

Acquisition of Wh-questions by a Cantonese-English Bilingual Child

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ABSTRACT

ACQUISITION OF *WH*-QUESTIONS BY A CANTONESE-ENGLISH BILINGUAL CHILD

This thesis investigates how a Cantonese – English bilingual child acquires *wh*-questions in the two languages. The two fundamental issues addressed are: (1) whether two grammars develop autonomously in the sense that two language systems are constructed separately, each resembling that developed by monolingual children or whether there is interdependent development of two language systems whereby one system interacts with the other, resulting in a different picture of development. (2) what is the directionality of influence if interaction between the two language systems exists?

Cantonese differs greatly from English with respect to the formation of *wh*-questions. While [+movement] is part of the core grammar in English, there is no movement of *wh*-words to the initial position of an interrogative sentence in Cantonese. This makes the combination of this language pair very revealing with regard to whether there is autonomous or interdependent development of two grammars in the bilingual child.

Radford (1996)'s structure-building model is assumed to account for the development of *wh*-questions in both monolingual children and the bilingual child. On Radford's view, syntactic structures are projections of the lexical items they contain. Children will build up their clausal structure in a stepwise manner from VP to IP to CP based on the lexical items they have acquired. The development of *wh*-questions in the bilingual child has been observed between the age range of 1;05-3;06. Several aspects concerning the acquisition of *wh*-questions, such as acquisition order, placement of *wh*-expressions and subject-auxiliary inversion in *wh*-questions are studied in detail. Monolingual data are drawn on wherever possible for comparison with the data from the bilingual child. It has been found that while the bilingual child's development of *wh*-questions in Cantonese is on a par with that monolingual children, placement of *wh*-expressions in his English shows Cantonese-based pattern.

Based on findings of this longitudinal study we argue that one developing stage can be identified where *wh*-questions produced by the child reveal systematic influence coming from Cantonese with many cases of *wh*-words remaining in-situ. The direction of influence goes from the dominant language to the less dominant one. This result lends strong support to the interdependent development hypothesis.

論文摘要

雙語兒童(粵語-英語)特殊疑問句的獲得(個案分析)

本論文研究雙語兒童(粵語-英語)獲得粵語及英語特殊疑問句的情況。其中兩個基本的研究問題是：(1)究竟兩套語法是否獨立形成與發展，即這兩套語法是否在互不影響的情況下建立起來，而如此建立的兩套語法其實質無異於單語兒童所建立的語法；還是說這兩套語法互動發展，由此形成的語法則異於單語兒童所建立的語法。(2)是否存在從強勢語到弱勢語的轉移現象。

粵語的特殊疑問句有別於英語的特殊疑問句。在英語中特殊疑問詞需移至句首，這是該語法必不可少的一部分；但在粵語中，特殊疑問詞則無需移至句首。兩者的差異使得將這兩種語言結合來進行的研究具有特殊的意義，因為它可幫助我們了解雙語兒童的語法到底是獨立發展還是兩套語法互動發展。

本文使用Radford(1996)的結構建立模式來解釋單語及雙語兒童特殊疑問句的發展。Radford認為句法結構是每個句子中所包含的詞彙的投射。兒童的句子結構投射亦是基於他們所獲得的詞彙，並以循序漸進的方式從VP擴展至IP，再從IP擴展至CP。我們對一名粵語-英語雙語兒童的特殊疑問句的發展進行了長期跟蹤，跨越年齡段為1;05-3;06。調查重點放在與特殊疑問句發展相關的幾個方面，如：特殊疑問詞獲得順序，特殊疑問詞的位置以及特殊疑問句中主語-助動詞倒裝的情況，並引用有關單語兒童特殊疑問句發展的研究數據對所得數據進行對比分析。分析結果表明該雙語兒童粵語特殊疑問句的發展同單語兒童特殊疑問句的發展過程一致。但其英語特殊疑問詞所置放的位置卻受到粵語特殊疑問詞的位置的影響。

基於這一長期跟蹤調查的研究結果，我們認為在雙語兒童的特殊疑問句的發展過程中由於英語的特殊疑問句在一段時間內受到了粵語特殊疑問句的影響，從而出現了許多特殊疑問詞留在原位的情況。影響的方向是強勢語影響弱勢語。該結果明確支持兩套語法互動發展這一假設。

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Abbreviation:

ASP – aspectual marker

CL – classifier

SFP – sentence final particle

NOM – nominalizer

(Age) e.g. 3;04;05 is read as: 3 yrs 4 mths 5 days

Chapter 1

INTRODUCTION AND THEORETICAL CONSIDERATIONS

The present study is conducted in order to gain a better understanding of the controversial issue of how bilingual children develop grammar in two distinct languages, viz. Cantonese and English. It is based on the data from a longitudinal project by Matthews, Yip and Huang (1994), investigating the development of Cantonese-English bilingual competence in Hong Kong children. The specific research question addressed here is whether two language systems develop autonomously and independently or whether they develop interdependently if bilingual children approach two languages with two language systems (De Houwer 1990, Genesee 1995, Koppe 1996, Gawlitzek-Maiwald & Tracy 1996, Dopke 1997).

1.1 One unitary language system or two separate language systems?

In the field of bilingual first language acquisition, a considerable body of research has been done investigating how bilingual children acquire both languages simultaneously as first languages (Leopold 1939-49, Kessler 1971, Padilla & Liebman 1975, Bergman 1976, Volterra & Taeschner 1978, Redlinger & Park 1980, Grosjean 1982, McLaughlin 1984, Kwan-Terry 1986, Meisel 1989, De Houwer 1990, Heijden & Verhoeven 1994, Paradis & Genesee 1996, Koppe 1996, etc.).¹ Under this general

¹ The term 'bilingual first language acquisition' (henceforth BFLA) was proposed by De Houwer (1990) in lieu of the term 'simultaneous acquisition of two languages' as suggested by McLaughlin (1978). McLaughlin used the term to refer to the situation when a child is exposed to two languages before the child is three years old. As long as the child receives input from two languages before he reaches three, he counts as acquiring two languages simultaneously. Nevertheless, the rationale behind his classification is questioned by researchers like Meisel (1990) and De Houwer (1990) for its arbitrariness. Moreover, the meaning of 'simultaneous bilingual acquisition' varies with different authors. As was pointed out by De Houwer (1990:3), "it is not at all clear whether the child was exposed to these languages very soon after birth, or came into contact with a second language some time between birth and age three". To avoid confusion, De Houwer suggested using BFLA to refer to "those

topic, one relevant question being raised is: do bilingual children start acquisition of both languages with one unitary language system or with two separate language systems?

One school hypothesizes that bilingual children start acquisition of both languages with one unitary language system. Several labels are used by researchers such as mish-mash hypothesis (Bergman 1976), one-system theory (Redlinger & Park 1980), one unitary language system (Genesee 1989) or fusion hypothesis (Koppe 1996) to refer to the situation where bilingual children do not make a differentiation of two language systems. In other words, these terms suggest that the internalized language system in a bilingual child at some stage is a hybrid one.

The proponents of this approach have tried to find support from the prevalent phenomena of code-mixing in early bilinguals. 'Code-mixing' refers to the "instances where the speaker violates the constraints on code-switching that normally govern the linguistic behavior of the bilingual community. These constraints can be defined in terms of grammar, discourse organization, or social rules" (Meisel 1994: 414). In other words, code-mixing refers to the cases where speakers freely mix linguistic elements from one language with those from the other in the same utterance without observing specific sociolinguistic and grammatical constraints. It includes the instances of mixing codes from either language in a single utterance or across utterances. In other words, both intra-utterance and inter-utterance mixing of codes which do not observe either grammatical rules or rules for language use are manifestations of code-mixing. Based on a day-to-day observation of his own daughter's language development of both English and German, Leopold (1939-49) noted that during the first two years, the child simply combined two linguistic codes

situations in which (a) a child is first exposed to language B no later than a week after he or she was first exposed to language A, and (b) a child's exposure to languages A and B is fairly regular, i.e. the child is addressed in both languages almost every day up to the time of observation, but allowing for brief interludes in which such regular exposure was absent" (p.3-4). De Houwer's definition will be adopted

into one system either at phonological level or at syntactic level. This led him to the conclusion that "looking back, I think I have given a picture of a mixed language, particularly during the preliminary stage when the child was still trying to build up a unified language system out of the double model." (1954:32). This assumption also finds support in Swain's work (1977, cited in Beardsmore 1986) in which pre-school children learning French and English were found to use one set of rules to encode both languages. In another case study of German-Italian speaking bilingual children, Volterra & Taeschner (1978) suggested a three-stage model with the evidence they had gleaned from the acquisition of Italian and German by two bilingual children. They observed that at ST1(Stage I), the children had only one set of lexical items from both languages. This coincided with the one-word stage. At Stage II, syntax came into play when the children tried to string two or more words together. At this time, the children might be aware of separate lexicons in two languages, but they still used one set of syntactic rules for two languages. It was only at Stage III (at around 2;09) that the children had two differentiated sets of lexicon and syntactic rules at their disposal.

Nevertheless, the one language system hypothesis has been widely challenged both for the logic underlying the hypothesis and for its research methodology. The claim of a hybrid language system is mainly based on the phenomenon of code-mixing by bilingual children. However, the question of "whether code-mixing is a valid measure of an underlying unitary system" (Paradis & Genesee 1996) calls for further investigation. As is pointed out by the above researchers, pragmatic or sociolinguistic knowledge also determines the presence or absence of code-mixing. Thus it is premature to draw any conclusion about bilingual children's grammatical competence without considering the development of their pragmatic competence. Bilingual children's inadequate sociolinguistic knowledge might be responsible for code-mixing, e.g. bilingual children may have not developed such knowledge as to tell him when to use one language in a context where the use of the other language would be inappropriate; or the children might lack the kind of grammatical knowledge necessary

as the working definition for this study.

for successful code-switching (Meisel 1994).² Another possible cause of code-mixing involves the language input bilingual children receive. If the input bilingual children get is mixed in nature, it will not be surprising to find mixing in the children's production. McLaughlin (1984) points out: "When the languages are mixed by adult speakers, or when one language becomes dominant, one finds more mixing in the child's speech" (p. 27). The same view is voiced by Padilla & Liebman (1975), who also argued that caretakers' language mixing might lead to the occurrence of this phenomenon among children. In addition, Genesee et al. (1995) also severely criticize the practice of basing one's conclusion only on "single examples of switching to the appropriate language of the interlocutor, isolated examples of mixing in specific contexts, or overall rates of mixing without regard to context".

Due to all these flaws found in the previous mentioned studies, many researchers cast doubt on the view of single language system. A study conducted by De Houwer (1990) of a Dutch-English bilingual child Kate reveals that the child's morphosyntactic knowledge not only develops along two separate language systems but is also used in a language-specific manner. This leads the author to make a strong claim that "the Separate Development Hypothesis accurately describes a major part of Kate's bilingual acquisition process" (1990:338-339). The Separate Development Hypothesis, in De Houwer's sense, assumes that "a bilingual child's morphosyntactic development proceeds along separate lines for each of the child's languages. Thus, the child's languages are seen as constituting largely self-contained systems" (1990:6). Her view of two differentiated language systems in bilingual children is corroborated by the research done by both Genesee et al (1995) and Koppe (1996). According to Genesee et al (p. 612), "evidence that bilingual children in the early stage of development use each language predominantly with speakers of that language, independent of their rates of mixing, would attest to their ability to differentiate between their languages." They

² Code-switching refers to "the bilingual's ability to select the language according to the interlocutor, the situational context, etc." (Meisel 1989:13). Beardsmore (1986) argues that code-switching operates at the level of consciousness, for code-switching observes both grammatical and sociolinguistic constraints.

have studied five French-English children in the age group of 1;10 to 2;2 with their MLU ranging from 1.23 to 2.08. By examining children's use of language in the following situation: (1) when they are with either one of their parents who spoke a distinct language from the other; (2) when they are with both of their parents together, they find that "bilingual children between the one- and two-word stage are able to differentiate their languages. Even the most dominant children we observed were able to use the relatively limited skills developed in their non-dominant languages selectively with the appropriate parent." (op cit:627). A study by Koppe (1996) has again lent strong support to the separate language system hypothesis. The researcher notes that structures found in the utterances of three German-French bilingual children exhibit the word order of the context language, i.e. the children know whether they should combine the verb and object in an OV order which is allowed in German or in a VO order which is the canonical word order for French declarative sentences. Since word order typically belongs to language-specific knowledge, the evidence suggests that there is separate development of two language systems in bilingual children. Furthermore, even in the case of code-mixing, "the children show that they are well aware of the fact that the mixed word belongs to a different linguistic context. Their awareness of lexical mixing is illustrated by hesitations... or by self-correction... and metalinguistic comments." (Koppe 1996:948).

Obviously the majority of researchers working in the field of bilingualism now concur with the proponents of distinct language systems in bilinguals from early on. When studying the development of the main clauses and infinitival constructions of a German-English bilingual, Gawlitzek-Maiwald & Tracy (1996) observe that "there is strong evidence that at least by the time the data collection started (at 2;1), the child is on two syntactically differentiated tracks" (1996: 908). Nevertheless, they also note that there was frequent occurrence of mixed utterances which fall into two groups. One group is featured by lexically mixed structures and the other appears to be translated versions using word order from the other language. Since the data strongly suggest that both language systems are highly activated, they come to the conclusion that the mixed utterances are not a reflection of a fused system, but rather of the child's

"respective language competencies in both languages" (op cit:920). "The mixtures show that the child can pool her resources in a constructive way: as a temporary gap-filling or placeholder strategy" (op.cit. 908). They name this "bilingual bootstrapping" (op.cit. 903). The phenomenon of "something that has been acquired in language A fulfils a booster function for language B" (op.cit 903) is also termed 'activation' (Hulk & van der Linden 1996, Yip & Matthews 1997). When studying a Cantonese/English child's language production data, Yip & Matthews (1997) noticed the prevalent use of null object in English by the bilingual child. This cannot be counted straightforwardly as transfer for null object can also be found in monolingual English data. Nevertheless it does not occur at such a high rate in monolingual data. Thus it is suspected that Cantonese 'activates' the frequent use of the infrequent occurrence of null object in the bilingual child's English. In other words, bilingual bootstrapping has taken place and pushes up the use of null objects in English which is a recessive (i.e. less dominant) language compared with the other language the child is acquiring.

1.2 The autonomous development hypothesis vs. the interdependent development hypothesis

If we accept the assumption that the development of grammatical knowledge in bilingual children is along two separate tracks, one inextricable question is whether two grammars develop autonomously in the sense that two language systems are constructed separately, each resembling that developed by monolinguals, or whether there is interdependent development of two language systems whereby one system interacts with the other, resulting in a different picture of development. Again opinions differ with respect to this point on how the two language systems develop.

A widely accepted view holds that the core principles at work during the process of natural language acquisition must be the same for both monolinguals and bilingual children. Nevertheless we have to recognize the essential difference between a bilingual and a monolingual child, i.e. a bilingual child is exposed to two sets of input

at the same time and he has the additional task of making a distinction between the two language systems. If so, is there any interaction between the two language systems in the development of bilingual competence? A considerable body of research has touched upon this issue by studying this dynamic developmental process via longitudinal studies addressing whether there is interaction of two grammars in bilingual children (Weinreich 1968, Bergman 1976, McLaughlin 1984, Beardsmore 1986, Paradis & Genesee 1996).

One view concerning bilingual acquisition of grammar assumes that the acquisition of two languages proceeds concurrently so that the two languages, like two straight lines, never intersect with each other. If we espouse this view that bilingual children develop their two grammars separately or autonomously, the consequence we predict is that the two grammars built by those children will each resemble that developed by monolingual children.

Evidence supporting the argument of autonomous development of two grammars comes from the research by Ronjat (1913), who found that the development of the two languages in his bilingual child Louis who was observed during the period of 0;08 – 4;06 paralleled each other with differences only in the choice of different codes in different domains of language use (e.g. French for technology and German for literature).

Meisel (1989) reached a similar conclusion after studying two French-German bilingual children. The two domains he looked at were word order and subject-verb agreement. It was reported that “bilingual children use different word order sequence in both languages as soon as they begin to produce multi-word utterances” (p.28). Moreover, morphologically, “both children make almost no errors in person marking on verbs” (p. 32). Thus he remarked that bilingual children seem to be very consistent in using language-specific syntactic constructions and approach the two languages with two separate grammars “without going through a phase of confusion” (p. 35).

Additional evidence from De Houwer's study conducted in 1990 also supports this hypothesis. In studying the morphosyntactic development in an English-Dutch bilingual child Kate within the age range of 2;07 - 3;04, it is noted that "Kate's two languages at the time of investigation constituted two distinct, structurally closed sets. There was no evidence of structures, patterns or rules of the one language being applied to the other" (1994:41). Findings reported by Heijden & Verhoeven's (1994) study echo De Houwer's view. It is reported that evidence of transfer could hardly be found at both lexical level and morphosyntactic level of the languages developed by Turkish - Dutch bilingual children. A more recent study conducted by Mishina (1997) on language separation in early Japanese-English bilingual children provides support for the autonomous development hypothesis as well. The investigator examined the development of morphosyntactic devices of past tense marking, negation and question formation in two Japanese-English bilingual children between the age range of 1;11-3;03. It is found that "In all three morphosyntactic systems examined, little interaction between Japanese and English was found in either child's data, indicating that the two grammatical systems seem to develop separately, in a language-specific manner" (p. 85)

Paradis and Genesee's (1996) study lends further credence to the autonomous development hypothesis. They compared the syntactic development of 3 English/French bilingual children within the age range of 1;11-3;03 with data in Depez and Pierce's (1993, 1994) study on the development of finiteness of verb, negation and distribution of pronominal subjects in monolingual French and English children. The result of Depez and Pierce's study showed that very early on French-speaking children had acquired the use of finiteness, the correct position of negator and distribution restriction on weak and strong form of pronominal subjects. Since these three aspects were different manifestations of INFL properties in French, they concluded that "French children acquire the properties of INFL earlier than English children do" (p. 7). Drawing on this finding, it was hypothesized that if two languages interact with each other, the bilinguals' English should be influenced to the extent that there was a higher frequency of occurrence of finite verbs. By the same token, since English has no

distribution constraint on pronominals, this might “influence the children to treat French clitic pronouns similarly, resulting in their appearance with nonfinite verbs in French”-(p.8). The result of their careful comparison between bilingual children and monolingual French and English children showed that their null hypothesis was not supported. Acquiring French simultaneously with English did not accelerate the use of finiteness in English. The presence of postverbal negator in French did not lead to occurrence of postverbal negator in English. In addition, children seem to be aware that French pronominal subjects are clitics and the English ones are not. These findings are taken to be strong support to the claim that two grammars in bilingual children develop autonomously.

