

But are they really verbs?

**But are they really verbs? Chinese words for action**

Twila Tardif, University of Michigan

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Correspondence Address:  
Twila Tardif  
Center for Human Growth and Development  
300 North Ingalls, 10<sup>th</sup> Floor  
Ann Arbor, MI 48109-0406

[twila@umich.edu](mailto:twila@umich.edu)

Over the past decade, several studies of Mandarin- and Cantonese-speaking children's early vocabulary development have provided converging evidence for the fact that Chinese-speaking children's vocabularies have a *very different* proportion of nouns and verbs than comparable samples of English speakers and speakers of most other languages, except perhaps Korean (see Choi, 2000; Choi & Gopnik, 1995; Kim, McGregor, & Thompson, 2000). Moreover, although individual child characteristics, activity context and measurement instruments all have significant effects on the extent to which a child's vocabulary may appear to contain nouns or verbs, every context and instrument in which Chinese- and English-speaking children's vocabularies has been compared directly has yielded reliable and highly significant differences. English-speaking children's vocabularies, on average, contain a much higher proportion of nouns than verbs as well as a higher proportion of nouns than Chinese-speaking children. In contrast, Chinese-speaking children's vocabularies contain roughly equal numbers of nouns and verbs and a much higher proportion of verbs than English-speaking children (Tardif, 1996; Tardif, Shatz, & Naigles, 1997; Tardif, Gelman, & Xu, 1999). Thus, although I would not argue that Chinese children have a "verb bias," the fact that verbs are learned so early and in such great numbers in Chinese needs to be explained.

The focus of this chapter is on what properties Chinese verbs may have to facilitate the process of verb-learning in Chinese, much as properties of nouns may afford the learning of nouns (cf. Gentner, 1982; Gentner & Boroditsky, 2001). More generally, I believe that important insights can be obtained from an examination of the nature of Chinese- and English-speaking children's early vocabularies. Certainly nouns have many properties that make them easy to learn, but why are they not learned at the same rates across languages? Moreover, why do Chinese-speaking children learn so many verbs as well as (and often instead of) concrete nouns? As many authors have commented (Gentner, 1982; Gentner &

Boroditsky, 2001; Tardif, 1996; Tardif, Shatz, & Naigles, 1997; Tomasello, 2003) Chinese is a “verb-friendly” language. Specifically, several aspects of the input (e.g., frequency and placement of nouns vs. verbs), morphological transparency, and pragmatic emphases on “naming” vs. “doing” games may act in tandem with (as in English) or against (as in Mandarin) any cognitive biases that children might bring to the task of word learning and result in varying proportions of nouns and verbs in children’s early vocabularies across languages. However, I believe there is an additional factor that has not been emphasized in previous treatments of why English and Chinese might be different.

In Chinese, but not English, verbs are highly specified and there is little resorting to “general purpose” or “light” verbs as there is in English simply because these general purpose verb terms do not exist. In contrast, Chinese-speakers often resort to “general purpose” types of nouns (e.g., *che1*, vehicle) even though they have more specific labels which would correspond to the myriad of specific object nouns that young children acquire early in English (e.g., car, truck, motorcycle, bicycle, bus). Previous theories on the nature of word-learning and particularly those focused on explaining the noun bias have discussed various features of nouns and verbs that may work together with innate perceptual and conceptual constraints to facilitate the learning of nouns and hinder the learning of verbs. However, in this chapter, I would like to suggest that some of these features may not be true across all languages. Specifically, whereas these prior theories have allowed for cross-linguistic differences in specific features such as syntactic markings and inflections, word order, and differences in the extent to which manner and path are lexicalized within the verb itself, I am suggesting that we need to also consider the nature of the words themselves and how they are organized into a coherent “noun” or “verb” lexicon in a particular language. In essence, I am responding to a question that Liz Bates posed to me (personal communication, 2002) regarding the following findings in Chinese – “But are they really verbs?” With

respect to Liz and to foreshadow my conclusions, “YES!” they are most certainly verbs in every formal sense of the term. However, I would also argue that they are not the same kinds of verbs (or nouns) that we have in English and a deeper understanding of cross-linguistic differences in what verbs (and nouns) really are, I feel, may go a long way towards explaining the phenomenon. For urging me to think through this issue, I owe a debt of gratitude to Liz for posing the question in the first place.

## **1. Documenting the phenomenon**

Before explaining the phenomenon, however, it is important to clarify the nature of the difference between Mandarin and English with respect to verb (and noun) acquisition. Several previous studies have demonstrated, in separate samples of children and using various methods of counting nouns and verbs, that Mandarin Chinese-speaking children do not have the same predominance of nouns in their early vocabularies as English-speaking children (Tardif, 1996; Tardif, Shatz, & Naigles, 1997; Tardif, Gelman, & Xu, 1999). More recently, this has been found for Cantonese-speaking children in Hong Kong as well (Leung, 2001). However, each of these samples were relatively small and relied primarily on naturalistic speech samples (although Tardif et al., 1999, also administered a pilot version of the MacArthur-Bates Communicative Development Inventory (CDI), a parental-report checklist measure of early vocabulary) with children who were typically beyond the earliest stages of vocabulary acquisition. This has led some authors (e.g., Gentner & Boroditsky, 2001) to conclude that Chinese children probably do show a noun bias in their earliest stages of vocabulary learning, but that it was not captured in these studies because they examined toddlers who were beyond the earliest stages of language acquisition. Moreover, other researchers (e.g., Au, Dapretto, & Song, 1994; Caselli et al., 1995; Tomasello, 2003) have suggested that the CDI, because it is based on mothers’ knowledge of their children’s vocabularies over multiple contexts and situations, would be a more appropriate instrument for examining the actual content of children’s vocabularies than spoken language measures which may

overestimate the words that children use more frequently. In other words, naturalistic samples may be biased by counting more word types for those words that appear more frequently as tokens (see Richards, 1987 for an expansion of this argument). Indeed, Mandarin-speaking children and their caregivers produce more verb tokens as well as verb types. However, when the type-token ratios for children's nouns and verbs in the Tardif (1996) Mandarin sample were examined, they did not differ. More importantly, I have also argued (1996, 2005) that Mandarin-speaking children have access to more verb types than English-speaking children and that English-speaking children have access to more noun types than Mandarin-speaking children. Nonetheless, without examining comparable samples of English and Mandarin on a measure that is not susceptible to a frequency effect, it is difficult to demonstrate this convincingly.

Thus, the focus in this section will be on preliminary data from three large scale norming studies of the MacArthur-Bates Communicative Development Inventory (CDI) (Fenson et al., 1993) – the original English sample, as well as both the Putonghua (Mandarin) and Cantonese CDI norming samples (Tardif, Fletcher, Liang, & Zhang, 2002).

