for sufficiently in the noun verb discussion. In most studies, data has been pooled in order to contrast typologically different languages. But, as Tardif & al. showed, none of the language typological factors predict the vocabulary composition of the children. We think that the individual speech style of the mother constitutes one missing link here. Language typology in itself does not necessarily determine the way of speaking of an individual mother. Rather, it sets the frame in which a mother can express what she wants to say to her child, and it also sets the degree to which nouns and verbs can become salient or easily recognizable.

English-speaking mothers can focus on action as well as on objects as much as Japanese- or Korean-speaking mothers can, but they have fewer chances to use a verb in isolation. Furthermore, English contains a high number of irregular verbs which make especially frequent verbs less recognizable. In Japanese the verb can be used in isolation, the conjugation is agglutinative and easy to parse, and, with only 3 irregular verbs, extremely regular. These characteristics work certainly in favor of an easy verb acquisition in Japanese, but they mark only the frame in which the actual input can vary. If an individual mother chooses to highlight nouns and to teach her child the names of objects rather than the names of actions, she can do so in Japanese or Korean just as much as is possible in English. Certainly a Japanese- or Korean-speaking mother has more possibilities to highlight verbs and to make them easy to acquire for her child than an English-speaking mother, but she is under no obligation to actually make use of these possibilities.

Fernald & Morikawa (1993) reported that American mothers tend to teach the names of things to a much higher degree than Japanese mothers. The speech of two of the mothers we observed, exhibit the characteristics given for Japanese mothers by Fernald & Morikawa, but the other two mothers, who used substantially more object descriptions, bore more resemblance to American mothers. We want to point out that cultural tendencies are indeed only general tendencies and not inevitable facts. The essential point of our study is not so much the individual difference between the mothers or the children, but the correspondence between the individual mother and her child. Our results showed that the mothers of the strongly noun-biased children displayed a noun-and object-focused speech style, namely a high n/v ratio in types and tokens, a high n/v ratio in isolated word presentation, and a high frequency of object descriptions. On the other hand, the mothers of the more balanced or only mildly noun-biased children displayed a more balanced speech style. Our data lends evidence to support the strong role of concrete input in the language acquisition of the individual child.

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