Though there is copious evidence which points to the possibility that two grammars in a bilingual child may develop in an independent way, other studies seem to contradict these findings. Instead of showing autonomous development of two distinct language systems, results coming out of these studies suggest interactive development of two grammars in bilingual children. These empirical data lead to the view that during the process of acquisition, the two grammars being constructed by bilingual children interact with each other, hence the interdependence hypothesis. Interdependence is defined by Paradis & Genesee (1996) as “the systemic influence of the grammar of one language on the grammar of the other language during acquisition, causing difference in a bilingual’s patterns and rates of development in comparison with a monolingual’s” (1996:3) ‘Systemic influence’ reflects the prolonged influence of one grammar on the other.

Interdependence may be manifested in the form of transfer of a grammatical property from one language to the other. For instance, in her study of acquisition by an English/Cantonese bilingual child raised in Singapore within the age range of 3;06-5;00, Kwan-Terry (1986) observed some intriguing phenomena regarding the development of properties of *wh*-questions. While the child’s *wh*-questions in Cantonese resembled those produced by monolingual Cantonese-speaking children, the *wh*-expressions in some English *wh*-questions remained in the base-generated positions and were not

productively preposed until nearly one year after the taping began.

(1) You are doing what? (3;06;00)

This is for making what? (3;09;00) (p. 23)

Interestingly, by the time the child began to prepose *wh*-expressions in his English *wh*-questions, his Cantonese *wh*-questions began to be affected. He started to prepose some of the Cantonese *wh*-expressions inappropriately, which were never found in monolingual Cantonese-speaking children's utterances.

(2) *mat1je5 nei5 zung1ji3? (4;09)

What you like

'what do you like?'

cf. adult Cantonese: nei5 zung1ji3 mat1je5?

(3) *mat1je5 hai6 li1go3? (4;10)

What is this

'what is this?'

cf. adult Cantonese: li1go3 hai2 mat1je5?

Kwan-Terry concluded that transfer took place during the process of simultaneous acquisition of the two languages.

Interdependence may also appear in the form of acceleration, i.e. earlier emergence of certain property in the grammar compared with that in monolingual acquisition, or in the form of delay which means just the opposite to 'acceleration', i.e. later emergence of certain property in the grammar compared with that in monolingual acquisition. In the case of acceleration, for example, the structure of topicalization may appear earlier in English for a Chinese-English bilingual child because in Chinese topicalization is an oft-used structure. In the case of delay, 'the burden of acquiring two languages could slow down the acquisition process in bilinguals, causing them to be behind monolinguals in their overall progress in grammatical development' (Paradis & Genesee 1996:3). The language development of a Finnish-Swedish bilingual child in Skutnabb-Kangas's (1978 cited in McLaughlin 1984) study represents an extreme

case of this phenomenon. By the age of five, “he couldn’t count to more than three in any language, after that he said: many. He didn’t know the names of most of the things around him, either at the day care centre or outside (I often took him out and downtown for walks) in any language. In Finnish he used only present tense, in Swedish present and past...” (Skutnabb-Kangas, 1978:224). The child’s language acquisition is so much slower compared with monolinguals’ development that it is regarded as an extreme case of language delay.

Dopke (1997) studied early bilingual development of 3 German/English bilingual children living in Australia. The difference between German and English can be illustrated by the relative position of heads and complements within phrases. While English is a head-first language, German is a head-final language. In addition, German finite verbs undergo double raising from V to I, from I to C. In this study, Dopke divided the developmental stages into five phases on the basis of mean length of utterances (MLU). Evidence showed that from the start the children could correctly set the parameter of head position in both languages. Interestingly, from the third phase on, while the children’s English followed the same pattern as those of monolingual English-speaking children concerning the elements around VP, their German structures were affected by English and resembled their English counterparts. They allowed verbs to be fronted irrespective of their finiteness, which was not found in monolingual German-speaking children. They also overgeneralized the use of topicalisation in their English, which, Dopke posited, might be due to their exposure to German in which topicalisation is obligatory. Obviously the existence of what Dopke called “crosslinguistic structures” is not congruent with Paradis and Genesee’s findings.

Yip and Matthews (1997) took up the same topic by looking into a Cantonese-English bilingual child’s development of *wh*-questions, existential construction, topicalisation, pseudo-tough movement and prenominal relative clauses during the period of 1;05-3;05.³ The evidence they adduced strongly suggested the existence of

³ We are using the same child’s longitudinal data for the present study.

transfer in several grammatical structures from the dominant language to the recessive language. They found, for instance, that there was a stage whereby most of the *wh*-expressions in the child's English *wh*-questions remain in-situ, taking the position of their counterparts in Cantonese.

(4) The snail why live in the water? (3;04)

Relative clauses, which should follow the noun being modified in VO languages, precede the noun.

(5) You buy that tape is English? (2;10)

This led them to a strong claim that "This relative clause structure must involve transfer because it is so highly marked in a universal sense: Sinitic languages represent the only known counterexamples to the generalization that relative clauses follow the noun in VO languages."

Why should findings from different studies differ so greatly? Genesee (1996) in his evaluation of potential manifestations of interdependence suggests that "transfer is most likely to occur if the child has reached a more advanced level of syntactic complexity in one language than in the other" and that it may be due to the fact that "the bilingual child is more dominant in one of his or her languages" (1996:3). In other words, the autonomous development hypothesis may be more applicable only to balanced bilingual children whose language development does not exhibit a clear pattern of dominance.

1.3 Language dominance

Under Genesee's explanation, it is important to determine whether the bilingual child is dominant in one language or not. Some measures of language dominance have been suggested by those working in the field of bilingualism and are listed below:

(1) MLU in each language (De Houwer 1990): as far as MLU of the bilingual files is concerned, when the MLU generated based on the data in Language A is greater than MLU generated based on the data in Language B, it is argued that Language A is developing faster than Language B and that the bilingual child is Language A

dominant. MLU can be measured on the basis of syllables, morphemes or words. Which language units should be used as counting units depends on how well the units chosen can reflect syntactic development of the language under investigation. In Cantonese, for example, each syllable may be a meaningful form. Using syllables as counting units in calculating MLU may reflect children's lexical development but it may not necessarily indicate children's grammatical development. Both 'fo2ce1' ('train') and 'tai2 syu1' ('read') contain two syllables, but 'tai2 syu1' which involves a structure of VP+Complement is syntactically more complex than 'fo2ce1' which is only a NP. Thus units other than syllables should be considered when computing MLU in Cantonese.

- (2) the amount of each language a child uses to interact with his parents (Dopke 1992)
- (3) a bilingual child's preference for a language given the same topic and situation (Saunders 1988)
- (4) syntactic complexity (Yip & Matthews 1997): if derivation of Sentence A involves more syntactic operations than derivation of Sentence B, A is thought to be syntactically more complex than B. In this sense, sentences involving movement are considered to be more complex than sentences not involving any movement. By the same token, long distance movement is more complex than short distance movement, for more operations are called for. According to Hoffman (1991), if Language A is characterized by using more complex syntactic structures to encode meanings than Language B, we can predict that Language B is acquired earlier than Language A because of the greater syntactic complexity involved in Language A. This gives rise to the possibility that at least for a certain period of time one language may develop faster in bilingual children and becomes a 'stronger language' while the other one becomes a 'weaker language' in the sense of Schlyter (1993). Or, in our terminology, one becomes a 'dominant language', and the other 'recessive language'.
- (5) the input the child obtains from his parents and care-takers may be one factor determining the degree of language balance and language dominance: Yip & Matthews (1997) propose that the more input a bilingual child obtains from one language, the more dominant that child will be in that language. Going over the

studies previously reviewed we may notice that this prediction gets support from empirical evidence.

A bilingual child may receive almost the same amount of language input for the two languages. It is under this circumstance that the child is most likely to develop balanced bilingual competence in both languages without any pattern of interdependence, as is pointed out by Genesee (1996). Louis in Ronjat's (1913) study grew up in a bilingual home environment in the strict sense: ever since the child was born, each of the parents would converse with the child using his/her native tongue. The practice of Ronjat was later known as the one parent - one language approach. De Houwer also remarked that her subject Kate received balanced language input for both languages:

“Whereas the ‘street environment’ was Dutch speaking, Kate had a lot of contact with English outside the home through a thriving English speaking community which included a church, a play-group and a small school, all of which Kate visited regularly. All in all, the amount of Dutch and English that Kate heard from the various people around her was fairly balanced for both languages.” (1994:39)

Bergman, who was among the first researchers to propose the Independent Development Hypothesis (IDH),⁴ emphasized the importance of input as well:

“The development of proficiency in either language is limited only to the extent to which that language is used in the environment of the child, e.g. the total number of hours that the child is exposed to the language and the domain of use of that language in the environment of the child.” (1976:88)

McLaughlin also pointed out that “research on early bilingualism suggests that language learning is a process that is greatly influenced by the conditions of language presentation to which the child is exposed. If the child experiences a rich and balanced language environment, the child will develop verbal proficiency in both

⁴ It is an alternative label for the Autonomous Development Hypothesis proposed by Paradis & Genesee (1996). Readers are referred to Section 1.2 for the details of this hypothesis.

languages” (1984:31).

On the other hand, a bilingual child may get comparatively more input from one language than from the other. The three bilingual German-English children in Dopke’s study lived in Australia. Though the parents all claimed to uphold the ‘one parent-one language’ principle at home, the macro-language-environment was English dominant. English was heard from both the children’s father and from “nearly everyone else in their environment, from birth on.” In addition, “the language of communication between the parents is English in each family” (1997:99). It is in this study that Dopke reported instances of cross-linguistic structures. The subject in Yip & Matthews’s (1997) study, the same in the present study, also received unbalanced language exposure: the subject was exposed to one language more often than to another. Again evidence of transfer was reported by Yip and Matthews when analyzing the development of some grammatical structures in their bilingual subject. The issue of language dominance will be addressed again in Section 3.1.3 when we talk about bilingual development in a Cantonese-English child.

In sum, the above studies suggest that there is evidence for both autonomous and interdependent development of two grammars in bilingual children. The issue is still an open one. Obviously, more in-depth studies of development of various aspects of grammar in bilingual children speaking different languages in different acquisition environments are called for in order to have a better understanding of this issue.

1.4 The research goal and outline of the thesis

The present study which also aims at a better understanding of the controversial issue of how bilingual children develop grammar in Cantonese and English addresses the two hypotheses: (i) autonomous development hypothesis, (ii) interdependent development hypothesis in order to see which hypothesis is borne out. The autonomous development hypothesis assumes that the development of two grammars in a bilingual child is along two separate tracks, each resembling that developed in

monolingual children. On the other hand, the interdependent hypothesis posits that during the process of developing two grammars in a bilingual child, the two language systems interact with each other, hence the interdependence between them.

To test which hypothesis is substantiated, we focus on the acquisition of one aspect of grammar, i.e. *wh*-questions, by a Cantonese-English (C/E) bilingual child. The reason we choose *wh*-questions as our topic of investigation is that at the level of syntax, Cantonese differs greatly from English with respect to the formation of *wh*-questions. While moving *wh*-expressions to the initial position of an interrogative sentence is part of the core grammar in a language like English, *wh*-expressions do not undergo overt movement in an interrogative sentence in Cantonese. The difference between English and Cantonese is sometimes expressed by saying that English is with overt *wh*-movement, whereas in Cantonese *wh*-expressions do not undergo any syntactic movement. In other words, Cantonese is a *wh*-in-situ language. This makes the combination of languages very revealing in addressing the controversial issue of how bilingual children develop the two language systems. It is predicted that if the autonomous development hypothesis is corroborated, *wh*-questions in each language constructed by the C/E bilingual child will resemble those produced by monolingual children. On the other hand, if the interdependent development hypothesis is supported, one developing stage is expected when *wh*-questions constructed by the C/E bilingual child will reveal systematic influence on one language by the other. The direction of influence will go from the dominant language to the less dominant one.

The significance of the present study is twofold. Firstly, a systematic study of a bilingual child's acquisition of a certain aspect of grammar in both languages gives us a window into the processes of bilingual development in general. The findings enable us to address issues such as autonomous vs. interdependent development. Secondly, the present study focuses on the acquisition of *wh*-questions by a Cantonese-English (C/E) bilingual child, which can be compared with monolingual development. The findings can address issues such as degree of balance, delayed development.

Moreover, as far as bilingual first language acquisition is concerned, this longitudinal study is the first of its kind in terms of the language pair studied. Most research conducted so far on how bilingual children approach two language systems are based on data coming from the language pairs which are typologically closely related, as shown in Table 1.

Table 1: Summary of major published studies of bilingual first language acquisition

Investigators	Year of publication	Language pair under investigation
Ronjat, J.	1913	French – German
Leopold, W.	1939 - 49	English – German
Meisel, J.	1989	French – German
De Houwer, A.	1990	English – Dutch
Schlyter, S.	1993	French – Swedish
Heijden & Verhoeven	1994	Turkish – Dutch
Paradis & Genesee	1996	English – French
Dopke, S.	1997	English – German

A general point from the above summary is that most language pairs under consideration are typologically close to each other. It is believed that a study of language pairs which are typologically distant will complement existing studies and make any conclusion more generalizable and convincing. Thus it is the goal of the present study to offer new acquisition evidence from two typologically unrelated languages, i.e. English and Cantonese in order to gain an insight into the controversial issue of whether there is autonomous or interdependent development of two grammars.

One distinction we should be careful to make is between developmental phenomena and interdependent developmental phenomena. Meisel (1989), while ready to accept the existence of transfer in bilingual acquisition, remarked that “ I do not want to claim that whenever a structural pattern appears in both languages spoken by the bilingual, but only in one of the corresponding target languages, that this should necessarily be interpreted as evidence for transfer process” (p.19). This shows that in interpreting bilingual data, especially when deviant forms/structures which are different

from monolingual forms are found in the data, we should take great care in determining whether it represents a developmental phenomenon or it is a manifestation of interdependence. One proposal made by De Houwer (1994) to get around this interpretative problem is to compare bilingual data with those from monolingual children. If monolingual data show the same pattern, it is likely that the rate of development or the form produced by the bilingual child is the result of development; otherwise, it can be reckoned as an instance of interdependence. For instance, Mikes (1967, cited in Romaine 1995:211) studied Hungarian/Serbo-Croat bilingual children and observed that the locative construction in Serbo-Croatian which was encoded with noun inflection and preposition was acquired earlier than the same construction which was encoded with noun inflection in Hungarian. Comparing this result with monolingual acquisition data, Mikes found that the same structure was also acquired relatively late by monolingual Hungarian children. Given the consideration of monolingual data, he concluded that rate of syntactic development in bilingual children was not influenced by simultaneous exposure to two languages. The relatively late acquisition of locative construction in Hungarian is a developmental phenomenon, rather than a manifestation of delay.

The present work is composed of five parts. The first chapter lays the theoretical foundation for the present study. It briefly reviews the findings and conclusions of some relevant studies. A description of the goal of present study is also given here. The second chapter is mainly devoted to the description of syntactic behavior of *wh*-questions in both Cantonese and English. Empirical data with regard to the acquisition of *wh*-questions in both languages by monolingual children are presented in this chapter. In the third chapter background information concerning the subject and methodology is reported. Findings based on the analysis of the bilingual data collected are presented in Chapter Four. The thesis will conclude with a discussion centered on the comparison between the monolingual and bilingual data, a summary of major findings, limitations and further questions for research.

Chapter 2

THE DEVELOPMENT OF *WH*-QUESTIONS IN ENGLISH AND CANTONESE MONOLINGUAL CHILDREN

In this chapter we first describe the syntactic behavior of *wh*-questions in both adult English and Cantonese. Empirical data and findings regarding the acquisition of *wh*-questions by monolingual children are presented next, covering such aspects as acquisition order of different types of *wh*-questions in both languages, landing site of *wh*-expressions and inversion in *wh*-questions in English and distribution pattern of *wh*-expressions in Cantonese. The weak continuity hypothesis (Radford 1996) is assumed to account for the development of *wh*-fronting and inversion in English *wh*-questions.

2.1 The syntax of English *wh*-questions

2.1.1 The landing site of *wh*-expressions

'*Wh*-questions', which are one type of question serving the communicative function of seeking information, contain interrogative *wh*-words, such as *what*, *who*, *where*, *when*, *why* and *how*. The questioned constituents led by *wh*-words are termed *wh*-expressions, as illustrated in (1a), (1b) and (1c).

- 1a. **Which book** is he reading?
- 1b. **What** do you want?
- 1c. **How** could the new airport authority solve the problems?

Government and Binding Theory (GB Theory henceafter) (Chomsky 1981) posits that at d-structure, the *wh*-expression occurs in the place where the questioned constituent is base-generated and substitutes the constituent with the relevant *wh*-expression.⁵ As a consequence, the basic argument relation in the sentence is

⁵ In more recent development of syntactic theory, Inflection is no longer considered to be one constituent carrying the feature of tense and agreement. Instead each of these features heads one maximal

preserved.