Each of these 3 samples includes approximately 1600 children, with roughly 70 children at each monthly age group from 8 to 30 months, with equal numbers of males and females at each age group. In addition, all 3 samples are relatively well distributed in terms of parents' levels of education and socioeconomic status and are generally representative of urban and suburban populations in each location. Direct comparisons of these samples to examine the overall patterns of word types that appear in children's early vocabularies as well as the nature of the words themselves, will allow us to more clearly understand the nature of the cross-linguistic differences between English and Chinese. Importantly, we also consider two different dialects of Chinese, Mandarin and Cantonese, which differ

in many phonological, lexical, and syntactic properties -- so much so that some linguists (e.g., Ramsey, 1987) have suggested that, from a linguistic perspective, they are only dialects inasmuch as French and Italian could be considered “dialects” of Romance.

As with the naturalistic data reported in earlier studies, even the large sample CDI results show clear noun-verb differences between children who were learning English versus those learning Mandarin or Cantonese as their first language (Tardif, Fletcher, Liang, & Zhang, 2002). Importantly, this was true at all levels of vocabulary development. As can be seen from Figure 1, both Mandarin- and Cantonese-speaking children had fewer nouns and more verbs than English-speaking children at every level of vocabulary development examined by the CDI. In Figure 2, which examines the ratios of nouns/(nouns+verbs) in English and Mandarin, it is even more obvious that this was more true for children who had only 1-5 words in their vocabularies than it was for children who had 600 or 700 words. What is particularly striking about these data is that, when side-by-side comparisons are made, verbs appear to develop at roughly the same time (and with similar growth curves) as closed class items in English, whereas they develop early and are more parallel with the growth of nouns in Mandarin and Cantonese. And yet, despite enormous differences in the nature of closed class items across English and Chinese, both the Mandarin and Cantonese samples showed a similar, delayed, development of closed class items as the English-speaking children. Thus, even on the CDI with large samples of children at varying ages and levels of language development, English- and Chinese-speaking children differ with respect to how predominant and easily *both nouns and verbs* are acquired in each language. Statistically, this translates into a highly significant word type by location interaction, controlling for both age and total vocabulary,  $F(2, 5098) = 1689.91$ ,  $p < .0001$ , with English-speaking children producing more nouns and fewer verbs than either the Mandarin- or Cantonese-speaking children.

The next question, then, given how reliably this finding has appeared (using naturalistic samples in home environments, controlled contexts of natural speech sampling in the laboratory, and even the CDI), is *why* Chinese-speaking children have so many verbs in their early vocabularies? Previous studies have focused on the role of input and activity context, as discussed below, but, as mentioned above, I will propose that it is not just input, but that the nature of the categories “verb” and “noun” also differ across languages.

### **Is it input?**

Several studies point towards the role of input -- the speech that children hear directed specifically towards them – both in supporting the noun bias in languages like English and in not supporting the noun bias in languages like Mandarin. In Tardif, Shatz, & Naigles’ (1997) study, Mandarin-speaking caregivers produced more verb types and tokens than noun types and tokens, placed verbs at the ends of utterances, and had fewer morphological alterations to verbs than to nouns. In contrast, English- and Italian-speaking caregivers showed more morphological alterations on the verbs, placed nouns at the ends of utterances, showed a much smaller difference between verb and noun tokens than the Mandarin-speaking caregivers, and, most importantly, neither the English- nor the Italian-speaking caregivers produced more verb types than noun types. These input frequency differences were replicated in Tardif, Gelman and Xu’s (1999) study of English- and Mandarin-speaking caregivers in three controlled laboratory contexts (book-reading, toy play, mechanical toy play), where again Mandarin-speaking caregivers (and their children) showed a significantly greater token frequency for verbs, but also a significantly greater number of verb types than the English-speaking caregivers. Similar findings have been reported for Korean (Choi, 2000) and for Tzeltal (Brown, 1998), but it is not clear that the type difference between nouns and verbs or even the contrast with English is true for

Japanese (Ogura, Murase, Yamashita, & Mahieu, 1999). If frequency of types as well as tokens is important, then, it is not surprising that high proportions of verbs are reported for Mandarin, Korean, and Tzeltal-speaking toddlers, but not for English, Italian, or Japanese-speaking children.

Another way of considering the role of input is to consider not just the words themselves, but to consider the clarity of cues that caregivers provide for children when they are trying to call their attention to a specific noun or verb in ongoing speech. Gleitman and colleagues (Gillette, Gleitman, Gleitman, & Lederer, 1999) addressed this issue by filming a group of English-speaking caregivers interacting with their language-learning toddlers and extracting segments of the videos where the caregivers were emphasizing a particular noun or verb (target word). These segments were then shown to a group of undergraduate students with the target word removed in order to test how likely the students would be to guess the target word. Their findings, for this native English-speaking sample watching native English-speaking caregivers, were that the students were much more accurate at guessing the nouns than they were at guessing the verbs and that the imageability of the words themselves did not predict the accuracy of their guesses. Gillette et al. (1999) take these findings to suggest that not only are nouns conceptually simpler than verbs, but that it is also easier to identify which noun-object mapping is intended than it is to identify which verb-action mapping is intended. I would argue that, for English, this finding is most certainly true, but that it is unlikely to hold up for Chinese. Indeed, in a recent study reported by Snedeker, Li, and Yuan (2003), cross-linguistic differences were found in this very same task. Specifically, English-speaking college students were very inaccurate at identifying the translation-equivalents of nouns used by Mandarin-speaking caregivers in the same types of adult-child interactions used in the Gillette et al. study and were in fact more accurate at guessing the translation-equivalents of Mandarin verbs than they were at guessing the

English verbs. Second, a group of Mandarin-speaking college students were also more accurate at guessing the Mandarin verbs than the translation-equivalents of English verbs and at guessing the translation-equivalents of English nouns versus the Mandarin nouns. This input language by word type interaction suggests, in fact, that not only does the linguistic input (type and token frequency, placement of words in an utterance) vary across languages, but so does the non-linguistic input. In addition to the possibility that caregivers in different cultures may engage in different activities with their children (see Fernald & Morikawa, 1993; and discussion of context effects found by Tardif et al., 1999), the non-linguistic cues offered by native English- and native Mandarin-speaking caregivers also vary to the extent that even when one cannot understand the language being spoken, accuracy in making word-to-world mappings will be in the direction of emphasis for the language being spoken, not in the direction of emphasis for one's native language.

