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The Production of Nouns and Verbs  
in Young Cantonese-speaking Children

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### Abstract

More than twenty years ago, Gentner's (1982) stated that nouns are universally predominant in children's early vocabulary. However, no information was given on that issue in Cantonese. The present study investigates the production of nouns and verbs in Cantonese-speaking children and adults, by replicating the study of Tardif, Gelman, and Xu (1999). Three activity contexts were used in the language sampling. They are picture book reading, mechanical toys and regular toys. The results failed to give evidence of a noun-bias. Moreover, the Cantonese children used verbs and nouns in a similar way across the three contexts as their Mandarin counterparts. The similarity between the input language of Mandarin and Cantonese may explain the result obtained.

Children usually develop their first word sometime between 10 and 15 months. For several months after the appearance of their first word, new words begin adding to their vocabulary slowly, but with increasing speed as the vocabulary size approach 50-word vocabulary (Hoff, 2001). Many researches on children's lexical development have found a predominance of common nouns in children (Bates et al., 1994; Benedict, 1979; Dromi, 1987). In a study of lexical development of six English-speaking children, McShane (1980) found that five of the subjects showed a noun spurt between 1 year and 5 months and 1 year and 11 months. Similarly, in a cross-linguistic survey on children aged between one year old and two years and six months, Gentner (1982) found that nouns and verbs made up 66% and 22% of children's early lexicon on average. These results seem to support the claim that nouns are universally acquired before verbs (Gentner, 1982; Markman, 1989).

However, in a cross-linguistic study by Choi and Gopnik (1995), it was found that in Korean children, verbs appeared to be more prevalent than nouns. In the study, nine Korean-speaking children were followed from the mean age of one year and two months until one year and ten months. At the end of the study, seven of the subjects showed both a verb spurt and a noun spurt. Among them, six of them showed the verb spurt first before the noun spurt. In another study by Tardif (1996), ten Mandarin speaking children aged from one year and eight months and two years were studied. They were engaged in a naturalistic interaction with their caregivers and the verbs and nouns the children produced were identified. Three different definitions of nouns and verbs were used in the study: common nouns versus main verbs; object labels versus action words; and sentential nominal versus sentential predicates. It was found that regardless of which definition of nouns and verbs was used, the Mandarin-speaking children in the sample produced more verbs than nouns. In addition to the results from Choi and Gopkin (1995) and Tardif (1996), a more recent study by Kauschke and Hofmeister (2002) also give supporting evidence that noun bias may not be a universal

phenomenon. In their study about the early lexical development in German, 32 German-speaking children were recruited and they were studied longitudinally at the age of one year and one month, one year and three months, one year and nine months and three years. At the end of the study, it was found, instead of nouns, relational words (e.g. there, up, on, again) and personal-social words (e.g. yes, no, hello, thanks) were the two categories of word that dominated the early stages in German-speaking children. These results have given challenges to the claim that noun bias is a universal phenomenon (see Table 1 for a summary on the literature review of the noun bias issue).

Table 1

*Summary of Studies on the Early Vocabulary in Children*

Study	Language	Results
Benedict (1979)	English	noun bias
Gentner(1982)	Mandarin	noun bias
	Japanese	noun bias
	Kaluti	noun bias
	German	noun bias
	English	noun bias
	Turkish	noun bias
Dromi(1987)	English	noun bias
Bates et al. (1994)	English	noun bias
Choi and Gopkin(1995)	Korean	absent of noun bias
	English	noun bias
Tardif et al. (1996)	Mandarin	verb bias
Tardif Gelman, and Xu (1999)	Mandarin	absent of noun bias
	English	noun bias
Kauschke and Hofmeister (2002)	German	absent of noun bias

To explain for the absence of noun bias in Mandarin-speaking children, Tardif (1996) suggests that it was important to examine the role of input in word learning. Specifically, four factors relevant to the input features were suggested. These are the word frequency, perceptual salience, morphological simplicity and interactional quality of the language leaning game. Word frequency refers to the frequency which a lexical item or class

of items appear in the input language. The higher frequency that word appears in the mother's speech, the earlier the child acquires that word (Huttenlocher, Haight, Bryce, Seltzer, & Lyons, 1991). Secondly, perceptual salience refers to the position in which a particular word appears in an utterance. Children acquire words appearing frequently in salient utterance position earlier than words which frequently appear in non-salient utterance position (Slobin, 1973, 1985). Thirdly, morphological simplicity is related to the morphological markings on a word. The simpler the morphological marking a word has, the easier it should be for a child to acquire. Finally, an interaction quality of a language refers the way in which the word is presented in the context of adult-infant interaction. For example, English-speaking parents enjoy talking about objects to their infants. Thus, they often elicit objects names to maintain the language learning game of their culture (Tomasello, 1992).