- (2) [CP [IP [NP The company] [I will [VP announce a staff salary cut]]]].
 → (d-structure)

2a. [CP [IP [**who**] [I will [VP announce a staff salary cut]]]]

2b. [CP [IP [The company] [I will [VP announce **what**]]]]

At the s-structure, the *wh*-expression undergoes movement to Spec of CP which is the landing site for the moved phrase. After movement, a co-indexed trace is left in the extraction site. The moved *wh*-expression is also called ‘antecedent’ of the trace which c-commands the trace. Movement of this type is termed *wh*-movement. Meanwhile, auxiliary will also undergo head-to-head-movement and move from the head of IP to C position--the head of CP. In other words, modal auxiliaries such as *can, must, should, may, will, shall* and aspectual auxiliaries which previously occupy the head I position move to C position. So (2a) and (2b) have the following s-structures in (3a) and (3b) respectively. The I position also accommodates all verbal inflections, including tense, person and number features, realized in the form of bound morphemes. Thus if auxiliaries are absent, do-support becomes a must when movement takes place from I to the head of CP as is shown in example (4). If the main verb is copula, however, the copula itself will move up to I, picking up tense, person and number features, and then move to C, as is exemplified in example (5).

→ s-structure

- 3a. [CP **who**_i [C will_j [IP t_i [t_j [VP announce a staff salary cut]]]]]

projection so a typical clause in English would have the following structural representation (Pollock 1989, Radford 1992).

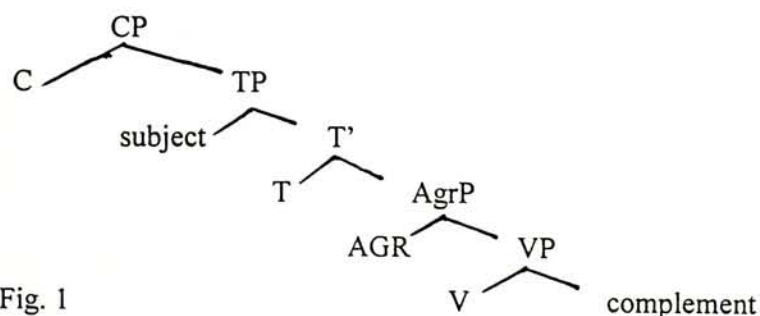


Fig. 1

- 3b. [CP **what**_i [C will_j [IP [NP the company] [t_j [VP announce t_i]]]]]
4. [CP [C [IP [NP The lift] [I '-s' [VP trap 5 passengers]]]]].
 → [CP How many passengers_i [C does_j [IP [NP the lift] [I t_j [VP trap t_i]]]]]?
5. [CP [C [IP [NP John] [I '-s' [VP be a doctor]]]]].
 → [CP what_i [C is_j [IP [NP John] [I t_j [VP t_i]]]]]

Movement involving one clause is termed 'short-movement' (6a) while movement over more than one clause successive cyclically is called 'long-movement' (6b).⁶

- 6a. [CP Which color_i does [IP he like t_i best]]? (short-movement)
- 6b. [CP Which color_i do [IP you think [CP [IP he likes t_i best]]]]? (long-movement)

In general, according to GB Theory, English *wh*-question formation requires that:

- (1) *Wh*-expressions move to Spec of CP
- (2) Head of CP be filled by elements from I position, including a) auxiliaries, b) copula which moves up from VP to I to pick up verbal inflections and c) helping verb 'do' which is inserted in I position in order to help main verb pick up verbal inflections of tense, person and number originating in I position when auxiliaries are absent. This I to C movement can be superficially observed as subject-auxiliary inversion.

The proposed tree diagram for these operations, including *wh*-movement and head-to-head movement, is shown below.

⁶ A *wh*-expression can move from its base-generated position to its final landing site through a series of complementizer nodes in successive steps, leaving intermediate traces at the extraction places. The movement of this kind is termed 'successive cyclic movement'.

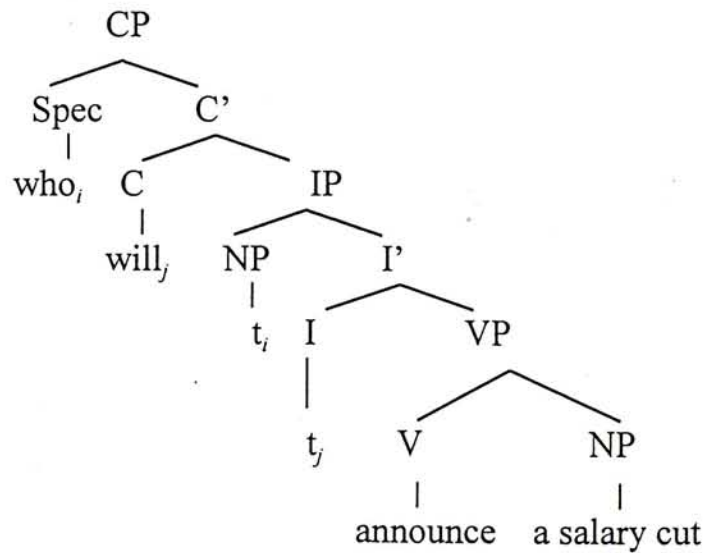


Fig. 2

2.1.2 Types of *wh*-questions

There are several ways to categorize *wh*-questions. A *wh*-question can be an argument question or an adjunct question.⁷ This classification is made based on whether the *wh*-phrase questions an argument or an adjunct of a sentence. As summed up by Stromswold (1988:110), “argument questions include all *who* and *what* questions and certain *where* questions (e.g. where did Mary put the book?, where do the books go?, where is the book?, etc) and *how* questions (e.g. how big is the book? How many did she have?, etc.) Adjunct questions include all *why*, *when*, and *how come* questions, and most *where* and *how* questions (e.g., where did Mary meet John? And how did Mary know John?)”

A second classification is made between a direct/root question and indirect/embedded question. Direct/root questions, in Radford’s (1988:464) term, “are questions in which the interrogative structure is an independent sentence - as, for

⁷ Arguments are expressions which typically denote the participants in the activity or event described by a verb. Adjuncts are expressions not subcategorized for by the predicate and its subject. They provide additional information about the relevant activity/event, such as the location, the time or the manner in/at which the event/activity takes place (Napoli 1993, Radford 1997).

example, in: When did you get back? Indirect questions, by contrast, are questions in which the interrogative structure is a dependent clause (i.e. embedded or subordinate clause) which is the complement of a verb like *ask*, *wonder* etc., as with the italicized clause in: He asked me *who I had talked to.*” One differentiating feature of indirect questions is that there is no subject-auxiliary inversion in this type of sentences. The present study focuses on direct/root *wh*-questions produced by the bilingual child.

Another division is made between nonecho *wh*-questions and echo *wh*-questions. Syntactically, a *wh*-expression in an echo question remains in the base-generated position of a questioned constituent, in contradistinction to a nonecho question in which a *wh*-expression moves into the [Spec, CP] position of a clause. Moreover, subject-auxiliary inversion does not apply in echo questions. At the discourse level, an echo question is generally regarded as having the function of asking for repetition, clarification, or expressing “irony, incredulity, or merely to fill in a conversational gap” (Quirk, 1985:836). As we will see, many non-echo *wh*-questions in the bilingual child’s English remain in situ. We take this as evidence of transfer from Cantonese.

2.2 The acquisition of *wh*-questions by monolingual English-speaking children

Different researchers have proposed different acquisition cut-off points when studying acquisition of different aspects of language. Grondin and White (1996), for example, in studying the acquisition of functional categories, suggested the criterion of first productive use of functional morphology; Brown (1973), on the contrary, set the cut-off point at 90% of correct usage in his acquisition research while Vainikka and Young-Scholten (1994) at 60% when investigating the interlanguage of second-language learners. In the present study Paradis & Genesee’s (1997) approach will be adopted. We take a developmental perspective and do not set a correct usage rate beyond which acquisition is said to have taken place. Rather we view acquisition as a continuous process and trace the first productive use of *wh*-questions in the obligatory contexts.

Some major issues in the study of acquisition of *wh*-questions by monolingual English children concern (1) the acquisition order of various types of *wh*-questions and the frequency of correct comprehension or/and usage (Ervin-Tripp 1970, Tyack & Ingram 1977, Cairns & Hsu 1978, Stromswold 1988, 1995), (2) question formation rules developed by children (Klima & Bellugi 1966, Brown 1968, Radford 1994), (3) function of *wh*-questions (Tyack & Ingram 1977), and (4) strategies children use in comprehending *wh*-questions (Ervin-Tripp 1970, Tyack & Ingram 1977). In this thesis, only those findings relevant to the first two points of concern will be dealt with here. Specifically, what we are going to review in the following concerns (1) the acquisition order of *wh*-questions in production data; (2) how monolingual children develop from VP to IP and then to CP and develop adult-like *wh*-questions following Radford's (1994, 1996) structure-building model .

2.2.1 The acquisition order of *wh*-questions

The following is the acquisition order of *wh*-questions based on Bloom's (1970) longitudinal observation of one child, Peter, between the ages of 1;09;07 and 3;01;21. The first productive spontaneous use of *wh*-questions was counted as the point of acquisition.

Table 2: The acquisition order of *wh*-questions by one monolingual English-speaking child [based on Bloom's (1970) corpus]

Type of <i>wh</i> -questions	Age of first spontaneous use ⁸
(1) what (object)	2;00;10
(2) where (argument)	2;00;10
(3) how (argument)	2;00;10
(4) who (object)	2;00;10
(5) where (adjunct)	2;01;00

⁸ The following utterances are not counted as spontaneous use of *wh*-questions, including imitation, questions formed with bare *wh*-words, echo questions and cases where the grammatical status of *wh*-expressions is indeterminate.

Type of wh-questions	Age of first spontaneous use ⁸
(6) how (how about)	2;01;18
(7) what (subject)	2;02;13
(8) whose	2;03;24
(9) how (how many)	2;03;24
(10) who (subject)	2;04;15
(11) when	2;08;12
(12) why	2;09;15
(13) how (adjunct)	3;01;20

The order of occurrences of each type of *wh*-questions indicates a general acquisition order, i.e. *what*, *who*, *where* and *how* argument questions are among the earliest to be acquired by the child. The next ones include some semi-formulaic expressions such as 'how about +...'⁹ *Why*-, *how*- and *When*-questions are among the last acquired *wh*-questions.

Stromswold (1988) focused on the acquisition order of subject questions and object questions as well as the acquisition order of argument questions and adjunct questions. She built her database on the spontaneous speech data of 12 monolingual English-speaking children collected by Brown (1973), MacWhinny (1973), Snow (1983), Sachs (1983), Bloom (1973) and Higginson (1985) respectively (see Stromswold 1988 for details). The statistics showed that overall object questions emerged earlier than subject questions; argument questions occurred before adjunct questions.

⁹ Radford (1990) used the term 'semi-formulaic utterances' to refer to the case when 'the first and last constituent are invariable (in the sense that they contain a specific lexical item not replaceable by other similar items), and only the middle constituent is variable. We use the term here in its broader sense to refer to any structure with some lexical items fixed.

2.2.2 Development of *wh*-questions in monolingual English-speaking children

2.2.2.1 Developmental stages

Both Klima & Bellugi (1966) and Brown (1968) were among the first to give a systematic description of grammatical development of English-speaking children. The three children under investigation -- Eve, Adam, and Sarah were 18, 26 and 27 months old respectively when observation began. They gauged the children's development with an index of MLUm (mean length of utterance on the basis of morpheme) instead of using biological age. The rationale behind their choice of measurement is widely accepted. A linguistically precocious child could develop his grammar much faster than another child of his age. The development stages stipulated by Brown were as follows:

Stage I: MLU 1.75 – 2.25

Stage II: MLU 2.25 above – 2.75

Stage III: MLU 2.75 above– 3.5

Stage IV: MLU 3.5 above– 4.00

Stage V: MLU 4.0 above

Klima & Bellugi (1966) adopted a rougher way to set different developmental stages apart. “The first stage is from the first month of study for each child; the last is from the month in which the mean utterance lengths approach 4.0 for each of the three children; and the second stage is between the two.” (p. 186). To be exact, Stage I was when MLU reached 1.75, Stage III was when MLU reached 4.0 and above, and Stage II was between MLU 1.75 and 4.00. In this study, findings relevant to development of *wh*-questions at different developmental stages corresponding to Klima & Bellugi's will be briefly reviewed.

2.2.2.2 Overall course of development

2.2.2.2.1 UG and language acquisition

Several hypotheses have been proposed with respect to the relationship of UG and language development. One hypothesis, the strong continuity hypothesis (Pinker 1984) which is consonant with the instantaneous model, holds that from the outset the contents of children's grammar are the same as that in adults' grammar. To phrase it differently, the UG principles and possible values of parameters are available to children throughout the course of language acquisition from the initial stage to the final stage. Take functional categories for example. On the strong continuity hypothesis account, it is claimed that from the start children's grammar contains all nonlexical, grammatical categories such as complementizer phrase (CP), inflection phrase (IP) or determiner phrase (DP) irrespective of whether they emerge in children's production or not. For supporters of this hypothesis, the absence of functional categories might be due to constraints on phonological production in the sense that functional categories are generally stressless, or due to coordination difficulty between the morphology and the syntax (Demuth 1994, Phillips 1996). The proponents of this hypothesis turn to markedness and intrinsic ordering of syntactic structures in order to explain why one construction develops before the others in children's grammar. Some argue that one form may be unmarked if it is a frequently occurring form cross-linguistically, and that this form will be acquired earlier by children. However evidence seems not robust enough to enable us to make a very strong prediction concerning acquisition order based on markedness theory only. For instance, it is found that English-speaking children produce dative structure *V NP NP* quite early compared with the corresponding structure *V NP to NP* even it is widely agreed that *V NP to NP* is an unmarked structure while *V NP NP* is a marked one according to the criterion of cross-linguistic and language-internal frequency. Obviously the markedness assumption fails to account for this acquisition sequence. There might be some other factors at work (Goodluck 1991). Thus, as pointed out by Borer & Wexler (1987), there is no linguistic motivation for markedness assumptions.

“In sum, linguistic explanations of ordering in development, based on the continuity hypothesis, involve the assumption of some kind of ordering in linguistic theory (extrinsic or intrinsic). And we have suggested that there is no linguistic motivation for the ordering. So according to these acquisition accounts, linguistic theory has to make linguistic assumptions (e.g., markedness or intrinsic ordering) which have no linguistic motivation” (Borer & Wexler 1987:126).

Contrary to the strong continuity hypothesis which assumes that the UG principles are available to children and remain constant throughout their language development, some researchers hold that UG principles emerge at different times driven by a maturational schedule.

“The principles are not available at certain stages of a child’s development, and they are available at a later stage...the principles mature. Like any other instance of biological maturation, the principles take time to develop, but the particular character of experience during this time is not what makes the principles develop. As analogy, we have in mind, for example, the maturation of secondary sexual characteristics, which do not develop until adolescence” (Borer & Wexler 1987:124).

It is emphasized that the development of grammar is a result of the maturation schedule. This hypothesis is called the maturation hypothesis. Reasoning along this line, Radford (1990) argues that the development of categorial knowledge also follows this biological schedule. In the initial grammar of children the lexical-thematic system develops before the functional-nonthematic system. He bases his argument on the empirical evidence that all the constituents of early utterances have both categorial and thematic functions which are quite different from non-thematic functional categories. It is found that children’s utterances consist of only projections of lexical category such as noun phrases (NPs), verb phrases (VPs), adjective phrases (APs) and prepositional phrases (PPs). In light of the empirical data, Radford (1990) argues that the structure of children’s early utterances thus resembles that of small clauses in adult grammar in

the sense that it contains no CP.¹⁰ The development of functional system matures “typically at the age of 24 months \pm 20%” (Radford 1990:274). The predictions we could make following this analysis are: (1) we do not expect to find overt complementizers such as *that/for/if* in children’s early utterances; (2) nor do we expect to find subject-auxiliary inversion in children’s early interrogatives for auxiliaries are generally absent in their grammar and the landing site is not available yet for auxiliaries to move into; (3) given the claim that children at the Small Clause stage have no functional category CP in their grammar, it follows that preposed *wh*-expressions are not the result of moving *wh*-expressions from their base-generated position to Spec of CP for Spec of CP is not available. The first two points are supported by empirical data. Analyses of children’s early *wh*-questions are needed, however, given the third consideration. Obviously *wh*-expressions are found in initial position in *wh*-questions produced by children at the Small Clause stage. According to Radford, further analyses of these data show that either these *wh*-questions appear to be produced as unanalyzed chunks or *wh*-expressions in copula construction appear to be analyzed by children as subject of the sentence, hence satisfying the Extended Projection Principle. Evidence in support of this analysis comes from the phenomenon of lack of agreement between subject and verb in these *wh*-questions:

(7) What color is these? (Holly 2;00) (Radford 1996:68)

¹⁰ One piece of evidence to support the argument that Small Clauses contain no CP is that if Small Clauses have C-system, it is expected that in English *wh*-expressions which should undergo syntactic movement from their base-generated position to Specifier of CP could be preposed outside their containing Small Clauses. Empirical evidence shows that Small clauses never allow such *wh*-movement.

e.g. *I can’t imagine *what kind of party* e [there being ---]

*Try and find *how comfortable* e [water beds ---] (Radford 1990:119)

However, if the bracketed clauses are CP instead of Small Clauses, the above sentences become grammatical.

e.g. I can’t imagine [*what kind of party* there was ---].

Try and find [*how comfortable* water beds are---].