Thus, there are plenty of reasons from the input (linguistic and non-linguistic) alone for why Mandarin-speaking children might be more readily able to learn verbs than English-speaking children. Nonetheless, I believe a full account of why Mandarin-speaking children learn as many verbs (and as few common nouns) as they do is not complete until we also consider the nature of the verbs themselves.

## **2. Are Chinese verbs really “verbs”?**

To answer the question, “But are they really verbs?” one has to consider the question of what makes a verb a “verb.” For the present purposes, I will focus on two issues: (1) the acquisition and use of syntactic markers that are unique to the category of “verbs”; and (2) the semantics of these words as words that encode “one or more entities undergoing changes of state” (Tomasello, 1992, p. 6). For the first, I will demonstrate that Mandarin-speaking children demonstrate early acquisition of these markers

(i.e., soon after they first begin to combine words) and that they use these markers in conjunction with verbs in everyday speech. For the second, I will examine the most frequent words that appear in children's vocabularies, as measured on the CDI in English and Mandarin, and specifically contrast the most frequent "action words" in each of these languages. For each of these ways of considering the question, my answer is most definitely "yes, Chinese verbs are VERBS." However, there is a remaining sense in which verbs in Chinese (and Korean and Tzeltal) are quite different from those in English and it is this last sense, I believe, that can help us to understand why Chinese speakers have such an easy time with verbs (and perhaps a harder time acquiring common nouns than expected by current theories which map cognitive predispositions onto form class categories).

### **Misconception #1: Chinese doesn't have form classes**

Several authors (e.g., Kao, 1990) have argued that perhaps verbs in Chinese aren't really "verbs" because Chinese allows for much flexibility in the assignment of words to word classes, and this may in fact account for why there appear to be so many verbs in Chinese children's early vocabularies – because they are not really "verbs" in the grammatical sense of the term. Although this is an extreme position, many authors (e.g., Bates, Chen, Tzeng, Li, & Opie, 1991; Li, Jin, & Tan, in press) have taken a milder form of this position. In this view, it is assumed that although class-ambiguous words occur in many languages, including English, the proportion of verbs that can occur freely as nouns or nouns that can appear as verbs with no morphological changes is greater in Chinese than for other languages. Instead, I argue that this is a misconstrual of both English and Chinese for adults (see also Chan & Tai, 1995) and even more so for children's earliest verbs.

In fact, of the 20 most frequent "Action words" (verbs) in the vocabularies of 16-month-olds in the English and Mandarin norming studies for the CDI, a much larger number of the English verbs can

be turned into nouns (without changes in morphology or pronunciation) than the Chinese verbs. If we examine the list shown in Table 1, fully 12 of the English verbs can be used as nouns by placing them in a sentence with a general-purpose verb such as “have/take a TARGET” (e.g., have a bite/drink/cry/...). Others, (e.g., “go,” “tickle”) are more marginal, but likely to be frequently nominalized in adult-to-child speech, whereas only 3 (“eat,” “open,” “see”) of the 20 most common verbs for 16-month-olds are resistant to this type of nominalization. In Mandarin, the comparable transformation would be to add a numeral-classifier compound (e.g., yi-ge), with the general classifier “-ge4.” Under this rule (or any other rule that transforms verbs into nouns without changing morphology), only one of the Mandarin verbs (“niao4” = “pee”) could be transformed into a noun. Six others (“chi1”/eat, “zou3”/walk “he1”/drink, “kai1”/open, “chuan1”/wear, and “ti1”/kick) frequently appear in verb-object compounds (e.g., “chi1 fan4”), but only two of these compounds (“chi1 fan4”, “zou3 lu4”) are synonymous with the verb in isolation. Instead, most of these common Mandarin verbs have free substitutions of objects and do not change form class unless they are transformed grammatically in a nominalizing phrase (i.e., verb + DE). Even this process, which is much like the process of creating a gerund in English, would not occur with great frequency for most of these verbs. Note that even for verbs which are semantically similar across English and Mandarin such as “bao4/hug,” the English verb, but not the Mandarin, is form-class ambiguous. Thus, for children’s earliest verbs, at least, it is simply not the case that Mandarin has more words that can be both nouns and verbs than English (see also Chan & Tai, 1995 for a comparison of denominal verbs in modern adult Mandarin versus English).

**Misconception #2: Chinese children are using verbs as bare forms, not inflected forms**

Another way one might argue that the Chinese verbs reported on the CDI are not really verbs is if children are producing them as bare forms. In this view, although the lexical items may be verbs in the adult lexicon, when children are producing them at the one-word stage, they may simply be producing them as holophrases such as Lois Bloom's (1970) "mommy sock" example in which the words that are uttered may have a whole host of meanings that go beyond the forms themselves. Tomasello (1992) also makes this argument for several of his daughter's early noun forms as well as for children's early words more generally. Although detailed data on how children are actually using words is necessary to fully address this question, the issue of whether Mandarin-speaking children are producing verbs in isolation versus verbs together with appropriate syntactic markings is something that can be addressed both with the CDI data and with the naturalistic data that have already been collected for Mandarin-speaking toddlers.

Despite the fact that Mandarin allows frequent ellipsis of grammatical markers and verbal arguments, prompting some to suggest it presents a "worst case" scenario for syntactic bootstrapping, there is quite a large degree of predictability in which verbs receive arguments and which do not, even in adult-to-child speech (Lee, Nelson, & Naigles, 2003). Moreover, although the particular syntactic differences between nouns and verbs are different from English and not as easily identified in inflectional processes such as plurals or tense, the differences between nouns and verbs in Mandarin are both numerous and obvious to the listener, particularly when word order and specific constructions are taken into account. Among other distinguishing features, both Chao (1968) and Li and Thompson (1981) argue that nouns, but not verbs, are modifiable by a preceding numeral-classifier compound (e.g., *yi1-ben3 shu1*; one-CL book); cannot be modified by monosyllabic adverbs such as negative markers (e.g., *\*bu4 shu1*; \*not book); and can typically be substituted into a possessive phrase such as "*wo3-de*

*shu1*” (“my book”). In contrast, verbs, but not nouns, can be preceded by the negative markers “*bu4*” or “*mei2*,” may be preceded by “*bie2*” (don’t) and other auxiliaries; may receive aspect marking with the pre-verbal marker “*zai4*” or the post-verbal markers “*zhe*,” “*le*,” or “*guo4*,” and may be followed by various types of resultative verb constructions indicating the extent or direction of the verb (e.g., *kan4-wan2 le*; read-finish ASP = finished reading).

