13 Early bilingual acquisition in the Chinese context

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Introduction

Bilingual acquisition is a fast-growing field of interdisciplinary research, seeking to understand how children acquire two languages simultaneously in the first years of life. Many children grow up in families where more than one language is spoken on a regular basis. This chapter discusses some of the major issues and findings in the study of early bilingual acquisition with special reference to studies involving a Chinese language as one of the target languages.

The field of bilingual acquisition can be characterized as the intersection of child language acquisition and bilingualism (De Houwer, 1998a). Bilingual acquisition, child language acquisition, and bilingualism are fields which mutually inform each other. Bilingual acquisition research investigates how children acquire knowledge of two languages, what this tells us about the nature of language acquisition in general, and how the acquisition of two languages is similar to or different from that of one language only. To address issues in bilingual acquisition, one typically draws on monolingual child language acquisition data to serve as a baseline comparison in order to ascertain the similarities and differences in developmental patterns and rate of development. The methods used in monolingual child language acquisition, longitudinal and cross-sectional, observational and experimental, are also used in bilingual acquisition (see below on methods). In addition, phenomena unique to bilingual acquisition, such as code mixing, can be analyzed using models available in the field of bilingualism (see Bhatia & Ritchie, 2004). Bilingualism at the individual level can be compared with bilingualism at the societal level, as in the case of mechanisms of language contact applying to both levels (see final section on language contact).

Many researchers approach childhood bilingualism from the perspective of cognitive development and language processing. Bialystok (2001) draws together a multitude of strands in the development of linguistic and nonlinguistic

* The research reported in this chapter was substantially supported by grants from the Research Grants Council of the Hong Kong Special Administrative Region, China (Project Nos. CUHK4002/97H, CUHK4014/02H) and direct grants from the Chinese University of Hong Kong (2001/2, 2003/4).

cognitive domains in bilingual children. Examining various linguistic and cognitive consequences of developing two languages in childhood, she points out the potential contribution of childhood bilingualism in illuminating the nature of linguistic knowledge, organization of cognitive processes, and the functional structure of the brain. Among the issues covered are developmental issues in language acquisition, metalinguistic awareness, literacy, and problem solving. She explores and highlights the complexities and intricacies that make the empirical study of bilingual development so challenging, arguing that bilingual children are different from monolinguals in the way they acquire language and concluding that "The vast majority of cognitive differences were advantageous to the bilingual children" (Bialystok, 2001: 232). Whether the bilingual advantages observed in the preschool years, such as those involving selective attention and inhibition, carry over into adolescence and adulthood awaits further research. Bialystok's views also echo Grosjean's (1989) insight that "the bilingual is not two monolinguals in one person." Whether children or adults, bilinguals have a distinct profile that defies a simple characterization whereby the bilingual individual is a composite of two monolinguals housed in the same mind. According to Grosjean's holistic view of bilingualism, the bilingual is not the sum of two complete or incomplete monolinguals, but an integrated whole with a unique linguistic profile.

The question of how children develop simultaneous bilingualism in the Chinese context, i.e. in Chinese-speaking communities or with Chinese as a target language, takes on theoretical and practical significance. In terms of constructing a theory of bilingual acquisition, childhood bilingualism involving Chinese enriches the diversity of language pairs in bilingual acquisition, promising to yield a complex picture of languages in contact in the individual and providing a window into the bilingual mind. Just as bringing a wider range of languages into consideration changes our view of what is possible in human languages, so it promises to change our view of what is possible in language acquisition. The study of bilingual acquisition in the Chinese context is also of growing practical importance, since the number of bilingual families with children speaking Cantonese, Mandarin or another variety of Chinese together with another language such as English is on the rise in the twenty-first century. Raising bilingual children has become a prime concern for parents in such situations.

We begin with a discussion of the innate human capacity to acquire more than one language and a review of the classical studies of child bilingual acquisition, followed by the methodology and the research agenda of the field at large. Our discussion will highlight findings of studies involving a Chinese language (Mandarin or Cantonese), as one of the bilingual child's target languages, concluding with some suggestions for future research.

