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The Acquisition of Mandarin

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INTRODUCTION

1. A Descriptive Sketch of Mandarin

1.1. *Mandarin and Other Chinese Dialects*

One billion people speak Mandarin, the most prominent member of the Sino-Tibetan language family and the official language of media, government, and education in the People's Republic of China and Taiwan. Some 70% of the 1.1 billion citizens of the People's Republic are native speakers, as are some 10% of Taiwan's 20 million citizens, those descended from the mainlanders who retreated to the island with Chiang Kai-shek after the 1949 Communist victory. The

vast remainder of Chinese are second-language Mandarin speakers. For the past two thousand years, successive forms of Mandarin have been the common language for officials all over the empire, as well as the ultimate model for both the classical and vernacular written language. Beijing pronunciation is standard, but native speakers predominate throughout most of north and southwest China, including Sichuan Province and Yunnan Province, which borders Myanmar (Burma), Laos, and Vietnam. The Mandarins spoken in Beijing and Taibei are mutually intelligible. Separated for only 40 years, they are vastly more similar than the English spoken in London and Boston (Norman, 1988, pp. 181–199; Ramsey, 1987; Zhongguo da baike, 1988, pp. 112–115).

Chinese has an additional six major nonmutually intelligible "dialects," each different enough to be considered separate languages in Europe. The Roman Empire split into separate nations, so we call the modern descendants of Latin— Italian, French, Portuguese, Romanian—different languages. But the Chinese empire remains united, and the written language is based on Mandarin, so Chinese is considered one language. Even the least-spoken dialects such as Gan have some 30 million native speakers, twice as many as all the Scandinavian languages combined (Crystal, 1987, pp. 312–313; Li & Thompson, 1979, 1981, pp. 2–3; Moser, 1985; Ramsey, 1987, pp. 85–115).[1]

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[1]Academic discussions usually refer to the dialects by the names of the ancient kingdoms in which they were spoken, adding in parentheses where they differ from the English name. Cantonese (Yue) is about as different from Mandarin as French is from Italian. Cantonese is native to only 5% in the People's Republic (PRC), but it is the only Chinese spoken by 95% of Hong Kong and the overwhelming majority of Chinese who live outside China (Norman, 1988, pp. 214–221; Ramsey, 1987; Zhongguo da, 1988, pp. 500–504). The Wu dialect of the Shanghai region is native to 9% in the People's Republic (Norman, 1988, pp. 199–204; Ramsey, 1987; Zhongguo da, 1988, pp. 408–411). The Xiang dialect, spoken in Mao Zedong's central native province of Hunan Province, is spoken by 5% (Norman, 1988, pp. 207–209, Ramsey, 1987; Zhongguo da, 1988, pp. 421–424). Hakka, (Kejia, literally 'the guest people') is spoken by northerners who migrated to the southeast mountains of Fujian, Jiangxi, Guangdong, and Sichuan a thousand years ago. Hakka is native to 4% in the People's Republic and to about 5% of Taiwan (Norman, 1988, 221–288; Ramsey, 1987; Zhongguo da, 1988, pp. 237–242). The Gan dialect, contiguous with Jiangxi Province in the southeast is spoken by 3% (Norman, 1988, pp. 204–209; Ramsey, 1987; Zhongguo da, 1988, pp. 89–93). The Min dialects of Fujian Province are native to about 2% in the PRC. Northern and Southern Min are not mutually intelligible. Southern Min is often called Amoy Hokkien, or Taiwanese, because it is the native tongue for about 80% of Taiwan, as well as about 75% of Singapore (Norman, 1988, pp. 228–244; Ramsey, 1987; Zhongguo da, 1988, pp. 292–297).

"Taiwanese" as a political term usually includes both southern Min and Hakkas whose Han Chinese ancestors settled Taiwan 300 years ago. "Taiwanese" almost always contrasts with the politically dominant "mainlander" 10% who fled to Taiwan after 1949. Most mainlanders were native Mandarin speakers, though many, including Chiang Kai-shek, were virtually monolingual Wu. About 0.5% of Taiwan residents are Malayo-Polynesian "aborigines" from a variety of ethnic groups. Currently, almost all Taiwan residents under 50 speak fluent Mandarin (Kaplan & Tse, 1982).

An additional 7% of China's population is not ethnically Han Chinese but belong to some of the 56 national minorities who live on some 60% of Chinese territory (Norman, 1988, pp. 6–22; Ramsey,

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The Chinese dialects are far closer syntactically than are related European languages. About 80% of the difference between Chinese dialects is phonological. The Mandarin word for *meat* is pronounced /rou/, whereas the Cantonese word is /yuk/; Mandarin *speech* is pronounced /hua/; in Southern Min dialect is /ue/. Tones also differ dramatically. Only about 20% of difference among dialects is lexical variations comparable to the differing but overlapping scopes of English *girl* and *maiden* and German *Mädchen* 'girl, maiden'. Where one Chinese dialect prefers a particular form, such as *niáng* rather than *mā* for 'mother', Mandarin typically also includes the cognate, but in restricted or archaic constructions. Syntactic variation among dialects is minor. Cantonese, for example, puts the indirect object before the direct object, whereas Mandarin does the reverse. Where syntactic variation exists, personal pronouns, negatives, and noun classifiers vary more than word order (Chao, 1968a, pp. 13–14; Li & Thompson, 1987; Moser, 1985; Norman, 1988, pp. 187–190; Zeng, 1988). Most of the grammatical trends described in this chapter are pertinent to other Chinese dialects. I use the term "Chinese" for general features, in contrast to "Mandarin," which refers to forms specific to that dialect.

1.2. Misconceptions about Chinese

Few languages are as badly misrepresented as Chinese. Early misconceptions need discussion because they remain alive well into the 1990s. "Such a language, so constructed, invites to 'intellectual turbidity' as the incandescent heats of summer gently woo to afternoon repose" neatly summarizes these misconceptions, as stated by a sympathetic observer (Smith, 1894, p. 83). Early European descriptions of Chinese came from classically educated would-be colonialists and missionaries who glorified Greek and Latin inflectional morphology, which, they claimed, stimulated the rise of Western civilization. Even admiring linguists have argued that Chinese "has no grammar" (Karlgren, 1949) or is *supra grammaticum* 'above grammar' (Giles, 1964, p. xiv). Chinese civilization and the Chinese language are often denigrated together. The Chinese may be praised as gifted poets but are still condemned by their language to remain unscientific, illogical, premodern thinkers, "inscrutable."

The orientalist vision of the Chinese as fundamentally alien (whether as

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1987). Many are highly assimilated Chinese speakers who no longer speak their ancestral languages. The Democracy movement student leader Wuer Kaixi is ethnically a Uygur Turk but speaks the perfect Beijing Mandarin of his native city. Other important minority languages include very distantly related Altaic languages such as Mongol and Korean; Tibeto-Burman languages such as Tibetan and Yi; Thai-related languages such as Zhuang; and Miao-Yao languages such as Hmong, whose genetic relation is unclear (Crystal, 1988, pp. 306–307, 309, 310–311, 317–319; Ramsey, 1987). Japanese, however, is completely unrelated to Chinese, as typologically different as English is from Turkish or Swahili. Japan borrowed the Chinese writing system a thousand years ago and continues to use Chinese characters, called *kanji* in Japanese, along with two native syllabaries.

superior or inferior) encourages extravagant claims of linguistic determinism, the notion that the structure of a language controls the complexity of thought: "The Asian thinks with his belly . . . . the non-logical character of the verbal expression of Chinese thought is, of course, intimately connected with the characteristics of the Chinese language" (Nakamura, 1960, p. 177). "For the Chinese speaker, speaking and thinking 'theoretically' remain pretty much confined to the domain of the scientist, but for the English speaker . . . they can become a part of the speaker's everyday linguistic and cognitive activity" (A. Bloom, 1981, p. 53). One reason China rejected Christianity is said to be that the grammar makes no morphological distinction between nouns and verbs, obscuring the Aristotelian difference between Being and Essence (Gernet, 1985, pp. 238–247). The Chinese people are said to think via concrete nouns "without having to invent a detour through mental images." Therefore, Chinese babies, unlike English-speaking babies, are claimed to be unable to form abstract categories (Hansen, 1983, pp. 6, 52). Not one of these claims stands up to detailed analysis of the language, to experimental test, or data from language acquisition.

Psycholinguists have been more careful and have not published their informal, spoken assumption that a language with little inflectional morphology might be simpler to learn because it has "fewer paradigms" or is "just semantics." If this were true, Chinese children should learn their language rapidly, with few errors, with little problem with intelligibility, little difficulty with the grammatical morphemes that do exist, and much early stylistic variation. Yet Chinese aphasics make many grammatical errors (Bates, Chen, Tzeng, Li, & Opie, 1991; Tzeng, Chen, & Hung, 1991). And Chinese acquisition data uniformly reveal a gradual, error-sprinkled development that strikingly resembles that of European children, as well as young speakers of languages as diverse as Hebrew, Samoan, and Sesotho.

The hoary misconceptions about Chinese can be summarized as condemning it as "musical, monosyllabic, and misleading." But each epithet can be analyzed to point us toward a more complex, if still incomplete understanding of how Chinese languages do differ from Indo-European. "Musical" is more usefully discussed by analyzing tones, the changes in pitch level that produce Chinese words that differ as much as English *mitt* and *meat*. Mandarin *jī*, pronounced with a high level pitch, means 'chicken'. But *jì* means 'to mail' if the pitch falls rapidly from high to low. "Monosyllabic" can be shorthand for the fact that virtually all Chinese morphemes are single syllables. English, in contrast, has many polysyllabic morphemes such as *berry* or *-ism*. More importantly, most Chinese morphemes can stand alone as full free words. "Misleading," charitably construed, can stimulate closer analysis of how Chinese grammar does convey complex notions of existence, negation, time, aspect, and hypothesis. Usable analysis demands seeing Chinese grammar as an integrated system, rather than isolating single categories to "stretch its flesh to fit the skeleton of European

grammatical categories" (Kuo, 1937). Frequently, Chinese grammar does not fit Western categories.

> When we try to look for the boundaries between morphology and syntax on one hand, and between morphology and the lexicon on the other, we find that although some things can be said to be clearly within one or another of these three domains, other things lend themselves equally well to being included in either morphology or syntax, or else in either morphology or the lexicon. (Cikoski, 1978, p. 45)

1.3. Chinese as an Analytic Language with Covert Grammar

Chinese is often called an isolating or an analytic language, according to early 19th-century terminology that has yet to be supplanted (Comrie, 1981; Crystal, 1988, p. 293). Analytic languages such as Vietnamese or Mandarin abound in words that are single morphemes. Word order and word choice vary by independent words rather than bound grammatical morphemes (Norman, 1988, pp. 7–12, 84–87). In agglutinative languages such as Turkish, strings of grammatical morphemes are affixed to the stem one after another. Inflectional languages such as Hebrew, Mohawk, Latin, or Russian make many changes in the word root itself. English has lost most of its Germanic inflectional morphology and become much more analytic like Chinese. But even in English, a past tense morpheme makes a vowel change between *sit* and *sat,* and adds a suffix for *looked.* The *-ed* past tense morpheme cannot function as a full word and is phonetically bound to the verb; the vowel change is an abstract rule, not a word at all. The English subject first person pronoun is *I,* but *me* is the only grammatical choice for a direct object. But in Mandarin, the same verb is used for past and present tense, the same pronoun for both masculine and feminine, for subject and direct object.

(1) Wǒ   zuótiān   kàn   tā,   tā   jīntiān   kàn   wǒ
     I   yesterday look him/her, she/he   today   look me
     'I looked [at] him [or her] yesterday, he [or she] is looking at me today'

Note that word order is SVO for both clauses and that conjunctions are usually omitted. Much more syntactic complexity and explicitness are also possible.

In many languages, most grammatical distinctions are marked by surface morphemes, as with French gender and number agreement or with English tense or plural. But other grammatical categories can be described as covert, that is, unmarked lexical categories that must be learned for each word. The distinction between English transitive and intransitive verbs forms a covert category. No surface morpheme signals learners that *she dreamed a dream* is transitive, but *sleep* is an intransitive verb. *She slept a dream* is ungrammatical. The notion of covert and overt grammatical categories was first developed by Whorf.

A covert category is marked, whether morphemically or by sentence pattern, only in certain types of sentence, and not in every sentence in which a word or element belonging to the category occurs. The class-membership of the word is not apparent until there is a question of using it or referring to it in one of these special types of sentences, and then we find that this word belongs to a class requiring some sort of distinctive treatment. . . . They easily escape notice, and may be hard to define, yet they may have profound influence on linguistic behavior. (Whorf, 1956, pp. 88, 96)

Chao organized his monumental Chinese grammar around the delineation of covert categories (1968a, p. 9). In these terms, Chinese word order and negation are overt grammar.

The main features of Mandarin are typical of other analytic languages such as Burmese, Thai, and Vietnamese, as well as other Chinese dialects. This chapter discusses them by moving from the phonological level to a discourse level, both for linguistic description and acquisition data. Phonologically, Mandarin has numerous HOMOPHONES. Every morpheme has a distinctive pitch level or TONE, which is as central as its vowel to conveying its meaning. Grammatically, Mandarin has numerous covert WORD CLASSES, including distinctive NOUN CLASSIFIERS, which specify a noun by its shape (e.g., long skinny things) or by function (such as vehicles, books, or clothing). Mandarin uses extremely strict WORD ORDER, which is overwhelmingly Subject-Verb-Object, without inflections for agreement with the verb. It also uses TIME ADVERBS and ASPECT MARKERS, which are often suffixed on the verb, rather than tense for time relations. At the discourse level, TOPICALIZATION and SENTENCE FINAL PARTICLES knit together meaning beyond the sentence.

1.4. Phonology

1.4.1. Lexically Contrastive Tone.
Chinese, like many other related and unrelated East Asian languages such as Thai or Vietnamese, assigns a lexical pitch called tone to every morpheme (Chao, 1968a, pp. 25–39; Li & Thompson, 1981, pp. 3–9). Tone changes produce words as different in Chinese as *beat* and *bet*. Written Chinese uses different characters for different meanings. Pitch contours can be diagrammed iconically with "tone letters." But alphabetic transcriptions use the more easily printed diacritics for each morpheme. With only four tones, Mandarin has fewer tones than any other dialect. Table 6.1 gives a sample of the various elements of written Mandarin.

Morphemes can lose their tone in unstressed syllables, becoming "neutral tones," written without a diacritic. Neutral tones are common for grammatical morphemes. *Qǐ* 'rise' has a low dipping tone when used as a verb. The first word of the Chinese translation of the Communist *Internationale* is *qǐ-lai* 'rise-come' 'arise!' But *qǐ* has a neutral tone when suffixed as a directional complement to the

TABLE 6.1
Mandarin Tones

Word	Character	Pitch	Tone Letter	Meaning
Tāng	湯	High level	⌐	'soup'
Táng	糖	High rising	⌐	'sugar, candy'
Tǎng	躺	Low dipping	⌐	'to recline'
Tàng	燙	High falling	⌐	'scorching hot'

main verb for *stand, zhàn-qi-lai* 'stand-rise-come'.[2] Full tone often signals that a grammatical syllable can also function as a free word, usually as a verb. Neutral tone signals bleached, bound status in Mandarin more than in any other dialect.

Additional tone rules, called SANDHI, alter the citation tone when syllables with particular tones follow one another (Chao, 1968a, pp. 27–29). Stress and intonation rules also apply to Chinese sentences in a manner that is still poorly understood. (Chao, 1968a, pp. 35–44, discussed many patterns; see also Norman, 1988, pp. 148–149; Shen, 1990.) Some people wonder if it is possible to whisper or sing in Chinese (*con brio!*) Others wonder whether Chinese sounds like singing. In fact, phonemically contrastive pitch range is much narrower and more rigidly patterned than song. Others ask if Western music can be sung in Chinese. (Yes, including *La Boheme*, though occasionally tone interference can mean that "Happy Birthday to You" can be sung perfectly in Mandarin but not in Cantonese [Chan, 1987].)

1.4.2. High Homophony.
Chinese has more homophones than most languages. And Mandarin has fewer phonemes than any other dialect, having moved farthest away from the more complex historical sound system. Mandarin has a particular small inventory of possible syllables, some 400 compared with tens of thousands of potential English syllables. In Mandarin, only a few consonants can begin a word. No consonant clusters are allowed, and no syllable can end with a consonant. The sole exceptions are final *-n* and *-ng*, both of which are rapidly disappearing into nasalized vowels in Yunnan and Taiwan. (Final nasals did something similar in French, where *vin* 'wine' is actually pronounced *vẽ*.) Even multiplying 400 possible Mandarin syllables by four tones yields only

[2]Romanization of spaces as opposed to hyphens in this chapter involves a few compromises between linguistic conventions for neutral tone affixes and standard orthography as described in Yin and Felley (1990).

about 1,200 possible syllables, once we exclude nonoccurring syllables comparable to a nonexistent English word such as *keet*.

Non-Chinese who have learned the written language character by character from dictionaries often exaggerate the degree of homophony, claiming that Chinese is inherently ambiguous. The misconception that Chinese words are monosyllabic is reinforced because Chinese characters are written with a space between every morpheme. And morphemes in isolation make the most impressive puns. As the classical language had many more phonemes, many more words were monosyllabic, and an extremely terse style was favored (Li & Thompson, 1987). Chao (1968b, pp. 120–121) used classical grammar to construct tongue twisters composed entirely of what are single syllables, such as *shi* or *xi* in modern Mandarin, about 10 stone lions shooting arrows at one another.

But modern Mandarin uses compounds very heavily. Far from being monosyllabic, the average Mandarin word now has two-and-a-half morphemes. That is, one now usually talks about 'candy' not as *táng* but *táng-guǒ* 'sugar-fruit'. Translating *I like reclining* as **wǒ xǐhuān tǎng* ***'I like [to] recline] is ungrammatical. One must add a complement, e.g., *tǎng zài cǎodì shang* 'recline LOC [the] lawn LOC:on' ('recline on the lawn'). Compounding is so widespread that in this chapter I give syllable-by-syllable translations only for those compounds whose grammar is under discussion, thereby sparing the reader the etymology lesson forced on readers who must decode the characters for 'papaya' *mù-guā* as 'wood melon'. Spoken Mandarin, in fact, is no more ambiguous than English, which copes with homophones such as *right, wright,* and *write* or *can of tomatoes* as well as *can laugh* (Chao, 1968b, p. 173; DeFrancis, 1984, chapters 4, 5). In 72 hours of transcribed adult and child conversations, I found only a few dozen ambiguous words.

1.5. *Word Classes are Morphologically Identical*

If grammar is defined as inflectional morphology, which must include case, number, gender, and verb agreement, with stem changes, then Chinese has no grammar. Chinese morphemes do not vary internally. Surviving English inflectional morphology marks adverbs such as *ridiculously* with an *-ly* suffix; nouns can be marked with many suffixes, such as *-tion* or *-ness*. Chinese has almost nothing like this. Context often determines case. *yú chī-le* 'fish eat-PFV' can mean either '[someone] has eaten up the fish' or 'the fish has finished eating [its food]' (Chao, 1968a, p. 75). 'Your horse rides very well' *nǐ de mǎ qí de zhēn hǎo* is perfectly clear in a riding stable.

Ungrammatical sentences would be impossible in a language without grammar. Yet, Chinese learners produce great waves of ungrammatical sentences until they master overt word-order rules and the covert and irregular word class distinctions.

Pronouns, it seems, could hardly be simpler, as shown in Table 6.2. There are

TABLE 6.2
Mandarin Pronouns

wǒ	'I/me'	wǒmen	'we/us'
nǐ	'you'	nǐmen	'you:PL'
tā	'he/she/it; him/her/it'	tāmen	'they/them'

no case or gender distinctions, no honorifics, and no familiar-polite variants. *Wǒ xǐhuān tā* means 'I like him/her/it'; *tā xǐhuān wǒ* means 'he/she/it likes me'. Yet covert complexity arises because 3rd person *tā* refers primarily to human beings, particularly in sentence-initial subject position. *Tā* sounds very bad even to refer to animals. It is ungrammatical to use *tā* as an equivalent of English *it* for an inanimate in subject position for first mention of an item. Describing a papaya as 'it [is] really sweet' **tā hěn tián* is bad. The plural suffix *-men* is even more strongly human, so **tāmen hěn tián* 'they [are] really sweet' is worse still. (*Tā* is tolerated as a dummy pronoun in object position in informal speech.)

The grammar of *tā* is also strongly controlled by verb usage. Statives sound bad enough with inanimate subjects, but active verbs are worse. Zero subject is preferred. Even climatic conditions are zero subject, as in *xià yǔ le* 'down rain PFV' for 'it's raining'. If we translated an English sentence about the 1906 earthquake, *It destroyed San Francisco*, as **tā huìmiè-le Jiùjīnshān* 'it destroy-PFV San Francisco', the result is so ungrammatical that it is nearly incomprehensible. An idiomatic translation topicalizes San Francisco and leaves the agent unstated: *Jiùjīnshān huìmiè-le* 'San Francisco [was] destroyed'. Inanimate subjects should not be pronouns, but rather a noun or a demonstrative plus a noun classifier, as in *nà-ge* 'that CLASS:general' ('that one'). Subject ellipsis is very extensive. An "empathy hierarchy" and preference for informative rather than dummy initial noun phrases mean that "San Francisco" should appear sentence-initially, followed by a subject marker for adverse events, and then the verb *Jiùiīnshān bèi mièdiào* (Li & Thompson, 1981, pp. 492–508).

Chinese traditionally had no morphological markers for word class. Traditional grammars simply distinguished between FULL WORDS with semantic weight, as opposed to EMPTY WORDS, grammatical morphemes such as particles and aspect markers. But almost all grammatical morphemes also have an independent meaning. *Guo,* for example, is the neutral tone verb suffix for past experience, as in (2).

(2)   wǒ   chī-   guo   shé-ròu
      I   eat-   PAST.EXPERIENCE   snake-meat
      'I have had the experience of eating snake meat'

Experiential past contrasts with simple perfective, which typically implies definiteness as well. *Wǒ chī-le shé-ròu* 'I eat-PFV snake meat' translates as 'I have

eaten the snake meat', perhaps as one of many dishes on the table. But *guò* in full citation tone, using the same character, can also stand alone as a full verb that retains its historic meaning 'to cross over' and, metaphorically, 'to experience'. *Guò mǎlù* means 'cross [the] street'; *guò shēngrì* means 'to experience a birthday'.