In our CDI data, Mandarin-speaking children were reported to use syntactic markings on verbs at roughly the same ages and stages of language acquisition as English-speaking children. As shown in Figure 3, by 24 months of age, over 80 percent of Mandarin-speaking children in our CDI sample were reported to combine words, and roughly 50 percent of children produced one or more of the markers used on nouns and verbs. Thus, it is clear that by 24 months of age Mandarin-speaking children are using verb-specific syntax and, in this sense, are producing “verbs” and not just words that happen to be verbs in the adult speech but are not marked as verbs by the child.

Nonetheless, the above data do not examine whether children are making distinctions between nouns and verbs by using these markings uniquely for nouns and verbs or whether they are using them indiscriminately. In order to examine this question, Tardif & Zhang (2003) reported an analysis of the 5 most frequent action verbs (*na2*, *zuo4*, *chi1*, *da3*, *zou3*; grab, sit, eat, hit, walk/go) and the 5 most frequent object nouns (*che1*, *qiu2*, *mao1*, *bi3*, *deng1*; car/vehicle, ball, cat, pen/writing instrument, light) in every child utterance from the monthly transcripts of the 10 children in the Tardif (1996) corpus. In this analysis, a total of 1,267 sentence frames were examined from the 20- to 26-month-old children. And, although the vast majority of words (a higher proportion of nouns than verbs) were produced in isolation, as shown in Table 2, when children did use syntactic markers there was almost no overlap for the unique noun (numeral + classifier; possessive) and verb (negative; aspect; resultative verb

complement) modifiers. The one exception to this was for 2 uses of the negative marker “*mei2*” (not [have]) with the noun “*che1*” (car/vehicle). In fact, although negative markers are not permitted to directly modify nouns, the marker “*mei2*” (not) often appears as a shortened form of “*mei2 you3*” (not have) when preceding bare nouns, even in adult speech, and its status as a pure negative marker versus a negative verb form is debatable (Chao, 1968)<sup>1</sup>.

Thus, it is clear that Mandarin-speakers, and presumably Cantonese-speakers as well, use syntactic markings for nouns and verbs from a very early age and that they use them appropriately such that only noun-markings are used with nouns and only verb-markings are used with verbs. A remaining issue, however is how flexible they are in using these markings. Do Mandarin- and Cantonese-speaking children use sentence structures and syntactic markings on verbs flexibly with relatively free substitution (as is allowed by the verb properties), as Tomasello (1992; 2000) argues is necessary to demonstrate that they have the syntactic category of “verb,” or do they use them in a piecemeal fashion, using some markings with some verbs but not yet with others, at rates mimicking the frequencies heard in the input? For Mandarin, these analyses have yet to be done, but if we were to extrapolate from both English and Tzeltal (Brown, 1998), we might predict that once children acquire a “critical mass” of verbs in their vocabularies, they do become flexible users of the syntax. The interesting difference is that for Mandarin and Tzeltal, because large numbers of verbs are learned early, one would predict that this critical mass of verbs and, by extension, “verb” as a syntactic category, would be acquired much earlier in the word-learning process than it is for English.

**Misconception #3: Chinese verbs are not really what we would call “verbs” in English – they are simpler types of predicates or possibly even nouns**

A final way in which Mandarin verbs might not be considered “verbs” is if their meanings are different from what we mean by a verb in English. To use Tomasello’s (1992) definition, in order to be considered a verb, a word must encode something about a change of state rather than be a simple directional (e.g., “up” as it is often used in English child speech) or other placeholder for more complex verbal meanings. To examine this more closely, let us consider the 100 most frequent words acquired by 16-month-old English- and Mandarin-speaking toddlers on the CDI. The number of items that fall into the categories People, Common Nouns (including Animals, Body Parts, Clothing, Food and Drink, Small Household Objects, Toys, Vehicles, and Outside Things and Places), Adjectives (Descriptive Words), Verbs (Action Words), Games and Routines, Sound Effects, and Closed Class (Quantifiers, Pronouns, Time Words, Direction Words, and Classifiers) from the CDI norming samples in both English and Mandarin are shown in Table 3. As expected, most of the top 100 words for English-speaking toddlers are common nouns. Two-thirds of the most common 100 words, in fact, are nouns, and only three of the top 100 words in English are verbs. In contrast, only one-third of the top 100 words in Mandarin are common nouns and this is paralleled by almost as many verbs. Even when the category of “people” is considered together with common nouns, just under half of the top 100 Mandarin words for 16-month-olds are nominals, whereas English-speaking 16-month-olds have almost three-quarters of their vocabularies filled with nominals. Although some authors (e.g., Gentner & Boroditsky, 2001; Gillette et al., 1999) are satisfied that this then demonstrates Mandarin conforms to the general cognitive predispositions children have towards learning nouns, I believe that stopping at this conclusion prevents us from fully understanding not only how children learn verbs in Mandarin but how words are learned by children more generally. Understanding what is really different about

Mandarin-speaking children's early lexicons can provide us with clues to understanding the deeper principles underlying the predispositions.

What is most surprising in the Mandarin data is not that children do not acquire as many common nouns as English (although this too is worthy of exploration, as I discuss below), but that they acquire so many verbs. Almost one-third (27) of the top 100 words for the Mandarin-speaking 16-month-olds were verbs, whereas English-speaking children had only three. This is a nine-fold difference! For common nouns, the difference is only two-fold. Although some of the differences might be explained by input alone, I believe that differences in the semantic properties of both nouns and verbs in these two languages may help explain the rest of the anomaly.

However, it is important to clarify that the semantic properties of these categories are not different in the sense that verbs in Chinese are really what are called “nouns” in English or, to be less extreme, other “predicate-like” categories. For the case with nouns, it should suffice to examine the most common 20 verbs in 16-month-olds vocabularies, as shown in Table 1. Clearly, each of these verbs, even in Mandarin, is a word that describes an action or change of state and not an entity. Moreover, even when categories such as descriptive words and games and routines are included in the data, there is still a highly significant difference across languages. Finally, when the actual terms that are described in each of these categories are examined, they are surprisingly similar across languages. For instance, in English, the most common descriptive terms are “hot,” “all gone,” “yucky,” and “pretty,” whereas they are “*mei2 le!*/gone,” “*da4*/big,” “*tang4*/hot,” and “*chou4*/stinky” in Mandarin. Thus, it is not the case that the Mandarin verbs are “not really verbs” in the sense of being what one would count as adjectives or other types of predicates on the English CDI.