Based on the data, Radford (1990) suggests that “Small clauses lack a C-system, and hence contain no C-

Towards the end of the Small Clause stage, some semi-productive *wh*-questions are found in the data with *wh*-expressions occurring in the initial position which apparently cannot be interpreted as formulaic expressions. Nor can *wh*-expressions act as subject of the sentence for in these cases *wh*-questions already have a subject NP

(8) What Kitty doing? (Claire 2;00) (Radford 1990:136)

If we interpret this type of sentences as emergence of CP and as *wh*-expressions occupying Spec of CP, the problem will be that children have developed a maximal projection whose head is empty given the fact that by then Inflection has not been developed (Fig. 3). This would be against UG requirement that every head be filled at PF or at LF.

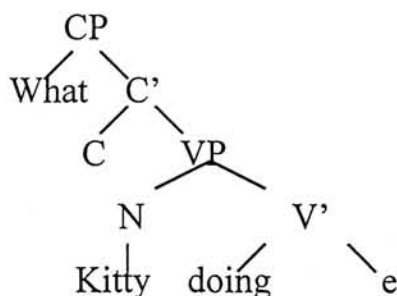


Fig. 3

Thus Radford (1990) suggests that the preposed *wh*-expressions in *wh*-questions produced by children at the end of the Small Clause stage be analyzed as clausal adjuncts. In other words, *wh*-expressions are analyzed as being adjoined to the Small Clause structure which is a VP:

(9) [_{VP} what [_{VP} kitty doing e]].

“Under either interpretation of the relevant facts, it follows that children at this stage have not developed a rule positioning initial *wh*-complements in the specifier position of CP. This in turn leads us to the more general conclusion that *wh*-question facts give us no reason to suppose that children at this stage have developed a C-system.” (Radford 1990:136).

Nevertheless, the adjunction analysis poses a problem of discontinuity. Cinque (1990) points out that in adult grammar, *wh*-expressions never adjoin to VP or IP. If his reasoning is right, the problem will be what makes *wh*-expressions adjoin to VP first,

specifier position to act as the landing-site for preposed *wh*-phrases” (p. 119)

then to IP at the next stage and finally to the target landing site – Spec of CP in children's grammar.

As an alternative hypothesis, the weak continuity hypothesis, also assumes that what makes up children's early grammar is the same as what makes up adult grammar. In other words, all the categories and principles found in children's grammar are identical to that in adult grammar. However, the weak continuity hypothesis does not assume that children's grammar and adults' grammar are qualitatively identical. Proponents of weak continuity impute absence of functional categories to underspecification in syntactic representation. Deprez (1994) proposes the functional underspecification hypothesis which states that functional categories are available in children's grammar throughout the course of acquisition. The reason we find differences between children's early grammar and adults' grammar is that some features related to the categories are underspecified in children's grammar. Nevertheless, what causes specifications to occur still remains a question. Another hypothesis from the weak continuity perspective, The Lexical Learning Hypothesis looks into how functional categories and relevant specifications are acquired by children. It postulates that the projected structure is based on the lexical properties of the elements children have acquired in their lexicon. In other words, children will not project CP until they have complementizers and *wh*-expressions in their lexicon. Moreover, categorial features are specified in a stepwise manner. In further modification of his account of children's language acquisition, Radford (1996) also adopts this lexical learning hypothesis, assuming "the alternative possibility that functional projections are acquired sequentially in a bottom-up fashion, with young children building up functional architecture 'one layer at a time'." (1996:66). He further explicates this structure-building model by saying that "children will build up syntactic structures 'one projection at a time' (so that acquiring a new type of item will lead to the projection of a new type of phrase)". (1996:43). Since syntactic structures are the minimal syntactic projections of the lexical items they contain and "a clause is only as big as it needs to be, it is an IP unless it has to be a CP (a VP unless it has to be an IP)." (Grimshaw 1993:5 cited by Radford 1996:44), it is assumed that children's

development of clausal structure undergoes three stages from VPs to IPs and then to CPs with functional categories being acquired in a bottom-up fashion.

2.2.2.2.2 General patterns of development of *wh*-questions in monolingual English-speaking children

Given the fact that no functional categories could be found in children's early utterances at Stage I (MLUm=1.75 in Klima & Bellugi's sense) and given Radford and Grimshaw's (cited in Radford 1996:46) arguments that V is the ultimate head of the clause and IP and CP are extended projection of V, it is held that the earliest clausal structure found in Stage I is VP.¹¹ If it is so, it was expected that for *wh*-questions at Stage I, even though all the *wh*-expressions undergo movement to the position which has wide scope over all the other constituents of the clause under the interaction of UG principles, the landing site for *wh*-expressions could not be the specifier position of CP, nor could we expect to find subject-auxiliary inversion which requires that auxiliaries undergo head-to-head movement from their base-generated position in the head of IP to the head of CP.¹²

The predictions seemed to be borne out by the data from the studies on monolingual English-speaking children. Klima & Bellugi (1966) noted that before MLUm reached 4.0, i.e. when the children were in Stage I and II, auxiliaries were absent in all types of sentences which precluded the appearance of subject-auxiliary

¹¹ Please refer to the discussion of MLU in Section 3.1.3.

¹² According to Radford (1996: 57-58), what is at work in early *wh*-questions with *wh*-words being preposed are UG principles related to scope and the *wh*-criterion and minimal projection. The principles given by Radford are repeated below.

Scope Principle: interrogative *wh*-expressions (by virtue of being wide-scope quantifiers) must have scope over (i.e., must c-command) all the other constituents of the clause containing them, at PF and/or at LF.

Wh-criterion: *wh*-expressions move to a (specifier or adjunct) position in which they are contained within a projection of an interrogative head.

inversion in either yes-no questions or *wh*-questions. It was found that *wh*-questions emerged early from Stage I on when the children's MLUm had reached 1.75 with all the *wh*-expressions occurring in the initial position of sentences they produced. However, at this stage production data were scanty considering the fact that the children's performance was "limited and rigid" (Brown 1968:283). The limitations were manifested in two forms. First, only a few types of *wh*-questions could be found in the data such as *what*-questions when children wanted to know the name of the object or action going on, or *where*-questions when they wanted to know the location of a(n) person/object.

(10) Who that? Why? What(s) that? (Klima & Bellugi 1966:200)

These instances of specific combination of words suggested that some of the early *wh*-questions produced by the children at Stage I appeared to be unanalyzed chunks. This claim was further supported by the finding that the children could not supply appropriate information called for by the *wh*-expressions when answering *wh*-questions. The possible account for poor performance in comprehension was that children at this development stage either had some difficulty understanding the meaning encoded by *wh*-expressions, or they were not sure of the the base-generated position of *wh*-expressions on hearing the questions. Considering the above mentioned fact, we could say that *wh*-questions produced by children were formulaic expressions rather than products of whatever operations involved in adult's *wh*-question formation.¹³ Secondly, when semi-formulaic *wh*-questions began to emerge, most of the *wh*-expressions were complement of verbs which were also limited in number. It seemed that 'what' was associated only with verbs 'to be' and 'do' whereas 'where' with 'to be' and 'to go'.

(11) What(s) that? What doing? What cowboy doing?
Where ann pencil? Where Mama boot? Where Kitty? Where milk go?
(Klima & Bellugi 1966:200)

If we consider 'ann pencil', 'mama boot', etc. to be instantiations of VP clausal

¹³ Formulaic utterances, in Radford (1990)'s sense, refer to utterances which are constructed with specific combination of words (morphemes) not replaceable by other words/morphemes.

structure with 'be' dropped in these cases, we can see that *wh*-expressions which were assigned theta-roles by the verbs could not be base-generated outside these VP structures, rather they underwent movement from their base-generated positions to the position above VP. What was the nature of this position above VP? One possibility could be CP, the specifier position of which is a licit position to accommodate *wh*-expressions in adults' grammar. However, as we mentioned above, empirical evidence suggested that at Stage I children's clausal structure was still VP. If Grimshaw (1993) was right in claiming that a clause is only as big as it needs to be, the projection of CP might seem to be less economical considering that the head of CP would be always empty which is against the UG principle that every head be filled at PF or LF. Thus the conclusion we could possibly draw was that at Stage I *wh*-questions produced by children were either formulaic expressions or semi-formulaic expressions with *wh*-expressions base-generated within VP structures and moving up to the VP adjunction position under the interaction of UG principles and ambient language input.

When the children's MLUm reached 2.75, data indicated that the children were able to give appropriate answers to at least half of the *wh*-questions (Klima & Bellugi 1966:204, Brown 1968:284). This suggested that the list of *wh*-expressions was growing and that the children were able to locate the constituents the *wh*-expressions stood for. It was posited (Brown 1968) that by this time in their production data *wh*-in-situ phenomena could be found, for this was the most economical way to form a *wh*-question: supply a *wh*-expression in the place of a constituent to mark the location where information is to be supplied. However, this expectation was not borne out. "Occasional questions never became frequent for the children, and the first ones appeared somewhat later than Stage III"(Brown 1968: 284).¹⁴ In their study, Klima &

¹⁴ In Brown's sense, 'occasional questions' refer to those questions in English in which *wh*-expressions occur in the final position to ask for relevant information to be supplied. They receive heavy stress and rising intonation and are different from echo questions (see features of echo questions in Section 2.1.2. e.g. Jone will do what? John will read when? John will read why? (Brown 1968:284)

Bellugi also remarked that “In the *wh*-question, all *wh*-interrogative words are in initial position.” (1966:203). This again showed that under the interaction of UG and positive evidence in language input, the children ‘know’ that *wh*-expressions must undergo movement. Given the fact that elements of I-system and C-system still could not be found then and that subject of the clauses they produced at that time carried either genitive case or accusative case (additional evidence to show that INFL does not exist to assign nominative case to the subject), Radford (1996) argued that the clausal structure was still VP and *wh*-expressions moved up to adjoin the VP structure.

When the MLUm reached 4.0 - above, such *wh*-expressions as ‘which + N’ and ‘how’ were found added to the children’s repertoire. Furthermore, the children have made impressive progress in their grammar. Elements in D(eterminer)-systems such as possessive markers and in I(nflection)-system, such as auxiliaries could be found. Subject-auxiliary inversion was also found in yes-no questions. Questions like “Will you help me?”, “Can I have a piece of paper?” began to appear in the children’s speech. Do-support was also attested at this stage to form yes-no questions, e.g. “Did I see that in my book?”. Relative clauses and embedded clauses also began to show up. The data suggest that by then the clausal structure has been extended from VP to IP and CP.

However, in *wh*-questions, though *wh*-expressions were fronted, the canonical declarative word order was still kept. Syntactic configuration showed that *wh*-expressions immediately proceeded nominative subjects, as in the following examples.

- (10) a. Where small trailer he should pull?
b. what he can ride in?
c. Why the Christmas tree going?
d. How he can be a doctor?

One possible account for this was that when VP was extended to IP and subject of the clause moved from Spec of VP to Spec of IP, *wh*-expressions also moved up to the

Snow (1972) reported that occasional forms were found in motherese, but not in children’s speech.

minimal A-bar position, i.e. IP-adjunction position. CP was still not projected. As Lighthood argued (1990), “The projection of CP is not automatic but rather follows only -when a specifier or head position actually appeared in the child’s primary linguistic data.”(cited in Weinberg 1990:176). It was only when overt complementizers occurred in the data or when subject-auxiliary inversion began to emerge in yes-no questions that CP was projected, for both cases indicated that a potential landing site for *wh*-expressions was available now in the children’s grammar. On top of emergence of CP, *wh*-expressions moved to Spec of CP observing *wh*-criterion and the head of CP was transformationally filled by auxiliaries from the head of IP to form an interrogative head; hence forming adult-like *wh*-questions. That explained why we expect to find a time-lag between emergence of subject-auxiliary inversion in *wh*-questions and in yes-no questions. This account also found support in Kuzaj and Maratsos’ (1975) observation that subject-auxiliary inversion emerged later in *wh*-questions than in yes-no questions.

However, the evidence Klima & Bellugi (1966) offered was not supported by findings in other studies. O’Grady (1997) summarized Bellugi’s (1971) data in the following table.

Table 3 Modal Auxiliaries in Adam’s questions (O’Grady 1997)

Approx. Age	MLUm	Yes-no questions		<i>Wh</i> -questions	
		Inverted	Uninverted	Inverted	Uninverted
3;0	3.5	0	1	0	3
3;5	4.0	198	7	9	22
3;8	4.7	No data		33	5
4;3		No data		27	4

The table showed that there was no time-lag between the inversion in *wh*-questions and in yes-no questions. Though the data might suggest that compared with 97% occurrences of inversion in yes-no questions, inversion in *wh*-questions was less productive with only 29% occurrences, and there was no indication that inversion

emerged earlier in yes-no questions than in *wh*-questions.

A similar pattern was observed in Ingram and Tyack's (1979, cited in O'Grady 1997:163) study. Questions gathered by parents of 21 children who fell into the age range of 2;00–3;11 were categorized and studied according to whether they were yes-no questions or *wh*-questions and whether they were inverted or noninverted within each question type. Instead of showing preference for inversion in yes-no questions, the figures suggested the opposite. There was a higher percentage of inversion in *wh*-questions right from the first developmental stage of observation when the subjects were 2;00.

Erreich (1984) used an elicitation task on 18 English-speaking children within the age range of 2;05 to 3;00 with MLU ranging from 2.66 to 4.26.¹⁵ The results showed that non-inversion was found in 36% of the children's early *wh*-questions and 51% of their yes-no questions. When looking further to find out whether the occurrence of non-inversion was attributable to the low frequency of auxiliaries, she noticed that "auxiliaries overall occurred frequently and with equal frequency in yes-no question, *wh*-questions and declaratives" (1984:589).

To accommodate the data that inversion in *wh*-questions and in yes-no questions occurred almost at the same time, an alternative simple account would be that once children have the projection of CP, they know that relevant specification of this category: root C is a position into which an auxiliary can move to make the illocutionary feature in C position visible and that Spec of CP is a landing site for *wh*-expressions as well. Thus auxiliaries raise from I position to C position whenever questions are asked, hence inversion in both *wh*-questions and in yes-no questions.

Nonetheless both accounts seemed to be after-fact explanations and failed to give a uniform account for the existence/nonexistence of time-lag between subject-auxiliary

¹⁵ The writer did not state explicitly how MLU is computed in the reported study.

inversion both in *wh*-questions and in yes-no questions. A better explanation is called for in order to get around the problem.

The effect of different *wh*-expressions on inversion was another issue which has long attracted researchers' attention. Labov & Labov (1978) found that their daughter Jessie's performance in inversion varied in different types of *wh*-questions with the earliest development of inversion in *how*-questions, and then *where*-questions, *what*-questions and *when*-questions. The child obviously had difficulty with inversion in *why*-questions. Kuczaj & Brannick (1979) made the similar claim after three studies of placement of auxiliaries by children within the age range 3;00 – 6;11. A series of three experiments were conducted to study the sequence in which the placement of auxiliaries in different types of *wh*-questions was acquired, to study the developmental relation between different types of *wh*-questions which were either semantically or syntactically related, and to study whether children overgeneralize the *wh*-question modal auxiliary placement rule. The data suggested that inversion was learnt in a specific-to-general way. The occurrence of inversion was limited in a few types of *wh*-questions at first, then extended to more types. The order they observed was: *what*, *where*, *why*, *when* and *how long*.

Radford (1996) attributes the effect of *wh*-expressions on inversion to distinction between operator and quantifier. He suggests that a *wh*-expression can function either as an operator or as a quantifier. When acting as an operator, it moves into Spec of CP. When functioning as a quantifier, it adjoins to IP. If a *wh*-expression move into Spec of CP, auxiliary movement will follow to meet both the *wh*-criterion and the economy principle which requires that no head could be left empty either at PF or LF. If *wh*-expressions adjoin to IP, there is no problem of empty head. Therefore auxiliary may stay in the base-generated position. Radford (1996) further gives an example of *what*-questions in children's data in which both inversion and non-inversion are found and suggests that probably children consider 'what' to be both an operator and a quantifier. "When (e.g.) *what* triggers auxiliary inversion it functions as an operator (and so moves into Spec-CP), but when it is used without inversion, it functions as a simple quantifier

(and so is adjoined to IP).” (p. 73). On this view, one of the learning tasks for children is to decide whether a specific *wh*-expression is an operator or a quantifier or is both. When a *wh*-expression is analyzed to be an operator, it will move into Spec of CP, which will trigger subject-auxiliary inversion (operated by *wh*-criterion). Since the learning task is done in a specific-to-general way according to Radford’s model, we expect sequence of occurrence of inversion in different types of *wh*-questions.

2.3 The syntax of interrogative *wh*-questions in Cantonese

In Cantonese, it is observed that the word order of a *wh*-question is just like its counterpart in declarative sentences. “A question with the subject as the *wh*-expression resembles an English question in word order; a *wh*-expression representing an object, however, occurs after the verb like any direct object” (Matthews & Yip 1994:323). In other words, *wh*-expressions in Cantonese stay in-situ in *wh*-questions. “If a language allows the *wh*-word in a *wh*-question to stay in-situ, the language is a language without syntactic movement” (Cheng 1991:19). For this very property, Cantonese is also called an in-situ language. In this in-situ language, however, *wh*-expressions do display scope properties. Thus it is assumed that movement of *wh*-expressions takes place at LF.

If “all clauses must be typed at S-structure” (Cheng 1991:15), one problem arising here is how to type a sentence as interrogative at S-structure. Cheng (1991) argued that for languages with syntactic *wh*-movement, “syntactic movement serves to ‘type’ a sentence as interrogative (and more specifically, a *wh*-question). Languages which do not have syntactic *wh*-movement have another way to ‘type’ a clause as interrogative, namely, by the use of question particles” (p. 18). Cheng (1991) also holds that “no language alternates between the use of in-situ *wh*-words and syntactic *wh*-movement” (p. 20). In light of this generalization, a further conclusion we could draw here is that Cantonese must have particles to type a sentence as interrogative. This is actually borne out by the fact that in Cantonese yes-no questions are formed with overt sentence final particles [q(estion)-sfp] (e.g. aa3) and *wh*-questions with overt *wh*-particles (q-sfp)

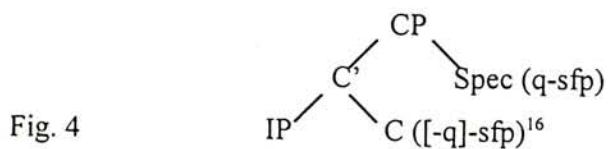
(e.g. *le1*).