Contrary to popular belief, word classes are not intechangeable in Chinese. Unlike English, modern Mandarin does not allow nouns to be used as verbs or adjectives as in "let's table the motion" or "that jacket is very New York." Word classes are fluid, but are still defined distributionally, not merely by their position in the sentence (Chao, 1968a, pp. 496–505; L. Wang, 1977, pp. 20–34). Nouns follow determiners, take nominal and diminutive suffixes such as *-zi* and *-er*, and cannot be directly preceded by a negative. **Bù zhuōzi* 'not table' is ungrammatical. Verbs are any word that can be directly preceded by a negative. Verbs subdivide into active, stative, and process verbs (Teng, 1975). Each verb type controls its own subset of rules for aspect, complementation, and causation, as described in a schematic decision tree in Figure 6.1. Covert categories govern predication for each verb, and its complements depend on whether it is classified covertly as an active or stative or process. Active verbs, such as *xiě* 'write', can take a completive complement *-wan* 'finish' as well as perfective *-le*, as in *xiě-wan-le wénzhāng* 'write essay' 'finish writing essay'. Active verbs can take preverbal subjects that are either agents or patients: *wǒ xiě-wan-le wénzhāng* 'I finished writing the essay' or *wénzhang xiě-wan-le* 'the essay is finished' 'as for the essay, [someone] finished writing it'.

However, stative verbs, which often correspond to English adjectives, cannot take either agents or completions: *shuǐ hǎo lěng* 'water very cold' '[the] water is very cold', *shuǐ lěng-le* 'water cold-PFV' '[the] water got cold'. But **shuǐ lěng-wan-le* 'water cold-finish-PFV' and **wǒ lěng-le shuǐ* 'I cold-PFV water' 'I cold-ed the water' are both ungrammatical. Figure 6.1 diagrams these verb relations as a flow chart. After choosing a verb, the speaker must sort it as an active or a stative. If stative, it may take a patient and a perfective. If active, the verb must be further subcategorized as perfective, potential, or progressive. If it expresses a change of state, then cause, result, and potential also require analysis.

Stative verbs are often equivalent to English adjectives:

(3) *Guì   de   mùguā   hǎo   tián*
     expensive MODIFIER papaya   very   sweet

     'The expensive papayas are really sweet'

But unlike English adjectives, Chinese stative verbs also function as full verbs that take verbal suffixes. They do not require a copula or an auxiliary.
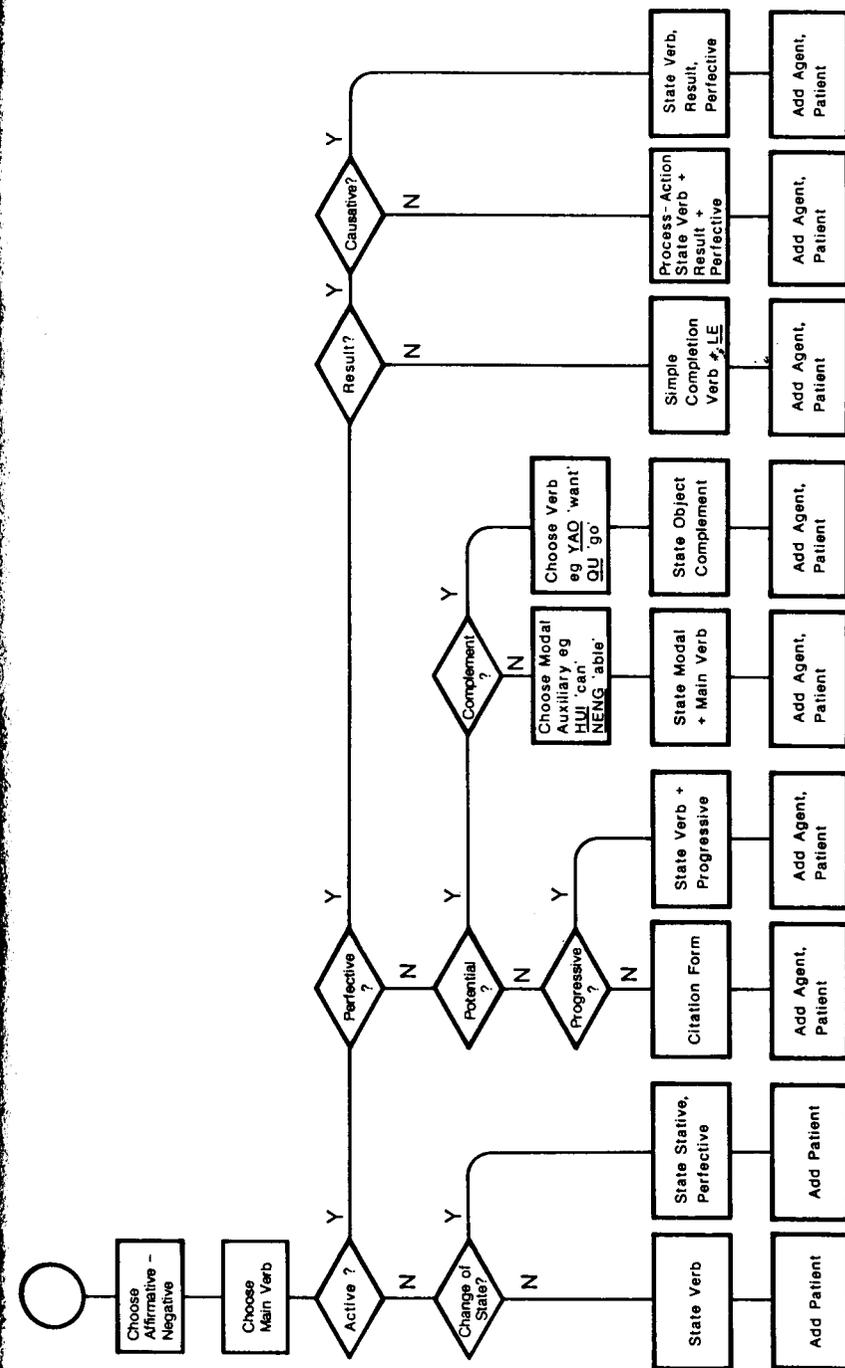

FIG. 6.1.   Schematic decision tree for Mandarin verb types.

(4) *Mùguā   guì-   le*
     papaya expensive- PFV
     'Papayas have become expensive'

Although many Mandarin stative verbs can be used as causatives, many others cannot. Each case must be learned individually, with no inflectional clues to show that *wŏ rè-le tāng* 'I hot-PFV soup' 'I heated up the soup' is fine but **wŏ xián-le-tāng* 'I salty-PFV [the] soup' 'I salty-ed the soup' is ungrammatical because it lacks a lexical causative such as *wŏ bă tāng nòng de tai xián-le* 'I OBJ.MKR soup make MOD too salty PFV' 'I made the soup too salty'.

1.6. Case Functions Expressed by Verbs

Chinese has an additional class of grammatical words called COVERBS, which express the equivalent of case relations. Coverbs are often translated with English prepositions (Li & Thompson, 1981, pp. 356–359). But coverbs are all descended from full, free verbs and can frequently function independently as such (Li & Thompson, 1981, pp. 172–183). Table 6.3 lists case functions of coverbs.

(5) *Wŏ zài   chēzi   shang   kàn-   shū*
     I   LOC   car-   LOC.on   read- book

     'I'm reading on the bus'

     Shéi   shàng-   le   chēzi?
     who   LOC:on-   PFV   car?

     'Who got on the bus?'

1.7. Noun Classifiers

Mandarin is one of hundreds of unrelated languages, such as Thai, Mohawk, Bantu, and American Sign Language, that use noun classifiers. Classifiers spec-

TABLE 6.3
Case Functions Expressed by Coverbs

Coverb	Meaning as Full Verb	Case Role
bă	'grasp' (archaic)	Object Marker
gěi	'give'	Dative, Benefactive
yòng	'use'	Instrumental
gēn	'follow'	Comitative
zài	'be present'	Locative
cóng	'follow'	Ablative
dào	'arrive'	Terminal

Adapted from Norman, 1988, p. 163.

ify a noun when it is used with a determiner or a number or to stand in for it, much like a specialized pronoun. In Chinese, one cannot say the literal equivalent of *a bird* or *those two tables*. One must say 'one CLASS:animal bird' *yī zhī niăo*, or 'that two CLASS:flat object table' *nà liăng zhāng zhuōzi*. At the market one points to the nicest bird in the cage, saying *wŏ măi zhè zhī* 'I buy this CLASS:animal' 'I'll buy this one [animal]'.

Chinese noun classifiers, as recorded from about 1400 B.C., developed much like the classifier systems in numerous world languages (Erbaugh, 1986). Historically, culturally valued objects received classifiers earliest. These objects then became prototypes whose features were extended, as when the Chinese word for 'branch' came to classify long, skinny things as *tiáo*. Special classifiers rather than general ones appear in discourse settings where the referent is not present and in danger of being misconstrued, such as narratives, inventories, lists of booty.

Current dictionaries list over a hundred special classifiers in addition to a general-purpose *gè* classifier. Specialized dictionaries of classifiers, etymologies, and usage discuss up to 900 (B. Chen, Chen, Chen, & Zhang, 1988; Wang & Wu, 1989). Special classifiers can be divided roughly into shape classifiers and function classifiers. Shape classifiers are especially prominent for the three dimensions, several each for long, flat, and roughly spherical objects. Important function classifiers denote animals, vehicles, clothing, buildings, and machines. Unlike most classifier languages, Chinese has never had a classifier that defines either animates or humans (Chao, 1968a, pp. 654–683; Erbaugh, 1984, 1986; Li & Thompson, 1981, pp. 104–113).

Prescriptive grammars claim that each object must take a special classifier. Chinese adults say that using the general *gè* classifier rather than a special one sounds typically childish. But special classifiers are actually rare in conversation. Tape-recorded adult narratives and conversations average only one special classifier for every 30 to 100 sentences. Even classical Chinese teachers routinely use *gè* where they would claim a special classifier is required, as in *yī gè chēzi* 'a CLASS:general car' rather than *yī liàng chēzi* 'a CLASS:vehicle car'.

The same referent can be described by a variety of special classifiers, according to context and the speaker's emphasis. Twenty young Chinese women taped descriptions of the same 7-minute film; not a one used the same set of classifiers to describe the identical objects. Even the interviewer, who taped a film narrative based on the interviews, watched the film and then taped her first-hand narrative, used different classifiers in each telling. A goat, for example, on screen only 7 seconds, was described with different classifiers, including 'long-thing' *tiáo*, 'animal' *zhī*, 'head' *tóu*, as well as general *gè* (Erbaugh, 1984, 1986).

1.8. Strict SVO Order

Mandarin word order is far stricter than English. Chinese word order has been Subject-Verb-Object for at least three thousand years (Norman, 1988, pp. 113–

132). Over 90% of modern spoken and written Mandarin sentences are SVO (Erbaugh, 1982, pp. 250–258; Sun & Givon, 1985). There are only a few mutually exclusive choices for reordering in Mandarin. Order is strict because Chinese has no inflectional morphology for subject-verb agreement, number, gender, or case. Subject is either the Agent of an active verb or Patient of a stative or process one. Canonical order for the full range of sentence elements is:

(6)

Agent	Time		Place			Action
Wǒ	*jīntiān*	*zǎo shang*	*zài*	*jiā li*		*bāo-le*
I	today	morning	at	home LOC:in		wrap-PFV

Patient			
hǎo	*jǐ gè*		*lǐwù*
very	many CLASS		gift

'This morning at home I wrapped quite a few gifts'

Virtually any order variation yields an incorrect or incomprehensible sentence. English order, though rigid compared with Russian or Hebrew, is far more flexible. Varying time, location, or indirect object is routine: *I wrapped quite a few gifts at home this morning; This morning, at home, I wrapped quite a few gifts; At home, I wrapped quite a few gifts this morning; Lois sent me an armadillo; Lois sent an armadillo to me.* English also allows sentence order that reverses real-time order: *Give me a call before you eat breakfast. Before you eat breakfast, give me a call.* Mandarin allows only iconic order (Tai, 1985). Mandarin equivalents to these variants are so jarring that they prompt the normally tolerant Chinese to ask with annoyance, "Why do you foreigners always talk like that?", much as an American cabby would react to a visitor who said **Take me to airport the.*

Mandarin order is so crucial that it cannot be permuted. Unlike speakers of Yiddish or Turkish, Mandarin speakers do not reorder for emphasis, embellishment, or clarification. They repeat, emphasize parallel grammatical forms, and vary their intonation, particle use, and word choice (Erbaugh, 1982, pp. 263–265).

The only important Mandarin order variant allows object fronting to OV to highlight a completed action on a concrete patient. An object marker, *bǎ*, etymologically 'to take in one's hands', often marks such fronted objects, as in (7) (Erbaugh, 1982, pp. 191–220; Li & Thompson, 1981, pp. 463–491).

(7)

Wǒ	*bǎ*	*mùguā*	*qiē-*	*hǎo-*	*le*
I	OBJ.MKR	papaya	slice-	finish-	PFV

'I've finished slicing up the papaya'

1.9. Question Forms that Match Declaratives

Question forms are simple. *Wh*-question order matches declarative, using a *wh*-pronoun:

(8) a.

Nǐ	*zhǎo*	*shéi?*
you	search	who?

'Who are you looking for?'

b.

Zhǎo	*Lín*	*āyí*
[I] search	Lin	Aunt

'[I'm] looking for Aunt Lin'

Yes-no questions can be formed several ways. Rising intonation on a declarative, much like English, is permitted in informal conversation. A question particle can also be added to the end of the sentence, as in *nǐ xǐhuān ma?* 'you like PART.Q' 'do you like it?' Particles such as *ma* also include subtle discourse assumptions. *Ne* solicits agreement or requests omitted information, as in *hái yǒu ne?* 'also exist PART.Q' 'and what else?'

The extremely common V-not-V construction is grammatically complex but more neutral socially. The main verb stem is followed by a negative and a verb.

(9)

Nǐ	*yào*	*bù*	*yào*	*kàn*	*diànyǐng?*
You	want	not	want	look	movie

'Do you want to watch a movie?'

Mandarin has no single word for 'yes' or 'no'. Answers must copy or negate the verb in question.

(10) *Yào*
  want
'[Yes, I] want [to]'

(11)

Bú	*yào*
not	want

'[No, I] don't want [to]'

Negative *bù* also divides compound verbs such as *xiě-zì* literally 'write characters' 'write', as in *Nǐ xiě bù xiě-zì?* 'You write-not-write characters?' 'Are you writing?' The answer must copy the verb stem. Answering *xiě* 'write' is equivalent to 'Yes, [I am] writing'.

1.10. Time-marking Without Verb Tense

Chinese, like other isolating languages such as Thai and Vietnamese, has no tense changes on verbs. Event time is marked by adverbs comparable to *yesterday* or *later*. Time then remains unmarked in subsequent utterances until the temporal reference changes. But the verb root itself remains unchanged. Note how the verb *chàng* 'sing' in (12) remains constant, even when used as a sentence subject equivalent to an English gerund or infinitive.

(12) Mèimei   qùnián   chàngxì,   chàng   de   bù-cuò
little sister last year sing opera, sing   MOD   not bad

'Last year [when my] little sister sang Chinese opera, [she] sang pretty well'

Tā   jīnnián   chàng   aìqíng   gēqǔ
she   this year   sing   love   song

'This year she's singing love songs'

Nǐ   tīng,   tā   zhèng   zài   chàng
you   listen, s/he   this moment   PROG   sing

'Listen, she's singing right now'

Zhèyàng   chàng   zhēn   hǎo-   tīng
this way   sing   true   good   listen

'This kind of singing sounds really good'

Děng-   yi-   xià   chàng-   wan-   le,   nǐ   xiǎng
wait-   one-   moment   sing-   finish-   PFV,   you   think

tā   zài   chàng   shénme   gēqǔ?
she   again   sing   what   song?

'In a minute, when she's done, what do you think she'll sing next?'

Following Berman and Dromi (1984), time adverbials can be subcategorized into aspectuals, connectives, and temporals. Aspectuals define internal properties of the situation (e.g., *already*). Connectives link situations sequentially (e.g., *later*). Temporals specify local situations in time. These may be deictic (e.g., *now*), or they can be indexed to an external reference point (e.g., *on Sundays*).

1.11. *Aspect Prominent*

Aspect is a second major time category, one that describes the internal contour of events. The distinction between completed events, such as *I have baked a cake*, and ongoing ones, such as *I'm baking*, is particularly important in Mandarin. Mandarin aspect defines event boundaries, particularly a contrast between perfective and imperfective aspect. Perfective is marked by the *-le* verb suffix. Durative is marked by an unbound *zài* progressive, as well as by a much less frequent *-zhe* verb suffix for durative. (A sentence-final particle *ne* also implies duration in a restricted set of discourse contexts.) The fourth important aspect morpheme is the *-guo* suffix for past experience (P. Li, 1990; Li & Thompson, 1981, pp. 184–237). Table 6.4 summarizes the four Mandarin aspect markers.

The *-le* perfective is by far the most common aspect marker. Unmarked, *wǒ chǎo jīdàn* 'I fry egg[s]' is tacitly present, translatable as either 'I fry egg[s] (habitually)' or 'I am frying egg[s]'. Suffixing perfective *-le* means either 'I have fried [the] egg[s]' or I fried [the] egg[s]'. Adding time adverbs can alter these to the equivalent of past or future perfect. A clear demonstration that *-le* marks

TABLE 6.4
Mandarin Aspect Markers

Morpheme	Function	Form	Example
-le	perfective	verb suffix	huài-le 'bad-PFV' 'has broken'
zài	progressive (main verb)	adverb	zài xǐzǎo 'PROG wash' 'is bathing [now]'
-zhe	durative (posture or background)	verb suffix	chuān-zhe yīfu 'is wearing clothes'
-guo	past experience	verb suffix	fēi-guo 'fly-EXP' 'has experienced flying'

aspect, not tense, is sentences such as *kāi-le, guān-le* 'boil-PFV, shut-PFV' used to mean 'when [the tea water] boils, shut if off'.

The *-le* perfective verb suffix has a near-pair in a sentence-final particle *le*, which is pronounced identically and written with the same character. The final particle adds what Li and Thompson (1981) call "Current Relevance." *Wǒ chǎo jīdàn le* highlights the immediate social importance of an activity; it might imply 'hey, don't eat that cereal' or 'look at me, at last I've learned to fry eggs'. Both perfective *-le* and Current Relevance *le* can appear in the same sentence. *Wǒ chǎo-le jīdàn le* implies 'I have fried [the] egg[s] (so now you can eat breakfast, it's your turn to make toast, call everyone to the table)' (Li & Thompson, 1981, pp. 185–217, 296–300). Many researchers claim that both perfective *-le* and sentence-final Current Relevance express the same basic notion of inchoative or "contrast to previous state" (Chappell, 1988; Li, 1990). Note, however, that many dialects, including Cantonese and Wu, distinguish phonologically between the perfective and sentence-final Current Relevance (Chao, 1968a, pp. 798–799n.).

The other important aspect markers are imperfective and past experiential. Mandarin marks imperfective only contrastively. English *I'm writing* translates as simple *wǒ xiě-zì* 'I write-characters'. Mandarin has two imperfective morphemes. The preverbal *zài* progressive adverb highlights prominent actions, as in *wǒ zài xiě-zì* 'I PROG write-characters' 'I am writing now (so don't bother me, I'm not drawing, tell the guests to wait)'. A second imperfective, the bound *-zhe* durative verb suffix, is added to a backgrounded, subordinate verb, to provide a context for the main verb, as in *wǒ xiě-zhe-zì tīng yīnyuè* 'I write-PROG-characters listen music' 'I listen to music while writing' (Li & Thompson, 1981, pp. 202–203, 217–226; Light, 1989).[3] A second, less frequent usage of *-zhe*

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[3]Note that *-zhe* progressive cannot describe two simultaneous actions described as being equally prominent. 'I'm writing and I'm listening to music' translates as *wǒ xiě-zì tīng yīnyuè* 'I write-character listen music' or *wǒ yòu xiě-zì yòu tīng yīnyuè* 'I both write-character both listen music'.

describes postures and locations, as in *qiángbì-shang guà-zhe yī fù huà* 'wall-on hang-PROG one CLASS:painting' 'a painting hangs on the wall'.

The adverb *hái* 'still', usually combined with a modal or a progressive, can also mark imperfective: *shuì-zháo-le méi?* 'sleep-rest-PFV NEG-PVF? 'are you asleep yet?' *Hái méi ne. Hái xiǎng kàn-shū* 'Still NEG-PFV PART. Still want read-book' 'Not yet. I still want to read for awhile.'

Iteratives are marked by reduplicated verbs, usually in the sense of 'do something a little bit'. *Shéi lái gēn wǒ paǒ-paǒ-bù?* 'who come with me run-run-foot' 'who's coming jogging with me?' Often, the word *yī* 'one'; 'a bit' is infixed: *shéi lái pǎo-yi-pǎo.* 'who come run-one-run' 'who wants to come run a little?' Reduplications abound in speech to young children.

1.12. *Negation and Aspect*

Negatives also distinguish between perfectives and nonperfectives. The *méi* negative appears with existential verb *yǒu* 'have, exist', as in *méi yǒu lái* 'NEG-PFV exist come' 's/he has not come yet'. Often, *yǒu* is omitted in casual speech. *Méi* also negates verbs with the *zài* progressive. *Méi* perfective occurs in complementary distribution with the general negative *bù*. **Bù yǒu lái* is gratingly ungrammatical. *Bù* negates all nonperfective verbs. Experientials and stative verbs with *bù* include: *nàge wǒ bù xǐhuān* 'that I not like' 'that one, I don't like'; *zhège bù hóng* 'that not red' 'this one isn't red'. *Bù* does modify generic and habitual statements using active verbs: *jīqìrén bù chī ròu* 'robot NEG eat meat' 'robot's don't eat meat'; *Lín Shūshu bù chōuyān* 'Lin Uncle NEG smoke' 'Uncle Lin doesn't smoke'. Many active constructions, of course, use a modal before a *bù* negative: *tā bù huì jiǎng Rìyǔ* 's/he is not able to speak Japanese'; *bù xiǎng tiàowǔ de xiǎo péngyou bù duō* 'NEG want dance-MOD little friend NEG many' 'only a few children don't want to dance'.