So how are verbs different in Chinese: “Are they really verbs?”, revisited

According to Gentner (1982, p. 304), “the Natural Partitions view predicts that terms denoting objects and entities will be acquired first across languages and that these terms will be nominals.” This is echoed in her more recent view, whereby the combination of “natural partitions” and “relational relativity” (that “noun meanings are given to us by the world” whereas “verb meanings are more free to vary across languages,” Gentner, 1981, p. 169) leads to the proposal that “children learn some object names before relational terms” (Gentner & Boroditsky, 2001, p. 217). In both discussions, there is a “division of dominance” such that cognitive and perceptual categories and experience aid in children’s mapping of words to the world for proper names and concrete nouns, whereas linguistic experience is required for the acquisition of closed class items, with kinship terms, verbs, and prepositions lying in between. Although the general claim that children acquire some words by relying on perceptual and conceptual cues, and that others are acquired by relying more heavily on linguistic experience must be true, I suggest that this particular continuum of categories is not equally applicable across languages. In fact, Gentner and Boroditsky (2001) allude to this issue in their discussions of English-speaking children’s acquisition of different types of nouns and verbs and of cross-linguistic data pertaining to their hypothesis (particularly with respect to Brown’s (1998) work in Tzeltal and deLeon’s (2001) findings for Tzotzil). Nonetheless, examining this question more closely with reference to the nature of verb (and noun) semantics in English and Mandarin will be particularly informative as to why Mandarin appears to “break the rule.”

Several authors (e.g., Clark, 1993; Goldberg, 1999) have made a distinction between “light” vs. “heavy” verbs and argued that “light,” or “general-purpose,” verbs such as “go,” “do,” and “make” are acquired earliest and used most frequently in children’s verb vocabularies. Nonetheless, there may be cross-linguistic differences in this as well (Clark, 2003). In her discussion of why Tzeltal-speaking

children appear to acquire so many verbs, Brown (1998) challenged this notion and suggested that, in contrast, Tzeltal-speaking children tend to acquire “heavy” verbs in their early stages of vocabulary learning. I would argue that Mandarin-speaking children acquire both types of verbs and that they use “heavy” verbs with much greater frequency than English-speaking children. For instance, in English, “go” and “put” are used more than twice as often as any other verbs when talking about intransitive and transitive motion, respectively (Clark, 2003). In Mandarin, this is not the case – the verbs for “go” (*zou3/qu4*) are among the most common intransitive verbs in Tardif’s (1996) corpus, but these two Mandarin verbs are more specific than the English equivalent and not used with much greater frequency than other verbs such as “look” (*kan4*), “come” (*lai2*), sit (*zuo4*), “ascend” (*shang4*), or “descend” (*xia4*). For transitive motion verbs, “grab” (*na2*) is the most common, followed by “hit” (*da3*), “eat” (*chi1*) and other verbs, with “put” still appearing frequently, but not as frequently as any of these other verbs (Tardif, 2001).

In the English and Mandarin CDI data presented above, both “light” and “heavy” verbs appear as common verb types for 16-month-olds. Thus, even for English, “heavy” verbs – those which provide strong cues to the subject/agent or object/patient of the verb – can be acquired early. Nonetheless, in English, these words are not acquired as early as many common nouns, as evidenced by the relative rankings of these words on the CDI. In English, for instance, the most common object noun is “ball,” ranking number 6, followed by “dog,” at rank number 9. The most common action words are “go” (a light verb) and “bite” (a heavy verb) with a tied ranking of 81, and 48 object nouns preceding these 2 verbs. For Mandarin, the most common object noun is “egg,” ranking number 10, followed by “light” at rank 17. The most common action words are “hug/hold” (a heavy verb, with a human agent holding another human patient in the arms) at rank 5 and “hit” (neither very heavy nor very light, since a human

agent using a hand is implied but not required – an instrument could be instead of a bare hand—and any number of potential objects or beings could serve as the patient) at rank 10. Thus, for Mandarin, the action words appear just as early and are just as common as object nouns, whereas object nouns clearly appear earlier and more frequently in English-speaking children’s early vocabularies.

Mandarin, like Korean and Tzeltal (Choi & Bowerman, 1991; Brown, 1998; Choi, 1998), encodes much more into the verb than English. Examples of this difference abound, and Choi and Bowerman (1991; Bowerman & Choi, 2001) discuss this for Korean in terms of spatial properties, but I believe the difference is more broad than that. Consider, for example, the verbs “carry,” and “push.” In English, “carry” refers to “carrying a backpack” (on the shoulders/back), “carrying a baby,” “carrying a serving dish,” “carrying a purse,” and a number of different ways of transporting objects with one’s body. In Mandarin, distinct verbs are used for different ways in which objects might be carried (i.e., on the back, *bei1*, held in one’s arms, *bao4*, flat on two hands, *duan1*, dangling in one hand, *ling2*, etc.). To distinguish amongst these different forms of carrying, Chinese (both Mandarin and Cantonese) uses distinctly different morphological forms such that there is nothing common or transparent in the morphology of each of these verbs that would allow the child to infer the English term “carry.” Indeed it would be incorrect and result in a different understanding if one tried to use a single verb to represent these various meanings. In English, even though there are distinct terms for many specific actions – one can press, topple, shove, or squish something – one tends to resort to a general purpose verb, together with a preposition and the relevant object noun when talking about actions (i.e., “push down,” “push over,” “push away,” etc.) particularly in face-to-face communications where it is obvious what kind of pushing (or other motion) is involved.

The opposite is true for nouns. Specifically, I would argue that, in Chinese, many nouns, and particularly nouns of everyday use, are “light.” This became particularly evident when we began the process of translating and piloting the CDI in Mandarin and Cantonese. Although both of these Chinese languages have an indefinitely large number of specific nouns to describe all kinds of household objects, toys, and everyday items that a child might come into contact with, when we put these terms on the instrument, two types of phenomena became glaringly obvious. First, many distinct English nouns had common “root” terms in Chinese. For example, in English, “rooster” and “hen” are both types of “chickens” and each of these words appear on the CDI, with over 50% of 24-month olds in the English sample able to say “chicken” and 20% or more able to say “rooster” and “hen” (Dale & Fenson, 1996). In Chinese, all 3 terms share a common root, “chicken” (“*ji1*”), and “hen” and “rooster” are productive variations with the prefixes “mother” (“*mu3-ji1*”) and “male” (“*gong1-ji1*”). Although it is acceptable to consider these as separate words, the problem comes when additional male-female or adult-juvenile distinctions are made with other animals – the same prefixes are used over and over again. In English, “mare” and “cow” have no obvious morphological relations to “hen,” despite the fact that they are all females. In Chinese, however, the females of all three species would be referred to as “*mu3*” plus the common term for the species. In other cases, such as for the category vehicles, the English terms are again highly distinctive (e.g., motorcycle, bicycle, truck, car, taxi, bus, train, etc.), whereas the Chinese terms could certainly be considered as separate words, but they also share a common root (e.g., *mo2tuo2che1*, *zi4xing2che1*, *ka3che1*, *jiao4che1*, *chu1zu1che1*, *gong1gong4qi4che1*, *huo3che1*, etc.). In both of these cases, when we piloted the CDI with Mandarin-speaking parents, they objected to many of the specific noun terms as either being completely redundant (e.g., in the case of hens, chickens, and

roosters) or as too difficult (e.g., in the case of the names of different rooms, and several items that were commonly used in Chinese households).