- (12) a. *nei5 heoi2 aa3?* cf. b. *nei5 heoi2.*
 you go q-sfp you go
 ‘Are you going?’ ‘You go.’

- (13) a. *go3 gaa3 ce1 le1?* cf. b. *go3 gaa3 ce1*
 that CL car q-sfp that CL car
 ‘where is that car?’ ‘That car.’

(12a) (12b) and (13a) (13b) show that after interrogative sentences final particles are added, the utterance *nei5 heoi* (‘You go’) and the NP *go3 gaa3 ce1* (‘that car’) become a yes-no question and a wh-question respectively.

The structure of wh-questions is represented as in Figure 4, following Lee (1997).



In this syntactic representation, interrogative sentence final particles occupy the position of [Spec CP] while non-interrogative sentence final particles occur in the head of CP. Q(uestion)-sfp occur in Spec of CP to capture the fact that interrogative sentence final particle occurs after the non-interrogative sentence final particle if they cooccur in a sentence, and that it could also rule out the possibility of allowing two interrogative sentence final particles to occur together.

- (14) a. *keoi5 waa6 dak1 ge2 me1?*
 he say okey [-q]sfq [q]sfp
 ‘Does he say it’s okey?’

¹⁶ [-q]-sfp refers to non-interrogative sentence final particles to serve various communicative functions such as assertions, requests, evidentiality, affective and emotional coloring. (Matthews and Yip 1994).

b. *keoi5 waa6 dak1 mel ge2 ?
 he say okey [q]sfp [-q]sfp
 'Does he say it's okey?'

(15) *keoi5 waa6 dak1 aa3 mel?
 He say okey [q]-sfp [q]-sfp
 'Does he say it's okey?'

Most Cantonese *wh*-expressions are formed containing four words: mat1/me1 ('what'), bin1 ('which/where'), dim2 ('how') and gei2 ('how much') (I will call them 'basic *wh*-expressions' hereafter). They could also be treated as shortened forms of lexicalized *wh*-expressions <e.g. mat1je5 ('what'), bin1go2 ('who'), bin1dou6 ('where'), dim2joeng2 ('how')> when used as independent question words. There are cases when basic *wh*-expressions form part of a compound noun <e.g. mel sik1 ('what color')>, or when basic *wh*-expressions occur within a phrase and take the Spec position <e.g. bin1 gaa3 ce1 ('which car'), gei2 coeng4 ('how long')>.

One point worth mentioning is that a basic *wh*-expression or lexicalized *wh*-expression may have more than one meaning. The word 'bin1go3' can have either the interrogative meaning of 'who', or 'which', or 'whose', depending on the context it occurs. In the same vein, 'mat1je5', when used together with the word 'zou6' ('do') can also be interpreted as 'what-do', 'what-matter', 'why' and 'what-for'.

The different meanings of basic *wh*-expressions / lexicalized *wh*-expressions and their relevant distribution patterns are summed up following Cheung (1995). Because of space limitation, examples given after the table are confined to only one *wh*-expression to show the distribution pattern and different meanings it encodes.

Table 4 Distribution of *wh*-expressions in adult Cantonese

Distribution of <i>wh</i> -expressions	subject	object	adjunct	NP containing a nominaliser	In a compound NP	Spec Position
bin1go3 ('who')	✓	✓		✓		
bin1go3 ('which')	✓	✓				
bin1 ('which')						✓ (e.g. bin1+CL+N)
Distribution of <i>wh</i> -expressions	subject	object	adjunct	NP containing a nominaliser	In a compound NP	Spec Position
mat1(je5) me1(je5)('what')	✓	✓		✓ (e.g. nei5 go3 me1)	✓	
bin1dou6 bin1syu3 bin1 ('where')	✓	✓	✓	✓		
dim2(joeng2) ('how' / 'what-manner')			✓			
dim2joeng2 dim2 ('what-like')	✓	✓				
dim2joeng2 ('what-do')	✓	✓	✓?			
dim2gaai2 ('why')			✓			
gei2si4 ('when')	✓	✓	✓			
gei2do1('how many'/'how much')		✓				✓
gei2 ('what-extent')						✓

- (16) bin1go3: a) **bin1go3** lo2 zo2 bun2 syu1 aa3? (subject)
 (=who) who take ASP CL book sfp
 'Who has taken the book?'
 b) keoi5 zung1ji3 **bin1go3?** (object)
 s/he like who
 'Who(m) does s/he like?'
 c) **nei5 ge3 bin1go3** hai6 ji1san1 aa3? (NP
 containing a nominaliser)
 You NOM who is doctor sfp
 'Who (of yours) is a doctor?'

- bin1go3: a) **bin1go3** hai6 gau6 gaa3? (subject)
 ('which') which is old sfp
 'Which one is old?'
 b) keoi5 gaan2 zo2 **bin1go3?** (object)
 he choose ASP which
 'Which has he chosen?'

- bin1 + CL +N a) **bin1 gin6 saam1** leng3 aa3? (Spec position)
 ('which') which CL dress beautiful sfp
 'Which dress is beautiful?'
 b) nei5 zung1ji3 **bin1 zek3 gau2** aa3?
 you like which CL dog sfp
 'Which dog do you like?'

2.4 The acquisition of *wh*-questions by monolingual Cantonese children

The following findings concerning the acquisition of *wh*-questions by monolingual Cantonese children come from a longitudinal study by Cheung (1995). Eight children between the age range of 1;05;22 – 3;08;10 were chosen for one-year long observation. Cheung's findings will be reported here using the chart we created above to capture the distribution patterns of Cantonese *wh*-expressions and their respective meanings. Data from four subjects will be selected to enter the table. These children fell into the same biological age range as our bilingual child who was observed from 1;05;19 to 3;06;25. The information about these four subjects is as follows:

Table 5 Information about monolingual Cantonese-speaking children (Cheung 1995)

CHILD	AGE	SEX
CKT	1;05;22 - 2;07;02	Male
MHZ	1;07;00 - 2;08;06	Male
HHC	2;04;08 - 3;04;14	Male
LLY	2;08;10 - 3;08;09	Female

Table 6 The distribution of first *wh*-expressions in monolingual Cantonese-speaking children (based on Cheung 1995)

Distribution of <i>wh</i> -expressions	subject	Object	adjunct	NP containing a nominalizer	In a compound NP	Formulaic expression
bin1(go3) ('who')	HHC 3;02;16	CKT 1;10;30 HHC 3;01;16		HHC 3;04;14		
bin1go3 ('which')		MHZ 2;05;19				
bin1+CL+N ('which')		HHC 3;02;16				
mat1(je5) me1(je5) ('what')		CKT 1;08;21 MHZ 2;05;04 HHC 2;06;24 LLY 2;08;10			HHC 3;03;11	CKT 2;06;18 (zou6 mat1) MHZ 2;03;28 (zou6 mat1je5)
bin1(dou6) bin1syu3 ('where')		CKT 2;00;09 MHZ 2;03;09 HHC 2;09;30 LLY 2;09;28	HHC 3;02;26 LLY 2;11;08			
dim2(joeng2) ('how'/'what-manner')		HHC 3;00;08	LLY 2;11;08			
dim2joeng2 ('what-like')						
dim2joeng2 ('what-do')			CKT 2;05;14			
dim2gaai2 ('why')			MHZ 2;06;04 HHC 2;07;21			HHC 3;03;11(zou6 me1) LLY 2;11;01(zou6mat1)
gei2si4 ('when')	No data					

gei2do1 ('how many/how much')	No data
gei2 ('what-extent')	No data

The data showed that: (1) *Wh*-expressions were used by the children from an early age on. The earliest use of a *wh*-expression was recorded when the child reached 1;08. (2) If arranging the data in the order of the first use of *wh*-expressions, we can see that the acquisition order shows the following progression: *mat1je5* ('what') / *bin1dou6* ('where') (in argument position) > *bin1go3* ('who') > *dim2 gaai2* ('why') > *dim2* ('how'). Basic *wh*-expressions forming part of a compound noun or basic *wh*-expressions + CL structures were produced comparatively late. (3) The use of a few *wh*-expressions [e.g. *gei2si4* ('when'), *gei2* + adjective ('what-extent') e.g. *gei2 coeng4* ('how long') and *gei2do1* ('how many/much')] was not found in the data available. This suggested that by the time taping stopped the children had not developed a full-range of *wh*-expressions. (4) There was an asymmetric development of subject vs. object questions with the same *wh*-expression, e.g. *mat1je5* ('what')-object questions were produced earlier than *mat1je5*-subject questions. Generally speaking, if a *wh*-expression can be placed either in object position or in subject position, it was object questions that appeared earlier. The only exception is *bin1go3* ('who')-questions. In this case, *bin1go3*-subject questions emerged earlier than *bin1go3*-object questions. (5) Asymmetric development was also detected between argument questions and adjunct questions. The general picture was that argument questions were acquired earlier than adjunct questions: argument questions like *mat1je5* ('what')-questions were acquired before adjunct *dim1gaai2* ('why') questions.

2.5 Summary

To sum up, this chapter describes the syntactic behavior of *wh*-questions in both English and Cantonese. Findings regarding the acquisition of *wh*-questions by monolingual children are reported here. So far as acquisition order is concerned,

asymmetric development of different types of *wh*-questions is detected in both English-speaking children and in Cantonese-speaking children. In general, argument questions are acquired before adjunct questions and object questions are acquired before subject questions. As for the landing site of *wh*-expressions in English, it is found that from start all *wh*-expressions occur in the sentence initial position. No developmental stage can be identified whereby *wh*-expressions stay in-situ. Following Radford's (1996) structure-building model, it is assumed that as the clausal structure in children's grammar grows step by step, moved *wh*-expressions first take VP-adjunct position, and then Spec of IP position, and they finally land in Spec of CP. In addition, a time-lag between inversion in yes-no questions and inversion in *wh*-questions is observed in some of the children's acquisition data.

Chapter 3

METHODOLOGY

The data for this study come from a longitudinal study of one Cantonese-English bilingual child. Details about the data are shown in Appendix I. What I am going to present in the following concerns the background information about the subject, taping and transcription of data and data sampling from the longitudinal study.

3.1 Subject

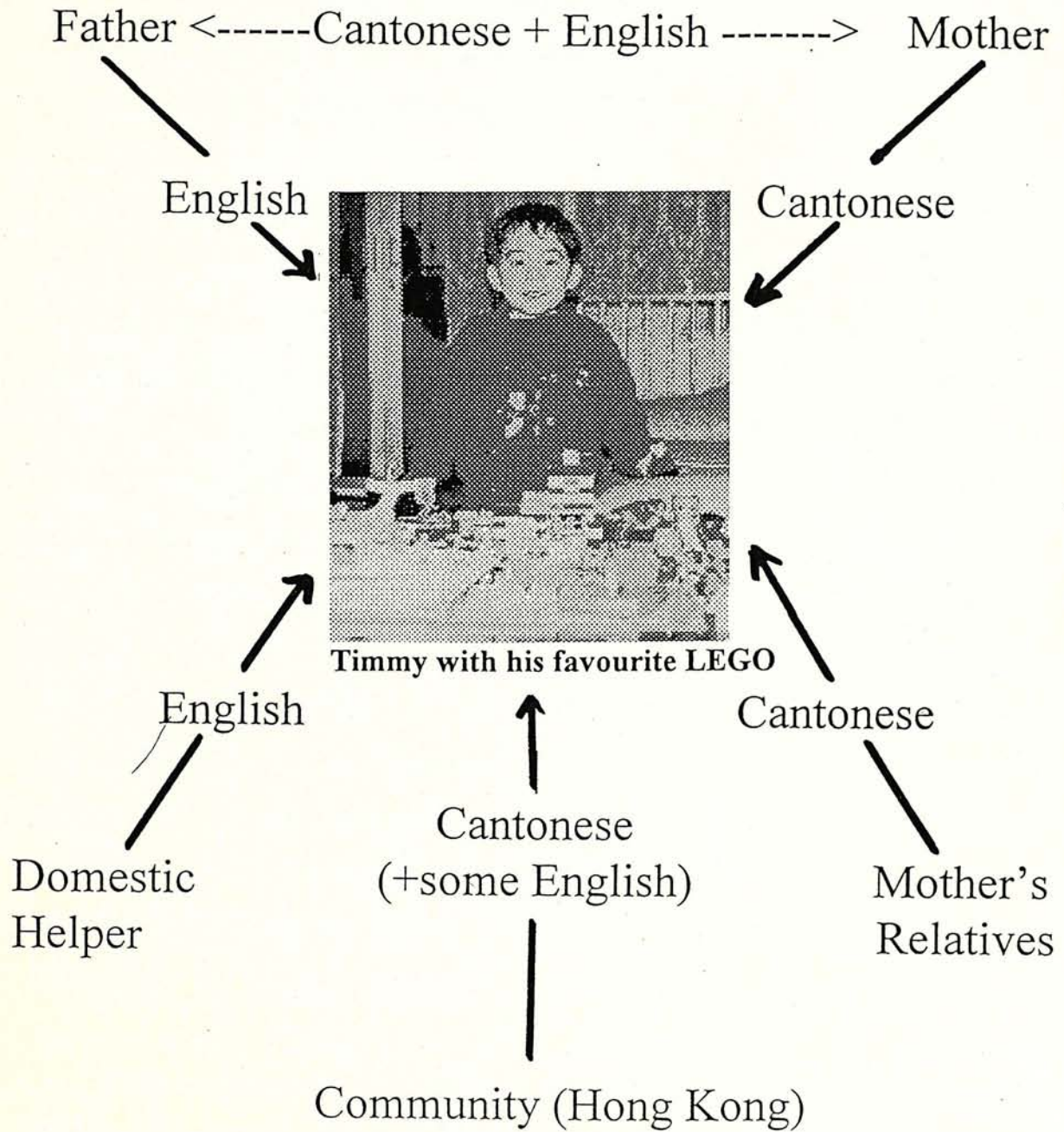
3.1.1 Family background

The child is the first born of a Cantonese-English speaking middle-class family. He was exposed to both Cantonese and the English simultaneously from his birth. The parents implement a one person - one language policy when interacting with the subject. This principle is said to be very successful in promoting the development of balanced bilingualism. The age range under investigation is from 1;05;19 to 3;06;25.

3.1.2 Input for both languages

For our subject Timothy, the schooling he had from 3;00 on gave him almost a balanced bilingual education in the sense that time for his exposure to two languages at the kindergarten was almost the same. He went to two schools every day. The school he attended in the morning used Cantonese as medium of instruction and the medium of instruction in the school he attended in the afternoon was English. However, the child spent more time with his Cantonese-speaking mother than with his English-speaking father because his father usually comes home from work very late in the evening. The language for parents' conversation at home is mainly Cantonese. A diagram summarizing the child's language input is given below.

Diagram 1: Background information concerning the language input the bilingual child gets



3.1.3 Bilingual development in the bilingual child

By far, there has not been a standardized way to measure the development of two languages in bilingual children. In order to build our judgment on a comparatively objective and solid basis, several indices of language development as mentioned in Chapter One will be employed here, each is meant to complement the other method to make the analyses more convincing.

(A) MLU (Mean Length of Utterance)

The first index of language development in the bilingual child is MLU which is the ratio of morphemes to utterances in a speech sample. MLU was first employed by Brown (1973: 54) as an index of grammatical development in monolingual children, for as Brown claimed, almost every new kind of knowledge, such as emergence of negative forms, auxiliaries, etc., increases length. Brown's idea has been widely accepted and used by child language researchers to "reflect advances in any of a variety of language systems, including morphology, syntax, semantics and conversational skills" (Rollins et al. 1996) and to compare language development among children. The reason we think MLU applies to our study is that we need to compare the development of two first languages and that MLU is known for its developmental sensitivity. Instead of being used for making a between-subject comparison, MLU is adopted in this study to give us a measurement of within-child development of two languages.

When computing MLU, although many studies in L1 acquisition, especially the studies on acquisition by monolingual English-speaking children have used morphemes as counting units, words were used as counting units in the present study instead.¹⁷ The consideration underlying this choice of MLUw was as follows. MLU is used to

¹⁷ The definition of 'word' in English goes by orthographic convention.

gauge the development of both English and Cantonese in the bilingual child. The prerequisite for employing this index is comparability of MLU computed based on language samples in both languages. English, though not a highly inflected language, still has many morphological markers or bound morphemes which attach to other morphemes or other sequence of morphemes such as the inflectional suffix – ed which is a past tense marker, -‘s a possessive marker, -ing a progressive marker, to name only a few. Besides there are also many derivational suffixes and prefixes to form new words or to change the word class of the stem they attach to. In Cantonese, however, as a typologically isolating language, “there is very little (overt) morphology. Separate grammatical concepts or functions tend to be conveyed by separate words and not by morphological processes” (Don et al 1996). Each syllable in Chinese may be a meaningful form “and has been termed the Monosyllabic Myth by de Francis(1984)” (Matthews & Yip 1994). Thus the typological difference between English and Cantonese makes MLU of the English speech samples and MLU of the Cantonese speech samples less comparable with morphemes as counting units. In this respect, MLUw seems to have more advantage in getting around this typological problem when making cross-linguistic comparison.¹⁸

Many approaches to MLU have been suggested by linguists from phonological, semantic and grammatical perspectives (see Sze 1997). For the purpose of the present study, only the semantic approach and the grammatical approach will be adopted with the hope that the criteria could be applied to English and Cantonese as well. They are listed below to show how we decide wordhood when doing transcription. There is no order when applying these criteria. So far as one criterion is met, the form is granted the word status.