1.13. *Sentential Nominalization for 'What Happened Was . . .'*

Sentential nominalizations affirm or deny a supposition. The following example might explain why someone could not speak English. Merely stating that they had arrived the day before takes the simple perfective. With the *shì . . . de* sentential nominalization, the subject and the *shì* "copula" are followed by a verb phrase and a *de* nominalizer: *Tā shì zuótiān lái de* 's/he COP yesterday come NOMINALIZER' '[the situation is that] s/he came yesterday' (Li & Thompson, 1981, pp. 587–593).

1.14. *Conditionals*

Conditionals set the conditions under which a second proposition would be true. They contain two clauses by definition: 'if you go, I will'. English conditionals are divided into three types: reality conditionals in the "real world" as in *If*

you heat water to 100 degrees, it boils; If you are tired, stay in bed this morning. Imaginative conditionals describe unreal or imagined conditions. One type is hypothetical, as in *If I won the lottery, I'd be amazed.* A second type is counterfactual; it describes what could have been true BUT WAS NOT: *If John Kennedy had not been assassinated, he would be in his 70s; If you had taken my advice, you wouldn't be in this mess.* English makes grammatical distinctions for conditionals using conjunctions such as *if* or *unless*, as well as changes in auxiliary verbs, tense and aspect markers, as well as the more literary (and moribund) subjunctive mood, as in *if I were a carpenter* (Li & Thompson, 1981, pp. 646–656).

Mandarin makes no verb tense or mood changes for conditionals. Clauses are often juxtaposed without a conjunction. *If you go, I will too* can be translated *Nǐ qù, wǒ yě qù* 'you go, I also go'. As the condition required is frequently a time, a place, or a series of events, Mandarin conditionals are often implicit, based on the speaker's understanding of the relationship between events. They overlap strongly with serial verb constructions, particularly those describing time or place. Order is iconic, first the condition, then the consequence. Unmarked conditionals have either a reality or an imaginative reading: *Zuò fēijī, nǐ yīdìng lái de jí* 'take airplane, you certainly come-POT-reach' '[if] you fly, you can certainly make it on time'; '[if] you were to fly, you would certainly be able to make it on time'; '[if] you had flown, you would have been able to make it on time' [but you didn't]'.

Greater explicitness is always possible, in both classical and modern languages (Norman, 1988, pp. 106–108). Informal conditionals often insert conjunctions, such as *jiù* 'as soon as, then, in that case' or *nà* conjunction meaning 'then, in that case', between the clauses. More explicitly conditional conjunctions comparable to *if* or *in that case* also exist and include *rúguǒ, yàoshi*, and *jiǎshǐ* (< stative verb *jiǎ* 'false' + *shǐ* 'if, supposing'). Explicit conditionals begin with a conjunction, followed by the clause, and then a tag *de huà* 'MOD-speak' comparable to English *so to speak*. Modal auxiliaries, including *huì* 'can', and *kěyǐ* 'have permission to, may', and *-le* perfective, are often included as well.

(13)   Rúguǒ   nǐ   zuò   fēijī   de   huà,
       if   you   take   airplane   MOD   speak,

       yīdìng   lái   de   jí
       certain   come-   POT   reach

       'If you fly, you can certainly make it on time'

       Jiǎ-   shǐ   nǐ   zuò-   le   fēijī   de   huà,   jiù
       false-   suppose   you   take-   PFV   plane   MOD   speak,   then

       huì   lái   de   jí
       sure   come   POT   reach

       'If you had flown, you would have made it on time'

1.15. *Frequent Topicalization*

Topic is a discourse-level function. Subject, in contrast, reflects a sentence-level grammatical relationship with the predicate. In Mandarin, a topic can be appended before the beginning of any socially appropriate sentence, typically before the subject. Topics can always be set off by an optional sentence-internal particle. Although the subject is often the topic, a sentence often has both a subject and a topic.

(14) Mùguā   a,   zhè xiē   dōu lán- diào- le
      papaya PTL:topic this group all rot- off-   PFV
      TOPIC   SUBJECT
      'As for papayas, these are all rotted'

2. Sources of Evidence

The Chinese people traditionally delight both in language and in small children. Pre-modern Chinese believed that the songs children sang while playing revealed the supernatural. They transcribed and analyzed them, even basing political decisions on them (Eberhard, 1986, p. 63). The cynical philosopher Xunzi (Hsun Tzu), himself in exile from his native kingdom, noted in the third century B.C. that "while the children of various regions make the same sounds at birth, they learn to speak quite differently as a result of training." Xunzi argued that the importance of environment was so strong that he could not accept the prevailing Chinese belief that humans were born with a single, normal, "good" pattern of conduct (Creel, 1953, p. 120). An article on child Chinese acquisition of phonology appeared in 1759 (cited in S.-M. Tse, 1980, summarized in Kam, 1975). The very influential late 19th century reformer and politician Kang Youwei advocated universally available nursery schools for communal childrearing. Impressed at hearing that infants worldwide made the same basic sounds, he selected 16 sounds as basic and elaborated on them with explanatory material to be used for a phonetic primer. His daughter was to pursue the scheme, but no records survive (DeFrancis, 1972, p. 36; I. Hsu, 1983, pp. 364–373).

Twentieth-century work on child Chinese is sparse and uneven. The very homogeneity and relative progressiveness of traditional views of child development made the subject less intriguing and controversial than in the West. The cataclysms of the 20th century, a Japanese occupation, 40 years of civil war, a world war, and the strain of building a new society in a bitterly poor nation all took a toll on social science. Soviet psychology was influential in the 1950s, but orthodox Chinese Marxists look askance at psychology as encouraging elitist individualism at the expense of broader social reform. Research on personality, individual differences, and IQ testing has been particularly discouraged. All university social science departments closed for 10 years during the Cultural

Revolution (1966–76); most contact with foreign research ceased. Recent research is often restricted to physiological and pedagogical applications. Similar forces handicap psychology in Taiwan. However, psychologists have managed to contribute a great deal to developing modern preschool and grade schools; improved reading curricula are especially successful.

Despite these obstacles, a 1925 textbook on child psychology discussed language acquisition (H.-Q. Chen, 1925). Kuo (1937) took a Piagetian approach in analyzing shorthand transcriptions of spontaneous speech by 3 to 7 year olds. She found a gradually increasing but still incomplete mastery of complex sentences and narratives. Kuo's work appeared 1937, the year the Japanese invaded. In 1951, Y. R. Chao produced the first extensive study of child Chinese, a phonological analysis of phonograph recordings of Canta, his 28-month-old Mandarin-speaking granddaughter. Canta lived with Chao's extended family in Berkeley, California. Chao (reprinted in 1973) provides phonetic transcription of an extensive vocabulary, useful grammatical notes, as well as short but authoritative discussions of syntax, semantics, and context. Unfortunately, Canta's Mandarin seems heavily influenced by English. All Chao's work, including his monumental grammar (1968a), uses the extremely complex romanization of his own invention. The *pinyin* romanization developed in the People's Republic has been the standard for the United Nations and the United States since 1979. All examples in this chapter are rendered in *pinyin*.

Since 1978, the Center for Developmental Psychology at East China Normal University in Shanghai has performed dozens of experimental studies with hundreds of Mandarin-speaking children between the ages of 1;6 and 10. Topics include: comprehension (Zhu & Wu, 1986b); compound sentences (Zhu, Wu, & Miao, 1986; Zhu & Miao, 1989); word order and animacy (Miao, Chen, & Ying, 1986); personal pronouns (Zhu, Chen, Ying, & Zhang, 1986); demonstrative pronouns (Zhu, Cao, & Zhang, 1986); datives and instrumentals (Y. Wang, 1986); time adverbs (Zhu, Wu, Ying, Zhu, & Zhuang, 1986); noun classifiers (Ying, Chen, Song, Shao, & Guo, 1986); adjectives (Yuyan fazhan, 1986); causatives (Zhu & Wu, 1986b); questions (Miao, 1986); spatial direction (Zhang, 1986); picture description (Wu, Ying, & Zhu, 1986); social influences on language acquisition (Wu & Zhu, 1986); comparisons between deaf and hearing children (Zhu & Wu, 1981) and normal, deaf, and blind children (Zhu & Wu, 1986a).

Phonology has also attracted much interest. Clumeck (1977) and Li and Thompson (1977) are experimental and observational studies of Mandarin tone acquisition. J. K.-P. Tse (1978) discusses his son's acquisition of Cantonese tone. Hashimoto (1971) and Light (1976) discuss acquisition, the extensive tone play, and tone loss among their children who grew up in North America speaking Mandarin and Cantonese respectively. P. J.-K. Li (1978) describes the overall acquisition of Mandarin phonology.

Word-class distribution and sentence length are the focus of short articles by

Yuan (1977), who taped a 2 year old as he looked at picture books with his mother; by Wu and Xu (1979), who taped four children from birth to age 3; and by Chen and Ryback (1974), who also discuss numerous tone errors, vocabulary, and syntactic examples based on 15-minute recordings from four children aged 1;4 to 2;8. Chen (1973) finds more imitation errors in picture descriptions by lower-class children than upper-class ones. Su (1978) briefly discusses IQ and language among 2- to 3-year-old English–Chinese bilinguals. Huang and Hatch (1978) present a detailed quantitative discourse analysis of the acquisition of English by a 5-year-old Taiwanese-speaking kindergartner in Los Angeles.

Studies of the acquisition of negation, and early question comprehension, based on extensive analysis of tapes and diaries of the author's son appear in Lee (1981, 1982). An experimental study of the acquisition of quantificational scope appears in Lee (1986, 1989). Spontaneous speech and storytelling by 461 4 to 6 year olds are analyzed in R. Wu (1987), who finds that the temporal, conditional, and emphatic functions of the *jiù* adverb develop in tandem. Li (1990) is a major experimental study of the acquisition of aspect, analyzed in terms of inherent verb semantics (Aktionsart).

Some syntactically oriented research is deeply flawed because it selects a single "universal" syntactic structure from English, translates it into ungrammatical Chinese, then elicits single-sentence responses, out of context, with ambiguous materials (Bloom, 1981; Chien & Lust, 1983; Chien & Wexler, 1989; Lust & Chien, 1984; Packard, 1988; Yau, 1981). Skepticism is justified. Two separate replications of A. H. Bloom (1981), by Au (1983, 1988) and Liu (1985), found that once test materials were translated idiomatically, even grade-school Chinese children could master abstract concepts that Chinese grammar was alleged to make inaccessible to adults. Using socially appropriate subject matter enhanced children's scores even more.

Pragmatic and sociolinguistic studies remain rare, but Poggi (1982) discusses spontaneous imitations and those elicited while reading picture books with the mother. Farris (1988a, 1988b) extensively videotaped Taibei nursery schools to analyze the acquisition of a peculiarly female, flirtatious *sā jiāo* speech style and its selective use by little boys. Careful cross-cultural comparisons between American and Chinese children are the focus of Flavell, Zhang, Zou, Dong, and Sen's (1983) experiments on the appearance–reality distinction, as well as Stevenson, Stigler, Lucker, and Lee's (1982) study of reading and dyslexia in school children. "Literate" strategies in preschool narratives are analyzed in Hong-Fincher (1987).

Erbaugh's studies (1978, 1982, 1983a, 1983b, 1984, 1985, 1986) focus on the pragmatic context for the acquisition of syntax. They are based on 64 hours of audiotaped longitudinal home visits with four Chinese children aged 1;10 through 3;10 in Taibei, Taiwan, and constitute the main data for this chapter. All four were Mandarin monolinguals, selected after interviews with 20 Mandarin-speaking families who had immigrated to Taiwan from north China. Three moth-

ers and one father were teachers of Mandarin. One father was a police officer; the other parents did business. I audiotaped hour-long visits with Pang, a girl aged 1;10, and Kang, a boy aged 2;10, every other week for 12 months in 1979–80. I also recorded seven hour-long visits with Laohu, a boy aged 2;0, over 2 weeks' time and 9 hours with a girl, Zhongrong, aged 2;6, in an 8-week period in 1976. A young Chinese woman followed the child with one tape recorder, while I whispered a running contextual description into a second machine. I became friendly with all the families, visiting them many times without taping. Adult conversations on the tapes form a control, as do 19 adult Chinese descriptions of a short film. Chinese consultants and I transcribed, contextualized, and checked the corpus. I coded the 135,000 interpretable child utterances for syntax, checking the analyses with native speakers. I then performed statistical tests (Erbaugh, 1982, pp. 45–113).

The four unacquainted Taibei children acquired language in strikingly similar patterns, despite their varied personalities. Two of the children, Kang and Zhongrong, both only children, were highly verbal and aggressive; both frequently experimented with language. The two youngest children, Pang and Laohu, were relatively taciturn but precise. The Taibei children were talented. Follow-up visits to Zhongrong when she was 6 years old found her spontaneously reading books written for sixth graders. At age 14, Kang earned an A average at the best junior high school in an Ivy League university town, a mere 18 months after his family immigrated to the United States. Pang's family also immigrated. Both the former "wild children" grew into lively but quietly courteous school children. Overall, speech style and language acquisition in the Taibei homes strongly resembled that of Chinese children of similar class backgrounds in the People's Republic, Hong Kong, and Singapore, as well as the conversations recorded among intellectual families in Cambridge, Massachusetts, Berkeley, Tel Aviv, and Tokyo (Slobin, 1985b).

3. Chinese Culture and Language Acquisition

3.1. *Beliefs about Child Development*

Chinese traditionally believe 'from the very beginning, humans are good by nature', *rén zhǐ chū, xìng běn shàn* 'person MOD beginning, nature root good' (*San zi jing* 1988). These are the first two phrases in *The Three Character Classic*, the first text memorized by new readers for over a millennium and still in print today. In a view much closer to modern psychology than traditional European values, children are considered as neither innocent nor sinful but in need of education. No single critical moment is seen as igniting a "divine spark" or an age of reason.

The behavior of pregnant women is believed to influence the fetus through 'fetal education' *tāi jiào*. A two-thousand-year-old annal says:

In ancient times, before manners grew corrupt, princesses used to be careful to eat correctly when they were pregnant, and to listen to nothing but sacred music. They were especially strict about their language, keeping it moderate and dignified so that the child in the womb should not be exposed to any harmful influence (Levi, 1989, p. 58).

Legend has it that the mother of the Qin Shi Huang Emperor ignored this advice when she was pregnant with the tyrant who later unified the empire and commissioned a pottery army for his tomb at Xi'an. At birth, the future emperor cried so fiercely that his nurse refused to take care of him, saying he would be the ruin of his family (she was beaten to death) (Levi, 1989, p. 58). In the 1990s, the tradition of "fetal education" has reappeared in modern form to include widely-used educational tape recordings for pregnant women to play by their bellies.

Newborns are believed to continue a rudimentary gestational consciousness and to have some understanding. Healthy, intelligent babies should be calm and happy, not cry too much or "babble senselessly." Parents and older children look newborns in the eye and talk with them, often supplying dialogue for conversations with other adults. At 18 months, the vegetative stage of infancy or yīng ér is complete. The child is considered a developed person because "its form and spirit are complete," because it walks, understands speech, and can express human emotions of joy and sorrow. Once children 'understand reality' dǒng shì, a more orderly education can begin (Furth, 1987, pp. 12, 21, 23–26). Even bitterly poor, illiterate peasants distinguish the same words used for childrearing among intellectuals. Yǎng 'to raise' is used like its English equivalent, to refer to plants and animals, as well as children. It contrasts with jiāo 'to teach' in a more active sense, which is the parent's responsibility. Children's duty is xué 'to memorize, to learn' practical, scholastic, and moral skills (Ward, 1985a, p. 191). Informal surveys of parents in Beijing and Taibei indicate that parents spontaneously mention both biological destiny and parent's modeling as crucial for language development, but they disagree as to when children are considered to understand language. Traditional and modern beliefs about children, morality, and education are discussed in the first chapters of Munro (1977), in Chiang (1952), Chin (1988), D. Y. F. Ho (1986), Liljestrom et al. (1982), Tobin, Wu, and Davidson (1989, pp. 72–125, 195–205), and Wolf (1968, 1972).

China is justly famous for strikingly uniform, long-sustained ideals about childrearing and education. But social class and poverty, of course, force tragic compromises (D. Wu, 1981). In famines of the 1930s, men stood by the roadside selling their wives and children as laborers, priced by weight. "Bathing the baby" was the euphemism for drowning a newborn girl whom the family could not afford to feed. Urban intellectuals bitterly criticize peasants for treating their children "like animals." A proverb equivalent to "still wet behind the ears," derides naive young bumblers as "still wearing dirt trousers." In the 1990s, millions of babies, born near the upper reaches of the Yellow River, still spend

their days sitting alone, immobilized, stuffed into bags of porous clay with only their heads and arms peeping out. This region is bitterly poor even by Chinese standards; a full-time worker earns only U.S. $25.00 PER YEAR. Parents are away all day, except for noon, when the baby is nursed. They take the baby out of the bag only to change the clay. Parents say "bagging" produces model children who seldom cry and are "more polite and obedient, as well as more intelligent." They resent efforts, such as those by Wu Fenggang, deputy head of the Beijing Child Development Center of China, that encourage parents to change the silt more often, to pick up their children, and to play with them more (Branson, 1990).

The Chinese traditionally believe that childrearing is a group responsibility, too important and demanding for parents to handle alone. Contrary to popular belief, the Communists did not introduce child care outside the nuclear family. In traditional China, Taiwan, and the People's Republic alike, Chinese parents routinely send young children to live with distant relatives or families of servants, with little concern about possible trauma (Tobin et al., 1989, p. 103). Grandparents, other older relatives, and preschool teachers are believed to provide more patient and stimulating childcare than inexperienced and impatient young mothers (Chin, 1988, pp. 47, 66, 74, 77, 172–173). Mothers are traditionally expected to work to augment family income. Pang lived with her maternal grandparents in Taibei while her parents spent most of their time doing business in the United States. Both mainland and Taiwan intellectuals are distressed to hear that American (and Japanese) women are pressured to stay home full-time. They expressed concern about the waste of the mother's talents, education, and income-earning ability, as well as the possible harm to children from overindulgence and lack of social stimulation.

Like the Japanese, the Chinese indulge preschoolers in a "universal amnesty" for much behavior that Americans consider unacceptable, such as emptying the contents of an adult's purse or hitting the mother. (Although from first grade on, Chinese schoolchildren are among the most disciplined in the world.) Several factors seem to reinforce the toddler's "amnesty." In the extended family, someone, often an older sister, is expected to hold the child in her arms or carry the child on her back at all times. Crawling is discouraged from revulsion at dirt and cold. Subsistence-level families own very few breakable objects, and children are included in almost all activities, where their presence provides a welcome diversion. Children's uninhibited comments and antics provide a welcome release to disciplined Chinese adults. Unsophisticated adults, who love children, will often deliberately knock a toy out of the child's hands to provoke a reaction. Adults comment, "these are children, it doesn't matter. They don't feel pain the way adults do." Adults are also unlikely to fuss over scrapes, falls, or tantrums. The adult Chinese ability to remain calm and avoid conflict even under intense crowding may be developed under childhood conditions that combine frustration and indulgence (Ward, 1985, pp. 173–176).

Politeness, other than using names and titles, is much less emphasized and

discussed with Chinese preschoolers than among young Japanese (Clancy, 1985) or Mexican-Americans (Eisenberg, 1982). Adults also traditionally do not say 'please' or apologize to children, although some foreign-influenced Chinese now criticize this as unfair (Bo, 1985, pp. 28–29).

Preschool is seen as extremely desirable, especially for only children. But contrary to popular belief, only about 23% of children in the People's Republic attend preschool (57% in the cities; 14% in rural areas, where 80% of the population live) (Zhongguo ertong, 1988). Taiwan preschool attendance rates are similar. Rural children who do not attend preschool are discussed in Wolf (1968, 1972) and Lofgren (1982).

Reports from Western scholarly delegations describe family life and nursery school curriculum in a wide range of cities, both during the Cultural Revolution, when questions about ability grouping understandably made teachers uneasy (Kessen, 1975), and in the 1980s (Liljestrom et al., 1982). Tobin et al. (1989) videotaped representative Chinese, Japanese, and American nursery schools. Videotapes of orchestrated, uniform group activity in the Chinese school elicited negative comments from some elite Chinese, as well as many Japanese and Americans.

Chinese cultural continuity is so strong that preschools and childcare for corresponding social classes are very similar throughout China and Taiwan, according both to published reports and my own observations. Taiwan preschools are as structured and politicized as mainland schools, but with a Nationalist rather than Communist ideology (Tobin et al., 1989, pp. 122–123).

3.2. Language Addressed to Children

Chinese from every social background use a distinctive speech style when talking to very young children. Chinese "adultese" includes a phonological component that aids children in segmenting compound words; a social component that emphasizes names and kinship terms; and a quiz style of conversation that prepares children for success in school. Preschool children are also vigorously drilled in memorization and precise retelling of adult model stories (Hong-Fincher, 1987; Noren-Bjorn, 1982, pp. 59, 81–83; Tobin et al., 1989, p. 81).

3.2.1. Chinese Adultese as an Aid to Segmentation.
Child and adult speakers of both sexes address toddlers in a register that resembles the crosslinguistic patterns for baby talk (Ferguson, 1977) and motherese (Snow, 1977). Chinese adultese includes much reduplication, is higher pitched than ordinary speech, and exaggerates pitch contours in both tone and intonation. Reduplication highlights the root noun or verb in a compound. Often it eliminates the modifying noun or verb complement. In Mandarin, *nǎi* 'milk' always means HUMAN milk. (Many "foreigner jokes" focus on this distinction.) All other milk is *niú-nǎi* 'cow

milk', reduplicated as *nǎināi* 'milk-milk'. The reduplicated noun receives a high level tone. Similarly, the verb *tiào-wǔ* 'dance-hop' (= 'to dance') eliminates the noun complement, reduplicating the main verb as *tiàotiào*. A slightly more complex variant reduplicates the noun complement, especially if it is free. 'To eat' is literally 'eat [cooked] rice' *chī-fàn*, reduplicated as *chī fàn-fàn*. Reduplication and the perceptually salient high level tone aid segmentation and substitution in this analytic language (see Peters, 1983). A comparison of motherese in other analytic tone languages such as Thai would determine how universally accessible such tone alternations are.