However, when looking into the methodology of the crosslinguistic studies involved in the noun bias debate (Choi & Gopnik, 1995; Tardif, 1996), it could be found that in their sampling of children's naturalistic speech, different activities contexts (i.e. the activities that were engaged in while a conversation takes place) have been used. Thus, one might wonder the cross-linguistic differences found in children's vocabulary composition in the two studies were specifically due to language, or whether the variations in contexts have partly contributed to it. In fact, a number of studies have found evidence for large variations in parental speech across different activity contexts. Heberle, Kaufman, Grego, Hirsh-Pasek, and Golinkoff's study (as cited in Tardif, Gelman, & Xu, 1999) have found that the variables in the activity context include the number, type, and presence of other speakers and hearers. In a study conducted by Fu, Gelman, and Behrend (as cited in Tardif et al., 1999), it was actually found that activity context might indeed have an important effect on the proportions of nouns and verbs that appear in adult's, and possibly also children's, spontaneous speech. The English-speaking mothers were found to produce more verb types than nouns types in

their interaction with their 14- and 20-month-old toddlers. This result was not consistent with findings in previous studies (Goldfield, 1993; Tardif, Shatz & Naigles, 1997) on the noun bias issue.

Given these findings of contextual difference in adult's speech, it is of interest to know whether there are corresponding differences in children's speech. Most importantly, have these variations in context partially contributed to the cross-linguistic difference in children's vocabulary composition? A study by Sugarne (as cited in Tardif et al., 1999) has shed light on this question by proving that communicative context affects the proportion of various parts of speech (in nursery school children).

To verify the question of to what extent nature of the specific language system and difference in the activity context (when the children's vocabulary were sampled) might responsible for the cross-linguistic difference found, Tardif et al. (1999) have designed a study. In their study, the activity contexts were controlled for both the Mandarin- and English-speaking mothers and children. The aim of their study was to find out whether, under controlled activity contexts that were identical for both groups, consistent cross-linguistic differences in the speech of both group of mothers and children would still be found, or activity context was a more salience source of the difference. To examine these, three activity contexts were chosen. The first activity context involved the use of a picture book which enabled a focus on object-labeling to elicit more nouns. The second context involved the use of some mechanical toys which enabled a focus on actions to elicit verbs and talks about action. In addition to the picture book and mechanical toys, a set of regular toys was chosen to be more neutral in this regard and to be comparable to the type of context typically chosen for eliciting naturalistic speech samples. Results from the study have shown that there were consistent language differences for the proportion of nouns, relative to verbs, in both the adults and child speech. Mandarin adults used a relatively higher proportion of verb types

than English adults in their productive speech. Moreover, when looking at the overall results from the production data of children, nouns bias was found in English-speaking but not Mandarin-speaking children. In addition, across different activity contexts, nouns and verbs were used differently. Results from the study suggest that context is in fact an important source of variation in vocabulary use for both adults and children. More noun types than verbs types were used in both Mandarin- and English- speaking adults and their children when given a picture book to look at. However, when given toys (include both mechanical toys and regular toy) to play with, adults in both group produced more verb types while their children produced roughly equal numbers of nouns and verbs types. This suggests that noun usage in children's speech depends greatly on the context in which their speech is sampled.

The above overview of the findings of studies on the noun bias issue suggests that context in fact plays a significant role on the noun usage in children's speech. Attention must be paid to control the activities context when sampling children's speech in crosslinguistic study on the noun bias issue. As Cantonese shares many common features with Mandarin, it is of interest to know whether the absence of noun bias hold for Cantonese-speaking children also. To date, there is no information on that issue. To address that question, the present study replicates the three activity contexts used in Tardif et al. (1999) on our Cantonese- speaking children and adults. Since the two languages share a lot similarity on syntax and morphology, it is hypothesized that no noun bias will be found in Cantonese-speaking children. However, as suggested by Tardif (1996), the input factors which contribute to the word learning of children include not only perceptual salience and morphological simplicity, but also word frequency and interactional qualities of the language learning game. Thus, despite the syntactic features and morphological simplicity that the two languages share, it is yet unknown how different or similar the frequency of word use and interaction style of the parents of the two languages are.