¹⁸ In an internet discussion held in 1999 concerning the issue of whether there is a difference between MLU in words and MLU in morphemes, Butt, Corinna reported that many studies of non-English speaking children suggest a high correlation between MLUm and MLUw. If so, we consider it evidence to support the comparison we have made in the present study between the grammatical development of English in monolingual English-speaking children based on MLUm and that of English

According to the semantic criterion, when one single concept is encoded by one linguistic form, this form is counted as a word. The concept can be either concrete [e.g. car, man, sei2('water'), fung1('wind'), or abstract [e.g. beautiful, slowly, oi3('love'), lau1('angry')] or purely relational [e.g. in, of, a, the, bei2('than')]. We can see that the criterion will not be difficult to apply when the form is made up of only one morpheme. But when the form is made up of more than one free morpheme, e.g. Mickey Mouse, green house, sai1 gwaal('water melon'), caul tin1('autumn'), cung1 ming4 ('clever'), zyu2 faan6('cook rice'), faan1 hok6('go to school'), jau4 sei2('swim'), zung1 ji3('like'), ming4 baak6('understand'), we have to be very careful in deciding whether it is a compound word or not. The guideline to follow here is: when the meaning of the form cannot be simply inferred by putting the meaning of the composing elements together, this form is regarded as a word. e.g. 'Mickey Mouse' does not mean 'mickey' plus 'mouse' and 'green house' does not mean a house that is green. By the same token, 'sai1 gwaal'('water melon') does not mean a melon in the west; 'caul tin1'('autumn') does not mean the sky in a period of time of a year; and 'ming4 baak6'('understand') does not mean clear and white. Thus they are treated as one word. Since the meaning of 'zyu2 faan6'('cook'), 'jau4 sei2' ('swim') and 'faan1 hok6'('go to school') can be easily derived from the composing elements, they are considered to be made up of two words. In transcribing compound words in English, a '+' is put between the composing morphemes, e.g. 'mickey mouse' is transcribed as 'Mickey+Mouse' and 'green house' 'green+house'. In Cantonese, a compound word is transcribed by putting the components together, e.g. sailgwaal, caul tin1, cung1 ming4, zung1 ji3, ming4 baak6. One additional criterion which is also employed in the present study as a supplementary approach in deciding whether the polymorphemic form is a word or not is the 'insertion criterion'. In light of this criterion, if the form belongs to the noun category and does not allow the insertion of genitive marker 'ge3' or quantifiers such as jat1('one') or gei2 ('several'), this form is a word.

in the bilingual child based on MLUw.

e.g. one word: sailgwaal('water+melon')--*sail ge3 gwaal

caultin1('autumn')--*caul ge3 tin1

two words: daai6 ju4 ('big fish')-- daai6 ge3 ju4

bin1 syu3('which place')-- bin1 gei2 syu3

In the same vein, if the form belongs to verb category and does not allow the insertion of aspectual marker such as 'zo2(perfective), gan2(progressive), gwo3(experiential)', the form is a word.

e.g. one word: zung1ji3('like') -- *zung1 zo2 ji3

kit3hoi1('open') -- *kit3 gwo3 hoi1

two words: zyu2 faan6('cook') --zyu2 gan2 faan6

lok6 jyu5('rain') – lok6 gwo3 jyu5

In light of the grammatical criterion, any minimum free form, which can occur in isolation or can occur in one word utterance, is counted as a word. On this view, however, some linguistic forms will not be counted as words because they can never occur independently and must be used together with other elements, such as 'per' in 'per day, per month'; 'ni1'('this') in 'ni1 bin1'('this side'), 'ni1 go3' ('this one'); 'dou6' ('place') in 'bin1 dou6' ('which place'), 'go3 dou6' ('that place'). The following modified version of this criterion is adopted: any minimum free form is granted a word status if it can occur in isolation or if it is usually used together with other linguistic forms without changing its intrinsic meaning. On this view, we treat 'ni1'('this') as a word in 'ni1 bin1' ('this side'), 'ni1 go3' ('this one'); and so is 'dou6' in 'bin1 dou6' ('which place'), 'go2 dou6' ('that place'); 'per' in 'per day, per month'.

In order to achieve comparability, we calculate MLU of only those files in which transcription has been done for both the English part and Cantonese part. Files transcribed before the child was 1;10 are mixed files (see Section 3.3 for description of mixed files). Since the computer could not tease apart the two languages in the mixed files and generate MLUw for each languages, the files are not used here for the present purpose of MLUw comparison. All the figures of MLUw in Table 6 are machine-

generated, using the CLAN program (MacWhinney 1996).¹⁹

Table 7 Comparison of MLUw of the bilingual child's Cantonese and English

Age	MLU	
	English	Cantonese
1;10;02	2.246	1.881
2;01;02	2.353	2.308
2;01;22	2.618	2.656
2;02;19	2.185	2.913
2;02;26	2.136	3.144
2;04;28	2.573	3.638
2;05;11	2.690	2.965
2;05;25	2.705	3.355
2;06;09	2.422	3.577
2;07;00	2.867	3.516
2;07;27	2.843	3.436
2;08;17	2.453	4.135
2;09;23	4.270	3.625
2;10;07	3.270	3.365
2;10;27	3.897	3.742
2;11;12	3.196	3.602
3;00;09	3.458	3.536
3;01;00	3.738	3.516
3;01;13	3.276	3.498
3;02;03	3.099	3.409
3;02;25	3.227	3.460
3;04;15	4.000	3.729
3;05;00	3.147	3.409
3;05;13	4.053	3.993
3;05;27	3.469	3.740
3;06;11	3.500	4.568
3;06;25	3.173	3.793

If we concur with the idea that MLUw can be an indicator of a child's general language developmental level, we can infer from the table that the subject's Cantonese

¹⁹ The CLAN program computes all utterances in the file (excluding imitation, repetition, unintelligible utterances). This is different from Brown's method who computed the 51th – 150th utterances in a file manually.

has developed faster than his English. Except for the few highlighted figures, almost all the MLU values coming out of Cantonese data are greater than their English counterparts.

(B) Syntactic complexity

Another measure of language development to be adopted here is qualitative measure of grammatical complexity. Though MLU is developmentally sensitive, it has been challenged for its inadequacy to reflect the structural characteristics of the child's language, especially when the child's MLU reached 4.0, a value capped by Brown as an indicator of grammatical development. In order to have a clearer picture of the development of both languages, other measures of syntactic complexity as suggested by Yip and Matthews (1997) is also employed here in order to determine language development in the case of our subject. It is argued that if derivation of syntactic structure A involves more syntactic operations than the derivation of syntactic structure B, A is said to be syntactically more complex than B. Therefore sentences involving movement are considered to be more complex than sentences not involving movement. A constituent expressed with a single element is less complex than one expressed with more than one expanded elements. [e.g. 'I found it.' is less complex than 'I found that it was my mistake' where the object has been expanded]. The data show that it is in the bilingual child's Cantonese that the expanded structure emerges earlier.

- (1) < lei5 lei5 > [/] lei5 man6 < keoi5 jau5 > [//] keoi5 sik6 mat1je5 aa1 .
you you you ask he want he eat what SFP
'You ask (him) what he wants to eat.' (2;09)

The counterpart structure in his English data was not found until one month later.

- (2) And the ambulance tell you what do you go. (2;10;27).

This indicates that the child's Cantonese grammar develops faster to allow a more complex structure within a language to make earlier emergence. Thus the bilingual child's Cantonese sentences appear to be syntactically more complex than his English sentences.

(C) The child's preference for a language given the same topic and the situation

Saunders (1988) argues that a bilingual child's preference for a language can also be an indication of the dominance of the language. If this argument holds, we should say that our subject is Cantonese-dominant, for the child felt more comfortable to talk in Cantonese given the same topic and situation. His preference for Cantonese was so strong that we chose to start our conversation in English in our taping session, and then switch to Cantonese, rather than the other way round, lest the child refused to switch to English if we start our conversation in Cantonese. Moreover, we decided that three tapings had to be taken away from the corpus due to the fact that no matter how hard the investigator tried to get him to speak English, the child insisted on speaking Cantonese and did not switch to English.

Both the child's observed preference for Cantonese and the qualitative and quantitative analysis of the bilingual data show that our subject Timmy is more Cantonese dominant, or that English, in his case, is a recessive language.

3.2 Taping

We taped the child's utterances with an audio-cassette recorder during an hour long play session with the child. All the data were collected under natural conditions. Such activities as playing with toys available in the child's home, reading books, drawing pictures and watching videos formed the settings under which taping was done. The investigation was conducted at weekly intervals, using the one person - one language approach in principle. While one investigator was playing and talking to the subject, the other did the taping. Only when the child felt uncomfortable in one language in certain contexts did the investigator code-switch to another language; or when the child's attention turned to the other investigator, that investigator would take the turn to interact with the child using the language under investigation. Each taping session lasted one hour, 30 minutes in Cantonese, and 30 minutes in English.

3.3 Transcription

Each taping session produced two batches of data: one in English and one in Cantonese. The transcription of both the English part and the Cantonese part was in CHAT format (MacWhinney 1991) to facilitate the future electronic analysis of data. Cantonese utterances were transcribed in the romanization system (JyutPing) formulated by Linguistic Society of Hong Kong. If the taping could not go on as stipulated, for instance, 30 minutes in Cantonese, 30 minutes in English, but was characterized with frequent mixing of the two languages, the data would be put in one file under the category of 'Mixed file'. The cues used to segment utterances were long pauses, intonation, intervening turns by the experimenter, and the presence or absence of connectives.

Some excerpts taken from a typical English file and a typical Cantonese file are given in the Appendix I.

3.4 Sampling and data analysis

From each month of taping two files were chosen to obtain internal consistency. There were totally 32 English files, 33 Cantonese files and 14 mixed files selected for the purpose of the present study. Data analysis was conducted with the help of one search program which was previously written for Lee et al's project on The Development of Grammatical Competence in Cantonese-speaking Children (1991-1993) (see Acknowledgement). By dint of this program, data could easily be extracted out of the corpus, including utterances containing the words under investigation and utterances preceding and following the target utterances. The context is necessary to determine whether an utterance is used productively by the child or whether it is only a case of imitation, or whether a question asked is an echo question. The following extracts from the search result of the file ti960208 (2;08;17) illustrates how the program works.

(3) The phrase(s) to be searched: who, what, which, whose
Preceding Line Number: 3
Following Line Number: 2
Speaker(s) Selected: CHI

Phrase: what

*CHI: bear.
*LIN: a bear, oh.
*CHI: <he> [/] he want to +...
*CHI: he eat what -.
*LIN: +” he eat what -.
*LIN: he wants to eat the candy.

The speaker is: CHI

Line number: 707

Based on the search result, utterances containing ‘what’ produced by the bilingual child are put into several categories:

1. novel *wh*-questions productively constructed by children
2. formulaic / semi-formulaic expressions (see Section 2.2.1 and Section 2.2.2.2.2 for definition of these terms)
3. imitation which involves word for word repetition of the utterance immediately preceding the child’s utterance.

e.g. (4) *Investigator: lei5 hai6 bin1go3 aa3?
*CHI: lei5 hai6 bin1go3 aa3? (3;02;03)

4. questions formed with bare *wh*-expressions.

e.g. (5) bin1go3 +... (2;06;09)

5. cases where the grammatical status of *wh*-expressions is indeterminate.

e.g. (6) gam2 zau6 me1 aa3? (2;10;07)

Chapter 4

THE ACQUISITION OF *WH*-QUESTIONS BY ONE CANTONESE-ENGLISH BILINGUAL CHILD

In this chapter, the general patterns of the C/E bilingual subject's development of *wh*-questions in both languages will be reported and compared with those of monolingual children. Several issues which have received wide attention in monolingual acquisition of *wh*-questions are also highlighted here such as acquisition order of different types of *wh*-questions, position of *wh*-expressions and subject-auxiliary inversion in *wh*-question formation.

4.1 UG and bilingual acquisition

Though facing the same logical problem of underdetermination, degeneracy and poverty of stimulus, bilingual children, taking approximately the same amount of time as monolingual children, are able to master one language in tandem with another. This miracle strongly suggests that "the core principles that determine the nature of human speech must be the same for both types of speakers [monolinguals and bilinguals])." (Beardsmore 1986:120). Bilingual children, like their monolingual counterparts, endowed with the UG principles and parameters, will develop the language-specific grammar gradually in each language based on the surrounding language input. The syntactic structures they are able to build are based on the lexical properties of the items they have acquired in their lexicon. Given the fact that children's initial clauses are projections of lexical categories such as noun, verb, adjective and preposition, we further infer that bilingual children's initial clauses are projections of these four major lexical categories as well. They are Small Clauses in the sense that the internal structure of the clauses are like adult small clauses with head of the projection being a nonfinite predicative lexical category as shown in the following labelled bracketing (examples from Radford 1990:114).

- (1) Sausage bit hot. [_{AP} [_{NP} sausage [_A bit [_A hot]]]]
Wayne in bedroom. [_{PP} [_{NP} Wayne [_P [_P in [_{NP} bedroom]]]]]]

Teddy want bed. [VP [NP teddy [V [V want [NP bed]]]]]]

If we agree with Radford and Grimshaw (in Radford 1996:46) that V is the ultimate head of the clause and IP and CP are extended projection of V, and if we adopt the Lexical Learning Hypothesis, it is assumed that bilingual children will develop their clausal structure in the following sequence: VPs → IPs → CPs.

4.2 The acquisition of *wh*-questions in Cantonese by the bilingual child

As mentioned in Chapter 2, Cantonese is a *wh*-in-situ language. In other words, the word order of a *wh*-question is just like its counterpart in declarative sentences, i.e. *wh*-expressions in Cantonese stay in-situ. A *wh*-expression may have more than one meaning, depending on the context it occurs in. The word '*binlgo3*', for instance, can have either the interrogative meaning of 'who', or 'which', or 'whose' when used together with a nominaliser '*ge3 / gaa3*' in different contexts. The search results for the developmental sequence in which *wh*-expressions appear and for the frequency of occurrences and their corresponding syntactic positions are shown in two tables in the Appendix.

The search results showed that like monolingual Cantonese-speaking children, spontaneous use of *wh*-expressions by the bilingual child emerged from an early age. Except for 18 cases in which either the grammatical status of the *wh*-expressions were indeterminate or *wh*-questions were results of imitation and 28 cases in which questions were formed with bare *wh*-expressions, all the rest of 315 *wh*-questions found in the data sampled for the present study were constructed with *wh*-expressions consistently placed in the appropriate positions. The earliest appropriate spontaneous use of *wh*-expressions in Cantonese is 1;08;25, which was comparable to the first occurrence of *wh*-expressions in the monolingual data when the monolingual subject (CKT) was 1;08;21 (Cheung 1995:63). The chronological order of the occurrence of these *wh*-expressions in different positions are sequenced as follows:

bin1dou6-object ('where')²⁰ 1;08,25

- (2) baai2 hai2 **bin1?**
place at where
'At where (is it) placed?'

mat1je5-object ('what') 1;11,21

- (3) li1 dou6 **mat1je5** aa3?
here what SFP
'What is in here?'

bin1go3-subject ('who') 2;01;22

- (4) **bin1go3** lei4 aa3?
who come SFP
'Who is coming?'

bin1dou6-subject ('where') 2;04;14

- (5) **bin1dou6** ping4go2 aa3?
where apple SFP
'Where exists an apple?'

bin1go3-object ('who') 2;04;28

- (6) ji1 go3 **bin1go3** lei4 gaa3?
this one who SFP
'Who is this one?'

gei2+Adj ('what-extent') 2;05;11

- (7) keoi5 hai6 **gei2** lau1 aa3?
he is how angry
'how angry is he?'

bin1go3-in NP containing a nominalizer ('whose') / gei2 do1+N ('how many' / 'how much') 2;06;09

- (8) ji1 go3 **bin1go3** gaa3?
This one who Nom

²⁰ We consider 'bin1dou6' in the phrase 'hai2 bin1dou6' a complement.

- “Whose is this one?”
- (9) **gei2 do1 cin2?**
 How much money
 ‘How much money (is this)?’
 mat1je5+N (‘what’) 2;07;00
- (10) **hai6 me1 beng6 aa3?** ²¹
 is what ailment SFP
 ‘What is (his) ailment?’
 bin1+CL(+N) (‘which’) 2;11;12
- (11) **bin1 zek3 aa3?**
 which one SFP
 ‘Which one (is it)?’
 dim1gaai2-adjunct (‘why’) 3;01;00
- (12) **dim2gaai2 ngaak1 jan4 gaa3 lei5?**
 why cheat people SFP you
 ‘Why do you cheat people?’
 dim1joeng2-adjunct (‘how’ / ‘what-manner’) 3;02;03
- (13) **dim2joeng2 cai3 gaa3?**
 how build SFP
 ‘How to build (it)?’

In terms of first occurrence of *wh*-expressions, the acquisition order of *wh*-expressions patterns with that of monolingual children mentioned in Cheung’s study (1995), i.e. mat1je5 (‘what’) / bin1dou6 (‘where’) (in argument position) > bin1go3 (‘who’) > dim2 gaai2 (‘why’) > dim2 (‘how’).²² *Wh*-expressions forming part of a compound noun, *wh*-expressions occurring in NP containing a nominalizer and *wh*-expressions + CL (+N) structures were produced relatively later than when they

²¹ ‘mat1je5’ and ‘me1’ are interchangeable. ‘me1’ is the shortened form of ‘mat1je5’.

²² A > B means A is acquired before B. A/B means A and B are acquired at approximately the same time.

occurred independently as NPs.

With the same *wh*-expression which could occur either in subject position or in object position such as *mat1je5* ('what'), object questions were produced earlier than subject questions. However, the *wh*-expression *bin1go3* ('who') behaved differently in the sense that *bin1go3* subject questions emerged earlier than *bin1go3* object questions (see examples (3) (4) (6)). These findings were in line with those observed in monolingual data.