3.2.2. Names as a Model for Social and Linguistic Structure.
Confucian societies stress that adults must teach children their social roles. Every 2 year old I asked could tell me that he or she was a Chinese. Personal names also reflect the clan-based Chinese social organization. In old China, first graders learned one hundred of the most common surnames when they memorized their second primer (*San zi jing*, 1988). In China, the ratio between surnames and given names is inverse to Europe. Chinese surnames are a closed set of a few hundred; over half the population has one of the 10 most frequent names such as Wang, Chen, or Li. Given names, in contrast, are an open set, chosen from ordinary vocabulary. Traditionally, same-sex cousins or siblings are given the same first name, followed by a different but semantically parallel middle name. Brothers or cousins might be named *Wéi-guó* 'protect the nation', *Wéi-zōng* 'protect the clan', and *Wéi-mín* 'protect the common people' (Chao, 1956; Yang, 1945, pp. 68–72, 257–263). With the rise of one-child nuclear families, single-syllable, phonetically pleasing names such as *Yīng* 'hero' have become fashionable all over the Chinese-speaking world.

Mastering names is important for English-speaking children (Katz, Baker, & Macnamara, 1974). But naming is socially central in China. Where English mothers will say *what do you say, dear?* to prompt a *please* or *thank you*, Chinese mothers will say, *what do you call [jiào] so and so?*, that is, "use the right term of address and greet this adult politely" (Ward, 1985b, p. 191). Even newborns are playfully urged to say 'Mama' and 'Papa', as well as kinship titles. Parents, other adults, and older children interpret early vocalizations as names. A squealed /iii/, for example, will be interpreted as *yí* 'maternal aunt', used for adult women in general. Babbling babies are conventionally asked playfully but persistently, *jiào bàba hái shì jiào māma?* 'say papa or COP say mama?' 'Are you asking for papa or mama?' until they produce a syllable that can be glossed as a name. Strangers in the park or on a bus greet babies with this phrase rather than a *hello*. Two and 3 year olds are urged to address adults and older children by name when they enter the room.

Starting just after age 2, children are coached to master surnames, given names, and kinship terms for themselves and their parents (mothers use maiden names) and relatives. Surname plus title is usual, as in *Yáng Lǎoshī* 'Teacher

Yang' or *Máo Zhǔxí* 'Chairman Mao'. Surname also appears in family titles:
Chén Biǎojiě 'Chen maternal-line older sister', 'older female maternal cousin
surnamed Chen' 'Cousin Chen'. At 2;4, Canta's (Chao, 1973) vocabulary in-
cluded productive use of: English *daddy, mommy* (used for her own mother
only), *grampa* and *grandma* (used interchangably); *Èr yí* 'Second [in birth order,
maternal] Aunt'; *Èr yí-fū* '[second in birth order, maternal aunt's husband] Sec-
ond Uncle'; *Bóbo* 'Older Paternal Uncle', used for addressing men of her father's
generation; *Gōnggong* 'grandfather', for men of her grandfather's generation;
Gōng-bó 'great uncle-uncle', a coinage for men of an intermediate generation;
Mèimei 'younger sister', for girls (and sometimes boys) her age or younger;
Nǎinai 'granny', usually used with surname, for women of her grandmother's
generation; *Xiǎo Yí* 'little aunt'; *Sān Yí* 'third aunt'; *Sì Yí* 'fourth aunt'; and *Yí*
'maternal aunt'. Xiao Jing ('Little Classic') (1;4) produced nine different kinship
terms during a single 2-hour visit (Erbaugh, 1982, p. 171).

Children address strangers with kinship or occupational titles, as in *Sījī Bóbo*
'Elder Uncle Busdriver', *Hùshì Āyí* 'Auntie Nurse', or even *Jiěfàngjūn Shūshu*
'Younger Uncle Soldier from the People's Liberation Army' (= 'Uncle PLA-
man'). (Beijing editors finally rebelled at translating that one for English-edition
children's books.) The Chinese expand the human family to include unknown
children in picture books and on the street. They become *xiǎo dì* 'younger
brother' or *xiǎo mèi* 'younger sister', not 'the little girl' or 'the little boy'.
Foreign researchers sound friendlier and more respectful if they talk about 'little
friends' *xiǎo péngyoumen,* rather than 'children' *xiǎo háizimen.*

3.2.3. *The Quiz Style of Conversation.*   The quiz style of conversation is
normal for older children and adults who talk to young children. The adult asks a
question with a preselected answer in mind, then persists in asking the child until
he or she produces precisely the designated answer. Often the answer is modeled
as well. The quiz style develops even before children begin to talk, frequently at
around 18 months. Lin (1968) reports a child (1;3) who eagerly responded to her
mother's scripts that began 'say. . .' Slightly older children are prodded until
they answer queries like 'is the bunny cute?' or 'what does the bunny look like?'
Divergent replies such as 'no' or 'funny' are dismissed as *luàn jiǎng* 'disorderly
talk', 'nonsense'. Questioning is lighthearted but persistent. One godmother
rephrased the same question for 5 minutes before her 2-year-old goddaughter said
the microphone 'looks like an ice cream cone'. (Lee, 1981, and Poggi, 1982,
contain many examples.) The quiz style appears among all social classes in
Taiwan, Hong Kong, and American Chinatowns as well as the People's Re-
public. Older children of both sexes use it with younger children. Children as
young as 2;6 use it with infants and dolls, much as Andersen (1977) found
American 2 year olds able to code-switch to a younger speech style. Remnants of
the quiz style remain in teachers' speech at all levels, as well as in adult speech to

subordinates, particularly when consensus is expected, as in 'is everybody
happy?'

The quiz style emphasizes VERB-NOT-VERB questions. Copying the verbs
for an answer helps segment verbs and complements, as in *xǐ-bu-xǐhuān chàng
guó-gē?* 'like-NEG-like + enjoy sing nation-song?' '[Do you] like singing the
national anthem?' American-style open-ended questions such as *what would you
like to play?* or *what did you do today?* are often inappropriate. Children (and
adults) often go silent before replying. The quiz style prepares the child for
success in Chinese schools, which stress obedience, choral response, and memo-
rization. Strong support for education allows Taibei (and Tokyo) children to do
much better in grade school reading and arithmetic than carefully matched Min-
neapolis children do, according to Stevenson et al.'s comparative study (1982).

Cross-culturally, the same speech act plays vastly differing roles. Chinese
recitations differ from American ones less in kind than in their importance,
frequency, and classical emphasis. The Chinese value an exact repetition of
standard printed texts. Adults and older children model rhymes, stories, and
songs routinely throughout the day (Chin, 1988, pp. 64, 182–183; Lee, 1981;
Poggi, 1982). Three year olds from intellectual families proudly recite Tang
dynasty poems for guests, comparable in difficulty and incomprehensibility to an
Arkansas child's reciting passages from *Beowulf.* Popular anthologies print
thousand-year-old poems and stories for 4- to 8-year-old children to memorize.
One series publishes a dozen such titles, each with original texts, modern collo-
quial translations, notes on obscure vocabulary, and coaching tips for parents
(Xia & Gu, 1987).

White American working-class Southern families also prefer standard stories
(Heath, 1983, pp. 149–165). However, where the Americans, prompted by
religion, worry that childish variations are lies, the Chinese typically see a need
for tighter discipline to insure scholastic and financial success. Middle-class
Chinese expand children's comments and rehearse the children on naming ob-
jects, much like middle-class Americans and Japanese (Clancy, 1985). Rural
working-class African-Americans (Heath, 1983) and the Kaluli of New Guinea
(Schieffelin, 1985, p. 531) avoid such expansions, the African-Americans be-
cause they seem trivial, the Kaluli because expansions imply a witchlike ability
to read minds. Chinese adults often ask children to imitate their expansions. The
Kaluli and the Japanese also frequently model speech. But the goals differ. Kaluli
models teach the child to be verbally assertive (Schieffelin, 1985, pp. 531–532),
whereas Japanese models train the child in empathy and politeness (Clancy,
1985, pp. 491–492). In the United States, intensive adult modeling is associated
with pressure from status-conscious, upwardly mobile parents. But the Chinese
quiz style transcends social class as the ordinary, relaxed, and happy style of
conversing with small children, one that guarantees them both lines to speak and
rewards for responding successfully.

4. Overall Course of Development

4.1. *The One-word Stage*

Before age 2, speech is simple and relatively error free, because uninflected single words are grammatical. The mean length of an utterance (MLU), which corresponds very closely to English norms (Brown, 1973, p. 54), hovers below 2.0 (Chen & Ryback, 1974; Erbaugh, 1982, pp. 88, 670; Lee, 1981, pp. 20, 1982). Adults and older children scaffold a very high percentage of children's speech. Vocabulary and speech acts are distributed across all major categories, including social routines. In addition to kinship terms, concrete nouns are the most numerous subcategory. Examples include *huā* 'flower', *mǐ* 'uncooked rice', *fàn* 'cooked rice, food', and *diàn* 'electric', which was used for 'TV' (*diànshì* 'electric vision'), *diànhuà* telephone ('electric speech'), and *diànxiàn* 'electric cord'.

The same early predominance of nouns appears crosslinguistically in English, Turkish, Japanese, and Kaluli. Gentner (1983) argued that the perceptual salience and stability of nouns make them particularly accessible. Nouns also predominate in other Mandarin studies (Kuo, 1937; T. Wu & Xu, 1979; Yuan, 1977).

Verbs, the second most numerous group, spread across many categories, including actions such as *qù* 'go', activities such as *niào* 'urinate', experiences such as *pà* 'fear, be afraid', stative verbs for adjectival states such as *piàoliang* 'pretty', and directional coverbs such as *xià* 'down, get down'.

Modals are extremely rare, confined to answers to adult questions. No time adverbials such as 'tomorrow' appear. Aspect markers are extremely rare, largely confined to the *zài* adverb meaning 'again'. Niu's clear but ungrammatical request **zài Ø tāng!* 'again Ø soup' omits a verb such as *lái* 'bring' or *yào* 'want'. The null sign Ø signals omission of a grammatically required morpheme. Manner, modality, coverbs, serial verbs, and particles other than generally emotive *a* are nonexistent or extremely rare (Erbaugh, 1982, pp. 152–160, 295–307, 455–458, 538–553, 567–577, 670–671). The Taibei error rate is lower than that for older Chinese children, but still significant, with about four errors for every one hundred utterances.

Lee (1981, pp. 22–44) records development, including ability to copy verbs, in answering questions, pragmatic imperatives, omission of main verb such as 'drink' *hē*, in statements like **yào Ø shuǐ* 'want Ø water'. By age 1;8, Min had four negative concepts: nonrecurrence, nonexistence, negative volition, and negative imperative. These were often distinguished by intonation or gesture rather than word choice. Occasional spontaneous statements used agent-action-patient or serial verbs at 1;9, as in 'Minmin blows balls [bubbles]' and 'drive a car to see Big Sister Xingxing' *kāi chē kàn Xíngxing Jiějie* 'drive car see Xing-xing Sister' (Lee, 1981, p. 29).

Children under 2 converse very informatively.

(15)   Niu (1;10) thinks she hears someone outside the window in the bamboo grove (Erbaugh, 1982, pp. 174–75).

Shéi?
'Who?'

(Looks outside, answers self.)

Méi   yǒu   Ø
not   exist   Ø

(Standard Order = *Méi yǒu rén* 'not exist person')
(A few minutes later.)

Aunt: *Yǒu   rén   méi?*
exist   person   not?

'Is/was anyone there or not?'

Niu: *Yǒu*
exist

'[There] is/was'

Here, Niu introduces a topic, asks a question, answers, excites some adult consternation, then answers a later adult follow-up question by copying the verb in the question.

4.2. *The Emergence of Strong SVO Order*

The clearest overt syntactic marker is strong SVO order. It emerges as multiword utterances become more common with MLUs fluctuating between 1.8 and 2.5 (Erbaugh, 1982, pp. 81, 87; Lee, 1981, p. 45). Children produce many sentences that are either SV or VO, but very few SVO. However, they have mastered the order contrasts for subject and object. Patient-objects consistently come after active verbs. Preverb subject position is reserved for agents of active verbs and subjects of statives and processes. Reordering a VO phrase to topicialize it as OV does not occur in my data. The majority of verbs are agentive actions, with the child as agent, as in *wǒ chī* 'I eat' or *wán zhège* 'play [with] this'. The second most common predicates are also SV patient-punctual descriptions of inanimate objects, usually objects the children themselves manipulate, as in *chēzi huài-le* 'car break-PFV' 'the car is broken'. A few SV patient-state descriptions appear, for example, *huā hǎo piàoliang* 'the flower [is] very pretty'. The most common modal is *yào* 'want', used for the child's own desires as in **yào huà Ø gǒugou* 'want [to] draw Ø doggie'. Time marking remains extremely rare, with the exception of an occasional *děng-yi-xia* 'wait a moment', largely restricted to the child's description of his or her own imminent plans, rather than, say, as an imperative. *Le* sprouts up everywhere but is ambiguous between perfective and current relevance as it appears only as a sentence-final element.

4.3. *Rigid Order and Enhanced Transitivity*

Fluent speech blossoms when the children are between 2;3 and 3;2, with MLUs fluctuating between 3.0 and 4.0. Word order is rigidly SVO at first, as the children apparently refuse to vary the clearest and most overt rule they know. Separating compounded verbs seems very difficult. Modals such as *huì* 'can, might', *néng* 'can, able to' proliferate. Children emphasize highly transitive relations, especially with themselves as agents. They use many causatives, both conventional ones, such as *nòng-huài-le* 'make-break-PFV' 'broke', and anomalous ones, such as *pèng-fàng* 'bump-put down' to describe an unsuccessful attempt to smash a balloon. Causatives emphasize result but often omit a verb for the process. Verb complements for completion are common and correct. But progressives and duratives lag far behind perfective. Event time is rarely marked, except for an occasional *xiànzài* 'now' or *míngtiān* 'tomorrow', usually used appropriately. Duration is almost never marked. Manner is only rarely modified with *kuài* 'fast' and *hǎo* 'well'. Benefactive *gěi* 'give' becomes common, usually with the child as giver or recipient. Serial verbs expand to include *lái* 'come, gonna', *qù* 'go', *gǎn* 'dare', and *bāng* 'help'.

Re-ordering experiments appear with both the *bǎ* object marker and the *bèi* agent marker, especially in emphatics and imperatives. Children frequently misinterpret such purely grammatical morphemes as semantically full verbs. **Bù yào bǎ wǒ Ø* ***'not want OBJ.MKR me Ø' 'don't *BA* me' is incorrectly used to mean 'don't bump me' *bù yào bǎ wǒ pèngshang*. Discourse-controlled topicalization and idiomatically used final particles remain largely beyond reach.

4.4. *Full Sentence Predicates*

After about age 3;2, MLU above 4;0, children good control of full-sentence syntax. They frequently mention someone other than themselves as agent. Three-term sentences with agent, action, and patient become common. The most common modals are used correctly, as are serial verbs. Main verb is still often omitted. Aspect expands to include the past experiential *-guo*, as in *nǐ qù-guo Táizhōng méi yǒu?* 'you go-EXP Taizhong not have?' 'have you ever been to Taizhong?' Several events can be ordered within a single sentence, including contingent events. As in adult speech, these are usually not marked with conjunctions, *tiānqì hǎo, wǒmen qù yóuyǒng* 'weather good, we go swim' 'when the weather is good we [can] go swimming'. But background aspect, especially progressive, remains problematic. Sentences such as *tā shuìjiào de shíhòu tāmen jiù lái-le* 'she sleep-MOD-time they that moment come-PFV' 'They arrived while she was asleep' are almost nonoccurring. Irrealis begins to be marked lexically with *jiǎzhuāng* 'pretend'. Result, goal, and end location are usually correct. But process, duration, and background location of activities are usually unmarked. The children experiment with discourse-sensitive particles, re-ordering, topicalization, and time marking, but they frequently have difficulty.

Sentence-internal re-ordering emphasizes salient patients (Erbaugh, 1982, pp. 321–326). Unmarked frontings are usually correct, as when Pang (2;10) picked up a chess piece saying *zhège ná gěi jiějie* 'this take BEN big sister' 'this one [I'll] take for big sister'. But struggles with coordinating aspect between foregrounded and backgrounded actions and states continue throughout late childhood.

THE DATA

5. Errors

5.1. *Typical Errors*

If learning Mandarin really were "just semantics," grammatical errors would not exist. I calculated an overall error rate for the Taibei children as a preliminary crosslinguistic comparison (Erbaugh, 1982, pp. 136–171). Little opportunity for grammatical error exists at the one-word stage, but error rates rose rapidly as soon as multiword sentences appeared. Taibei children as a group showed a surprisingly high rate of utterances that are ungrammatical by adult standards: eight errors of omission, misuse, or word order for every one hundred utterances. (This does not mean that 8% of all utterances were ungrammatical, as many sentences had more than one error.) Omission errors were defined as a nonappearance of a grammatically obligatory element. I scored these conservatively according to the most taciturn adult equivalent. The very frequent, colloquial ellipsis of contextually clear subject or object, *chī-bǎo-le* 'eat-full-PFV' '[I/you/someone] has finished eating, is scored as correct. Pang, showing off five stuffed animals, remarked **wǒ hái Ø zhège* 'I also Ø this'; I scored one error for the missing main verb. Laohu asked me to pull down the bars of his crib by saying **Ø-xià* 'down' (= *lā-xia-lai* 'pull-down-come'). I coded two omissions, one for the missing main verb and one for the missing directional complement.

Misuse errors included inappropriate word choices, such as describing applying a salve as *fàng* 'put down' rather than *cā* 'wipe'. Inappropriate double markings also counted as misuse errors, as when a child showed off a doll saying **zhè shì wǒ de de* 'this COP I POSS/NOM POSS/NOM' 'this one is mine's'. Later and higher-frequency order errors include locatives that displaced source position to the end of the sentence. ** Wǒ kāi chē zài zhèbian* 'I drive car be at here' 'I'm here driving the car to there' is incorrect for *wǒ zài zhèbian kāi chē* 'I LOC here drive car' 'Here I am driving the car'.

Overall, the Taibei children had an error-to-utterance ratio of 8%. "Sins of omission" far outweighed other errors: 58% of all errors were omissions. Misuse errors comprised 35%, and order errors a mere 7%. The youngest children had the lowest error rates: Errors averaged 4% at age 1;10. Errors then rose steadily: 7% at 2;4; 11% at 2;10; between 7% and 21% between 3;0 and 3;8. After 3;8,

errors fell rapidly to about 5% thereafter. For Pang, all error types rose between ages 1;10 and 2;10, whereas Kang's error rate first rose then fell between ages 2;10 and 3;10. Kang's omission errors declined, whereas misuse and order errors held constant.

The Taibei children had stunningly similar error patterns. The five most frequent errors were: (1) omission of main verb (12% of all errors), (2) bad verb choice, (3) omission of the *de* possessive/nominalizer, (4) bad adverb usage, (5) omission of an auxiliary verb such as *yào* 'want' or *huì* 'able to'. These five most frequent errors accounted for 44% of Pang's errors and 31% of Kang's (Erbaugh, 1982, pp. 148–150). These errors appear frequently in accounts of other children (Chao, 1973; Kuo, 1937; Lee, 1981).

Yet this error pattern testifies to the children's increasing grasp of the covert structure of Mandarin. The very size and flexibility of the verb class encourages children to omit main verbs. They behave as though auxiliaries, coverbs, and locatives preempt the main verb. The rarity of grammatical morphemes, as well as their many competing functions, trigger many errors. *De*, for example, functions as a possessive, a nominalizer, a potential marker, and a relativizer. Order errors were rare by comparison; less than one in every 100–200 utterances for Pang and Kang. This comparative rarity testifies to the overtness and consistency of standard order.

The more covert, irregular, or discontinuous the grammatical device, the more slowly the children mastered it. Re-ordering to SOV, instrumentals, benefactives, infixes, separated verbs, and complements; and descriptions of processes, potentials, and durations all continued to develop after the children were 4 years old. Double-marking the few purely grammatical morphemes (the *bǎ* object marker, *bei* subject marker, the *de* nominalizer/possessive, and *-le* perfective) persisted through elementary school. Sentence-internal grammar was far easier than grammar for discourse relations, which required coordinating chains of sentences. Topicalization, sentence-final particles, backgrounded progressive aspect, backgrounded source location and source time, quantified distance and duration, and stative sentences were particularly difficult.

5.2. Nonoccurring Errors

The pattern of nonoccurring errors also testifies to the children's grasp of the fundamental organization of Mandarin. The strength of SVO means that SVO was occasionally retained even where object fronting was obligatory. 'I give older sister this' *wǒ gěi jiějie zhège* incorrectly preserves familiar SVO order. But the child avoids the more complex, obligatory OV re-ordering with or without the *bǎ* object marker, *wǒ (bǎ) zhège gěi jiějie* 'I (OBJ.MKR) this give older sister'. Only five examples of the reverse error, substituting OV for the dominant VO, exist in the Taibei corpus. All five appeared in the extremely early preorder stage, before age 2;0. They included *zhège kàn* 'this look' rather than *kàn*

zhège 'look [at] this' and *yīnyuè tīng* 'music listen' for *tīng yīnyuè* 'listen [to] music'.

Agentive role was salient. The Taibei children always put agent in correct preverbal agent-V position. They did not ever make the reverse error, V-agent, which would put agent in the postverbal patient position after an active verb. Errors like *tiàowu wǒ* 'dance I' for 'I'm dancing' simply did not occur. A postverbal noun must always be interpreted as a patient (if no other verb follows it). Nor did experiencers appear after a stative verb in patient position. Errors such as *lèi wǒ* 'tired I' did not occur. Nor did the children put patients before actions, as in *hóuzi huà* 'monkey draw' for the meaning 'draw (a) monkey'.

Bowerman (1985, p. 1296) suggests that subjects of intransitives provide the critical test of whether children begin with a language-neutral or language-specific strategy for nominative-accusative or ergative patterning. The Mandarin-speaker's intransitives indicate that children are sensitive to language-specific patterns equivalent to case relations from the beginning, as their intransitive subjects are all correct.