As the leading American structuralist Leonard Bloomfield (1933) remarked, the acquisition of language "is doubtless the greatest intellectual feat any one

of us is ever required to perform." If a child's acquisition of a language is a miracle, then acquiring two at the same time is doubly so. The ability of the child to acquire language is what Pinker (1994) calls the "language instinct": knowledge of language is not acquired as a result of anybody's teaching or purely the child's learning, but is to a large extent attributable to the innate human capacity for language acquisition. In the context of bilingual acquisition, we may refer to the *bilingual instinct*, the language instinct given full expression in the simultaneous acquisition of two languages by children. It is simply human, and totally natural, for the bilingual child to acquire both languages in response to the dual input in their environment. Though the same language instinct operates in both monolingual and bilingual acquisition, many researchers argue that the processes involved in bilingual acquisition are inherently different from those in monolingual acquisition. Under some circumstances, at least, bilingual children take a different path from their monolingual counterparts to reach the target.

Within the field of bilingual acquisition, a number of issues arise as to the relevant categories and subtypes of childhood bilingualism. In many cases, the parents each speak a different language natively, thus exposing the children to two languages from birth; yet this "one-parent-one-language" strategy is only one of many ways in which children may acquire two languages. Romaine (1989) proposed a typology of childhood bilingualism on the basis of input factors such as the native language of the parents, the language of the community and the parents' strategy in addressing the child.

The relationship between bilingual development and child second language acquisition, and the distinction between them, have been recurrent points of controversy (cf. Butler & Hakuta, 2004). Cases where competence in two languages is acquired within the first three years of life are considered *simultaneous bilingualism*, which is distinguished from *sequential bilingualism* where children begin acquisition of a second language after the first language is in place (cf. Bhatia & Ritchie, 1999). Alternatively, simultaneous bilingualism is also referred to as *bilingual first language acquisition* or *early bilingualism*, while sequential bilingualism may overlap with *child second language acquisition*. De Houwer (1995: 223) uses the term "bilingual first language acquisition" to refer to situations where the exposure to two languages occurs in the first month of birth; Deuchar and Quay (2000) adopt a more relaxed definition, using "bilingual acquisition" to refer to situations where the child's exposure to both languages begins within the first year of life. This may be considered as a question of epistemology: what is the status of the knowledge of each language being attained by the learner? Schwartz (1986) has raised this fundamental question for theory and research in second language acquisition. In a similar vein, a coherent theory of bilingual acquisition hinges on one's assumptions about the nature and status of the developing linguistic knowledge. Yip (2004) raises the

following questions regarding the relationship between bilingual acquisition and child second language acquisition:

- To what extent is the difference between the bilingual child's dominant and nondominant languages of a similar magnitude to that between a first and second language in early child second language acquisition?
- How far apart do the two simultaneously developing languages have to be (in terms of age of first exposure and/or rate of development?) before one can consider them first and second languages?

These are some of the questions that await future theoretical and empirical research in bilingual acquisition and child second language acquisition.

Study of bilingual acquisition in historical perspective

A time-honored tradition of using diary records in the study of bilingual acquisition begins with the classic studies of parent-cum-linguists Ronjat (1913) and Leopold (1939–49). Ronjat (1913) conducted a longitudinal study of his son Louis's development in French and German, which is generally considered the earliest modern study of the topic (see Hoffmann, 1991: 50–53). He inaugurated Grammont's principle, i.e. the one-parent-one-language approach, in addressing the bilingual child. Werner Leopold, a professor of German with the combined passion of a father and a developmental psychologist, recorded the bilingual development of his daughters Hildegard and later Karla in German and English, culminating in the masterpiece *Speech Development of a Bilingual Child: A Linguist's Record*. Without the help of a tape recorder, Leopold recorded his daughters' speech data in the form of a diary, with extensive commentaries on specific linguistic features. Leopold's linguistic study of early bilingual development remains unparalleled in its comprehensive coverage of the details of a child's simultaneous acquisition of two languages. Even today, Leopold is held in high esteem as one of the founding fathers of the study of bilingualism as well as child language at large. Leopold felt that the study of child language would reveal much about general principles of language and language change: "every pattern of grammar, every process of language shows up in child language in a nascent state, in coarser, more tangible shapes, compressed into a much shorter time and therefore more accessible to observation."