Asymmetric development of argument questions and adjunct questions was found in our data as well. Looking back at the first occurrence of *wh*-expressions, we noticed that argument questions were produced earlier than adjunct questions, i.e. *bin1dou6* ('where') in argument positions, *mat1je5* ('what') or *bin1go3* ('who')-questions were produced earlier than *dim2gaai2* ('why') or *dim2joeng2* ('how') questions (see examples given above). Out of 315 occurrences of *wh*-questions, 293 were argument questions, only 22 were adjunct questions.²³ In other words, argument questions accounted for 93% of the *wh*-questions spontaneously produced by the child.

Compared with syntax of *wh*-questions in adult Cantonese, it could be noticed that some types of *wh*-questions were still not produced by the time taping stopped. Questions formed with such *wh*-expressions as *bin1go3* ('which') in subject position, *mat1je5* ('what') in subject position, *bin1dou6* ('where') in NP containing a nominalizer, *dim2joeng2* ('what-like') and *gei2si4* ('when') were not found in the data available. This shows that by the age of 3;06;25, our bilingual subject had not developed the full-range of *wh*-expressions in Cantonese. This raises the problem of whether incomplete mastery of *wh*-expressions was an instance of delay or whether it was only a developmental phenomenon. In order to clarify this issue, a detailed study

²³ The following cases have been excluded, including (1) obvious imitation, (2) questions formed with bare *wh*-expressions alone without other items, (3) cases where the grammatical status of *wh*-expressions is indeterminate.

of the pattern of *wh*-questions developed by monolingual Cantonese-speaking children of the same age range (Cheung 1995) is necessary. The following chart gives the search results coming from both the above-mentioned monolingual study and the present bilingual study to show the occurrence of different types of *wh*-questions and their corresponding distribution patterns.

Table 8 Comparison of development of *wh*-questions in Cantonese by monolingual Cantonese-speaking children (Cheung 1995) and by the Cantonese/English bilingual child between the age range of 1;05;19 - 3;06;25

<i>wh</i> -expressions	Position						
	Subject	Object	Adjunct	NP containing nominaliser	a	In a compound NP	Spec position
bin1go3 ('who')	✓ *	✓ *		✓ *			
bin1go3 ('which')		✓					
bin1 ('which')							✓ * bin1+CL (+ N)
mat1je5 ('what')	✓	✓ *				✓ *	
bin1dou6 ('where')	*	✓ *	✓				
dim2joeng2 ('what-manner' / 'how')			✓ *				
dim2joeng2 ('what-like')							
dim2joeng2 ('what-do')			✓				
dim2gaai2 ('why')			✓ *				
gei2si4 ('when')							
gei2dol ('how much / how many')							*
gei2 ('what-extent')							*

'✓' indicates that the data come from monolingual Cantonese-speaking children

'*' indicates that the data come from our Cantonese/English bilingual subject

Going through the chart, we noticed that two batches of data bore strong resemblance to each other. Out of 15 filled boxes, there were 9 boxes showing that the same *wh*-expressions occurring in the same syntactic positions are found in both the

monolingual data and the bilingual data available. During the period of investigation (1;05;22 – 3;08;09) even monolingual Cantonese-speaking children had not established a complete range of *wh*-questions found in the adult grammar. Just as De Houwer (1994) pointed out, if the bilingual child's language development shows the same pattern as the monolingual one, it is likely that the rate of development or the forms produced by the bilingual child are the result of development. Therefore our bilingual data strongly suggested that the present case of incomplete mastery of *wh*-expressions by the bilingual child was a normal phenomenon during the process of language acquisition.

As mentioned at the start of this chapter, in Cantonese some *wh*-expressions encode several interrogative meanings. This feature can well be illustrated with the lexicalized phrase 'mat1je5'. When used together with 'zou6' ('do'), it can be interpreted differently. The subtle difference again is contextualized.

The following table shows that by the age of 2;06;09, the bilingual child was able to express four different meanings using the form: 'zou6 mat1je5'.

Table 9 The bilingual child's first use of **zou6 mat1je5** and different meanings expressed

'what-do'	'what-matter'	'why'	'what-for'
2;00;04	2;04;14	2;04;14	2;06;09

- (14) what-do: *Investigator: jat1 ji6 saam1 sei3 +...
 (2;04;14) one two three four
 'one, two, three, four ...'
 *CHI: keoi5 # **zou6** gan2 **me1je5** aa3?
 he do ASP what SFP

- ‘What is he doing now?’
- (15) what-matter: *Child: keoi5 **zou6 me1** aa3?
 (2;09;23) he do what SFP
 ‘what’s the matter with him?’
- *Investigator: www
 %exp: explaining to the child what happens to the
 deer
- (16) what-for: *Investigator: haak1 mang1 mang1 wo3
 (2;09;23) very dark SFP
 .. ‘It’s very dark now.’
- *CHI: haak1 mang1 mang1 ceot1 heoi3 **zou6 mat1je5** aa3?
 very dark go out do what SFP
 ‘For what do you go out since it is dark?’
- *Investigator: gam2 keoi5 faan1 uk1kei2 laa3.
 so he return home SFP
 ‘So he went back home.’
- (17) why: INV: keoi5 hou2 ci5 hou2 m4 hoil sam1 wo3 hai6 mai6 aa3-.
 (2;08;17) he look like very not happy SFP is or not SFP
 ‘He looks very unhappy, doesn’t he?’
- CHI: m4 hoil sam1 **zou6 mat1je5** aa3?
 not happy why SFP
 ‘Why is he not happy?’

Table 10 shows monolingual children’s first use of the set phrase ‘zou6 mat1je5’ to express different meanings.

Table 10 Monolingual children's first use of 'zou6 mat1je5' and different meanings expressed

Subject	'what-do'	'what-matter'	'why'	'what-for'
CKT	2;06;18			
MHZ	2;03;28			
HHC	3;04;14	3;04;14	3;03;11	3;04;14
LLY	2;09;14	2;09;28	2;11;01	2;08;22

The comparison between Table 10 and Table 11 indicates that though individual differences existed both among the monolingual children and between the monolingual children and the bilingual child concerning the emergence order of *wh*-forms to indicate different interrogative meanings, the general development pattern of 'zou6 mat1je5' is quite similar.

4.3 The acquisition of *wh*-questions in English by the bilingual child

As what we have done with the Cantonese *wh*-expressions, we would like to start our study by observing the general behavior of English *wh*-questions formed with *wh*-expressions such as 'what', 'where', 'who', 'which', 'how', 'when' and 'why'. This will be followed by a description of the overall course of development of *wh*-questions in the bilingual child. It is believed that the study of developmental pattern of *wh*-questions in the two languages in the bilingual child can provide us with more explicit evidence as regards how bilingual children approach the two grammars. Special attention will be given to two aspects of *wh*-questions, i.e. (1) the position of *wh*-expression, and (2) presence or absence of subject-auxiliary inversion.

4.3.1 The acquisition order

The order of the first spontaneous use of different types of *wh*-questions is tabulated as follows, excluding utterances by imitation. Spontaneous use, in the sense of Dopke (1997), means "utterances which were not modeled within the immediate

vicinity of the child's utterance" (p. 100).

Table 11 Order of first spontaneous use of *wh*-expressions and frequency of productive use of these question forms by the bilingual child (Total No. of files = 45)

Types of <i>wh</i> -questions	Age of first spontaneous use	Frequency
(1)what (object)	1;11,00	101
(2)where (argument) ²⁴	1;11,21	58
(3)what (subject) ²⁵	2;00;25	2
(3)how (how about)	2;01,02	16
(4)who (object) / why	2;07;00	4 / 16
(5)who (subject)	2;10;07	9
(6)whose / how (argument)	3;01;00	1 / 1
(7)how (adjunct)	3;02;03	1
(9)where (adjunct) / when / which	No data	
(10) others (including imitation, questions formed with bare-words, echo questions and cases where the grammatical status of <i>wh</i> -expressions is indeterminate)		62

Our data show that along the continuum of the age of first use of *wh*-questions, *what*-questions stood at the starting point while *when*-questions at the end of this scale. Even by the end of our taping, we could not find a *when*-question inquiring temporal information. This result strikingly resembles the acquisition order of *wh*-questions by one monolingual English-speaking child between the age range of 1;09;07 and 3;01;21 based on the production data collected by Bloom (1970). In order to facilitate comparison, the acquisition order reported in Bloom (1970) based on the production of *wh*-questions is presented in Table 12.

²⁴ We consider 'where' in the utterance 'Where do you live?' a complement.

²⁵ Formulaic expressions such as 'What's going on here?' have been excluded.

Table 12: The acquisition order of *wh*-questions by one monolingual English-speaking child based on Bloom's (1970) corpus

Type of <i>wh</i> -questions	Age of first spontaneous use ²⁶
(1) what (object)	2;00;10
(2) where (argument)	2;00;10
(3) how (argument)	2;00;10
(4) who (object)	2;00;10
(5) where (adjunct)	2;01;00
(6) how (how about)	2;01;18
(7) what (subject)	2;02;13
(8) whose	2;03;24
(9) how (how many)	2;03;24
(10) who (subject)	2;04;15
(11) when	2;08;12
(12) why	2;09;15
(13) how (adjunct)	3;01;20

In Table 11, we put the question words 'where' and 'how' under two categories, one questioning the argument of the sentence (e.g. Where is doctor?/ Where he come from?/ How are you?), the other one questioning the adjunct of a sentence (e.g. How can I break this boat?). After such categorization was done, it is found that argument questions were acquired much earlier than adjunct questions. This finding is in line with what has been observed in the monolingual English data (see Table 12).

4.3.2 Position of *wh*-expressions

In English, *wh*-expressions must occur in the initial position of a direct question. Nevertheless, in our bilingual data not all *wh*-expressions occur in initial position. Out of 214 *wh*-questions produced by the child during the period 1;05;19 – 3;06;25 (excluding 23 cases of obvious imitation, 34 cases of questions formed with bare *wh*-expressions, 1 case of echo question and 2 unintelligible cases), there were 152 cases in

²⁶ The following utterances are not counted as spontaneous uses of *wh*-questions, including imitation, questions formed with bare *wh*-words, echo questions and cases where the grammatical status of *wh*-

which *wh*-expressions appeared initially, making up 71% of the total occurrences of *wh*-questions. In the rest of 62 cases, *wh*-expressions remained in-situ in the object position, accounting for 29% of the total occurrences.

Overall, more than half of the *wh*-expressions occurred in the initial position of *wh*-questions. However, if we further break down this figure into different components, what we obtain is a different picture. Among these 152 *wh*-questions, there were 18 questions which also appeared as formulaic combination. Utterances exemplifying this type of *wh*-questions produced by the child were:

- (18) a. What's the matter?
b. What's going on here?

There were another 28 questions which were constructed with the following order: *wh*-expressions + copula 'is' (either in contracted form or or uncontracted form) + it/this/that.

- (19) a. What is it?
b. What's that?

Again we suspect that they formed part of the child's formulaic utterances and were produced by the child as unanalysed chunks. Formulaic/semi-formulaic utterances cannot be taken as the child's syntactic competence. "Whole formulaic expressions might be thought to be the product of mimicry ability. We cannot be sure whether this is a true reflection of the child's syntactic competence" (Radford 1990:17).

Moreover, there were 44 questions appearing to be semi-formulaic utterances with part of the word sequence fixed. The typical structures encountered in the child's data were: Where's + NP ? How about + VP ?

- (20) a. Where's the man? (2;00;25)
b. Who's that? (2;07;00)
c. How about get the police? (2;09;23)

expressions is indeterminate.

In addition to these, there were 11 utterances asking questions about the subject of the sentence. They were subject questions. It is natural to find *wh*-expressions appearing in the initial position in these utterances since subjects also appear initially.

If we discard these cases mentioned above from our data, what was left would be preposed object *wh*-questions produced by the bilingual child. In other words, if we subtracted 101 from 152, the number of preposed *wh*-questions was 51, which only made up 24% of the total number of *wh*-questions spontaneously produced by the child. This figure was in sharp contrast to what was reported in literature on *wh*-questions produced by monolingual children who placed all the *wh*-expressions in initial positions.

In order to obtain corroborating evidence, further comparison was made between monolingual data <Brown's corpus(1973)> and the longitudinal data we have collected as regards the occurrence of *wh*-expressions and their positions. For the sake of objectivity, one file was randomly chosen from each biological month from the monolingual data and the MLUw of each file was generated using the CLAN program (see discussion of MLUw in Section 3.1.3). Files of the similar MLUw from the bilingual data were then selected in order to achieve comparability.

Table 13 Comparison of distribution of *wh*-expressions in *wh*-questions produced by a monolingual English-speaking child (Brown 1973) and a Cantonese/English bilingual child

Monolingual child - EVE				Bilingual child - Timothy			
Age	MLUw	Occurrence of <i>wh</i> -expressions	<i>Wh</i> -in-situ	Age	MLUw	Occurrence of <i>wh</i> -expressions	<i>Wh</i> -in-situ
1;08	2.097	11	2	1;11	2.009	1	0
1;09	2.369	17	1	2;00	2.294	0	0
1;10	2.982	14	0	2;04	2.573	6	3
1;11	2.864	28	2	2;07	2.867	19	16
1;12	3.226	95	0	2;10	3.270	4	2

Monolingual child - EVE				Bilingual child – Timothy			
Age	MLUw	Occurrence of <i>wh</i> -expressions	<i>Wh</i> -in-situ	Age	MLUw	Occurrence of <i>wh</i> -expressions	<i>Wh</i> -in-situ
2;00	3.115	43	0	2;11	3.196	2	2
2;01	3.530	91	0	3;00	3.458	2	0
Percentage of <i>wh</i> -in-situ: 2%				Percentage of <i>wh</i> -in-situ: 68%			

We divided the total number of *wh*-expressions by the total number of occurrences of *wh*-in-situ and got the percentage of *wh*-in-situ. The statistics obtained indicates that *wh*-expressions rarely occurred in-situ in the monolingual data. However, *wh*-in-situ utterances were far more frequent in the bilingual data. Placement of *wh*-expressions by the bilingual child was variable. *Wh*-expressions occurred sometimes in initial position of a clause, sometimes in-situ.

These figures are more revealing if we look at the environment where *wh*-in-situ occurs.

Wh-in-situ in monolingual data:

e.g. (21) EVE05.CHA Line: 1230 (1; 08)

*MOT: do you know where?

*EVE: know **where**?

%spa: \$RES, \$IMIT

(22) EVE05.CHA Line: 1259 (1;08)

*MOT: he's eating what?

*EVE: eating **what**?

%spa: \$IMIT

(23) EVE07.CHA Line: 1598 (1;09)

*EVE: where clam chowder.

*EVE: where clam chowder.

*MOT: what?

*EVE: clam chowder **what**?

*MOT: what?

*EVE: clam chowder.

(24) EVE11.CHA Line:952 (1;11)

*COL: what?

*EVE: it's -: **what**-:?

%spa: \$IMIT

(25) EVE11.CHA Line: 956 (1;11)

*COL: it's what?

*EVE: it's **what**?

%spa: \$IMIT

Obviously, four out of five in-situ *wh*-questions were the result of imitation of the adults' occasional form or echo questions. The question with *wh*-expression in-situ in example (23) seems to be an exception. The context shows that the child's mother still could not supply the information the child wanted although the child had asked the same question twice. It was under this circumstance that the child reformulated her question. She chose to put the *wh*-expression back into its original syntactic position in a declarative sentence. Such a type of questions are often used by adults to elicit an answer when a normal question form fails. Thus example (23) was an occasional form. The use of *wh*-expression 'what' in the question might well be a slip-of-tongue, modelled on the previous *wh*-expression used by her mother. The target question in her mind might have been 'clam chowder where?'.

The context in the selected bilingual data, however, shows that questions with *wh*-in-situ could not be counted as imitation, or as occasional forms or echo questions. They should be treated as novel questions created by the child.

Wh-in-situ in bilingual data:

(26) TI951019.txt Line:104 (2;04) (LIN is one of the investigators)

*LIN: see whether she can count or not.

*LIN: ask her how many cars there are here .

*CHI: **is what** -.

*LIN: it's a trailer .

(27) TI951221.txt Line: 242 (2;07)

*LIN: yeh , two doggies .

*LIN: look # what do they want -.

*CHI: **it's a what** -.

*LIN: < it's > [//] is it a snake -?

*CHI: it's a snake .

(28) TI960328.txt Line: 68 (2;10) (MOT is the mother of the child; WIN is another investigator.)

*WIN: Snow+White -?

*MOT: is this boy or girl -.

*WIN: is this a +/.

*CHI: **this what colour** -.

*CHI: this one , and this +...

*MOT: grey .

(29) TI960503.txt Line: 205 (2;11)

*CHI: bee .

*WIN: &em .

*CHI: bee .

*CHI: **this who** -.

*LIN: +” this who -?

*LIN: no , it's +...

*LIN: what is this -.

Since the evidence shows that almost all the *wh*-expressions in the monolingual data were preposed while in the bilingual data *wh*-expressions had variant placement, we herein suggest that the position of *wh*-expressions is one feature that distinguishes the Cantonese-dominant bilingual child from monolingual English-speaking children as far as *wh*-question formation is concerned. The details of distribution of *wh*-expressions in different types of *wh*-questions are given below. Echo questions, questions formed by imitation and questions formed with one single *wh*-expression such as 'what?' 'why?' are excluded in this chart.