Children also adhered closely to an empathy hierarchy. They strongly preferred human and animate agents and inanimate patients. The *bǎ* object marker and the *bèi* "passive" subject marker are especially sensitive to this weighting. Children never produced sentences like the following, which, to non-Chinese, sound like logical translations of English passive sentences such as *the disease killed her, the puppy was chilled by the cold wind,* and *the box was kicked in.* *Bìng bǎ tā shā-sǐ-le* 'disease OBJ.MKR s/he kill-die-PFV'; ?*fēng bǎ xiǎo gǒu guà-lěng-le* 'wind OBJ.MKR little dog blow-cold-PFV'; ?*hézi bèi tī-huài-le* ?'box SUBJ.MKR kick-bad-PFV'. In Mandarin, the more animate being must be subject. Cause may be demoted to a resultative verb in *tā bìng-sǐ-le* 'she sick-die-PFV' 'she died of disease'. Animals can take the *bèi* subject marker *xiǎo gǒu bèi fēng guà-lěng-le* 'little dog SUBJ.MKR wind blow-cold-PFV' 'the puppy was chilled by the wind'. But lowly inanimates such as boxes seldom merit a *bèi*. A patient subject with a causative verb suffices: *hézi tī-huài-le* 'box kick-bad-PFV' 'the box was kicked in'.

Children as young as 4 years responded much like adults. They weighted animacy very strongly in interpreting word order. A total of 120 Chinese—children between 4;0 and 13;6 and adults—used toy animals to act out scrambled sentences with uninflected verbs (Miao, Chen, & Ying, 1986). The experiment included both animate (animals) and inanimate nouns (adapted from Sinclair & Bronckart, 1972; Slobin & Bever, 1982). Children and adults performed almost perfectly on sentences with NVN order, so long as order followed animate-animate (*the puppy pushes the kitty*) or animate-inanimate (*the bunny throws the ball*). Without SVO order, performance deteriorated dramatically. However NNV (*the bunny the kitty push*), with 54% correct overall, was much better than the aberrant VNN (*push the bunny the kitty*) at 32%. OV subject marking accounts for the difference.

Animacy was critical. Both children and adults performed very badly on inanimate-animate order (*the bowl throws the kitty*). Adults were very unwilling to act these out with first noun as actor; only 35% were correct, even with canonical NVN order. Children were less sensitive to animacy and/or more willing to suspend disbelief. Among 4 year olds, 64% acted out inanimate-animate sentences. Willingness rose to 96% of the 7 year olds, then fell to adult levels by age 13. School-age children were learning to topicalize and permute word order, and so loosened their rules.

Noncanonical order with inanimates decimated performance. NNV *the ball the kitty push* scored 16% overall, 8% for adults. *Push the ball the kitty,* VNN, was even worse: 4% overall, and a mere 0.8% for adults. These results contrast dramatically with European results in which both children and adults were willing to permute both word order and animacy, though they were sensitive to dominant order in their language (Sinclair & Bronckart, 1972). Native English speakers, fluent in Mandarin, also differed from native Chinese in their willingness to permute order and animacy (Miao, 1981).

5.3. Generally Error-free Acquisition

5.3.1. *Tone.* Tone is a critical clue to morpheme boundaries. It develops smoothly and is nearly error-free, under control many months before the segmentals (Chao, 1973; Clumeck, 1977; Lee, 1981, Li & Thompson, 1977; Tse, 1978). The earliest words use correct tone, though the high rising and low dipping tones are sometimes closer in pitch than they should be. Very young children often use exaggeratedly correct citation tone even on neutral syllables, probably to enhance analysis by creating maximally distinct citation forms.

Comprehension of tonal contrasts appeared perfect. At 3;4, Kang performed perfectly in a comprehension experiment. He acted out directions that contrasted tonal minimal pairs using dolls named Xiǎo Xīng (high level tone) and Xiǎo Xìng (high falling). He fed them soup *tāng* (high level) or sweets *táng* (high rising). He acted out the "good daddy" who 'rocked them a little' *yáo yī yáo* (high rising tone) and the "bad daddy" who 'bit a little' *yǎo yī yǎo* (low dipping). He covered them with a blanket *bāoqilai* (high level) or picked them up and hugged them *bàoqilai* (high falling) (Erbaugh, 1982, pp. 400–401).

Numerous factors support precocious tonal acquisition: (1) Pitch changes are very salient. Even 6-month-old infants are highly sensitive to pitch contrasts and have a rudimentary ability to imitate them (Bundy, Colombo, & Singer, 1982; Sachs, 1977). (2) Chinese adultese uses exaggeratedly contrastive tones. (3) Tones, more than phonemes, form a small, closed set. (4) Tones are obligatory on every syllable. (5) Tone changes are contrastive: They yield either a meaning change or nonsense. (6) Tones typically remain constant for each morpheme, regardless of grammatical role.

People who learn a tone language in childhood can typically master even unrelated tone languages as adults. But tones remain the most difficult aspect of

Chinese for speakers of non-tone languages such as English or Japanese. Tones also appear especially fragile for Chinese children who grow up in English-speaking countries, (or in Hong Kong, if English is spoken extensively at home) (Chao, 1973; Hashimoto, 1971; Leung & Mok, 1989; Light, 1976). Even in a monolingual Chinese household, outside exposure to English weakens tone. Loss of Chinese seems to begin with blurred tonal contrasts, even when segmentals, vocabulary, and syntax are intact. Overseas Chinese children vigorously resist tone corrections. An Oregon child (1;10), whose Mandarin greatly outdistanced her English, distressed her parents by pronouncing 'elephant' as *dà xiāng, with a high level rather than a high falling tone on the second syllable (= dà xiàng), yielding an unintended homophone meaning 'big box': She also asked to 'go home' by saying *dǎo jiā-jiā (incorrect low dipping tone, rather than high falling tone on dào jiā-jiā 'reach house-house'). This error yields a nonsense reading, 'turn over the house-ie'. She also added tones to her very small English vocabulary, as when she persistently pronounced *dǒg* with a low dipping tone (Ye Wa, personal communication, 1988). She rejected her mother's corrections with puzzled annoyance, as did a Chinese-speaking child in Singapore, a native Min Hokkien speaker, who typically added high level tone to stressed English first syllables and mid-level to second syllables (Kwan-Terry, 1989). Tone play is common among Chinese-speaking children growing up overseas (Chao, 1973, p. 28; Hashimoto, 1971; Light, 1976). But it was almost nonexistent among the Taibei children.

5.3.2. *Questions.* Both YES-NO and WH-questions appeared early and correctly. Both question forms are high frequency, consistent, and match declarative order precisely. About a third of all the Taibei children's questions were YES-NO. The earliest questions were marked by rising intonation alone. VERB-NOT-VERB questions appear first as sentence-final tags, much like English *ok?*, as in *gěi wǒ, hǎo bù hǎo?* 'give me, good-not-good' 'give [it to] me, ok?' After about age 2;2, full questions developed using the auxiliary verb, as in *nǐ huì bù huì huà yīge dà xīngxing* 'you can-not-can draw one gorilla?' 'can you draw a gorilla?'

Among WH-questions, 'what' questions are far and away the most frequent, especially 'what's this?' *zhè shì shénme?* Distant reference with 'what's that?' *nà shì shénme* was quite rare, however (Chao, 1973, p. 26; Erbaugh, 1982), probably because of low adult usage. *Shéi* 'who', and *zěnme* 'how' questions appeared far less frequently, typically in set phrases, especially *zěnme bàn?* 'how do?' 'what [shall we] do [about it]?' (Chao, 1973, p. 26; Erbaugh, 1982, pp. 453–456; Kuo, 1937, p. 354; Lee, 1981; Miao, 1986; Yuan, 1977). 'When' and 'where' questions also developed early. Cognitive complexity caused 'why' questions to emerge much later. Lee (1990) notes that emergence of question comprehension did not match the order of question production.

5.3.3. *Personal Pronouns.* Personal pronouns are extremely simple. Chinese style prefers nouns, names, or ellipsis over pronouns, so pronouns are

rarer than in English. But children mastered them early and used them appropriately. They honored the human–animal distinction and did not use personal pronouns inappropriately to refer to animals. *Nǐ* 'you' and *wǒ* 'I' emerged first before the age of 2;0. Third person *tā* and the plurals appeared much later, still lagging behind at age 5;6 (Zhu, Chen, et al., 1986). Around age 2;6, Chinese children occasionally confused pronominal "shifters." They would say *wǒ bào* 'I carry [you]' instead of *bào wǒ* '[you] carry me' (Chao, 1973, p. 25; Erbaugh, 1982, pp. 406–409; Zhu, Chen, et al., 1986, p. 124). This confusion reflects both adult input frequency, as well as being an apparent cognitive universal. Young Europeans make the same error, as do 2-year-old users of American Sign Language where 'I' is signaled by pointing to oneself and 'you' by pointing to the addressee (Bellugi & Klima, 1982, K6–K11).

5.3.4. De *for Possessive, Nominalizer, and Relative Clauses.*   *De* confounds word-order theory because it is both left-branching and right-branching. Nominal modification is left branching and head final: *wǒ de shū* 'I POSS book' 'my book'; *hái méi féng-hǎo de nà jiàn yīfu* 'still NEG sew-finish MOD DET CLASS:clothing' 'that piece of clothing that still isn't finished'. When the same -*de* character is used for verb complements and potentials, order is right-branching after the verb: *lǎohǔ pǎo de hǎo kuài* 'tiger run MOD very fast' 'tigers run very fast'; *jiějie huì ná de-qi-lai* 'older sister will take-POTENTIAL-rise-come' 'older sister will pull it up'.

The left-branching, prenominal uses of -*de* appear very early; the right-branching verb complements are rarer and later. They are also much lower frequency and restricted in adult speech. Children as old as 8 understand left-branching relative clauses more easily, according to comprehension experiments (Lee, 1990).

5.3.4.1. *Possessive/Nominalizing* de.   The earliest use of *de* is very common with possessives, as *wo de* 'I POSS' 'mine', *Māma de* 'mama's', and the like. Most stative verbs followed by *de* are nominalized. Children 2;0 and under did this easily and correctly: *hóng de* 'red NOM' 'the red one', *gāo de* 'tall-NOM' 'the tall one'. The overwhelming majority of these were correct. It is tempting to call this precocious acquisition of nominalization and possession.

But various errors cast doubt on the children's understanding of *de* as anything more than a multipurpose, utterance-final grammatical marker. *De* has a neutral tone like other purely grammatical particles. Its multiplicity of usage is confusing. It often is correct as a sentence-final element. And other purely grammatical morphemes, such as -*le* perfective, and sentence-final particles also appear in that slot. One sign of lack of productive control is that children below approximately 2;8 sometimes omit an obligatory *de* for nominal. Pang was asked about a pair of gloves *shì shéi de* 'COP who-POSS', but answered **wo Ø* 'I' rather than *wǒ de* 'mine'. Second, *de* is sometimes used with inappropriate nouns. Laohu

(2;0) pointed at objects in the living room. He used an idiomatic possessive for the air conditioner, **Bàba de lěngqì-Ø* 'Papa POSS air condition' (rather than *lengqiji* 'cold air machine'). Then he immediately added a redundant and incorrect NOM/POSS *de* to two nouns. He called an 'ashtray' **yāngāng de* 'ash-basin NOM' 'the ashtray's'; a Taiwan flag was called **quóqí de* 'national flag NOM' 'the flag's'. This error may indicate an embryonic understanding of *de* as a sentential nominalizer comparable to 'and this is what it is'.

Third, *de* was often displaced to the end of the noun phrase. N *de* N became N N*de*, as in **nǎinai wáwa de* 'granny doll-POSS' (= *nǎinai de wáwa*). Laohu (2;0) repeated an adult comment but displaced the *de* to sentence-final position. I told him not to disturb his sister's toys, *shì tā de dōngxī* 'COP she POSS thing' '[those] are her things'. He mimicked my intonation, repeating **tā dōngxi de* ***'she thing POSS' ***'she thing's'.

Once children began using a grammatical morpheme spontaneously, they frequently double-marked it. Three of the four Taibei children double-marked -*de*, as in **zhè shì wǒ de de* ***'this COP I NOM POSS' 'this is mine's'. This appears to be an effort at one-to-one surface marking for both functions, possessive and nominal. Karmiloff-Smith (1979) found French-speaking children making analogous possessive-nominal double markings as in **les miennes des voitures*, translatable as 'the mine of cars'. All these errors are common in children under approximately 2;6 (Erbaugh, 1982, pp. 413–431; Saville-Troike, 1989).

5.3.4.2. *Nominalization with* V + N + de.   Children as young as 2;0 coined correct nominals by using the very simple V + N + *de* form. Children, like adults, often coined new words when they forgot an old one (Erbaugh, 1982, pp. 380–384). Pang (2;0), shown a flashcard picture of a sewing machine, called it a *zuò yīfu de rén de* 'make clothing MOD/NOM person NOM/POSS' 'what a person makes clothes with', 'a clothes-maker's thing'.

5.3.4.3. *Serial Verb Constructions and Relative causes with* de.   Serial verb constructions make the distinction between main and subordinate clauses artificial for Chinese. Order is the same as in the main clause, there are no obligatory relative pronouns or changes in verb morphology. Such constructions are simple and virtually error-free for children once they enter the three-word stage, as in *yào qù kàn diànyǐng* 'want to go see a movie'. The direct object of the first clause is frequently the subject of the second but makes it very easy for Pang (2;5) to produce correct sentences such as: *jiějie dài wǒ qù shàng xué* 'older sister take I/me go enter school'.

Children master headless verb + nominalizers such as *dà de* 'the big one' before they control these constructions followed by the noun, as in *dà de xióngmāo* 'big MOD panda'. Packard (1988) analyzes these as headless relative clauses in his study of 27 Taiwan children aged 2;3 to 2;11. More complex nominalizations take a serial verb and follow it with *de*. These were especially

common with the verb *mǎi* 'buy' in descriptions of gifts the child had received or still coveted, *zhè shì bàba mǎi gěi wǒ de* 'this COP Papa buy BEN I/me NOM'. *De* is both a nominalizer and a modifier. Mandarin is a left-branching language for noun phrases, so adding another noun makes the whole phrase a relative clause. Canta (2;4) said *zhè shì grampa mǎi de bǐ* 'this COP grampa buy MOD pencil' 'this is the pencil grandpa bought' (Chao, 1973, p. 24). Zhongrong (2;6) fantasized that 'the puppy [that] Papa brought might bite me' *bàba lái de xiǎo gǒu huì yǎo wǒ* 'Papa bring MOD little dog can bite me'.

Early Mandarin mastery of the simple and regular serial verb constructions contrasts sharply with school-age Turkish children's difficulty with and avoidance of the complex Turkish constructions (Slobin, 1986). Early mastery of Chinese demonstrates that embedding is conceptually simple for even 2 year olds, who are also capable of complex linguistic mapping. However, the relations expressed are no more intricate than those expressed by young Turks by means of loosely coordinated clauses.

5.3.4.4. *Infixed Negatives and Potential with* de.

Children below 2;0 skillfully infixed negatives to describe unsuccessful attempts, for example, *kàn-bu-jian* 'look-not-see' 'can't see' or *ná-bu-dao* 'take-not-reach' 'can't reach' (Erbaugh, 1982; Lee, 1981, Saville-Troike, 1989). The analytic structure of Chinese strengthens the child's preference for one-to-one mapping strongly enough to overide the competing Avoid Interruptions (Slobin, 1973). But the children younger than 3;5 almost never used the parallel positive potential, *kàn-de-jian* 'look-POT-perceive' 'able to see'. This expresses mere potential rather than a completed or desired experience. Interrupting the verb is difficult, and the multiple uses of *de* for possessive, nominalizer, adjectival, and adverbial modifier weigh against its less salient use for marking potential.

6. Word Classes

6.1. *Word Class Detectors: If It Isn't a Noun, Treat It Like a Verb*

The Taibei children followed the historical Chinese principle of flexible word classes. They behaved as if they had a "noun detector," which works virtually without morphological clues to separate out concrete nouns from a very broad class of possible verbs (Erbaugh, 1982, pp. 114–119). The special perceptual status of concrete nouns in early child speech reinforces this ability (Gentner, 1983).

Evidence for the noun detector is widespread. The Taibei children alternated nouns with other word classes as a primitive means of balancing sentential relations. They did not produce NN utterances comparable to the "Mommy sock"

statements of young English speakers (see Bloom, 1973). (They did use the grammatically permissible pronoun + N *wǒ yīfu* 'my clothes'.) Instead, they typically alternated V + N. An NN sequence is easily misinterpreted as a compound. Mandarin-speaking children being raised in the United States, however, produced NN constructions comparable to English speakers. Examples include 'baby sock' *bèi Ø wàzi* (Chao, 1973), as well as Min's (1;7) *Bàba Ø yān* *'Papa Ø cigarette' and *dìdi Ø nǎinai* *'little brother Ø milk' 'little brother drinks milk' (Lee, 1981).

As a second piece of evidence, the Taibei children did not use nouns as verbs, as in *wǒ diànhuà nǐ* 'I telephone you'; a verb is required: *wǒ gěi nǐ dǎ yī gè diànhuà* 'I make a telephone [call] to you'. Foreign students frequently make such errors. Taibei children also distinguished between VV and VN compounds. VV can take a noun object, but VN compounds are intransitive because of the compounded object (Li & Thompson, 1981, pp. 45–84). The children never produced typical foreigner errors such as *wǒ chī-fàn miànbāo* 'I eat-rice bread' for *wǒ chī miànbāo* 'I eat bread'.

6.2. *Noun Classifiers*

Special classifiers were surprisingly rare. The Taibei children produced only 134 in 64 hours of recording, or one every 200 utterances. (Adults average one between every 30–100 utterances). Children never omitted a classifier where it was obligatory; instead, they overused the general *gè* form. But both children and adults frequently used *gè* where prescriptive grammar says special classifiers are obligatory, when referring to books, paper, pens, tables, chairs, real and toy vehicles, animals, machines, and clothing. All conversations took place in rooms crowded with these objects, but the very presence of the objects preempted special classifiers. (The only consistent exception was the *běn* classifier for books, revered objects in Chinese culture.)

Early classifier use reflected purely distributional information. Generalizing by semantic category developed slowly over several years (Erbaugh, 1984; Ken, 1991). Thai children followed a similar, early, purely grammatical strategy (Carpenter, 1991). The youngest Mandarin speakers rarely used special classifiers. Before approximately 2;6, special classifiers were used lexically, to refer only to a single object rather than to a category. *Zhāng* 'flat thing', for example, referred only to loose sheets of paper. After approximately 2;6, the children formed prototypes using particularly clear classifiers, such as *zhī* 'CLASS:animal' for dogs, *tiáo* 'CLASS:extended' for ropes or ribbons. They usually overgeneralized by shape rather than by function. *Tiáo* 'CLASS:extended' was used incorrectly for a sword and stepladder, but convention requires *bǎ* 'handle' for both.

Generalization by shape is encouraged because classifiers typically describe small, easily handled objects, which are not unique. There is no classifier for the

sun, for example, or for a whole city. Manipulation may have triggered a violation of the uniqueness condition when a girl aged 3;6 tore up pieces of paper to make a paper sun, repeatedly referring to *yī zhī taìyáng 'CLASS:small object or animal sun' (Kuo, 1937, p. 351).

Special classifiers increased gradually after age 2;6, though 4 year olds still used only half as many as adults. Picture-labeling experiments elicited many fewer special classifiers than the Taibei children produced; children as old as 7 still made many errors (Zhu, Wu, Ying, et al., 1986). An even later and more gradual acquisition appears in Thai (Carpenter, 1991; Gandour, Petty, Dardarananda, & Mukngoen, 1984), Japanese (Matsumoto, 1985), Bantu (Demuth, Faraclas, & Marchese, 1986), and American Sign Language (Newport & Meier, 1985, p. 915).

Perceptual salience gives children large vocabularies for concrete nouns and helps them distinguish nouns from verbs. Special classifiers for objects emerged nearly a year before classifiers for activities such as meals, movies, and periods of time (e.g., yì dùn fàn 'one CLASS:meal rice' 'a meal'). These remained rare at least to age 6. Quantified time, of course, develops late in the time adverb system as well.

Clark (1977) notes the primacy of shape, particularly vertical extension, in semantic overgeneralizations in several European languages. Classifying new or ambiguous objects by shape ("that little round thing") is more informative than classifying by function, which may be variable, ambiguous, or unknown. Carroll and Casagrande (1958) attempted to show that a language with noun classifiers may enhance children's ability to categorize. They tested extremely poor Indian children, monolingual either in Navajo or English. The Navajo speakers did score better than the English monolinguals. However, middle-class, Boston English monolinguals did as well or better than the Navajos. If classifiers enhance mental development, they may do so only when the child's environment is extraordinarily deprived. I find no evidence that privileged Chinese children derive any special benefit from classifier use.

Overgeneralizations by shape also appear in children learning Thai (Gandour, Petty, Dardarananda, Dechongkit, & Mukngoen, 1984), Japanese (Matsumoto, 1985), and American Sign Language (Newport & Meier, 1985, p. 900). But function generalization (e.g., classifiers for vehicles, clothing, machines) outweighs generalization by shape in these experimental studies of Thai and Japanese, as well as in experiments on Mandarin (Zhu, Wu, Ying, et al., 1986). Picture arrays may make function more available to children than in spontaneous overextensions about frequently handled objects. Demuth, Faraclas, and Marchese (1986, pp. 465–467) stress the discrepancy between experimental studies in which Bantu-speaking children made errors and overgeneralizations that never appeared in spontaneous speech.

Discourse context, not the referent, triggered the appearance of special

classifiers. Children as young as 2;4 shadowed the adult pattern of using special classifiers to add extra information for the first mention of nonpresent objects. The more of the following conditions that were present, the more likely a special classifier was:

Physically manipulable referent.

Not physically present.

Familiar to the speaker.

New topic.

Request, fantasy, or narrative.

First mention of referent.

Indefinite reference rather than definite.

Classifier used with the noun, not as a pro-form.

These discourse conditions appear in the following: The child requests a sheet of paper using zhāng 'CLASS:flat-thing', asks the mother to kneel down and play horsie using pǐ 'CLASS:horse', describes watering flowers the previous summer using duǒ 'CLASS:flower, cloud'; imagines bringing home a puppy using zhī 'CLASS:animal', and answers the perennial 'what did you draw?' by describing her latest scribble as yì gēn tóufa 'one CLASS:thread hair'. Like the adults, the children used special classifiers only with first mentions of new topics. Subsequent reference only the general gè classifier or zero.