Thus, in Chinese everyday speech, the most frequent nouns are not those that are specific and identify individual objects at the “basic level” as in English, but in fact are what would seem (to an English-speaker) to be more general terms identifying classes of objects. But to a Chinese-speaker, these are the “basic” level terms, much as general-purpose “light” verbs (e.g., “go,” “put,” “carry,” “push”) are the “basic” level for describing common actions in English. And, similar to the way that English speakers use more and different types of specific nouns, Chinese uses many more distinct and specific verbs. As a final example of this, consider the responses of an English- and a Mandarin-speaker when asked how one traveled to work. In Mandarin, one might answer any of the following “*qi2/zuo1/kai1 che1 lai2 de*” (“rode/sat/drove vehicle” come = came by riding/sitting/driving), where the specific vehicle of transportation is not specified, but how one interacted with the vehicle (ride/sit in/drive) is. In English, one could easily have omitted the verb and said “by bicycle/bus/car,” with the emphasis instead on highly distinct and specific names for different types of vehicles.

In sum, then, English and Chinese appear to resort to general purpose terms for different types of words and this goes beyond matters of simple preference to the issue of what is acceptable or not in a given language. For instance, it would be considered incorrect and indeed “childlike” to refer to all vehicles (including trains and firetrucks) as “cars” in English, whereas Chinese speakers can do this by simply using the “root” term “*che1*.” Which particular vehicle is meant would be inferred from context and/or the use of an associated verb (e.g., ride vs. drive), or, if required, one could use the specific term when there is ambiguity (e.g., *zuo4 huo3che1* vs. *zuo4 gong1gong4qi4che1* sat on a train vs. sat on a bus). Similarly, it would be incorrect to refer to all pushing motions as “*tui1*” (“push [open/away]”) in

Chinese, whereas English speakers do this quite naturally. Thus, in addition to having different assumptions about which terms (nouns or verbs) need to be lexicalized in a given situation, English and Chinese also differ in how nouns and verbs are lexicalized, at least insofar as when general purpose versus specific terms must be used. In some ways, this also brings back an issue raised by Snedeker et al. in the discussion of their cross-linguistic findings. One possible explanation, they felt, for the cross-linguistic differences, was that the English-speaking mothers were using basic level terms for the target nouns in English, but different terms were used for Chinese. They suspected that there may have been problems with the stimuli that they chose for the Chinese dyads since the study had first been conducted in English, but I suspect instead that the differences may reflect real and interesting differences in how one refers to objects in each of these languages. And, again, there is a corollary with verbs – English has many “general purpose” verbs and specific ones when specificity is needed, but Chinese has specific verbs for “basic” actions without an easily available “general purpose” term to describe them. Thus, whereas English-speakers may have used either the general-purpose verb or a more specific verb, Chinese-speakers would have used only the more specific verb and this (together with more concrete cues to the specific verb) may have accounted for the greater precision with which even English speakers guessed which verbs were meant by the Chinese mothers.

### **So... are they really verbs?**

By every formal account, I would argue that the verbs in Mandarin-speaking children’s early vocabularies *are* “verbs”, at least inasmuch as the verb-like words that English-speaking children have trouble acquiring are “verbs.” And yet, in addition to the multiple ways in which verbs are emphasized in Mandarin adult-to-child speech (see Tardif, Shatz, & Naigles, 1997), the nature of Mandarin verbs also makes its “easier” to acquire more verbs than English. It is not that English doesn’t have many

specific verbs, it does. It is also not the case that Chinese verbs are uniformly more “nouny” in the sense that they are all heavy and encode so much of the ground or of the instrument (Talmy, 1985) into the verb that the nouns are redundant. In fact, many of the most frequent verbs in the Mandarin children’s vocabularies are also the most frequent verbs in English, although there are differences as well. The main difference is that, in English, adults (as well as children) tend to use more general purpose verbs to approximate one’s meaning and then use prepositions, nouns, and other parts of speech to more fully specify one’s meaning. In Mandarin, verbs are used for very specific meanings (without the addition of distinguishing prepositions). In contrast, Mandarin nouns tend to be general, whereas they tend to be highly specific in English. When one counts up the number of distinct types that children have in their vocabularies, then, it is not surprising that children tend to acquire large numbers of the word class that is emphasized (via frequency, utterance position, *and* specificity of meaning in everyday use) in their language.

The fact that Mandarin-speaking children acquire so many verbs, whether one terms them “verbs” or something else, is what challenges us to consider what is special about Chinese. I believe it also challenges us to think about whether, ultimately, the distinctions between nouns and verbs are equally relevant across languages. More importantly, understanding the nature of the differences between early verb acquisition in English and Mandarin can also help us to understand better how children come to learn words and, when they do use cognitive biases to help them learn words, what the inherent features of these biases might be, regardless of which form class they might map onto in a particular language. Word learning, by its nature, is multidimensional – children (the learners) come to the task with both inborn and learned predispositions, adults (the “models”) come to the task with habits of speaking and interacting, as well as assumptions about what language is and whether and how to

teach their children language, and the words themselves were created through thousands of generations of use to represent categories, events, and all that is speech-worthy in our lives, with rules for combining them that have been codified into a grammar. Quine's (1960) posing of the "gavagai" problem, while interesting, fails to take all of these issues into account – it assumes a naïve listener in an unstructured environment learning a word that might be presented in the same way, regardless of the particular speaker or listener and their shared assumptions, or of the immediately preceding context and surrounding environment.

The evidence presented in this chapter speaks clearly to the fact that verbs are privileged in Chinese, in much the way as nouns are privileged in English. Regardless of which measures are used, whether one is looking at adult or child speech, or even the contexts in which the speech occurs, Mandarin speakers highlight verbs in their everyday spoken language. Although we may have answered one question – are they really "verbs?" – a number of even more difficult questions arise once we start to realize that the prevalence of verbs in Chinese may reflect a fundamental difference in how language systems have chosen to represent meaning.

### **Endnotes**

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to the author and HKU 7158/99H to Paul Fletcher. Correspondence concerning this article should be sent to Twila Tardif, Center for Human Growth and Development, 300 North Ingalls, 10<sup>th</sup> Floor, Ann Arbor, MI 48109-0406. e-mail: twila@umich.edu.