Methods

Two methods are commonly used in current bilingual acquisition research: (1) case studies using a longitudinal design over an extended period of time during which the subject is audio- and/or video-taped regularly in a naturalistic setting, usually in the home interacting with the parents or research

assistant. The recordings are then transcribed and the resulting transcripts form a corpus for analysis. Sometimes the corpus data are also supplemented by diary records kept by the parent researcher (e.g. Deuchar & Quay, 2000); (2) cross-sectional experimental studies that compare subjects at different ages, testing their perception, production or comprehension of language in a controlled setting (cf. papers in the volume edited by Cenoz & Genesee, 2001; Paradis, 2001; Nicoladis, 2003).

Most studies of bilingual development call for systematic comparison with monolingual data for the acquisition of the same target languages. When bilingual acquisition data are compared with monolingual data, factors such as comparability of ages, size of corpus, and levels of language development should be taken into consideration so that valid quantitative as well as qualitative comparisons can be made (De Houwer, 1998b).

Language dominance

When one of the bilingual child's two languages develops faster, or shows greater complexity at a given age, this language is said to be dominant. Language dominance appears to be a factor determining transfer, i.e. "the incorporation of a grammatical property into one language from the other" (Paradis & Genesee, 1996: 3). A number of studies have reported incorporation of elements from a dominant to a less dominant language (Gawlitzek-Maiwald & Tracy, 1996; Hulk & van der Linden, 1996). Language dominance can be measured most objectively by computing Mean Length of Utterance (MLU), for each language at different stages: the dominant language is expected to have a higher MLU value than the less dominant one. Less direct indications of dominance come from children's language preferences (Saunders, 1988). The amount of input from each language is thought to play a major role in determining language dominance (Döpke, 1992). The question of language dominance in the study of Cantonese–English bilingual development is discussed in Yip and Matthews (2000; see discussion later in this chapter). Another major factor determining language transfer is input ambiguity (see below), as discussed in Müller (1998) and Yip and Matthews (in preparation) among others.

Language differentiation and crosslinguistic interaction in bilingual acquisition

We now turn to the question of language differentiation and evidence of crosslinguistic interaction in bilingual acquisition. Below we highlight some important findings from recent studies which have unanimously supported the early differentiation of the two linguistic systems in the mind of the bilingual child.

For a long time, much of the research in the field of bilingual first language acquisition has been focused on the question of whether bilingual children begin with a unitary system, as proposed by Volterra and Taeschner (1978). This is perhaps the single most important question that has motivated and inspired the bulk of research in the field. The issue of grammatical differentiation assumes critical theoretical significance and interest since our understanding of the human language faculty can be enriched once the question of how humans are cognitively equipped to become bilingual is addressed properly. Thus far, the evidence suggests that bilingual children are able to divide the input into two separate systems from early on (Genesee, Nicoladis & Paradis, 1995; De Houwer, 1990; Meisel, 2001, 2004, among others). The more interesting question now is how early the differentiation is evident in the acquisition of phonology, lexicon, and syntax.

Do bilingual children begin with an undifferentiated phonological system which gradually becomes differentiated? There are divergent views regarding the question of how and when differentiation is achieved in phonological systems, ranging from total undifferentiation at 2 years old to partial or total differentiation by age 2 (see review in Paradis, 2001; papers in the special issue edited by Lleó & Kehoe, 2002). Some recent experimental evidence shows that 4–5-month-old bilingual infants have the perceptual ability to distinguish two rhythmically close languages, Spanish and Catalan (Bosch & Sebastián-Gallés, 2001). In terms of production, there is evidence that French–English bilingual infants develop differentiated systems during the babbling stage (Poulin-Dubois & Goodz, 2001). Yip and Matthews (2003) argue for early phonological differentiation based on video recordings of two bilingual children exposed to English and Cantonese from birth. The data show that syllable-final stops in each language are subject to different language-specific features, i.e. syllable-final stops are unreleased in Cantonese but optionally released or even over-released in English, putatively exhibiting a form of *hyperdifferentiatio*n.