6.3. Extended Verbs

Young Mandarin speakers act as if they decided "if a morpheme isn't a noun (a pronoun, or a classifier), treat it like a verb." Overextending the already-broad Mandarin verb class caused problems. Children interpreted even purely grammatical morphemes as verbs. Most overextensions involved action verbs rather than statives. The bǎ object marker was a case in point. Most purely grammatical morphemes and bound usages have neutral tone. But bǎ is an unbound grammatical morpheme with a full low-dipping tone. Children seemed to prefer single morpheme predicates. The most frequent error is the entire corpus was omitting the full main verb, as in *bù yào bǎ wǒ Ø 'not want OBJ.MKR me Ø' 'don't Ø me'.

Auxiliary verbs and modals frequently functioned as main verbs, *wǒ huì Ø zhège 'I can Ø this'. Children also used adverbs and locatives as main verbs. At age 2;6, a child said *wǒ yào hái 'I want still', 'I want to still' for the intended wǒ hái yào tán 'I want to continue playing [the piano]'. Sometimes the error springs from copying the wrong part of morpheme in a question.

(16)   Kang (3;0) did not enjoy visiting his cousins.

Mother: *Gēn   shéi   wán?*
           COMIT   who   play?
           'Whom did they play with?'

Kang: **Gēn   Ø*
         COMIT   Ø
         *'With Ø'

         (5-second pause)

         *Méi   yǒu   gēn-   zhe   Ø   wán
         not   exist   COMIT-   PROG   Ø   play
         *'They weren't with-ing'

On another occasion Kang said, **wǒ yào gēn Ø* 'I want to COMIT Ø' 'I want to with'.

Children also suffixed verb aspect to adverbs, clear evidence they were analyzing them as verbs. Zhongrong (2;6) protested that she wanted to keep on sweeping the floor by saying **hái-zhe* 'still-PROGRESSIVE', '[I'm] stilling'.

7. Word Order

7.1. *The Inviolability of Word Order*

Young speakers of more flexibly ordered languages such as Turkish, Polish, Russian, Hebrew, or even English often play with word order. But Mandarin order was literally "too important to play around with." The only Taibei example of order play occurred during a fantasy monologue in which agent and patient were ambiguous. Laohu (2;0) talked to himself while crashing a tiny car in and out of a mug of water, using both *zhuàng-dao-le chēzi* 'crash-reach-PFV car' '[someone] crashed the car', and *chēzi zhuàng-dao-le* '[the] car crashed'. Here, the child, the imaginary driver, and the car itself, a powerful moving object, alternate as potential agents (Erbaugh, 1982, pp. 297–299, 1983b). Early agents were also limited to people and vehicles in Bowerman's (1973) case grammar of Finnish and English.

7.2. *Strict SVO Order*

Mandarin-speaking children's canonical sentences used strict SVO order. They did not attempt discourse-sensitive variations of word order until basic sentential relations were under control. Children mastered SVO early, with few errors, except when highlighting OV constructions with the *bǎ* object marker. They often erroneously produced VO for OV. Far from being the innovators of word-order change, the Chinese children's limited processing capacities and

desire for consistency made their word order more conservative than that of adults.

Canonical word order seems to be an important and accessible clue to children in general. Young speakers of English, Italian, and Serbo-Croatian all failed to respond to sentences that violated canonical order in their native languages (Slobin & Bever, 1982). And adult Mandarin speakers are unable to process sentences that violate SVO order restrictions for canonical animate subject and inanimate object (Miao, 1981).

7.3. *Acquisition of Order and Reordering*

To discuss order and reordering, we need to know how many sentences even have the potential to be reordered. Single-word sentences and many other simple utterances have only one possible order. The vast majority of adult–adult utterances in ordinary conversation could have been reordered; about 20% of these were OV. But only about 55% of the adult speech to the 2- and 3-year-old children had OV potential; only 10%–15% of this was actually reordered (Erbaugh, 1982, pp. 250–258).

7.3.1. *The Pre-order Stage.*   A mere 22% of early child utterances had OV potential. Many utterances were single words, intransitive verbs such as *kū-le* '[I] cry-PFV' or objectless verb phrases such as *fàng zhèli* 'put here' 'put [it] here' (Erbaugh, 1982, pp. 251–260). Early order was almost perfect SV or VO, almost entirely action-patient, agent-action, or patient-state. Less than 1% of utterances had order errors. These rare errors appeared to follow the new-given "hot news" order in which a toddler blurts out a novel contribution before his or her planning capacity gives out (Bates & MacWhinney, 1979). **Wánjù zhège* 'toy this' for *zhège wánjù* 'this [is a] toy' is an example.

Chinese-speaking children in English-speaking countries seem more prone to make order errors than the Taibei children, though no figures are available (Chao, 1973; Hashimoto, 1971; Light, 1977; personal communications from Chan Ningping and Ye Wa). Even relatively freer English order seems to loosen the Chinese.

7.3.2. *Rigid Order Stage.*   A rigid order stage held sway between ages 2;0 and 2;9, with an MLU just over 3.0. Children produced more three-term sentences, about one third of them potentially OV. However, once the children discovered the SVO principle, they were loath to let it go. They reordered only 5% of the sentences with OV potential.

7.3.3. *Incorrect VO for OV.*   The Taibei children also used VO where OV fronting is preferred for a definite, completed act on a patient (Erbaugh, 1982, pp. 306–307).

(17) Pang (2;2) gives a towel to her sister.

*Gěi   jiějie   zhège
BEN   older:sister   this

(Standard order = Zhège gěi jiějie)

Canonical order made fronting difficult. Pang attempted to use object-fronting bǎ, paused, then retreated to SVO.

(18) Pang (2;2) is pulling on an electric cord.

*Wǒ   bǎ   //   lā   zhège
I   OBJ.MKR   //   pull   this

'I with//pull this'

Two months later, Pang used bǎ correctly but added a redundant object, yielding *SOVO.

(19) Pang (2;4) is unhappy that Auntie touched her puzzle.

*Bù   yào   bǎ   tā   cái-   diao   zhège   ou
not   want   OBJ.MKR   it   tear-   down   this   PTL:WARNING

'Don't tear it apart it!'
(Standard order = Bù yào bǎ tā cái-diao ou.
'not want OBJ.MKR it tear-apart PTL')

Occasionally, a child misordered a modal.

(20) Canta (2;4) wants to put on a brooch (from Chao, 1973, p. 23).

*Bei   hái   yào   zhège   dài
Baby   still   want   this   wear

'Baby still wants this to wear'
(Standard order = Bei hái yào dài nàge 'Baby still wants to wear that')

Children also omitted dative, benefactive, or instrumental markers, yielding superficially correct SVO sentences for intended indirect object-direct object.

(21) Zhongrong (2;6) wants me to wear her barrette.

Wǒ   yào   dài   nǐ
'I   want   carry/wear   you'

This is grammatical but means 'I want to carry you' or 'I want to wear you'. The adult glossed this as Wǒ yào nǐ dài zhège 'I want you to wear this'. Clancy (1985, pp. 390–391) and de Villiers (1985, pp. 92–96) also remark on the relative fragility of indirect objects. Benefactives seem particularly fragile.

(22) Pang (2;5) describes molding feet for a clay bird.

Xiǎo   niǎo   zuò   jiǎo
little   bird   make   foot

'Birdie makes a foot'

This is wellformed for the wrong meaning. Pang accepted and repeated the assistant's gloss with benefactive gěi: gěi xiǎo niǎo zuò yīge jiǎo 'make a foot for the birdie'.

7.3.4. *Difficulties in Reordering with the* bǎ *Object Marker.*   Three of the four Taibei children used the bǎ object marker as a main verb substitute for 'to use' or 'to do'. Sentence-final intonation indicates that they saw the utterances as complete. These sentences are gratingly ungrammatical in modern Mandarin, but eerily recapitulate bǎ's archaic origin as a free verb meaning 'to grasp'.

(23) Kang (3;1) warns us not to drink his tea.

*Bù   yào   bǎ   wǒ   Ø!
Not   want   OBJ.MKR   me   Ø!

'Don't BA me!'

An adult would say, 'Don't drink up my tea!' bù yào bǎ wǒ de chá hē-guāng! 'not want OBJ.MKR I POSS tea drink-empty'.

Three Taibei children also showed their partial grasp of bǎ as marking high transitivity when they misused it as a dative or benefactive.

(24) Kang (3;2) diapers his doll.

*Wǒ   bǎ   tā   cā   pìgu
I   OBJ.MKR   her   wipe   buttocks'

'I bottom-wipe her'.
(Standard order = Wǒ gěi tā cā pìgu 'I BEN her wipe bottom'
'I wipe her bottom for her')

8. Question Answering

Questioning is easy and straightforward (see section 5.3.2). Answering is harder. Children struggled for months to answer by copying the verb in the question. Min (1;6) was asked shì bu shì xióngmāo a? 'COP NEG COP bear-cat PTL?' 'Is it a panda?' He answered informatively with a noun māo, māomao a 'cat, kitty'. But shì '[it] COP' 'it is' is the correct reply (Lee, 1981, p. 31a). Pang escaped verb copying until she was 2;2 by using duì 'correct' as an all-purpose affirmative. (See also the following section.)

9. Difficulties with Verb Segmentation

Segmenting compound verbs causes problems for Chinese children and foreign learners. For example, the verb 'to sing' is a V + N compound meaning 'sing + song'. Answers to yes-no questions copy only the verb, if the compounded noun is a potentially free morpheme. The question 'are you singing' *nǐ chàng bù chàng-gē* 'you sing NEG sing-song' must be answered as *chàng* 'sing' (= '[I'm] singing'), not **chàng-gē*. Overgeneralizing this rule caused problems. The very frequent question 'do you know?' *nǐ zhī bù zhīdào* 'you know-NEG-know-way?' uses the noun *dào* 'way', which, in modern Mandarin, is free only in discussions of Daoism. The answer must be *zhīdào*. Min (1;8), however, logically assumed that *dào* was free, and incorrectly answered his father's question with **zhī-Ø* alone (Lee, 1982, p. 32). Canta (2;4) made similar errors. Verb compounds that violate normal order also cause problems. Asked *nǐ hài-pà bù hài-pà?* 'you fear-scare-NEG-fear-scare?' 'Are you scared?', Pang replied **hài* 'fear', rather than the conventional *pà*.

More intricate verb + complement combinations remained difficult even for children over 3 years of age. They sometimes refused to disrupt SVO order by separating verb and nominal complement for indirect objects. **Wǒ jiǎng-huà Ø nǐ* 'I talk-speech Ø you' 'I talk you' is simpler and maintains SVO order, in contrast to the correct *wǒ gěi nǐ jiǎng yī jù huà* 'I BEN you talk one CLASS:word speech' 'I'm telling you something'.[4] A slightly more sophisticated error, **Wǒ yào jiǎng nǐ huà* 'I want talk-you-speech', appeared at age 2;10. Foreign speakers have similar, more persistent problems.

10. Causatives and Enhanced Transitivity

The children overextended their highly transitive agent-action-patient prototype. Many causatives were grammatical with an agent-action interpretation, but not for the intended action-patient.

(25) Zhongrong (2;6) is handing me a barrette.

> **Nǐ   Ø   shàng   zhège*
> you   Ø   on   this

Nǐ shàng zhège is grammatical with an agentive reading, as in 'you get on this [bus]'. But *shàng* needs a main verb as a locative postposition, *nǐ bǎ zhège dài-shang* 'you OBJ.MKR this wear LOC:on'. Zhongrong also spilled some hand lotion and said **wǒ Ø-chū-lái-le* 'I LOC:out-come-PFV'. This means 'I've come out', inappropriate for 'I've poured [it] out', *wǒ dào-chu-lai-le*, with *dào* 'pour'.

Another transitivity error made inanimate objects sound agentive by position-

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[4]*Gěi* is acceptable in Taiwan Mandarin. Northern mainlanders, however, use *gēn* 'COMIT' here.

ing them in agent/subject position before action verbs. Zhongrong (2;6) dropped a crayon, saying **làbǐ pǎo-diao-le* 'the crayon ran-away-PFV' (= *làbǐ gǔn-xia-qu-le* 'crayon roll-down-go-PFV'). Questions about the use of unfamiliar objects triggered many such errors. Kang watched a TV show about how to dry and carve the bowling-pin-shaped lucky gourds, *húlu*, which traditional Chinese string around their waists for carrying things.

(26) Kang refers to the gourd.

> **Húlu   gàn   shénme?*
> gourd   do   what?
>
> 'What is the gourd doing?'

Kang's mother assumed he was asking about a person, but he rejected her explanations. His mother finally satisfied him by explaining "gourds are THINGS, they don't DO anything" (Erbaugh, 1982, pp. 264–265).

The children frequently marked result or end location, particularly in causatives. Process and source, however, were seldom mentioned. When these did appear, they often incorrectly appeared in the sentence-final goal location. Tai (1975, 1985) argues that Chinese is iconic in putting end result and location at the end of the sentence. Children highlight goal early, well before the source location and time, which also go iconically before the verb. Order variants highlighting source or static location appeared later and less correctly. Cantonese-speaking children make similar errors (Cheung, 1990, 1991; Leung, 1989). The four Taibei children frequently remarked **Wǒ huài-le* 'I bad-PFV' 'I'm broken'. Context required *wǒ bǎ zhège nòng-huài-le* 'I OBJ.MKR this make-bad-PFV' 'I broke it', 'I made it break'.

Omitting the process verb can render a sentence incomprehensible. The assistant quizzed Pang (2;10) seven times before realizing that **wǒ xǐhuān Ø suì* 'I like Ø fragmentary' meant *wǒ xǐhuān nòng-suì* 'I like to make [it] fragmentary' 'I like to smash [clay] to bits'. Other examples include: (2;0) completing a block tower: **wo gāo-le* 'I tall-PFV' 'I've talled'; (2;6) planning to paint nail polish on a doll's toenails: **wǒ yào hóng tā de jiǎo* 'I want red her-MOD foot' 'I want to red her foot'; (3;4) pretending to cook disgusting food: **kěyǐ chòu cài* 'can stink food' (= '[I] can stinky food'). Cantonese-speaking 2-year-olds followed a similar strategy by stating the result alone without a process verb, 80% of the time in Cheung's 1991 experiments.

Redundant causatives and benefactives double-mark transitivity.

(27) Pang (2;3) is writing.

> **Wǒ   gěi   xiě-   zì*
> I   BEN   write-   character
>
> 'I'm giving a writing'.
> (Standard order = *wǒ xiě-zì*)

(28) Pang (2;7) holds out her hand for a puppy to lick.

*Wŏ   nòng   gĕi   tā   tián-tian   shŏu
I   make   BEN   her   lick-lick   hand

'I make for her give a lick'.
(Standard order = Wŏ ràng tā tián-tian shŏu 'I allow her lick-lick hand')

English-speaking children also coin novel causatives and transitives, such as *don't fall me down* for years after they have used standard adult forms (Bowerman, 1982). Young speakers of English, Hebrew, and Portuguese coin similar causatives, preferring highly transitive forms in which a stative is used actively (Bowerman, 1982; Hochberg, 1986). Smoczyńska (1985, pp. 635–636) notes the privileged status of coined causatives in Polish.

Adding redundant directional or resultative suffixes is another common means of emphasizing transitivity.

(29) Pang (2;4) sticks her hand in the slot where a drawer had been removed from a chest.

*Zhège   pò-   diao-   xia-   qu-   lai-   le   ye!
this   break-   down-   off-   go-   come-   PFV   PTL:excitement

'This has broken-off-down-gone-come!'

Pang accepted and repeated the assistant's gloss, *diào-xia-qu-le* 'fall-down-go-PFV' '[it] has fallen out'.

Discourse factors often trigger enhanced transitivity. Taibei children were particularly likely to double-mark cause when they were emphatic, misunderstood, and/or describing a fantasy.

(30) Pang (2;11) comments about killing demons with her toy sword.

*Gĕi   nàme   duō   huài   rén   dă-   sĭ-   diao-   le!
give   so   many   bad   person   beat-   die-   off-   PFV

'Make so many bad people beat to death dead!'

In adult speech, *dă-sĭ* 'beat dead' suffices.

Double-marking demonstrates that Mandarin-speaking children have more ability to use grammatical morphology than their language happens to require. Children are also more likely to double-mark when a single morpheme serves two different grammatical functions following the principle of one-to-one mapping (Karmiloff-Smith, 1979; Slobin, 1985b).

The Mandarin perfective *-le* is homophonous with the sentence-final particle for current relevance. Children often exclaim *wŏ tiào-le-le!* 'I jump-PFV/CURRENT RELEVANCE' 'I've jumped-ed!' Chinese adults often mention this error when asked for examples of childish speech, adding that they had

tried vainly to correct it in their own children as old as 12. Because adults discourage double-marking, the children evidently double-mark in order to provide themselves with consistent and overt feedback.

11. Temporality

11.1. *Aspect and Time-marking in a Language Without Tense*

11.1.1. *Pre-narrative Roots of Time and Aspect.*   A narrative model of language is an improvement on a vision of language as simply an accretion of words and rules. But looking to narrative for the roots of time concepts has serious drawbacks. Anthropology and stylistics focus on elaborate adult styles; storytelling is a specialized and culture-specific genre. A narrative model is convenient for the linguist, but too narrow for child discourse. In narrative, the basic sentence is agent-action-patient; the agent is a third person, outside the speech setting. Stories follow a time line and resolve a problem. Early child speech, however, could hardly be farther from narrative. Infants use a wide range of speech acts, especially imperatives. Much speech concerns their interior experiences, *I gotta pee now.* Usually the subject is the child, or something the child is handling, in the here-and-now. Much early speech is a monologue, especially reenactments of family routines. These follow a time sequence but seldom solve a plot problem or end with a moral.

More importantly, time distinctions appear months before the first narratives. Young Mandarin speakers (e.g., at age 1;10) frequently use time adverbs several months before they regularly produce spontaneous, two-utterance descriptions of two events. Time adverbs appear almost a year before three-utterance sequenced descriptions become common.

A semantic model of time/aspect assumes that time and aspect distinctions will first appear disproportionately on a particular class of verb, especially highly transitive punctual verbs with a clear result, such as *hit* or *break*. The development of perfective *-le* (Erbaugh, 1978, 1985) follows this prediction to some extent. But Mandarin time adverbs develop in a near-complementary distribution with the contexts for *-le* (see Table 6.5).

Perfective *-le* is grammatically obligatory. The children in my study used it to describe ongoing, visible actions, such as *dă-pò-le* 'hit-break-PFV' '[I] have broken [it]' or *kū-le* 'cry-PFV' '[I]'ve cried'. Some 85% of event times in my data referred to the immediate past. Children, like adults, often use *-le* to call attention to a noteworthy change of state, such as breaking a cup or finishing a block tower.

In contrast, time adverbs were deployed selectively to brief the hearer on the not-here not-now. They are usually grammatically optional. Children used them to communicate their own internal experiences, especially wanting, hunger,

TABLE 6.5
Early Complementary Contexts for -le Perfective and Time Adverbs

-le Perfective	Time Adverbs
OBLIGATORY grammatically	OPTIONAL
DIALOGUE	MONOLOGUE
CURRENT context	NONSHARED context
DECLARATIVE	IMPERATIVE, REQUEST, PROCEDURAL
ACTION on small objects ('hit', 'break')	EXPERIENCE ('want', 'sleep', 'pee', 'be hungry')
TRANSITIVE, punctual events	DURATIVE, sustained
REAL, hear-and-now	PRETEND or desired
PAST (85%)	FUTURE, PRESENT, PAST, or CONDITIONAL
UNUSUAL experiences—"hot news"	HABITUAL, sustained

pain, sleepiness, and need to urinate. Time adverbs clustered with nondeclaratives, especially requests, imperatives, and the procedural instructions found in family routines, and the fantasy monologues that reenact them. Sustained or habitual experiences tend to receive time adverbs, unlike the "hot-news" conveyed by perfective. Eventually, of course, as the child neared 3;0, perfective and time adverbs became increasingly integrated with all utterance types. Time adverbs increasingly marked an event time as a background for a chain of foregrounded actions.

11.1.2. *Time/Aspect Stages.* Children mastered time/aspect in four cumulative overlapping stages. A general boundedness stage before age 2;4 focused on completion and current relevance with perfective -le. An enhanced transitivity stage between 2;4 and 2;9 frequently double-marked completion and result. A sequenced temporal relations stage, age 2;10–3;4, coordinated two or more events within a sentence. Progressive and sustained aspect became more important, as did event-time adverbs. After approximately age 3;4, a stage for developing narratives and backgrounded events emerged, along with rudimentary topicalization. Refinements continued through late childhood.

11.1.3. *Real Time and Perfective.* Early talk focused on the here-and-now. Events described sounded like "universal baby talk" with nothing Mandarin about it. Before age 2;3, only about 35% of utterances had verbs. Of these, 70% were actions; just over half described the child's own actions. Of these, 62% referred to the immediate future; 13%, to the ongoing situation (see Table 6.6).

Although 62% of past verbs referred to the immediate past, children also talked about the distant past and the future—about having a family picture taken several months before or plans to go swimming a few months in the future (see Table 6.7).

TABLE 6.6
Real Time for Events Mentioned
(Speaker < 2;3)

	Past	Present	Future
Overall Speech	25%	13%	62%
With -le	85%	7%	8%

Mandarin has no tense, but Chinese children gradually increased their ability to describe distant past and future events, with less and less adult scaffolding. Their gradually increasing distance of both past and future reference stunningly resembled that of young speakers of English, Polish, Romance languages, Japanese, and Hebrew (Berman, 1985; Berman & Dromi, 1984; Eisenberg, 1985; Weist, 1984).

11.1.4. *Early Aspect: The Perfective Axis.* Young children first master whichever time/aspect system their language makes central. Young English speakers contrast past tense to progressive/simple present. Young Spanish speakers contrast perfective with imperfective (Eisenberg, 1985). Young Turks and Hebrew speakers concentrate on past tense (Aksu-Koç, 1986; Aksu-Koç & Slobin, 1985; Berman, 1985; Berman & Dromi, 1984). Young Chinese must master perfective.

The Taibei children averaged one -le every 2 minutes, nearly 2,300 -le's in 64 hours. (Many were ambiguous between perfective and current relevance.) This contrasts with 108 progressives with the foregrounded zài aspectual marker, 50 progressives with the backgrounded -zhe verb suffix, and 34 experientials with the -guo verb suffix (see Table 6.8). Adults undoubtedly show a similar disparity, but no figures are available.