The purpose of the present study is to verify the hypothesis that no noun bias will be found in Cantonese-speaking children. Specifically, it aims to find out whether Cantonese-speaking adults and children will show similar results as their Mandarin counterparts, by replicating the study of Tardif et al. (1999). The three research questions are: 1) Would Cantonese-speaking children fail to show a noun-bias? 2) Would Cantonese-speaking adults fail to show a noun-bias? 3) Would the pattern of nouns and verbs used by these Cantonese subjects differ across different activity contexts, as shown in Mandarin? In recent years, in contradiction to Gentner's (1982) claim that nouns are universally acquired before verbs, verb bias is found in Asian languages like Korean (see Choi & Gopnik, 1995) and Mandarin (see Tardif, 1996). The importance of the present study is to investigate whether such phenomenon (i.e. verb bias) would appear in another Asian language – Cantonese. The results obtained not only enable us to understand more about Cantonese, but more importantly, to further verify Gentner's (1982) claim that nouns are universally acquired before verbs.

## Method

### *Participants*

Ten children and their parents were recruited by word-of-mouth in the area where the researcher lives in Hong Kong. The selection criteria were as follows: (a) the children were of age from 18 to 22 months; (b) their parents were native speakers of Cantonese (rather than some other dialect) (c) both parents had received formal schooling that was either high school level or below.

Among the 10 subjects, 6 of the children were male and 4 of the children were female, with a mean age of 20 months ( $SD =$  one month, six days). The mean level of education attainment of the children's mothers was 13.80 years ( $SD = 0.63$ ) and the fathers was 15.20 years ( $SD = 2.1$ ).

### *Procedure*

The participants were told that the researcher was interested in studying parent-child- interaction and how parents played with their children when different toys were used.

The entire session consisted of three 10-minute play sessions, with each play session representing one play context. Thus, there were three different play contexts. The order of the three play contexts (picture book, mechanical toy and cook set) was counterbalanced within group. Home visit was done to each of the family. During the visit, the experimenter brought the materials into their home and asked the parents to play with the material provided with their child 'as they normally would at home'. The experimenter demonstrated how to play with each toy before it was given to the parents. During the demonstrations, the experimenter said only '呢度有一個' (here's one!), '呢度有另一個' (here's another), or '呢度有一啲' (here is some more). The purpose of doing this was to restrict the experimenter's comments so as not to bias the parents or the children with any particular noun or verb label as they played with the toys. In all cases, the parents were instructed not to interact with her during the play session and try to ignore her presence as she stayed aside taking notes on the context of the interactions.

### *Transcribing and Coding of Naturalistic Speech*

All the play sessions were recorded and transcribed into Chinese characters by the researcher, who is a native Cantonese speaker. Direct repetitions of the parent's words within one conversation turn and quoted speech (from songs, poems or nursery rhymes) were not counted. Only responses to test question (questions which the mother already knows the answer e.g. 'what's it?' 'What is a comb for?') and fully productive speech were included in the following analyses.

### *Nouns and Verbs*

Previous researches on child language (Tardif, 1996; Nelson, Hampson & Kessler Shaw, 1993; Pine, 1992) recommended separating common nouns from proper names and main verbs from all other predicated terms. Following Tardif et al. (1999), we only coded common nouns and main verbs. As defined by Chao (1968), common noun is a substantive which can be modified by a D-M (determinatives and measures) compound whereas main verb is any word (excluding adjective) which can be modified by the negative 'not' or 'have not or did not' and which can serve as the predicate or the centre of a predicative expression.

Specifically, in Tardif (1996), it is stated that common nouns should only include concrete common nouns which have clear object reference. Thus, the common nouns coded in the present study included only nouns which had clear object reference whereas the main verbs coded included all verbs according to the above definition, excluding the auxiliary verbs listed in Matthews and Yip (1994). In addition, in serial verb construction (e.g. 你幫我買個橙), each verb was counted individually.

#### *Inter-rater Reliability*

10% of the data was extracted out and a native Cantonese speaker, a year 4 student from Speech and Hearing Sciences, was invited to count the nouns and verbs produced by the subjects in the 10% of transcription. No disagreement was occurred. The inter-rater reliability was calculated to be of 96%.

#### *Materials*

##### *Toys and book*

Three sets of materials were used. These included one picture book, two mechanical toys and one regular toy. The picture book was designed to provide a noun-eliciting context while the mechanical toys were designed to provide a verb-eliciting context. The regular toys were selected to provide a relatively more neutral (equal chance to elicit nouns or verbs) context.