In terms of lexical differentiation, evidence is sought as to the degree of overlap in the vocabularies in each language. If the child has a sufficient number of translation equivalents of the same word such as two words for *car*, one in German and one in English, then this is taken as evidence for two separate lexicons (Pearson, Fernandez & Oller, 1995; Lanvers, 1999). Another major type of evidence for differentiation comes from word order and morphosyntax observed in the speech of a wide variety of bilingual children acquiring different language pairs, reflecting structural properties and constraints on grammatical operations specific to each of the two languages. For example, language-specific headedness of syntactic categories (VP and IP), finiteness, and its syntactic consequences such as verb raising are acquired early in French–German bilingual children (Meisel, 2001; see also Deuchar & Quay, 1998, for an interesting interpretation of the question of early syntactic differentiation).

Chinese–English bilingual acquisition in childhood

This section reviews the major studies of childhood bilingualism involving Mandarin or Cantonese and English. We shall begin with the earliest published studies on record, moving on to Singapore and Hong Kong case studies, highlighting the significant contributions in each case.

Earlier studies

The earliest studies of Chinese–English bilingual development date back to Madorah Smith (1931, 1935). Her study was based on diary records of eight bilingual children from the same family kept by their mother from the time of the birth of the eldest child in China until their return to America. The children were exposed to two languages from birth: English from their missionary parents and Mandarin Chinese from their servants. This was during the "period of detrimental effects" (C. Baker, 2001: 136) when it was assumed that bilinguals were linguistically confused and mentally disadvantaged. Sure enough, Smith found evidence that the English vocabulary of the bilingual children was significantly less rich than that of a monolingual child of the same age. Language mixing was found to be frequent and treated as a sign of confusion, while bilingualism was seen as a handicap especially at the age of 18 months. Since Peal and Lambert's (1962) seminal study, a more positive attitude to child bilingualism has emerged, which (C. Baker, 2001: 140) terms "the period of additive effects" of bilingualism on cognition.

Timothy Light (1977) was the first linguist to describe a case of Cantonese–English bilingual development. His bilingual daughter Claire grew up in a Cantonese-dominant household and arrived in the United States at 16 months. Light made interesting observations regarding *Clairetalk*, discussing some striking features of her "increasingly Anglicized" Cantonese that were argued to reflect the influence of English in her new linguistic environment. The shift from Cantonese dominance to English dominance produced anomalies, including what Light called "disintegration" of the Cantonese tonal system as illustrated in (1):

(1) *Ngō* *hōu* *gwàai*
I very good
"I'm very good." (Light 1977: 265)

In (1) the high level tones assigned to the first-person pronoun *ngo5* (which has a low rising tone) and the intensifier *hou2* (high rising) are nontarget, and the whole utterance has an English intonation pattern, with a high falling tone at the end. Influences were observed at the syntactic level too. Four months after

Claire's arrival in the US, Light noticed the overgeneralized use of the classifier *go3* as a determiner before a noun as in (2):[1]

(2) *Go3 Maa1mi4 tai2 go3 syu1* (Claire 1;8)
CL mommy read CL book
"Mommy is reading a book." (Light 1977: 267)

Here, *Maa1mi4* "Mommy" does not take a classifier in Cantonese, while *syu1* "book" calls for the specific classifier *bun2*. It was noted that the prefacing of nouns with the general classifier *go3* occurred frequently for only a month or so at 1;8, coinciding with Claire's first immersion in English, and disappeared entirely in the next three months. This nontarget use of *go3* is attributed to exposure to the English article system whereby *go3* functions as a determiner. Claire also overextended the benefactive marker *bei2* "for/give":

(3) *M4goi1 nei5 cit3 bei2 ngo5* (produced during 4;0–6;6)
please you cut give me
"Please cut it up for me." (Light 1977:269)

Compare (3) with adult Cantonese (4):

(4) *M4goi1 nei5 tung4 ngo5 cit3*
please you for me cut
"Please cut it up for me."