11.1.5. *Earliest Aspect: General Boundedness.* As in adult speech, aspect was much more prominent than event time. The earliest aspect stage marked a general boundedness. Before approximately age 2;4, MLU 1.5–2.5, aspect marking was sporadic, broad, but often correct. Children behaved as if all their

TABLE 6.7
Degree of Pastness

	Immediate Past	Same Day	Distant
Unmarked Past Events	62%	29%	9%
With -le	96%	1%	3%

TABLE 6.8
Number of Aspect Morphemes
(Four Taibei Children, in 64 Hours)

Perfective/Current Relevance	(-le)	2,294
Foregrounded Progressive	(zài)	108
Background Progressive	(-zhe)	50
Past Experience	(-guo)	34

remarks were foregrounded. The earliest and most frequent aspect marker, -le, is ambiguous for perfective actions and currently relevant states. Every -le in the Taibei sample before MLU 2;5 is ambiguous: All are BOTH verb final and sentence final. Often, children used -le to call attention to a new topic.

(31) Niu (1;10) points to a portrait of her deceased great-grandmother.

Năinai
maternal grandmother
'Granny'

Zŏu- le
go-   PFV/CURR.REL
'Gone'

(As in English, 'gone' is a euphemism for 'deceased'.)

(32) Canta (2;4), on sitting down (from Chao, 1973, p. 26).

Nĭ   kàn,   Bei   zùo- xia-   (one second pause) *le*
you   look, Baby sit-   down- //   PFV/CURR.REL
'You look, Baby has sat // down'

Canta's pause before -le demonstrates her ability to contemplate it as a separate morpheme. Analytic grammar makes the morpheme accessible in a way that a vowel change between *sit* and *sat* does not. Many -le's violate adult standards. Children incorrectly suffixed -le to nouns, especially when trumpeting an achievement.

(33) Laohu (2;0) announces that he has become a robot.

*Wŏ   Ø   jīqìrén- le
I   Ø   robot-   PFV/CURR.REL
'I've robot-ed'
(Standard order = *wo biànchéng-le yīge jīqìrén* 'I become-PFV a robot')

(34) Laohu completes a block tower.

*Fángzi- Ø-   le
house-   Ø-   PFV/CURR.REL
'[It's] house-ed'
(Standard order = *Fangzi gài-hăo-le* 'book build-finish-PFV')

(35) Laohu finds his crayons.

*Làbĭ-   le
crayon- PFV/CURR.REL
'[It/I] has crayon-ed')
(Standard order = *Làbĭ zhăo-dào-le* 'crayon find-reach-PFV')

All four Taibei children described pulling apart Lego blocks as **liăngge-le* 'two-PFV/CURR.REL' '[it] has two-ed'.

Other ungrammatical -le's appeared with negatives, imperatives, and unmarked future.

(36) Pang (2;10) describes when she can go swimming again.

*Bù   lĕng- le Ø,   xiàtiān Ø kĕyĭ gĕi   wŏ   yóuyŏng.
NEG cold- PFV, summer   may   give me   swim
'Not cold-ed, summer can give me swimming'.
(= *Bù lĕng de shíhòu, xiàtiān de shíhòu, wŏ kĕyĭ qù yóuyŏng.* 'When it's not cold, when it's summer, I can go swimming'.)

Urgent imperatives often had ungrammatical -le. Zhongrong (2;7) ordered me to jump over a rope with **wŏ yào nĭ tiào-le* 'I want you jump-PFV/CURR.REL' **'I want you've jumped'.

11.1.6. *Perfective, Pastness, and Punctuality.* Children also used -le selectively. Typically, the child was the agent of an action in the immediate past. Some 73% of early -le described the child's own actions. An additional 11% were actions of objects that the child was manipulating. And 13% described actions of characters in picture books that the children were pointing to. Children understood that -le typically co-occurs with past: 85% of early -le referred to the past. (Only 25% of overall predicates did.) But 96% of early -le marked immediate past. Distant past, for events that occurred a day or more before, was harder. The youngest children used -le for distant past time only three times, each in family routines for 'Mama's gone to work' or 'Big sister has started school'. The mother had left on a business trip to the United States a month before; the sister had started nursery school several months previous.

Five contextual factors converge to help the child visualize a situation as

bounded, and so describable as perfective. From most to least important, these are: (1) event in immediate past; (2) clear end point to activity, either a punctual act, such as falling; or completion, such as finishing a drawing; (3) reenactment experience, such as storytelling, a family routine or imitation of adult speech; (4) child as agent; (5) transitivity of the verb chosen, causing a change on a patient (Erbaugh, 1985).

Some researchers propose that European children's first uses of past tense are selective, that past tense actually codes aspect distinctions on verbs such as 'kick' or 'break', which describe inherently punctual actions (Antinucci & Miller, 1976; Bronckart & Sinclair, 1973). Weist (1984) calls this "the defective tense hypothesis." Mandarin -le would seem a good focus for early child attention to punctuals. A bare majority of -le's do describe punctual events. Duàn-le 'has broken in half', diào-le 'has fallen', and kāi-le 'has opened' are especially common. But even the youngest Taibei children also used -le correctly for numerous nonpunctual process verbs equivalent to roll, fly, talk, cry, draw, and play. Many activity verbs with -le also included completive suffixes, as in hē-wán-le 'drink-finish-PFV/CURR.REL' '[I've] finished drinking', huà-hǎo-le 'draw-finish-PFV/CURR.REL' '[I've] finished drawing', or ná-dào-le 'reach-arrive-PFV/CURR.REL' '[I've] grasped [it]'. Children also suffixed -le to stative verbs: huài-le 'bad-PFV/CURR.REL' '[it] has broken', hǎo-le 'good PFV/CURR.REL' '[it's] all right now', and lěng-le 'cold-PFV/CURR.REL' '[I'm] cold' were particularly common (Chao, 1973, p. 26).

In fact, young speakers of Polish, Greek, English, Spanish, Japanese, Hebrew, and Finnish also use past tense for many nonpunctual events, including both activities and accomplishments (Weist, 1984). And even the youngest Taibei children distinguished between process and change of state. They did not ever mistakenly attach a process verb suffix, such as -wán 'finish', to a stative verb. *Lěng-wán-le 'cool-finish-PFV' 'it's have finished cooling off' was a nonoccurring error type. However, verbs for spontaneous processes and changes of state did lag behind actives and causatives.

11.1.7. Later Aspect: Progressives and Duratives.

Progressives remained rare until the children were nearly 3. Only nine examples appeared during the general boundedness stage. The most important early durative was the hái 'still' adverb. Virtually all early duratives foregrounded emphatic single events, as with wǒ huà-zhe 'I draw-PROG' 'I'm drawing now [so leave me alone]'. All but one were well-formed.

Perfectives clustered around self-reference. But 50% of early duratives described someone other than the child. A longer or repeated action by another person may allow the child the planning time required to describe an event as sustained. Children used both iconic and progressive duratives and contrasted them with perfective. Here, Pang added perfective to a normally telic verb 'drop', making it iterative:

(37) Pang (2;4) slowly drops pieces of a toy car.

Yòu   diào-   le   yīge   chē-   che   ma
again   drop-   PFV   a   car-   car   PTL:emphatic

Tā   zài   diàodiao
it   PROG   fall-fall

DIÀO-diao-diao-diao
DROP

'A little car has dropped again. It is dropping. DROP drop'.

Canta (2;4) used iconic repetition to describe the string of lights stretching across the Oakland Bay Bridge as dē-dē-dē-dē-dē-dē- . . . dēng! 'li-li-li-li-li-li . . . light!' (Chao, 1973, p. 26).

The progressive zài adverb contrasts with unmarked present for activity verbs, so it can be used contrastively to ward off requests.

(38) Pang (2;8) refuses her grandmother's requests to sing, claiming she is too busy slicing up clay.

Wǒ   zài   qiē   nàge
I   PROG   slice   that

'I'm slicing that up!'

A moment later, Pang used the perfective to announce that she had finished: qiē-hǎo-le 'slice-finish-PFV' '(I)'ve finished slicing'. Spanish and Polish speakers also contrast perfective and imperfective aspect at this age (Weist, 1984).

All the progressive adverb zài's are correctly formed with activity verbs. The Taibei children did not ever use zài incorrectly with a stative, not even in a logical-appearing attempt to say that someone was 'being good' *zài guāi 'PROG well-behaved' or that the soup was still too hot to eat *zài tàng 'PROG hot' 'it's being hot'. Foreigners often make such errors.

11.1.8. Later Aspects: Past Experiential -guo.

After about age 2;6, children occasionally used the -guo past experience verb suffix. Most uses were correct. They typically described extended, recurring activities and actions such as seeing, sleeping, peeing, and eating, rather than unique experiences. Some early -guos were more emphatic than adult usage, conveying enhanced transitivity.

(39) Zhongrong (2;6) points guiltily at a large electric fan.

*Méi   yǒu   nòng-   guo   huài
not   have   make-   EXP   bad

'[It] has not been made broken'
(Standard order = Méi yǒu nòng-huài)

Highlighting the boundedness of an event outweighed distinguishing whether or not the event had occurred. Kang (2;10) erroneously used *kàn-guo* 'see-EXP' as an imperative when asking his mother to watch a trick. *Kàn-guo* is grammatical but means '[I] have had the experience of seeing [it].'

11.2. *Time Adverbs*

The Taibei children passed through three stages for time/aspect adverbs before they began telling frequent, spontaneous stories as they neared age 4. A prototemporal stage lasted until approximately age 2;4, an early temporal stage from 2;4 to 2;9, and a sequenced temporal relations stage later. Mandarin has three types of time adverbs. Aspectuals such as *hái* 'still' note the internal contour of events. Connectives such as *yǐhòu* 'later' link events. Temporals specify local situations in time. Temporals can be deictics (e.g., *xiànzài* 'now') or they can have an external reference (e.g., *xīngqītiān* 'Sunday') (Berman & Dromi, 1984).

Even the youngest children used all three types of time adverbs. These developed simultaneously, though the connectives and aspectuals developed more fully before the temporals did. Temporal, conditional, and emphatic functions of the *jiù* 'then' adverb also developed in tandem in both spontaneous speech and elicited storytelling in 461 4-to-6 year old Taiwanese children (R. Wu, 1987).

11.2.1. *Prototemporal Stage Time Adverbs.*

Before age 2;4, only 1% of utterances had time adverbs. These were almost entirely connective and for the most part appropriate. Between 80% and 100% of early time adverbs described fantasies or desires for the immediate future (Erbaugh, 1985, 1986). Most were requests with *zài* 'again', as in *zài tiào!* 'jump again!'. *Hái* 'still', which almost always appeared coupled with *yào* 'want', 'I still want [some/to]', was very common. Canta (2;4) consistently used *hái yào* 'still want' rather than *yào* for her own desires (Chao, 1973, p. 24).

No narratives appeared. Almost no time adverbs noted a reference time. Two of the rare exceptions reflected family routines. Pang (1;10) looked at the number counter on the tape recorder and said 'nine o'clock'. At 1;11, she spontaneously imitated her older's sister's announcement that she had eaten all of her breakfast egg that morning: *Wǒ zǎoshang chī-wán-le,* 'I morning eat-finish-PFV' 'I ate [it] up this morning'.

11.2.2. *Homophony, Multiple Function, and Difficulties with Time/Aspect.*

Homophony probably inhibited early time adverbs. *Zài,* an adverb meaning 'again', is homophonous with the *zài* progressive adverb (but written with a different character). Progressive *zài* is also homophonous with the locative coverb *zài* 'be at' (and written with the same character). All three occupy the same crowded preverbal slot: *Tā zài xiǎng qù yóuyǒng* 's/he again wants [to] go swimming', *tā zài yóuyǒng* 's/he is PROG swimming [now]', and *tā zài jiāli*

's/he [is] at home-in'. Subtle stress and intonation clues separate these in adult speech. (Intonation contrasts that signal grammatical information, such as *They won the game?* versus *They won the game!,* remain unreliable among English-speaking 10 year olds.)

Another problematic multipurpose word is *hái,* which functions both as an adverb and a conjunction. One meaning is equivalent to English 'and also, in addition, as in '[I] also have a teddy' *hái yǒu yī zhī xiǎo-xióng* 'also exist one CLASS:animal little bear'. But *hái,* written with the same character, also functions as an adverb, translated as English 'still'. The conjunction develops first. The most frequently used *hái* appeared for enumerating possessions, as in *hái yǒu yīge gǒu, hái yǒu yīge māomao* '[I] also have a dog, [and I] also have a kitty'. *Hái*'s connotation of sustained possession of a concrete noun formed the model for the first adverbial use of *hái,* to express the child's own sustained desires with *hái yào* 'still want'. *Hái* emerges next with requests for sustained activities. *Hái* for statives appears later.

11.2.3. *The Early Temporal Stage.*

Between ages 2;4 and 2;9, time adverbs increased, to appear in between 5% and 10% of all utterances. Connective and sustained aspectual usages still dominated. A few temporal reference adverbs emerged, approximately equally distributed among past, present, and future references. Virtually all of these were deictic and congruent. A mere seven external time adverbs, such as 'at night', appeared before age 2;9.

Declaratives started to include many more time adverbs. But, virtually all still referred to the child's own experiences. Family routines provide natural, much-rehearsed, and rewarded contexts that highlight both time and sequence. Children learn time sequence in dialogue, then adapt them to monologues.

(40)   Pang (2;8) croons as she dresses a toy duck.

Xiǎo Yā //   chuān yīfu   jiù   bù   huì   lěng- le
little Duck // wear clothes then   not   can   cold- PFV/CURR.REL

'[If/when] Duckie wears clothes, then [she] can't get cold'

Early narratives frequently explained how the child came to have a cut, a sore, or an illness, all continuing reminders of internal experience.

(41)   Pang (2;7) explains a stomachache.

Wǒ chī duō   táng,   dōu   dùzi   tòng
1   eat much   candy   always stomach ache

'[When] 1 eat a lot of candy, my stomach always hurts'

She also remarked 'my nose runs every day' *wǒ tiāntiān liú bíti.* At the same age, Zhongrong complained, probably in make-believe, 'dogs often bite me' *gǒu chángcháng huì yǎo wǒ.*

Make-believe stimulated the most elaborate time adverbs. Pang, a younger sister, relished pretending to be a big brother.

(42)   Pang (2;8) about growing into a big brother.

*Wǒ   xiǎo   de   shíhoù,   jiù   bù   Ø   dāng   gē
I   small   MOD   time   then   NEG   Ø   take role of   older brother
'When I was little, then I'm not little brother'

*Xiǎo   de   shíhoù   jiù   Ø   dāng   mèimei
small   MOD   time   then   Ø   take role of   little sister
'When [I was] small, then Ø was younger sister'

Wǒ   zhǎng-   dà   de   shíhoù,   jiù   dāng   gē
I   grow-   big   MOD   time   then   take role of   older brother
'When I grow up, then I'll be a big brother'

Time expressions briefed hearers about a distinctive feature of an unusual object, much like English *antebellum architecture, summer salary*. Objects children had lost, created, or planned to create were often specified with time adverbs.

(43)   Pang (2;10) tries to explain that her newly finished clay creation is a bathtub.

Zhè   shì   yùgāng,   zhè   shì   xǐzǎo   yǐhoù   yòng-   de
this   COP   bathtub   this   COP   wash   after   use-   NOM
'This is a bathtub, this is [what is used] after a bath'

*Zuì   yǐhoù   de
most   after   NOM
'The most later one'

Pang also requested 'the knife that Granny used before' *Pó yǐqián yòng de dāo* 'Granny before use MOD knife'; the gifts 'that Papa bought for me yesterday' *Bàba zúotiān gěi wǒ mǎi de* 'Papa yesterday BEN me buy-MOD/NOM'; and the tiny live crabs that they 'had been to buy today' *jīntiān qù mǎi de la* 'today go buy MOD/NOM PTL:excitement'.

Procedurals are another fertile source of early time sequences that often blend family routines with descriptions of unusual creations.

(44)   Pang (2;9) pretends to eat a paper 'ice-cream cone'. She describes how the puffed-up origami ball was made.

Shì   zhèyang   dié   de,   zhèyang   dié   de,   ránhoù   chuī
COP   this way   fold   MOD   this way   fold   MOD   later   blow
'[It] is folded like this, folded like this, then Ø blow Ø'

11.2.4. *An Inventory of the Taibei Children's Time Adverbs.* Many time adverbs appeared as sequence markers before children understood their temporal meaning. When questioned about the meaning of time words, children sometimes replied with the equivalent of "'do it soon' means 'I have to do it'"; "'forever' means 'sometimes I do, sometimes I don't'."

Aspectual adverbs used by age 3;10 are: *hái* 'still', *cháng* 'often', *yǐjīng* 'already', *yǒu shíhoù* 'sometimes', *lǎo* 'all the time', *yī tiān dào wǎn* 'from morning till night', *yīzhí* 'continuously', *yǒngyuǎn* 'eternally', and *měi cì* 'every time'. Connectives include: *zài* 'again', *yòu* 'again', *xiān* 'first', *yǐhoù* 'later', *ránhoù* 'later', *xià cì* 'next time', and *jiù* 'then, as a result'. Deictic temporals are: *bù jiǔ yǐqián* 'not long ago', *zuótiān* 'yesterday', *gāngcái* 'a moment ago', *yuánlái* 'originally', *zǎo* 'early on', *xiànzài* 'now', *zhèng* 'at this moment', *kuài* 'soon', *děng-yi-xià* 'in a moment', and *mǎshàng* 'very soon'. External temporals are: *liùdiǎn zhōng* 'six o'clock', *zǎoshang* '[in the] morning', and *yèli* 'in the middle of the night'.

11.3. Sequenced Temporal Relations

Between ages 2;10 and 3;4, the children increasingly discussed three or more events in sequence. Time adverbs appeared in 4%–6% of their utterances. Children increasingly described activities by other people, although they almost never described simultaneous events. Spontaneous narratives blossomed, increasingly describing unique events rather than habitual ones. Fantasy time expressions increased in prominence as the children directed elaborate pretend play. Family routines remained important.

(45)   Pang (2;10) pretends to be a baby.

Shuìjiào   de   yǐqián,   wǒ   jiù   chī   nǎinai,   shuìjiào-jiao
sleep   MOD   before   I   then   eat   milk-milk   sleep-sleep
'Before I go to sleep, I drink some milkie, sleepy-bye'

Qǐ-   lái   dōu   chī-chi-le
rise-   come   all   eat-eat-PFV/CURR.REL
'Get up, eat [it] all all up'

But this babytalk is grammatically correct. By 2;10, Pang gave a much more elaborate description of the perils of eating candy than in (43) when she was 3 months younger.

(46)   Pang (2;10), on eating candy.

*Wǒ   hái   chī   de   tángguǒ
I   still   eat   MOD   candy
'I still am eat some candy'

Wǒ zài yào chī
I again want eat

'I want to eat [some] more'

Míngtiān hóulóng yǒu tán
tomorrow throat exist mucus

'Tomorrow [my] throat will be sore'

Ránhòu, um yǒu nàme duō tán ma
later um again so much mucus PTL

'Later, um, so much mucus again!'

Ránhòu ne, zài chī yào ma
later PTL again eat medicine PTL

'And then, [I'd have to] take medicine again!'

Pang used this set of conditionals to stop herself from eating more candy. Family conditions for granting permission produced much time language, which overlapped with the development of conditionals.

(47)   Pang (2;10), on a chilly October day.

Xiànzài tiānqì lěng, bù xíng qù yóuyǒng
now weather cold not OK go swim

'Now it's cold, not OK go swimming'

Bù tiānqì lěng cái kěyǐ qù yóuyǒng
NEG weather cold only then may go swim.

'Not cold weather, only then may [one] go swimming'

(Negative *bù* is wrong at the beginning of the second sentence, where it gives negative scope to the whole sentence. *Bù* belongs before the stative verb 'be cold' *lèng*.)

Pang (2;11) also described when to go to a crowded amusement park: *Shǎo de rén, wǒ jiù xǐhuān qù* 'few MOD person, I then enjoy go' 'Not many people, then I'd enjoy going'. The first clause should be *rén shǎo de shíhòu* 'people few MOD time'.

Descriptions of bodily experiences grow elaborate enough to describe specific instances by the setting and process, rather than simply naming the consequence alone.

(48)   Pang (2;11), on why she won't visit Taizhong again.

Wǒ zuótiān ho // zuò huǒchē qù Táizhōng
I yesterday PTL:topic // take train go Taizhong

'Yesterday, I took the train to Taizhong [Taichung]'

Wǒ xiànzài dōu bú yào qù Táizhōng- le
I now all not want go Taizhong- CURR.REL

'[But] now I don't ever want to go to Taizhong again!'

Táizhōng yè- li huì niàoniao
Taizhong night- in can pee-pee

'In Taizhong [I] might go pee-pee in the night.

Many of the best-formed narratives were pretend sequences. Elaborate scenarios of special treats and revenge on rival playmates appeared. Pang's most elaborate narrative was a fantasy about demanding better snacks at day care. Adding temporal scaffolding was difficult. An unusual number of false starts, omissions, and errors appeared.

(49)   Pang (2;10) pretends to tell her teacher to fix better snacks.

Wǒ míngtiān qù shuō Ø
I tomorrow go say Ø

'Tomorrow I'll go say Ø'

Lǎoshī, nǐ bù Ø zuò nàme bù hǎo chī de
Teacher you not Ø make such not good eat MOD

'Teacher, you not Ø make such bad-tasting things'

Lǎoshī shuō, "Nǐ xià cì yào hǎo chī de Ø"
Teacher say you next time want good eat MOD Ø

'Teacher says, "[If] you want good things to eat next time Ø"'

Lǎoshī shuō "hǎo"
Teacher say good

'Teacher says, "ok"'

Wǒ míngtiān lái gēn lǎoshī Ø
I tomorrow come with teacher Ø

'Tomorrow, I'll Ø with teacher'

Tā jiù zhīdào- le
She then know- PFV

'Then she'll know'

11.4. *Aspect and Basic Child Grammar*

P. Li's experiments with 4 to 6 year olds in Beijing demonstrate that children are sensitive to inherent verb features, especially process versus result. They understand durative *zài* better with process verbs, and *-le* better with result. Li (1990) argues that these results support Slobin's (1985b) hypothesis that basic child grammar initially orients children toward result and process. Li argues that this preference is not inborn but develops gradually (1990, pp. 157–163). He

rejects Bickerton's claims about an inborn sensitivity to a contrast between state and process, punctual and nonpunctual.