The picture book included pictures which were identical to those used in Tardif et al. (1999). According to Tardif et al. (1999), the pictures were selected for their simplicity and familiarity in China. A primary constraint was that none of the pictures could contain any written letters, words or characters. The pictures were color printed and modified so that they would fit on pages of equal size. The 43 pictures were then laminated and collated to form a book (see Appendix for a complete list).

The mechanical toys were chosen to elicit talk about the movement of the toys. Two different mechanical toys were used. The first one involved three ducks, two stairs and two slide. The ducks could go up the stairs when the button was on and they would slide down the slide when they got up to the top of the stairs. When they were at the lower point of the slide, they would go upstairs again using another stair and slide down using the other slide. The cycle kept repeating and the ducks would keep going up and sliding down. The second one was a mechanical train which would go around the rail when then button was on. Some standing signs were provided and they could be put along side the rail.

The regular toy was a cook set with some drinks, utensils and food which could be cut into half.

The mechanical and regular toys used in the present study were different from those used in Tardif et al. (1999). Different toys were used because toys identical to that of Tardif et al. (1999) could not be found. Thus, the toys were selected based on two objectives: firstly, the mechanical toys should be able to provide a verb-eliciting context; secondly, the regular toys should provide a relatively more neutral (equal chance to elicit nouns or verbs) context.

## Result

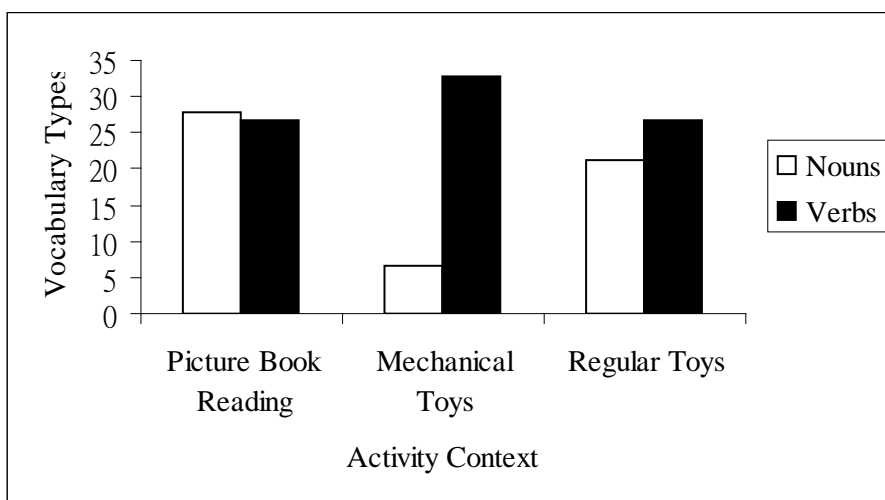
Results for the productive vocabulary measure for the parents and the children will be reported first. Then comparison between results of the Mandarin and Cantonese speaking parents and children will be made.

### *Productive Vocabulary Measures*

Repeated measures of analyses of variance (ANOVAs) were used to analyze the productive vocabulary by the parents and children across the three experimental settings. Context was the repeated measures independent variable, with nouns and verbs as the two dependent variables. As the primary debate has focus on a predominance of noun types but not tokens in children's early vocabulary (Gentner, 1982), in the present study, only analyses of noun types and verb types will be reported.

#### *Adult productive vocabulary measures*

Across the three activity contexts, there was a main effect of context such that the parents produced more verb types than noun types during the interactions with their children,  $F(1,27) = 36.16, p = .000002$ . Moreover, there was a significant interaction between context and word type for the adults productive vocabulary  $F(2, 27) = 23.52, p = .000001$ . As can be seen from Figure 1, they produced significantly more verb types than noun types in the mechanical toys condition, mean noun type = 6.70, standard deviation = 4.27; mean verb types = 32.70, standard deviation = 9.09, Tukey post hoc test,  $p = .0001$ . In the picture book reading and regular toy condition, roughly equal number of nouns and verbs were produced.



*Figure 1.* Mean vocabulary types of Cantonese-speaking adults.