Both the use of *bei2* "for/give" and the nontarget word order whereby the benefactive phrase [*bei2* + pronoun] occurs in postverbal rather than preverbal position are attributed to English influence, in that *bei2* "for/give" is treated as an equivalent of the English benefactive preposition *for*.

Singapore studies of Chinese–English childhood bilingualism

In a series of papers, Anna Kwan-Terry (1986, 1989, 1991, 1992) describes a longitudinal study of the Cantonese–English bilingual development of her child Elvoo growing up in a Chinese family in Singapore (3;6–5;0). The parents spoke primarily Cantonese, often code-mixed with English, while English input came from Elvoo's older sister, who went to an English school, and a Filipino maid from age 1 to 3 years. The type of English input the child was exposed to is known as Singapore Colloquial English (SCE), a variety that exhibits many language contact features, many of them attributable to Chinese influence. The areas of grammar investigated by Kwan-Terry include interrogatives, aspect

[1] The Cantonese tones are represented here using the *Jyut6ping3* system developed by the Linguistic Society of Hong Kong (2002).

marking and sentence-final particles. She found evidence of transfer from Cantonese to English in a number of areas, for example, *wh*-in-situ interrogatives where English *wh*-words were not preposed, following the Cantonese word order (Kwan-Terry 1986: 23):

(5) You are doing what? (Elvoo 3;6)
(6) This is for making what? (Elvoo 3;9)

Interestingly, when the child began to prepose *wh*-words in English, his Cantonese was affected and he produced nontarget interrogatives like the following:

(7) *Mat1je5/Bin1go3* *lei5* *zung1ji3?* (Elvoo 4;9)
what/who you like
"What/who do you like?"

In the case of yes/no questions, the child produced many English questions with *or not*:

(8) You want to go or not?
(9) Let me see you have or not?

Such sentences are apparently based on the Southern Min yes/no questions taking the form VP-Neg, reinforced by the English *or not* pattern. Since the child did not speak a Min dialect (Hokkien or Teochew) this may be a substrate feature of SCE in the adult language as acquired by the child, rather than a case of direct transfer from the child's developing Chinese grammar. Similarly, Kwan-Terry suggests that the use of Cantonese sentence-final particles in English can be attributed to exposure to SCE, since "only those particles which have been identified in Colloquial Singapore English found their way to Elvoo's English" (Kwan-Terry 1991: 181). One such Cantonese particle used in Elvoo's English is *ho2* which serves to solicit agreement and support:

(10) Patsy bad girl *ho2*. I don't like Patsy. (4;9)

Gupta (1994) provides a detailed description of four Singapore children's longitudinal development of SCE (1;3–7;8) as one of their first languages, embedded in a rich discussion of the social factors affecting children's language acquisition and language use in a multilingual environment. She discusses a number of structures in their English with a focus on interrogative constructions, including *wh*-in-situ interrogatives similar to the examples in (5–6) and polar questions with *or not* like (8–9). Gupta also identifies relative clauses with *one* as a pronominal head (11), which show the influence of southern Chinese dialects through transfer and as substrate languages:

(11) My this can change one *ah*.
"Mine is the sort that can change." (Child EB, 5;11)

Another feature described by Gupta (1994) involves conditional sentences without subordinating conjunctions, as in (12):

(12) Why I talk no sound one?
"Why is there no sound when/if I talk?" (Child YG, 3;6)

As an alternative to "bare" conditionals like (12) without any overt marking, Gupta (1994: 71) recorded instances of *then*-conditionals:

(13) Mummy, you must buy Care Bear first *leh*. Then you got ticket go and see. (Child EG, 4;3)