The Taibei children's preference for enhanced transitivity demonstrates their orientation toward perfective results before other marked aspects. But their very wide variety of inappropriate aspect markers and verb types when learning to use SOV demonstrates that children only gradually learn the distinction between process and result. Although the *bǎ* construction must take transitive, telic verbs, children used it for duratives such as *cā* 'wipe' (example 26), *xǐ* 'wash', and *shū* 'comb'. This last was used iteratively in an even greater aspectual contradiction, at 2;2, **bǎ tā shū-shu* 'OBJ.MKR her comb-comb'. Because all these examples appeared when the child was grooming a doll, the effects of manipulation and enhanced transitivity are stronger than the constraints required by resultative aspect. Other aspect contradictions between perfective and nominalized sentences are discussed in section 11.2.2. Similar aspectual contradictions appeared with the *zài* progressive. Other evidence of the relative nonsalience of process comes from the frequent omission of the process verb in causatives.

11.5. Crosslinguistic Time/Aspect Context

Tense, time, and aspect are part and parcel of discourse. Early usage is highly selective. Many contexts in other languages strongly resemble those of the Taibei children. Monologue versus dialogue, self-reference versus other-reference, and experience versus action are distinguished very early. An American child, Emmy (1;10–2;0), made many fine-grained tense distinctions in her presleep monologues (Gerhardt, 1989). Her monologues were cohesive and self-contained. But simple present tense appeared only in monologue, never in dialogue. Simple present co-occurred with many locatives in order to specify events more completely. Household routines rather than unique events were the focus. Emmy was typically the experiencer, rather than agent. She referred to herself as *Emmy* 87% of the time. The routines described in the monologues were reenacted rather than ongoing. Many were specified by time adverbs such as *when* and *then* and contained many "protonarrative" segments.

These monologues contrasted with "progressive monologues," which were assertive and instrumental. Their goal was to prevent Emmy's father from leaving her bedside. Here, Emmy referred to herself as *I*. Often, she was the agent of an action: *I throwing book away.* The progressive monologues used fewer sequencing terms, and complements. They were "a patchwork of locally organized frames" quite different from the cohesive "proto-narratives."

As Emmy neared age 2;0, she appeared as the agent of actions 87% of the time. (Recall that 84% of the Taibei children's early perfectives described their own actions.) Emmy also began recounting unique past events. Both regular and irregular past began to appear on a heterogeneous set of verbs, including both activities, such as *played,* and punctuals, such as *crashed.*

Most Mandarin time and aspect markers describe ordinary routines, not

unique experiences. American preschoolers also produce better-sequenced accounts of recurring, inherently ordered experiences, such as baking cookies or going to MacDonald's, rather than exciting but unusual ones, such as a trip to the zoo (Nelson & Gruendel, 1981). Young Mandarin speakers use time adverbs at the same age as and in a strikingly similar manner to young speakers of Polish, Hebrew, and Japanese. The young Chinese show no tendency to put time adverbs in every sentence as compensation for a "lack" of tense, although fluent foreign speakers persist in this error. Native speakers only rarely make use of time-aspect options outside the norm for their language. Hebrew and German speakers, who have strong verb tense systems but little aspect, add aspect to only about one-fourth of their narratives. Spanish and English speakers, whose tense system emphasizes progressive aspect, add it about 75% of the time (Slobin, 1987). Three year olds are also assimilated to the characteristic locative patterns of their native tongue. Young English and German speakers use a verb with a locative particle or phrase nearly 90% of time, whereas children learning Spanish and Hebrew use a verb without a locative about 70% of the time (Slobin, 1987).

11.6. Narratives and Sequenced Events

Occasional "pre-narratives" appeared at the prototemporal stage. These sequenced phrases resemble the "vertical constructions" described by Scollon (1976).

(50) Laohu (2;0), is upset that his father, a police officer, had left for work.

Researcher: *Bàba   shàng-   bān-   le*
Papa   LOC:on-   duty-   PFV

'Papa has gone to work'

Laohu: **Bàba   ∅-   le*
Papa   ∅   PFV/CURR.REL

'Papa's ∅ already'

*Jǐngchá   ∅-   le
police   ∅-   PFV/CURR.REL

'Police's already ∅'

*Shàng   jǐngchá   ∅-   le
LOC:on   police   ∅-   PFV/CURR.REL

'On police's already ∅'

Qiāng   a
gun   PTL

'Gun!'

11.6.1. *Narratives and Chinese Culture.* The Chinese rehearse and reward preschoolers for telling canonical stories 'from head to tail'. A "good" Chinese story must begin by establishing characters and setting, develop a plot chain, and

end with a moral, ideally a four-character proverb or *chéngyǔ* in literary Chinese (Erbaugh, 1982, pp. 654–661). Sketchy protonarratives showed that 3 year olds had learned a basic story grammar. Many of the earliest topicalizations appeared in such recitations.

(51)   Kang, (3;0) unhappily agrees to recite "The Three Bears."

'Lùlu   gēn   sān   zhī   xióng   a'
Goldilocks and   three CLASS:animal   bear   PTL:topic

Yǐzi   zuò-   huài-   le
chair   sit-   bad-   PFV

*Jiéguǒ   ba Ø
result   PTL:topic Ø

Méi   yǒu-   le
not   exist-   PFV

'As for "Goldilocks and the Three Bears." The chair sit-breaked.
Well, as a result Ø. That's all'.

By 2;10, the Taibei children produced spontaneous narratives some 10 clauses long without adult scaffolding. Adult prompting yielded tellings of "The Three Little Pigs" and "Goldilocks and the Three Bears" 20 clauses long. These included many explicit connectives, especially *cái* 'only then' and *jiù* 'then', as well as time adverbs. "Preliterate" Beijing 6 year olds used many "literate strategies" when they told "The Sword and the Shield" and "The Big Lazybones and the Little Lazybones." They integrated semantic and syntactic parallelism, topicalization, repetition, and phonological fine-tuning (Hong-Fincher, 1987). (A complete "Three Little Pigs" is transcribed in Erbaugh, 1982, pp. 723–730; Chin, 1988, pp. 174–177, also transcribes many translated narratives from school children.)

As the children neared 3;0, they increasingly described actions in terms of a whole situation, using a sentential nominalization that implies 'it is the case that' or 'what happened was . . .' with *shì . . . de* (Li & Thompson, 1981, pp. 587–593). Many usages were anomalous. The most frequent error omitted the *de* nominalizer at the end of the sentence. Processing difficulty of marking discontinuous elements is almost certainly the source (Slobin, 1973), as this is a pervasive foreigner error as well.

The other very frequent error involved aspectual conflicts in using the dynamic, perfective *-le* in a stative construction. The following example illustrates two errors in which an unfinished stative *shì . . . de* nominalization is uneasily hitched to a dynamic perfective *-le:*

(52)   Kang (3;0), playing doctor, examines an imaginary thermometer.

*Shì   fā-   shāo-   le!
COP   produce- burn-   PFV/CURR.REL
'It's fevered!'

He explains how adults can drink ice water but children get stomachaches.

*Nà,   wǒ   dùzi   yě   shì   hē-   le   liáng   shuǐ
well   I   stomach   also   COP   drink- PFV   cool   water
'Well, my stomach is also drinked cool water'

*Ø   Shì   dà-   rén   jiù   dāngrán   bù   Ø   tòng
Ø   COP   big   person   simply   natural   NEG   Ø   hurt
'Ø be an adult, of course not Ø hurt'

(Standard order =

Rúguǒ   shì   dàrén,   dāngrán   bù   huì   tòng
if   COP   adult   naturally   not   can   hurt

'If [one] were an adult, naturally [it] would not hurt')

11.6.2. *Multiple-clause Sentences and Narrative.*   After age 3;5, children routinely coordinate more than one clause within the sentence. They describe potential actions, beginnings, and processes more fully and flexibly, and increasingly add time and aspect to descriptions of other people's activities. Background information proliferates, as do extended narratives about specific, real experiences that are increasingly distant from speech time. However, much time-marking remains anomalous; main verbs are still frequently omitted, although results are usually highlighted. Time durations equivalent to 'all day' remain rare.

Children become increasingly aware of aspect contradictions between stative and perfective between ages 3 and 6, as shown by difficulty in imitating ungrammatical sentences with both *zài* progressive and perfective *-le* (Li, 1990, p. 139).

Other issues important to Mandarin narrative, including conditionals, topicalization, and particles, are discussed below. Narratives develop gradually throughout childhood among speakers of many languages. Coordinating stative background and foregrounded actions are particularly difficult. Young speakers of Warlpiri, an Australian Aborigine language, aged 4;10 to 12;0 told stories prompted by picture books. Children up to 9 years old used little focusing or linking morphology, and few anaphoric pronouns. The youngest children used ellipsis deictically and stressed actions rather than participants. Older children did name participants and tried to order the narrative (Bavin & Shopen, 1985). Karmiloff-Smith (1981) found a similar process in the acquisition of English and French narratives. Younger children used pronouns deitically without establishing their identity for the hearer. Older children attempted to establish referents and backgrounds linguistically and to provide more cohesion explicitly.

12. Conditionals and Counterfactuals

Conditionals, like narratives, coordinate events. The Taibei children began discussing conditional situations when they were barely 2. What would happen if

Zhongrong jumped off a third floor balcony? What if Pang were a big brother, rather than a baby sister? Kang (3;4) asked if dead people still had to offer sacrifices to the gods (Erbaugh, 1982, pp. 642–643). Often, children used a declarative, then tacked on a general 'how' question tag *zěnmeyàng,* as in *wǒ dāng gēge, zěnmeyàng?* 'I take-role-of big brother, what then?' Slightly more sophisticated conditionals juxtaposed two predicates. Often, these came in two separate utterances.

(53) Pang (2;0) looks longingly at a picture of Thumbalina riding a butterfly.

Wǒ   yào   zuò   húdié
I   want ride butterfly

*Bù   huì   diē-   dǎo-   le
NEG can   fall- over- PFV

'I want to ride a butterfly. Couldn't fell off'.

(Perfective *-le* is ungrammatical because *huì* 'can' is merely potential.)

(54) Zhongrong (2;6) delightedly throws toys at a teenage guest, begging him to fight back.

Nǐ   dǎ-   sǐ   wǒ-   le
you hit- die me-   PFV

*Kàn   dōu   kàn-   bu-   kàn   nǐ
see   all   see-   NEG- see   you

'You have killed me. [I] look but can't look at you'.

The intended meaning seems to be, 'if you kill me, I won't be able to look at you', *nǐ dǎ-sǐ wǒ, nà wǒ jiù kàn-bu-jiàn nǐ le* 'you hit-dead me, in that case I then see-NEG-perceive you CURR:REL'. Zhongrong's advice on how to avoid a scolding was also conditional: '[If] I don't scold her, she won't scold mine' *wǒ bù mà tā, tā bù huì mà wǒ de* 'I NEG scold her, she NEG can scold me POSS'. (The conditional is well-formed, but possessive *wǒ de* is strange; *wǒ* 'me' suffices.)

Explicit conditionals use conjunctions such as *jiù* 'then, in that case' between clauses. Sentences may also begin with *rúguǒ* 'if' or the verb *jiǎzhuāng* 'pretend', which are also low frequency in adult speech. These remained rare until the children were about 3;10. Yet the Taibei children debated their hypotheses with increasing vehemence, frequency, and explicitness as they matured, very much as young speakers of English, French, Italian, Turkish, and Polish do: first by juxtaposing clauses and only much later by adding explicit grammar for hypothetical and counterfactuals (Clancy, Jacobson, & Silva, 1976; Smoczyńska, 1985). Example 52 is an explicit counterfactual. Comparative experiments with Palo Alto and Beijing children find that Chinese and American children show the same mastery of the appearance-reality distinction, such as

describing a realistic wooden apple being 'really a pretend apple' (Flavell et al., 1983). Comparisons of grade school children in Taiwan and Chicago, Hong Kong, and Palo Alto show that the Chinese children understand counterfactuals as well or better than Americans (Au, 1983; Liu, 1985).

13. Topicalization

Topicalization remained difficult despite its high input frequency and importance. Children needed firm control of sentence relations, especially serial verbs and two-clause sentences, before they topicalized well across a longer discourse chain. Choosing a presentential topic, setting it off with a particle, then commenting on it over a number of sentences developed very slowly after the child turned 3;0. In many topicalizations, the comment was truncated or anaphorically unclear (Erbaugh, 1982, pp. 327–333). Refinements continued through middle childhood, as the child struggled to establish reference, often using many restatements while omitting obligatory verbs.

(55) Xiao Mi (5;10) introduces her birthday as topic.

*Běnlái   yǐqián   wǒ   shēngrì   Ø
originally once   I/my birthday Ø

*Zuótiān //   yǐqián,   ho,   wǒ   dú
yesterday // before   PTL:topic I study

zhōng-   bān   de   shíhou
middle- class MOD   time

*Yī   tiān,   ho,   hǎo   duō   rén   guò   shēngrì
one day   PTL:topic very many people pass birthday

Qí-   zhōng,   wǒ   guò   shēngrì   zuì //   zuì   gāoxìng
them- among   I   pass birthday most // most happy

'Originally, before, on my birthday Ø. As for yesterday / before, when I was in the intermediate class Ø. As for one day, many people had birthdays. [But] I had the happiest birthday of them all'.

Hebrew-speaking children also delay topicalization until they master sentence-internal grammar (Berman, 1985). Similarly, Japanese children mastered the *ga* subject particle before the *wa* topic particle. They sometimes misinterpreted *wa* as a subject marker (Clancy, 1985, pp. 387–388).

14. Problems with Sentence-final Particles

Young Mandarin speakers have great difficulty with the highly frequent, perceptually salient sentence-final particles. The particle usages overlap. *Le*, for current relevance, overlaps with perfective. *a* marks both WH-questions and warmly

involved declaratives. *Ne* is restricted to dialogue. It solicits agreement and forms tentative questions, while implying progressive and duration (Li, 1990, p. 25). *Ma* is either emphatically declarative or forms YES-NO questions. *ou* marks warnings.

Mastering particles requires subtle assessment of discourse conditions, including previous utterances by other speakers and the hearer's familiarity with the topic and likely reaction. Min (1;6) used a declarative particle rather than an interrogative to ask 'Where's the ball?' *Qiú a?* 'ball PTL:empathy' appeared for *qiú ne?* 'ball PTL:question/solicit agreement (Lee, 1981, p. 24); (A could have been appropriate if Min had used WH- 'where' and a locative, as in *qiú zài nǎli a?* 'ball LOC where PTL:question'.)

The four Taibei children followed the principle of one-to-one mapping in using the *a* particle as a general emphatic but not a question marker. They and Canta (Chao, 1973, p. 26) had particular difficulty with the *ma* particle, which has contradictory meanings. It can be either an empathic declarative or a YES-NO question. These children neither used it nor understood questions formed with it before approximately age 3. A Cantonese child used particles anomalously from 3;6–5;0 (Kwan-Terry, 1991). Unlike Japanese parents (Clancy, 1985), Chinese parents seem not to drill or correct their children on particle usage, possibly because Chinese particles are less closely tied to the politeness system, and Chinese emphasize politeness (other than names) less for preschoolers.

CONCLUSION

Ironically, children's acquisition of Mandarin points overwhelmingly to the centrality of syntax. Chinese children struggle hard toward syntactic regularity from their very first words. Far from reveling in a language that has been called "topic centered" and "without grammar," children are especially attentive to the surface cues to the underlying structure. Their SVO order is early, nearly perfect, and so strict that they often refuse to vary it to OV. They do not play with word order. They also master the order-based distinction between subject and object early and well. They have more native ability than their language requires for surface grammatical morphology, as shown by their analytic and redundant double-markings, which reflect a universal child grammar preference for one-to-one mapping (Slobin, 1985b). They reveled in the surface morphology that Mandarin does have. Double-marking of nominal, perfective, and cause resists correction until late childhood, as in *wǒ de de* 'I NOM POSS' 'mine's', *tiào-le-le* 'jump-PFV-CURR.REL' 'has jumped-ed', and *nòng gěi tā dǎ-sǐ-diào* 'CAUSE BEN her beat-die-off' 'make for her beat-ed to death dead'. If Mandarin were "above grammar," no errors should appear. But errors are frequent until children are well over 3;0.

Chinese has been described as "topic prominent" compared with languages said to be more syntactically oriented (Li & Thompson, 1976). Givón describes both early child speech and pidgin languages as using a "pragmatic mode" (1984, pp. 222–228). But pragmatics and topicalization are precisely what Mandarin-speaking children find most difficult, well into late childhood. Pragmatic mode is described as featuring topic-comment structure, a low noun/verb ratio, and no grammatical morphology. Pragmatic mode is said to precede a "syntactic mode," which has subject-predicate structure, a higher noun/verb ratio, and extensive use of grammatical morphology. But putting child language and pidgin together in a pragmatic mode blurs a crucial distinction between adult and child speech. Pragmatics is precisely what children control poorly, as they struggle to express clear reference, especially from a point of view other than their own. Adults have strongly developed narrative abilities and powerful (if individually variable) skills at tailoring their language to their audience. Handicapped by speaking a second language or a pidgin, adults can still topicalize according to what their hearer knows or cares about, using elaborate anaphora and cohesion and coordinating long sequences of events, with explicit conditionals, causes, processes, and effects.

Young Chinese children do tailor their speech to their hearers with increasing sensitivity. But contrary to the pragmatic mode hypothesis, they work at sentence-internal grammar, one utterance at a time. They use as much grammatical morphology as they can and have a higher noun/verb ratio than adults, almost 1:1 for Mandarin speakers at age 2;0 (Erbaugh, 1982, pp. 176–180). They also produce long relative clauses by the time they are 2;8, well before they produce long narratives or experiment with topicalization. The pragmatic mode hypothesis predicts the acquisition first of topic, then subject and topic (*Lucy, she's asleep*), and only later subject alone for previously introduced topics (*she's asleep*). The Taibei children, however, produced grammatical subjects long before topics. Topicalizing and discourse particles are among the most difficult aspects of Mandarin.

If Mandarin were a "pragmatic" language, early usage should reflect language universals, rather than features that are peculiar to Chinese. However, Chinese children, like young speakers of other languages, strongly adhere to the most prominent language-specific systems. In Mandarin, these include precocious acquisition of tone, rigid SVO, and willingness to use a very wide range of nonnouns as main verbs. The children behave almost as if they know about powerful historical regularities in classical Chinese. Their noun classifiers are always grammatically correct, even when semantically overextended, such as using *tiáo* 'CLASS:extension' for sword, rather than the conventional CLASS:handle *bǎ.*' Many of their errors are impossible in European languages. The most common error for Mandarin speakers up to 3;10 is omitting a main verb. Instead, they may add progressive aspect to an adverb, comparable to 'I'm stilling' *wǒ hái-zhe* 'I still-PROG'. *Bǎ* historically was a verb meaning 'to

grasp in one's hands'. *Bǎ* is now "bleached" as a purely grammatical Mandarin object marker. But numerous unrelated children use *bǎ* aberrantly as a main verb.

Mandarin-speaking 2 year olds also understand many nonsurface grammatical regularities that elude foreign students. Their ability to detect nouns and verb + noun compounds is especially refined. They have an early, basic understanding of an animacy hierarchy for subjects and pronouns, which disallows inanimate subjects and animate patients, comparable to *the stone hit the boy*. They distinguish verbs by rudimentary semantic properties (Aktionsart), especially resultative verbs, and mark perfective well before other aspects. They "enhance transitivity" to focus very strongly on results at the expense of process. However, their understanding of resultative and other verb semantics is not inborn, but rudimentary. It develops gradually, with many errors, such as using stative and perfective on the same verb.

Language-specific factors affect acquisition. Mandarin has extremely simple, consistent, and overt regularities for subject and object, patient-subjects that are translated by English passive, pronouns, possessives, questions, and relative clauses. Children learn these early and well, in direct challenge to many theories of "universal" grammar (Demuth, 1989).

In other areas, the power of cognitive universals appears in the extremely strong resemblance between Mandarin patterns for acquisition of WH-questions, time, modality, conditionals, benefactives, and causality; and that of typologically very distant and diverse languages including Japanese (Clancy, 1985), Hebrew (Berman, 1985), Polish (Smoczyńska, 1985), Turkish (Aksu-Koç & Slobin, 1985), and English (de Villiers and de Villiers, 1985; Gerhardt & Savasir, 1986). In particular, I find no evidence that a Mandarin "lack" of verb tense affected time concepts, that "lack" of grammatical gender affected either clear reference or concepts of sex, that "lack" of widespread conditional conjunctions or subjunctive mood affected hypothetical thinking, or that noun classifiers accelerated the ability to categorize. The development of narrative and discourse-sensitivity after about 3;5 increasingly resembled crosslinguistic results, though the actual linguistic devices varied. Topicalization, object-fronting, anaphoric devices (including noun classifiers), and particles for both topic and intrasentence and intraspeaker fine-tuning all merit further study.

Adult input is always important. Many Mandarin phenomena that look childish at first glance (e.g., widespread subject ellipsis or broad use of the general classifier) actually mirror colloquial speech among the most highly educated adults. Much more adult–child comparison is called for to avoid trumpeting false and misleading developmental trends and to avoid denigrating child speech. Long-standing cultural habits of speaking to children are particularly well-adapted for training the child for success in Chinese school and society. The stress on decoding naming conventions and the quiz style of conversation do more than integrate children socially; they also focus attention on elusive but critical linguistic structures for tone, compounding, and productive morphology.

Of course, many questions remain. Some can be illuminated by comparison with other Chinese dialects. Disentangling perfective from current relevance is an especially good prospect. Phonology, especially tone changes in sandhi and neutralization, offers many grammatical and morphological clues, especially for compounding. More finely grained studies of context and discourse should illuminate how much and in what ways modality, time, aspect, and cause reflect universal child grammar. Increasing studies of Chinese–English bilingual children throw light on which subsystems, such as tone and order, are particularly vulnerable to outside models. Foreign student errors hint that Mandarin-speaking 2 year olds may already have a superior grasp of nouniness, order, and animacy. These systems may be set early, so that a second language whose rules contradict them follows the earliest model. Comparisons with other analytic languages, including Thai, Burmese, and Vietnamese, would be particularly revealing here, as well as useful guides to how analytic languages do function and why "less" grammar is not easier.

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