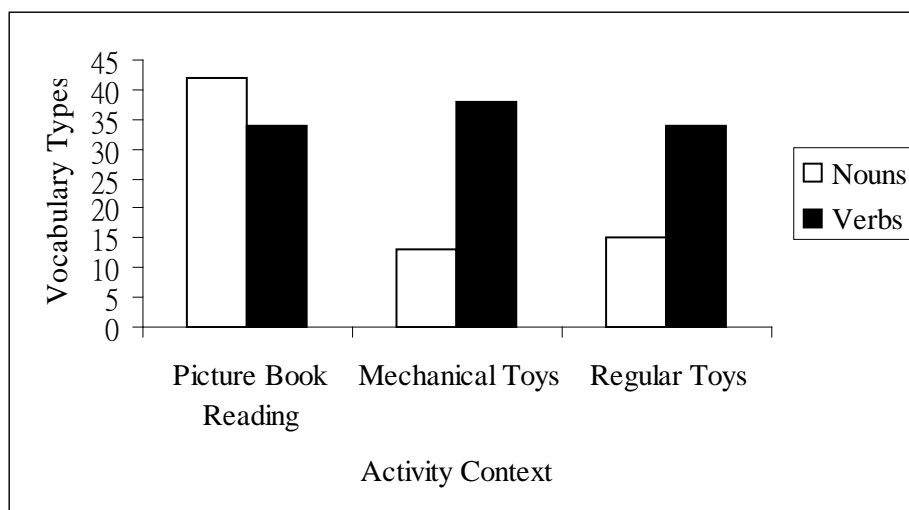


Figure 2. Mean vocabulary types of Mandarin-speaking adults.

Note. The Mandarin data was from Tardif et al. (1999)

Besides the measure of vocabulary use across contexts, the overall verb types and nouns types produced by the adults were also analyzed. The overall types were not obtained by simply adding the number of types in each of the three activity contexts. Rather, they were calculated separately to ensure that overlapping words (i.e. words that were produced in more than one context) were counted only once. The result of the overall verb types and noun types can be seen in Table 2. No significant difference between noun types and verb types was found.

Table 2

*Overall Mean Noun and Verb Types of Adults*

	Nouns	Verbs	$\frac{\text{Nouns}}{\text{Nouns+Verbs}}$
Overall productive speech			
Cantonese			
Mean	53.4	65.3	0.45
SD	16.77	18.09	0.07
Mandarin			
Mean	58.8	71.1	0.45
SD	12.6	10.1	0.05

Note. The Mandarin data was from Tardif et al. (1999)

### *Child productive vocabulary measures*

The children's productive vocabulary across the three activity contexts was analyzed in two ways. The primary analysis included all productive speech that the children produced except for direct repetition and quoted speech. The secondary analysis excluded children's responses to adult's test question, that is, only spontaneous speech produced by the children was counted. The purpose of that was to examine the vocabulary use of children in the absence of such parental elicitation, as sometimes, children may just produce the nouns or verbs in response to their parents' questions.

In the primary analysis (all productive speech excluding direct repetitions and quoted speech), no main effect of context was found. The difference between the noun types and verb types produced by the children during the interaction with their parents was not statistically significant. However, an interaction between context and word type was found in the children's productive vocabulary,  $F(2, 27) = 7.67, p = .002$ . As can be seen from Table 3(see below), the children produced significantly more noun types than verb types when they were given pictures book to read with their parents, mean noun type = 12, standard deviation = 9.7; mean verb types = 5.7, standard deviation = 4.06, Tukey post hoc test,  $p = .009$ . In the other two toys play conditions (mechanical toy and regular toy), they produced roughly equal number of nouns types and verbs types.

When repeating the analyses of common nouns and main verbs by excluding the direct repetitions, quoted speech and test questions and included only the spontaneous speech produced by the children(secondary analyses), a main effect of context was found. The children produced more verb types than noun types when played with materials provided with their parents,  $F(1,27) = 5.39, p = .003$ . However, the previous interaction that more noun types than verb types were produced by the children in the book reading condition no

Table 3

*Children's Mean Noun Types, Verb Types, and Total Word Types, by Language and Activity Context*

Activity Context	Cantonese			Mandarin		
	Nouns	Verbs	Total Types	Nouns	Verbs	Total Types
Productive speech						
Picture Book reading						
Mean*	12.00	5.70	23.10	17.20	7.80	37.70
SD	9.70	4.06	13.60	12.20	7.40	25.80
Mechanical toys						
Mean	1.50	4.00	8.60	4.00	6.50	22.40
SD	0.97	3.33	6.22	2.90	5.60	17.60
Regular toys						
Mean	3.40	4.00	10.90	2.10	4.10	13.50
SD	3.37	2.16	8.84	3.00	4.20	14.20
Excluding test question replies						
Picture Book reading						
Mean	3.70	3.80	12.90	5.40	4.70	18.40
SD	3.27	3.49	8.21	4.00	4.50	14.70
Mechanical toys						
Mean	1.50	3.00	7.60	2.50	4.80	15.50
SD	0.97	2.36	5.38	2.00	4.70	13.60
Regular toys						
Mean	1.70	2.90	0.30	1.70	3.00	9.60
SD	2.16	2.13	7.89	2.40	3.60	11.10

*Note. The Mandarin data was from Tardif et al. (1999)*

*\*Indicates significant difference between the mean of noun types and verb types*

longer exist. No significant interaction was obtained. The children produced roughly equal numbers of nouns types and verb types.