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Table 1 20 Most frequent “Action Words” on CDI for English and Mandarin 16 month

olds

Mandarin word	% can say	English Equivalent	Nominalized in Mandarin?	English word	% can say	Nominalized English?
<i>Bao4</i>	74.3	Hug/Hold	No	Go	23.6	Abstract
<i>Da3</i>	60	Hit	No	Bite	23.6	Yes
<i>Na2</i>	55.7	Take/Bring /Grab with hand	No	Drink (action)	20.8	Yes
<i>Yao4</i>	48.6	Want/think	No	Cry	19.4	Yes
<i>Chi1</i>	45.7	Eat	No	Eat	19.4	No
<i>Zou3</i>	40	Walk/leave /go	No	Kiss	19.4	Yes
<i>He1</i>	38.6	Drink	No	Open	18.1	No
<i>Kai1 (men)</i>	37.1	Open (a door)	No	Hug	18.1	Yes
<i>Niao4</i>	35.7	Pee	Yes	See	16.7	No
<i>Bei1</i>	35.7	Carry on Back	In fixed term “beibaol”	Tickle	15.3	Marginal
<i>Gei3</i>	34.3	Give	No	Stop	15.3	Yes
<i>Lai2</i>	34.3	Come	No	Sleep	15.3	Yes
<i>Chuan1</i>	32.9	Wear	No	Love	13.9	No

		(clothes)				
<i>Qin1</i>	32.9	Kiss	No	Walk	13.9	Yes
<i>Til</i>	32.9	Kick	No	Touch	12.5	Yes
<i>Mol</i>	30	Touch	No	Dance	12.5	Yes
<i>Diao4</i>	30	Drop	No	Read	12.5	No
<i>Kan4</i>	28.6	Look	No	Play	12.5	Limited
<i>Feil</i>	28.6	Fly	No	Swing (ac	12.5	Yes
<i>Kail (che</i>	28.6	Drive (a car)	No	Watch (ac	11.1	Yes

Table 2. Syntactic Markings on Target Words in Child Mandarin

SYNTACTIC MARKER	Object Nouns	Action Verbs
Bare Form	112 (58.9%)	259 (24%)
Uncodable	41 (21.6%)	52 (4.8%)
(Num)+(CL)+target	<b>28 (14.7%)</b>	0
Pro/NA+de+target	<b>3 (1.6%)</b>	0
Neg+target	2 (1.0%)	<b>139 (12.9%)</b>
Target+aspect	0	<b>36 (3.3%)</b>
Target+RVC	0	<b>5 (0.05%)</b>
TOTAL TOKENS	190	1077

\*Note: Num (Numeral), CL (Classifier), Pro (Pronoun), NA (Proper Name), de (“de” possessive marker), Neg (Negative), RVC (Resultative Verb Complement)

Table 3    100 Most frequent word types on English and Mandarin CDI for 16 month olds

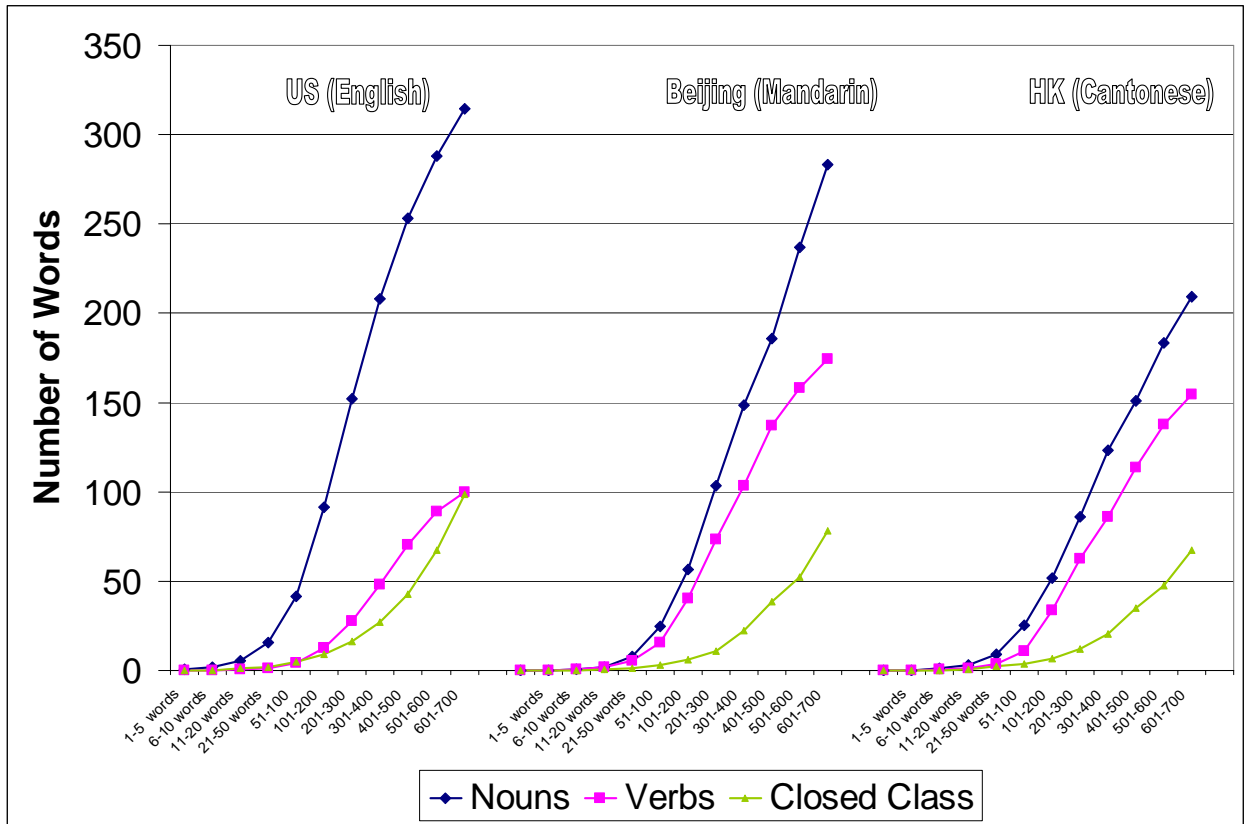
<b>Category</b>	<b>English Items</b>	<b>Mandarin Items</b>
<b>Predicate-Like</b>		
Action Words	3	27
Descriptive Words	4	7
Games/Routines	11	8
<b>Total</b>	<b>18</b>	<b>42</b>
<b>People</b>	<b>6</b>	<b>17</b>
<b>Common Nouns</b>		
Animals	12	8
Body Parts	11	1
Clothing	4	3
Food/Drink	10	11
Furniture/Rooms	3	0
Household Items	10	2
Outside Things	6	3
Toys	7	3
Vehicles	3	1
<b>Total</b>	<b>66</b>	<b>32</b>
(Common Nouns+People)	(72)	(49)
<b>Closed Class</b>		
Pronouns	2	0
Quantifiers	1	2
<b>Other</b>		
Sound Effects	11	11