The development of conditionals in SCE and Singapore Colloquial Mandarin (SCM) in bilingual preschool children (2;10–6;6) is investigated by E. S. Chen (2002, 2003) in an experimental study. In elicited imitation tasks, children as young as 3 were found to have command of a range of conditional constructions. In addition to "bare" conditionals like (12), Chen identifies "head-marked" conditionals as in (14), where the child's version marks conditionality by using *then* in the main clause, rather than *if* in the subordinate clause as in the experimenter's model sentence:

(14) Experimenter: If you see Piglet, come and tell Pooh.
Child: You have see Piglet, *then* you tell Pooh. (Child YJ, 4;6)

This pattern is based on the Chinese conditional construction where a conjunction (*jiu* "then" in Mandarin) introduces the main clause, as opposed to the English "dependent-marked" pattern where *if* introduces the subordinate clause.

Hong Kong studies of Cantonese–English childhood bilingualism

Many of the features identified in Singapore bilingual children are also found in children acquiring Cantonese and English in Hong Kong. Yip and Matthews (2000), Matthews and Yip (2003), and Yip (2004) argue for syntactic transfer and a high degree of interactivity in Cantonese–English bilingual development on the basis of the Hong Kong Bilingual Child Language Corpus (1;3–4;6), deposited at the Child Language Data Exchange System (CHILDES; MacWhinney, 2000). The subjects grew up in one-parent-one-language families in Hong Kong where each parent is a native speaker of Cantonese or English. Sample transcripts are linked to digital audio and video files so that the children's speech can be heard while reading the transcripts, and the action viewed on screen. In the case of the researchers' own children, the recordings are supplemented by diary data.

Yip and Matthews (2000) document transfer from Cantonese to English in three syntactic domains in a Cantonese-dominant bilingual subject, Timmy.

Each of these Cantonese-based constructions is also found in the second bilingual subject, Sophie, who shows dominance in Cantonese over English. Our analysis shows qualitative and quantitative differences between bilingual and monolingual development as well as pervasive transfer effects in three areas of grammar which involve core contrasts between Cantonese and English:

(i) *wh*-in-situ interrogatives, where the child fails to prepose the *wh*-word:

(15) You go to the *what*?
[sitting in the car, asking Daddy] (Timmy, 2;5;14)
(16) I know, I know, I know, I know, I know
it's *where*. (Sophie, 3;3;18)

(ii) null objects, where the object of a transitive verb is omitted:

(17) You get, I eat . . .
[father takes chocolates off shelf] (Timmy, 2;2;3)
(18) Don't break!
[cautions the adult not to break a toy cup] (Sophie, 3;6;6)

(iii) prenominal relatives, where a relative clause precedes the noun it modifies:

(19) Where's the Santa Claus give me the gun?
[i.e. the gun Santa Claus gave me] (Timmy, 2;7;5)
(20) Daddy, I want ice cream. Carmen eat that one.
[i.e. the kind of ice cream Carmen is eating] (Sophie, 4;1;11)

These structures are either absent, or substantially less frequent, in monolingual data. The high frequency and protracted use of null objects in English (17–18) by the bilingual children is discussed in Yip and Matthews (2005). An account based on input ambiguity is proposed to explain why transfer from Cantonese to English occurs in this grammatical domain and why the Cantonese-based analysis is difficult to unlearn. On this account, transfer may occur when "two different grammatical hypotheses are compatible with the same surface string" (Müller, 1998: 153). In English input ambiguity exists with respect to object omissibility: verbs like *eat* appear as both transitive and intransitive, whereas there is across the board optionality in the Cantonese input where all transitive verbs can appear with or without an object, as long as it is licensed by a topic which may be overt or null.