For the overall noun types and verb types produced by the children, the analysis is again, divided into two parts. The first part involves all productive speech of the children.

The second part involves all productive speech excluding replies to test questions. The results



are summarized as Table 4. No significant difference between noun types and verb types was found in both cases.

Table 4

*Overall Noun and Verb Types of Children*

	Nouns	Verbs	Nouns Nouns+Verbs
<b>Productive speech</b>			
<b>Cantonese</b>			
Mean	16.50	11.50	0.59
<i>SD</i>	12.56	7.63	0.13
<b>Mandarin</b>			
Mean	20.60	15.00	0.56
<i>SD</i>	14.20	11.70	0.19
<b>Excluding test question replies</b>			
<b>Cantonese</b>			
Mean	7.60	7.50	0.50
<i>SD</i>	7.23	5.10	0.20
<b>Mandarin</b>			
Mean	8.70	10.30	0.47
<i>SD</i>	6.60	8.60	0.18

*Note. The Mandarin data was from Tardif et al. (1999)*

*Comparison between Findings of the Mandarin and Cantonese Speaking Subjects*

The comparison will be made according to the following aspects: adult productive vocabulary measures, children productive vocabulary measures of all productive speech and children productive vocabulary measure excluding response to adult test questions.

*Adult productive vocabulary measures*

For both groups of adults, main effect was found for context such that both the Cantonese-speaking adults in the present study and the Mandarin-speaking adults in Tardif et al. (1999) produced more verb types than nouns type during the interactions with their

children. Similar to findings from Tardif et al. (1999), interaction effect of context and word type was found also. The Cantonese-speaking adults produced more verb types than noun types in the mechanical toy setting, resuming the results of their Mandarin counterparts. However, the difference between the two groups of adults lied in their vocabulary use in the other two contexts. In Mandarin adults, significant difference between verb types and noun types was found also in the picture book reading and regular toy play condition. Specifically, the Mandarin-speaking adults used more noun types than verb types in picture book reading while a reverse pattern (more verb types than noun types) was found when they were given regular toys to play with. However, for their Cantonese counterparts, no significant difference was found between their production of noun types and verb types in these two conditions.

For the overall productive speech, both the Mandarin- and Cantonese- speaking adults did not show either a noun bias.

#### *Child productive vocabulary measures*

For all productive speech of children excluding direct repetitions and quoted speech (primary analyses), main effect of context was found in the Mandarin-speaking children but not for the Cantonese-speaking children. However, for both groups of children, significant interaction effect was found. As can be seen from Table 4, both groups of children produced significantly more noun types than verb types in the picture book reading condition. In the other two toys play contexts (mechanical toys and regular toys), both groups of children produced roughly equal number of noun types and verb types.

When excluding direct repetitions, quoted speech and responses to test questions and included only spontaneous speech in the analyses (secondary analyses), a main effect of context was found for the Mandarin-speaking children but not the Cantonese-speaking children. Moreover, for both groups of children, no significant interaction effect and no significant difference between verb and noun types in any of the play context was found.

Specifically, both of them no longer showed a noun bias in the picture book reading context like they did when responses to test questions were included.

Looking at the overall productive speech on both groups, no evidence for nouns bias was shown. There was no significant difference between the noun types and verbs types produced in both groups.

Table 5

*Summary of Vocabulary Use in Mandarin- and Cantonese- speaking Adults and Children*

	Cantonese		Mandarin**	
	Children	Adult	Children	Adult
Picture Book	$N > V^*$	$N > V$	$N > V^*$	$N > V^*$
Mechanical Toys	$V > N$	$V > N^*$	$V > N$	$V > N^*$
Regular Toys	$V > N$	$V > N$	$V > N$	$V > N^*$

*Note. The Mandarin data was from Tardif et al. (1999).*

*N=Mean Noun types, V=Mean Verb types*

*\*Indicates significant difference between the mean of noun types and verb types*

## Discussion

Returning to our research questions of whether we would find a noun bias in Cantonese-speaking children and parents, results from the present study would suggest a clear ‘no’.

However, across the three activity contexts, the vocabulary (nouns and verbs) use by these Cantonese subjects was concluded to be different from that of their Mandarin counterparts.