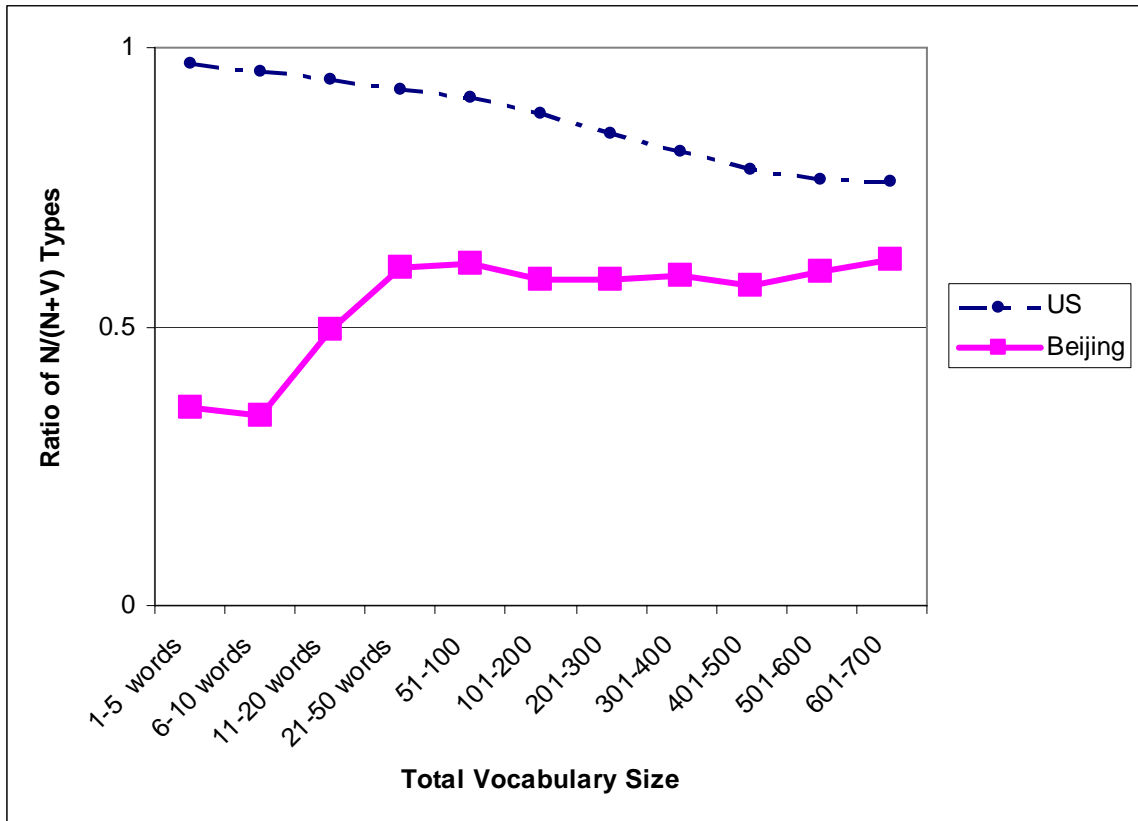
### Figure Captions

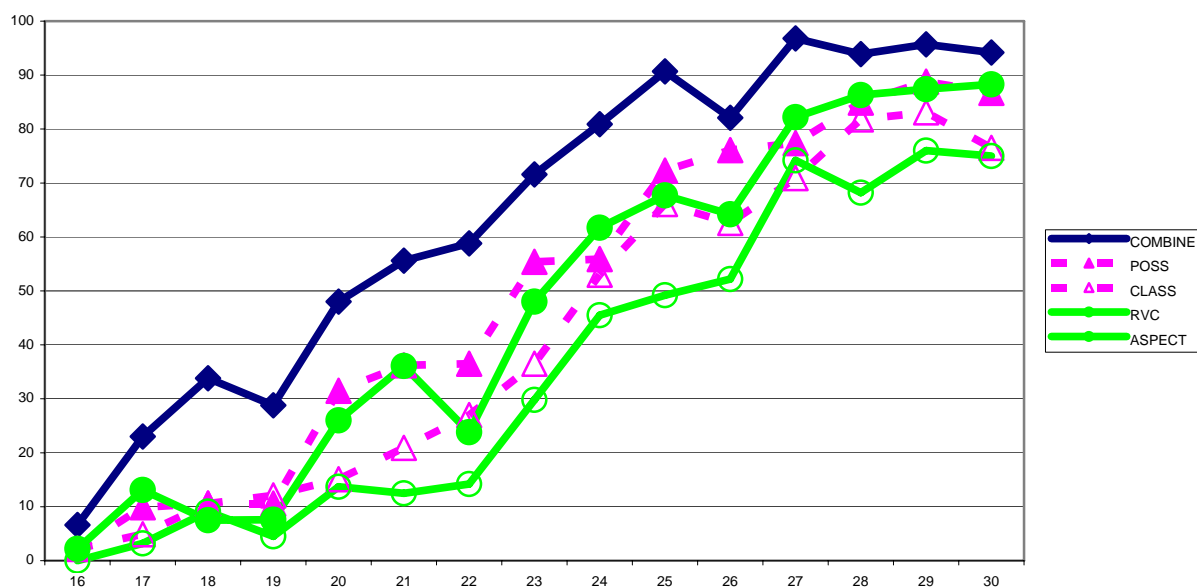
Figure 1. Mean number of common nouns, “action words,” and closed class items from Infant and Toddler samples in norming studies of the English (n = 1652), Mandarin (n = 1588), and Cantonese (n = 1556) Communicative Development Inventories, by total vocabulary size.

Figure 2. Mean ratio of N/(N+V) for English- (n = 1517) and Mandarin-speaking (n = 1321) children in CDI norming samples, by total vocabulary size.

Figure 3. Proportion of children reported to “sometimes” or “often” combine words, and use syntactic markers for nouns (possessive and classifiers) and verbs (resultative verb complements and perfective aspect marker “le”) from ages 16-30 months in Beijing CDI norming study (n = 1069)







<sup>1</sup> Nonetheless, even this marker was used conservatively directly in front of nouns, despite the fact that disappearance or the inability to find objects was a common topic of conversation for these toddlers. Instead, it tended to be used in isolation, or in utterances where the noun was fronted and the negative marker appeared after the noun in a topic-comment type of structure, rather than in the typical pre-target structure observed with verbs.