The English prenominal relatives (19–20) are another striking instance of transfer from Cantonese, rather unexpected to the extent that SVO languages generally have postnominal relatives (where the relative clause follows the noun it modifies) and Chinese languages are typologically exceptional in employing prenominal relatives. Moreover, prenominal relatives in an SVO sentence are predicted to incur a processing cost. Matthews and Yip (2003) discuss this case of transfer in relation to typological universals and processing factors. The fact

that object relatives of the type seen in (19–20) share the word order of a main clause may facilitate their early development and transfer to English. In a subsequent stage of development, postnominal relatives emerge with resumptive pronouns as in (21):

(21) I got that red flower dress that Jan give *it* to me. (Sophie, 4;10;28)

This type is treated as a universal developmental strategy rather than the result of transfer.

While the influence of Cantonese on English is strong due to the overall dominance of Cantonese over English in both bilingual children, the crosslinguistic influence should not be taken as unidirectional. Nontarget structures in Cantonese which may reflect English influence include postverbal prepositional phrases and verb–particle constructions (Yip & Matthews, 2000: 206). Another area where English influence on Cantonese may be implicated involves the word order in double-object constructions with *bei2* "give":

(22) *Bei2 keoi5 zyu1gu1lik1 laa1*
give him chocolate PRT
"Give him chocolate." (Timmy, 2;7;4)

(23) *Je4sou1 bei2 ngo5 cin2 aa3*
Jesus give me money PRT
"Jesus gave me money." (Sophie, 2;5;2)

These structures with the order Verb – Indirect Object – Direct Object [V IO DO] deviate from the usual adult order [V DO IO]. Chan (2003) investigated the use of the same nonadult word order in monolingual Cantonese children and found that the recipient NP often precedes the theme NP, as in (22–23). Although not the canonical order of double-object constructions with *bei2* "give," there is a precedent for this in adult Cantonese: the order [V IO DO] does occur as an alternative order, especially when the indirect object is a heavy NP (Matthews & Yip, 1994: 137). There is thus some ambiguity in the input which makes the target [V DO IO] structure inherently difficult for both monolingual and bilingual children. In the bilingual subjects' Cantonese, however, the structure persists until age 6 and beyond, apparently due to the influence of English which instantiates the [V IO DO] order.

To summarize, the influence of English, the nondominant language, on Cantonese, the dominant language, is relatively subtle, primarily affecting the frequency or productivity of structures for which there is already a precedent in Cantonese. This is in contrast to the influence of Cantonese on English, which is immediately striking, as in the case of *wh*-in-situ (15–16) and prenominal relatives (19–20), for which there is no precedent in English. Nevertheless, the possibility of bidirectional influence argues for a high degree of interaction between the two developing grammars. It is anticipated that the investigation of

the reverse dominance patterns, i.e. children for whom English is the dominant language, might produce contrasting results.

A further issue involves how and when nontarget structures are unlearned by bilingual children. Since many studies end long before the subjects have attained adult competence, the details regarding the resolution of nontarget structures remain largely unknown. For example, unlearning of transfer-based structures in bilingual acquisition may take a long time. Whereas some transfer-based structures such as *wh*-in-situ interrogatives and pronominal relatives gradually resolve themselves between ages 3 and 4 (Yip & Matthews, 2000: 207), null objects remain recalcitrant, persisting for a protracted period. The null objects are still observed in the Cantonese–English bilingual subjects at age 6. The difficulty of unlearning them can be attributed to the interplay of the ambiguity in the dual input in their environment and the continued dominance of Cantonese over English (Yip & Matthews, 2005). In the case of adult Chinese learners of English, it has also been noted that null objects are more difficult to unlearn than null subjects (Yip, 1995; Yuan, 1997). Exactly when, how, and to what extent the bilingual subjects overcome this challenge remains a question for further investigation.

Taken together, the data from simultaneous development of Cantonese and English provide compelling evidence for the following hypotheses concerning early bilingual development:

- There is considerable room for crosslinguistic influence and a high degree of interactivity between the two linguistic systems in the bilingual child's mind (Döpke, 2000).
- There are principles determining the direction of transfer and mechanisms which account for how it takes place: these include language dominance and input ambiguity.