### *Overall Productive Speech in Parents and Children*

Looking at the results from the overall noun types and verb types produced by the Cantonese-speaking children, no evidence for a noun bias was found. This result was in fact consistent with the findings of the study by Gentner (1982) and Tardif et al. (1999), in which the English-speaking children and Mandarin speaking mother used a higher proportion of noun types than their children. For the Cantonese-speaking adults, similar to the results of

that of the children, no evidence for a noun bias was found. Specifically, a higher proportion of verbs was used by them. Again, this was consistent with the result of the Mandarin-speaking adults in Tardif et al. (1999).

*Productive Speech of Parent and Children Across the Three Activity Contexts*

When we looked into the vocabulary (nouns and verbs) used by these Cantonese-speaking subjects across the three activity contexts, different results (in different contexts) from that of their Mandarin counterparts was found. Specifically, when given a book to read with, a significant difference was found. Both the Mandarin-speaking adults and children in Tardif et al. (1999) and the Cantonese-speaking children in the present study produced more noun types than verb types. However, no significant difference between noun types and verb types was found in the Cantonese-speaking adults. On the context of mechanical toys, the same result with the Mandarin-speaking subjects in Tardif et al. (1999) was found. Both the Mandarin- and Cantonese- speaking adults produced more verb types than noun types while their children produced roughly equal number of nouns and verbs. Finally, when given regular toys to play with, the Mandarin-speaking adults produced more verb types than noun types. Roughly equal numbers of noun types and verb types was found in the Mandarin- and Cantonese-speaking children, as well as the Cantonese-speaking adults. Thus, the variation in vocabulary use across different contexts was the same for children, but not for adults in the Mandarin subjects in Tardif et al. (1999) and the Cantonese subjects in the present study.

In addition, when we excluded children's reply to test questions by their parents, similar results to the Mandarin findings was obtained. The book reading context for both groups of children no longer resulted in predominance of nouns in their production. This suggested that similar to the Mandarin-speaking parents, the Cantonese-speaking parents were more focused on asking test questions to elicit nouns in the book reading context, and that the Cantonese-speaking children were producing nouns more 'on demand' in this context.

*Similarity between the Characteristic of the Input Language in Cantonese and Mandarin*

In general, the results obtained from the Cantonese-speaking children in the present study replicated that of the Mandarin-speaking subjects in Tardif et al. (1999). What are the similarities between the input speech of the Cantonese- and Mandarin- speaking adults that made the results obtained from the Cantonese-speaking subjects in the present study and the Mandarin-speaking subject in Tardif et al. (1999) so similar? I would like to discuss three characteristics which have been addressed by Tardif (1996), they are frequency, sentence position and morphological simplicity.

*Frequency*

There has been argument of whether the frequency of occurrence a lexical class in the input language has an effect on the children's acquisition it. In Gentner's (1982) study of preponderance of nouns in his English-speaking children, she examined and rejected the possibility of using frequency of occurrence to explain for the noun bias found in her subjects. However, in the study by Huttenlocher and colleagues (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991) about the frequency of lexical items in parental speech, it was found that there was a direct relation between children's time of acquiring particular word and the frequency of that word in their mother's speech. Specifically, in Choi and Gopnik's study (as cited in Tardif, 1996), Korean-speaking caregivers were reported to produce consistently more verbs types than noun types. On the other hand, in Goldfield (1993), English-speaking caregivers were found to produce more noun types than verb types. That may possibly explain the verb bias found in Korean-speaking children and the noun bias found in English-speaking children (Choi & Gopkin, 1995). A similar finding was obtained in a study of Tardif (1996) about adult-child-speech in Mandarin. It was found that in Mandarin-speaking adults, more verb types than noun types were actually produced by the Mandarin-speaking adults. In replicating Tardif's et al. (1999) study, this study showed that higher frequency of verb types

than noun types were used in the Cantonese input (see Table 1). This may serve to explain why, similar to their Mandarin counterparts, the present study failed to find a noun bias in Cantonese-speaking children.

#### *Sentence position*

Salient position in an utterance was defined as the beginnings and ends of the utterance. They are presumably salient for children (Slobin, 1973, 1985). As a result, a child may acquire words which frequently occur in these two positions than those which are not.

In Goldfield's (1993) study of maternal speech to one-year-old, nouns were found to use in a higher frequency than verbs in utterance-final position the English-speaking mothers. In addition, the Mandarin-speaking mothers in Tardif (1993) were also found to place verbs at salient position (beginnings and ends of utterance) with much higher frequencies than nouns. These two findings may explain for the nouns and verbs bias found in English-speaking children and Mandarin-speaking children respectively. Similar to Mandarin-speaking mothers, the Cantonese-speaking mothers in the present study were found to place verbs at the beginning and ends of utterance with higher frequency than nouns. Verbs were placed at salient position in 18% of all utterance whereas nouns were only found to occur in salient position with 8%. This similarity of higher percentage of verbs occurring at salient position might contribute to the similar findings obtained from the Cantonese-speaking subjects in the present study and the Mandarin subjects in Tardif et al. (1999).

#### *Morphological simplicity*

In Gentner (1982), it has been suggested that the simpler the morphological markings on a word, or the lesser these markings can be varied, the easier it is the word to be acquired by children. She suggested that as the morphology of noun in English is relatively simpler than verb, nouns are more easily acquired by English-speaking children, resulting in the noun bias phenomenon. In contrast, in Mandarin, the morphology of nouns and verbs is equally

consistent and simple. It seldom varies across different context of use. Thus, noun bias was not present in Mandarin-speaking children. Similarly, in Cantonese, the morphology of nouns and verbs is equally consistent and simple. The simple morphological feature of nouns and verbs in Mandarin and Cantonese has made nouns bias unlikely to be reinforced.

#### *Other Possible Contributing Factors*

Beside similarities in word frequency, sentence position and morphological simplicity in the input speech, one other factor which may also responsible for the results obtained was the socioeconomic status of the parents in the two studies.

#### *Socioeconomic status and birth order effect*

Socioeconomic status was proven to correlate with the proportion of nouns in children's lexicon (Bates et al.,1994; Lieven, Pine, & Dresner Barnes, 1992). In Lieven et al.'s study of children's first 50-word vocabulary, lower percentage of nouns was found in children with lower socioeconomic status than children with middle socioeconomic status in study of Pine(as cited in Tardif, 1996). Thus, there exists a correlation between the proportion of nouns produced by children and the socioeconomic status of their parents.

In the present study, the mean education attainment of the parents was 14.60 years while that of the Mandarin parents in Tardif et al. (1999) was 15.40 years. The two means do not show big difference. This may have implied that the similarity of the socioeconomic status of the parents in the two studies have partly contributed to the similar results obtained in the Mandarin-speaking children in Tardif et al. (1999) and the Cantonese-speaking children in the present study.

#### Conclusions

In sum, the Cantonese-speaking children in the present study, which replicated the results of Tardif et al. (1999), failed to show a noun bias during the interaction with their parents. Supported by results from study of Choi and Gopkin (1995) and Tardif (1996), this

study has further verified that noun bias is not a universal phenomenon in children learning language. However, though the obtained results matched with the initial hypothesis, it is suggested that more subjects could be recruited in the future in studying the noun bias issue in Cantonese. The number of subjects in the present study was limited because the children subjects were not of pre-school age, as a result, it was difficult to find a large group of subjects in the limited time. Another limitation of the present study lies in the choice of mechanical toys. As identical mechanical toys as that used in Tardif et al. (1999) could not be found, others mechanical toys were used instead. Thus, it is suggested that to make the results more comparable, identical toy sets should be used for future study. There are some questions that the present study could not answer. For examples, across the three activities contexts, why would the Cantonese-speaking children show the same results as their Mandarin counterparts, but different results was obtained for their parents? Would that suggest that the interaction style of the parents speaking Mandarin and Cantonese are different? If the interaction style of parents of the two languages is different, does it imply that other factors in the input language (e.g. word frequency, sentence position and morphological simplicity) play a more important role in children's word learning? Moreover, how do children with different languages differ in learning language, and how do these differences contribute to the nouns or verbs bias observed in others languages? These may be some issues worthy for further studies. It is believed that answers to these would help us understand more about the cross-linguistic difference observed in the use of nouns or verbs in children early vocabulary.

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## Appendix

### *List of Pictures in Picture Book*

Lion; soccer ball; saucepan; butterfly; dinosaur; girl with cat; turtle; boy listening to his wristwatch; boy standing astride; bulldozer; duck; shoes; carrots; bear; telephone; saw; clown hat; violin and bow; mouse; dandelions; comb; boy shoveling in sandbox; car; umbrella; apple with slice removed; kite; frog; hat and mitten; bird; hammer; dog; coat; tree; teapot; doll; chair; mushrooms in grass; airplane; gorilla; motorcycle; pencil; cow; sailboat; beetles; tractor.