What the above-mentioned studies have in common is that influence from one language, usually the dominant language, is found in the other language. However, it should be noted that crosslinguistic influence is not unidirectional, solely determined by language dominance; in some cases influence goes in the other direction, from the nondominant to the dominant language, for reasons of input ambiguity (Müller, 1998).

Bilingual acquisition and language contact

The case studies of bilingual acquisition at the level of individual bilingualism can also be investigated in connection with the processes and mechanisms of language contact at the societal level. Yip and Matthews (in preparation) view individual-level transfer effects as one mechanism by which structural influence takes place on a community level. The developmental patterns in the bilingual individuals under investigation parallel and reflect prominent features

in contact languages such as Singapore Colloquial English (SCE), spoken by a community of adult bilingual speakers. Grammatical features of English which reflect contact with Chinese at both individual and societal levels include relative clauses with *one* as the pronominal head (11), conditional constructions (13–14) and *wh*-in-situ interrogatives (15–16). This comparison in turn sheds light on the processes and mechanisms of language contact.

Another example involves the process of grammaticalization whereby content words take on a grammatical function, such as passive marking. Our bilingual subject constructs a clause with the verb *give* in a passive function:

(24) Here is give Timmy scratch.
[points to scratched leg] (Sophie, 3;6)

This is the result of transferring a Cantonese structure in which the verb *bei2* "give" serves to introduce the agent in a passive construction, as seen in (25):

(25) *bei2* *Pat-Pat* *laau6* *gaa3*
give Patrick scold PRT
"(You'll) get scolded by (Uncle) Patrick." (Sophie, 2;8)

The result is remarkably similar to a passive structure widespread in SCE, as in (26) which is based on a similar structure in Hokkien (Bao & Wee, 1999):

(26) John give his boss scold.

Bilingual development is thus one mechanism by which substrate influence can enter a contact language such as SCE. At the individual level, what develops in a matter of a few years in the development of the bilingual children's English is shown to bear similarities to what takes a generation to develop as a distinct variety of English in a community. Extending the scope of the findings beyond the field of bilingual development, the case study of bilingual development serves to illustrate how mechanisms of transfer at the individual level find their expression at the societal level. The study of bilingual development is thus linked up with the study of language contact.

Conclusions and future studies

The study of bilingual acquisition will continue to address central issues of interest to the field of language acquisition at large: the relative contributions of the child's innate capacity for language and general cognitive development, the input properties of each language in the child's environment, and the complex interplay between these factors in the course of bilingual development. Other general questions for future studies include: how do different dominance patterns shape the development of the two languages in different language pairs? What are the effects of factors such as age of first exposure, imbalance,

interruption or temporary deprivation of input? What are the qualitative and quantitative differences between bilingual and monolingual acquisition? In what way is the simultaneous acquisition of two languages similar to and different from the successive acquisition of two languages in childhood? To what extent is the difference between the bilingual child's dominant and nondominant languages of a similar magnitude to that between a first and second language in early child second language acquisition?

Apart from longitudinal corpus data based on case studies, experimental data are called for to investigate unexplored territory in bilingual acquisition in terms of language perception, production, and comprehension. Studies of language differentiation in phonology, in terms of segmental and suprasegmental features (including tone and prosody), are especially lacking compared to the growing research in the study of development of bilingual lexicon and syntax. The acquisition of tone in bilingual children is one area where studies of Chinese can contribute to the overall understanding of bilingual development (see Wang, Sereno & Jongman, this volume, for a discussion of second language acquisition of Mandarin tone). Another area of research that is unique to bilingual contexts and which awaits investigation in the Chinese context involves bilingual children's code-mixing patterns (Lanza, 1997) and the emergence of structural constraints governing early code-mixing (Paradis, Nicoladis & Genesee, 2000).

More studies investigating childhood bilingualism, pairing a Chinese language with a language other than English, will be important in extending the empirical database and addressing theoretical issues related to language contact and crosslinguistic interaction. Childhood bilingualism will be better understood when investigated against a rich background of linguistic diversity involving a Chinese language and other Asian languages.