Table 14 Distribution of *wh*-expressions in the bilingual child's English data

Types of <i>wh</i> -questions		Total No. of occurrences	<i>Wh</i> -preposed	<i>Wh</i> -in-situ	Others ²⁷
(1) what	Subject	108	2	0	5
	Object		42	59	
(2) where		58	56	2 (object)	
(3) how		18	18	0	
(4) who	Subject	13	9	0	
	Object		3	1	
(5) why		16	16	0	
(6) whose		1	1	0	

One striking finding from this table was that the high frequency of *wh*-in-situ actually came from those with one particular *wh*-expression – 'what'. Out of the total number of 101 cases in which *wh*-expression should be preposed in the adult grammar (i.e. object what-questions), 58% *wh*-expressions remained in-situ.²⁸ Only 42% *wh*-expressions were preposed. As for the other types of *wh*-expressions, such a *wh*-in-situ phenomenon was not prevalent at all. One occurrence of *who*-in-situ was

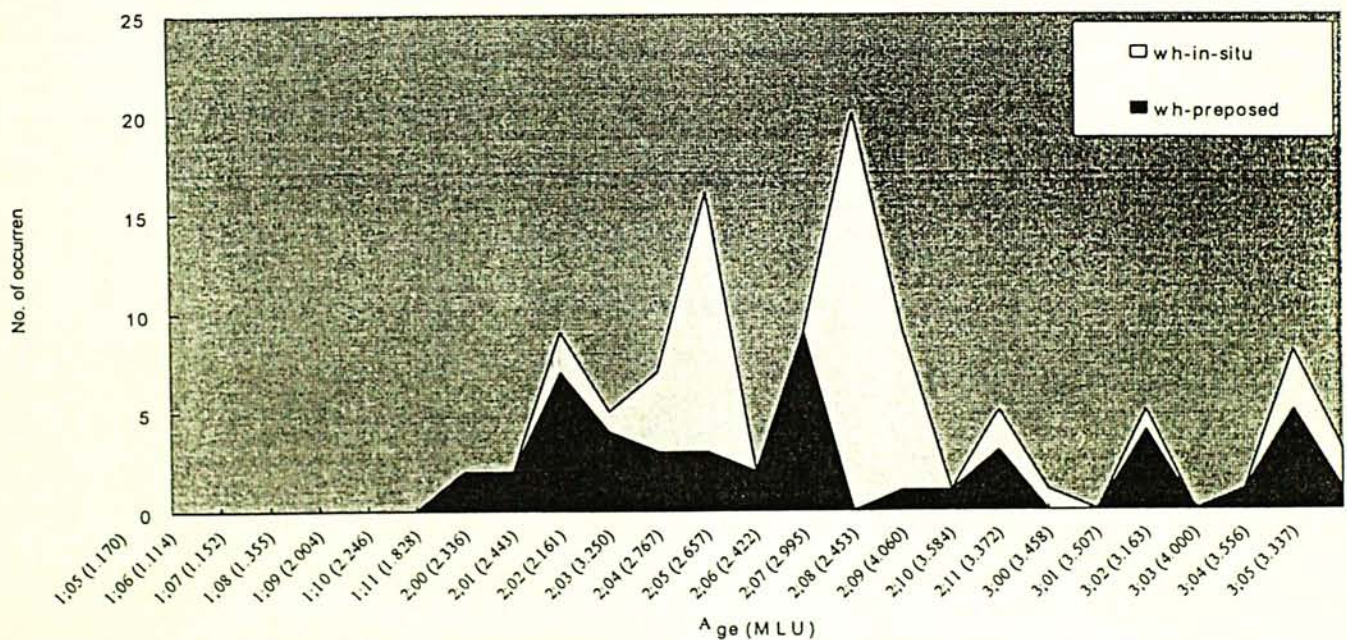
²⁷ Under this category are cases such as: What it is this one? What about this? The grammatical function of *wh*-expressions in these sentences is indeterminate.

²⁸ The total number of occurrences here does not exclude imitation and formulaic expressions.

recorded when the child's MLUw reached 3.196. The other two cases of *where*-in-situ were found when the child's MLUw reached 3.469. Why is there such a pattern of *wh*-placement? An account for this will be preposed in the next chapter.

Since the bilingual child's performance differs from monolingual children's so far as the placement of *wh*-expression in *what*-questions was concerned, and that *what*-question was the earliest and most highly frequent form in our bilingual data, in the following I am going to focus on the developmental pattern of the placement of 'what' *wh*-questions.

Chart 1 The developmental pattern of the placement of *wh*-expression 'what' in the bilingual child's English *wh*-questions



Three developmental stages concerning the placement of *wh*-expressions could be identified from Chart 1. At the onset of *what*-questions when the child was 1;11 (MLUw 1.828), all *wh*-expressions were preposed, but before long *wh*-in-situ began to emerge. When the child reached 2;00 (MLUw 2.336), the rate of preposed 'what' dropped gradually which was accompanied by a sharp rise of occurrence of *wh*-in-situ. The figure of *wh*-in-situ rocketed to a new height when the child was 2;07-2;08 (MLUw 2.995-2.453). Then the rate of *wh*-in-situ dropped again. From the chart we

can see that in the late stage, the area indicating *wh*-fronting almost overlaps with the area of *wh*-in-situ, indicating that the two placement patterns are both options employed by the child concurrently.

Another intriguing finding about the *wh*-expression 'what' is that it not only encoded the identification of an object, it also encoded location and reason. Moreover, it often co-occurred with a determiner to form a structure like 'a what' or 'the what'. This structure is not documented in monolingual English-speaking children's data and can only be found in adults' echo questions.

(30) CHILD: I bought a ball-pen.

ADULT: You bought a what?

In our bilingual data, however, there were quite a few instances of such usage. The parents' diary also has a lot of such examples. The examples showing the multi-functionality of the word 'what' is given in (A) and the bilingual child's use of 'a what' and 'the what' is given in (B):

(A) The examples are from the parents' diary

(31) (asking daddy) (2;05; 06)

CHI: it is **for what?**

FAT: what is it for?

CHI: what is it **for what?**

CHI: it is **for what?**

CHI: what is this for?

(32) (watching the cars in the street) (2;05;16)

CHI: the cars **going to what?**

(B) (33) on **the what?** (2;04;14)

(34) this on **the what?** (2;04;28)

(35) (sitting in the car, asking daddy) (2;05;17)

CHI: you go to **the what?**

(36) (daddy coming into the house) (2;05; 26)

CHI: you go to **the what?**

- CHI: you went to **the what**?
- (37) (the child is watching TV) (2;06;05)
- CHI: he climbed up to **the what**?
- (38) it's **a what**? (2;07;00)
- (39) bite **the what**? (2;08;17)
- (40) you have to call **the what**? (3;04;00)
- (41) going to **the what**? (3;05;25)

Looking into the internal structure of this 'a / the what' structure, we could see that 'what' occurs within an NP.

4.3.3 Subject-auxiliary inversion in *wh*-questions

In forming English *wh*-questions, one important syntactic operation involved is to move auxiliaries from head of IP position to head of CP. This movement is generally known as subject-auxiliary inversion. In the field of first language acquisition, children's acquisition of subject-auxiliary inversion in *wh*-questions has been studied extensively. As discussed in Chapter 2, these studies focus on whether there is a stage whereby inversion, either in yes-no questions or in *wh*-questions, is totally absent in children's speech, and whether there existed any time-lag concerning the emergence of inversion in yes-no questions and *wh*-questions. Another issue of concern is whether different *wh*-expressions affect the presence of inversion in *wh*-questions. In order to have a better understanding of the bilingual child's acquisition of *wh*-questions in English, the bilingual child's development of inversion in *wh*-questions will also be looked into from the perspectives mentioned above.

Table 15 summarizes the occurrences of inversion in *wh*-questions and yes-no questions in our bilingual data.

Table 15 The occurrences of inversion in *wh*-questions and yes-no questions in the bilingual data

Age	MLUw	Inversion in <i>wh</i> -questions		Inversion in yes-no questions
		<i>wh</i> -preposed e.g. Where is doctor?	<i>wh</i> -in-situ ²⁹	
1;11	1.828	3(what2)(where 1) ³⁰		
2;00	2.336	7(what 1)(where6)		
2;01	2.556	8(what 4)(where 4)	0	2 (do 1) (can 1)
2;02	2.161	11(what3)(who4) (where1)(how2)	0	1 (is 1)
2;03	3.250	8(what3) (where5)	0	
2;04	2.767	2 (where2)	0	
2;05	2.657	6(what2) (where4)	0	1 (do 1)
2;06	2.422	9(what9)		
2;07	2.995	8(who1)(where5)(why 2)	0	
2;08	2.453	1(where 1)	0	
2;09	4.060	7(what1) (where 6)		
2;10	3.584	3(what2) (where 1)	0	3 (are-copula 3)
2;11	3.372	0		1 (is-copula)
3;01	3.507	13(what 4)(where 5)(how 1) (why3)	0	
3;02	3.163	1 (how1)		
3;04	4.000	6(what1) (where 5)		
3;05	3.556	5 (what2) (who 1)	0	6(don't/did 2)(is-cop. 1)(shall3)
3;06	3.337	1(what 1)	0	14(is/isn't 2) (shall 12)

One conclusion we can infer from this table is that the placement of *wh*-expressions was closely related to the presence or absence of inversion in *wh*-questions. If *wh*-expressions remain in-situ, not a case of subject-auxiliary inversion can be detected.

²⁹ When the box is left unfilled, it means no case of *wh*-in-situ is found in the data. When the box is filled with '0', it means there exist cases of *wh*-in-situ in the data, but no inversion is found in these questions.

³⁰ Within the brackets, the *wh*-expression represents the type of *wh*-question in which inversion takes place. The number following the *wh*-expression indicates the frequency of occurrences of inversion.

In Klima & Bellugi's (1966) study, it was found that when inversion occurred in yes-no questions after the children's MLUm reached 4.0, the children's *wh*-questions still featured the canonical declarative word order, i.e. auxiliaries remained in their base-generated positions. They noted that "there is now a class of verbal forms that inverts with the subject in certain interrogatives (yes/no questions) and may take the negative particle with it...Notice, however, that the auxiliary verbs are not inverted with the subject noun phrase in *wh*-questions" (1966:205). Superficially their observation was not supported by our bilingual data, for in the bilingual data subject-auxiliary inversion was found right from the time *wh*-question made their first appearance when the child reached 1;11. Inversion was attested even in the early *wh*-questions, which was in contradistinction to what has been reported in the previously mentioned monolingual study. Nevertheless, one point we should not ignore is that data in Table 16 also included a lot of cases of inversion in which the moved verb is copula 'be', e.g. *who are you?* This structure is a little different from the structure in which the moved verb is of other types of auxiliaries, such as modal auxiliaries, aspectual auxiliaries 'be' and 'have', and auxiliary 'do'. The inverted structure involving movement of copula 'be' is used to identify a person (e.g. *Who are you?*), to locate a(n) person/object (e.g. *Where is the station?*) and to keep communication channel open (e.g. *How are you?*). When care-takers help a faltering child, or even a babbling baby to learn about his immediate world, they often start with this structure and then supply answers. Thus these expressions may easily become part of the child's formulaic or semi-formulaic expressions due to the sheer amount of exposure. In other words, production of these expressions does not necessarily involve use of the syntactic rule under investigation as they may be unanalyzed chunks. With these formulaic (e.g. *What's it?*) and semi-formulaic expressions (e.g. *Where's + NP*) excluded, Table 16 reports the result after such refinement was done.

Table 16 Inversion in *wh*-questions and yes-no questions in the bilingual data (formulaic and semi-formulaic expressions excluded)

Age	MLUw	Inversion in <i>wh</i> -questions		Inversion in yes-no questions
		[+Aux. +Inversion]	[+Aux. -Inversion]	
1;11	1.828	0		
2;00	2.336	0		
2;01	2.556	0	1 (what 1)	2 (do 1) (can 1)
2;03	3.250	0		
2;04	2.767	0		
2;05	2.609	0		1 (do 1)
2;06	2.422	0		
2;07	2.995	2 (why 2)	1 (where 1)	
2;08	2.453	0	1 (where 1)	
2;09	4.060	0		
2;10	3.584	1 (what 1)		3 (are-copula 3)
2;11	3.372	0		1 (is-copula)
3;01	3.507	3 (why 3)		2 (can 2)
3;02	3.163	1 (how1)	1 (why 1)	
3;04	4.000	3 (where 3)	1 (why 1)	
3;05	3.556	0	8 (why 8)	6(don't/did 2)(is-cop.1)(shall3)
3;06	3.337	0		14(is/isn't 2) (shall 12)

Table 16 shows that there existed a period during which inversion was absent in both *wh*-questions and yes-no questions. It was found that inversion in *wh*-questions appeared after inversion in yes-no questions. Canonical declarative word order was kept in *wh*-questions before inversion took place, e.g. What it is this one? (2;01;22), and it remained even after inversion in *wh*-questions had emerged. Generally speaking, the frequency of inversion was not so high in *wh*-questions as in yes-no questions. Another observation is that non-inversion seems to occur more often with certain type of *wh*-questions, e.g. why-questions.

4.4 Summary

This chapter reports findings on the acquisition of *wh*-questions by the bilingual child based on the data collected in a longitudinal study. The comparison of monolingual data and the bilingual data shows that the development patterns of *wh*-questions in monolinguals and the bilingual child are similar as far as the acquisition order of different types of *wh*-questions in both Cantonese and English is concerned. Both the distribution pattern and appropriate use of a question form to express different meanings in Cantonese suggest that the bilingual subject's development of Cantonese *wh*-questions is on a par with that of monolingual children. Moreover, two phenomena which have been reported in the acquisition of *wh*-questions by monolingual English-speaking children regarding inversion in *wh*-questions are also found in the bilingual data, viz. (1) a time-lag between inversion in yes-no questions and in *wh*-questions and (2) the effect of *wh*-expressions on inversion. Nevertheless, it is noticed that the placement of *wh*-expressions in bilingual child's English differs much from that of monolingual children, the position of *wh*-expressions becomes one feature that distinguishes the bilingual child from monolingual children. In English while *wh*-expressions in the monolingual data consistently occur in the initial position of a sentence, the bilingual child shows variant placement of *wh*-expressions. In many cases *wh*-expressions, in particular object *what*-questions stay in-situ, much like their counterparts in Cantonese.

Chapter 5

DISCUSSION AND CONCLUSION

In Chapter One, we review two hypotheses concerning how bilingual children approach two grammars. The autonomous separate development hypothesis assumes language-specific development of two grammars in bilingual children in the sense that the development of two grammars is like that in monolingual children. In contrast, the interdependence hypothesis posits the interdependent development of two grammars in bilingual children in the sense that the two grammars interact with each other during the process of grammar development.

If the postulation of separate development of two grammars captures what really happens in bilingual development, it is predicted that *wh*-questions constructed by the C/E bilingual child will resemble those produced by monolingual children. On the other hand, if interdependent development of two grammars turns out to be the case in the bilingual acquisition of grammars, one developing stage is expected when *wh*-questions constructed by the C/E bilingual child will reveal systematic influence coming from one grammar to the other. Either transfer or acceleration or delay could be considered as a manifestation of interdependence.

In the following we discuss whether the predictions are borne out in the development of *wh*-questions in the bilingual child. Findings about the child's acquisition order of *wh*-questions and placement of *wh*-expressions in the two languages are given a detailed discussion here in order to provide the background to address the issue of how the child approaches two languages. A tentative account for the developmental pattern will be proposed from a UG perspective.

5.1 The acquisition order of *wh*-questions in the bilingual child's English

The discussion of acquisition order does not bear on the issue of 'how to approach two grammars' directly, but it furnishes us with some idea about the general

mechanisms that underlie the linguistic development of the bilingual child, both cognitively and linguistically and about the pace of the bilingual child's linguistic development. Slobin (1971) has argued that we could impute the linguistic realization of semantic categories at different times to perceptual salience. From the point of view of cognitive development, the acquisition of different *wh*-questions is possible only under the condition that the learner has reached the cognitive development stage to know the notion underlying each *wh*-expression. In other words, the order of acquisition is closely related to the order of conceptual development. e.g. the concepts of objects and people are less complex than the concepts of time and manner, thus are developed earlier. As a consequence, questions about time are acquired later than questions about objects. Our findings show that the acquisition sequence of *wh*-questions by the bilingual child in both Cantonese and English bears strong resemblance to what has been reported in previous studies of monolingual first language acquisition: the bilingual subject has gone through the same developmental stages as his monolingual counterparts and learnt to ask *what/where* questions before *who/why* questions and *how*(adjunct)-questions while *when*-questions were still not produced. From this evidence we can infer that the bilingual child's linguistic as well as cognitive development is on a par with that of monolingual children. And it is reasonable to assume that by the time our taping stopped, the bilingual child has not reached the cognitive development stage to understand temporal concepts.

Nevertheless we still need to explain the late emergence of basic *wh*-expressions forming part of a compound noun, basic *wh*-expressions occurring in NP containing a nominalizer or basic *wh*-expressions + CL (+N) in the bilingual Cantonese data. One possible answer, as has been argued by Slobin (1982), might be due to the complexity of the formal devices to express a given meaning, as is true of monolingual children.

As noted earlier in relation to acquisition order, argument questions were acquired before adjunct questions in both the Cantonese data and the English data of the bilingual child. On average, in English the first argument questions were produced 11 months earlier than adjunct questions while in Cantonese the first argument questions

were asked again 10 months earlier than adjunct questions, which was quite similar to what has been reported in monolingual data. According to Stromswold, “averaging across *wh*-expressions and children, the children asked their first argument question 7.1 months before they asked their first adjunct questions” (1988:110). Even with the same *wh*-expression, say ‘where’, in our bilingual data argument questions were produced 4 months earlier before the adjunct questions were observed. This was in line with what has been reported by Stromswold in the monolingual data where “the children asked their first argument *where* question 6.8 months before they asked their first adjunct *where* question” (1988:111). Moreover, there was an asymmetric development of subject and object questions with the same *wh*-expression. In other words, if a word can occur in both subject position and object position like ‘mat1je5’ in Cantonese < e.g. **mat1je5** hoeng2? (‘what rings?’) (*wh*-expression in subject position), nei5 gin3 dou2 **mat1je5**? (‘what did you see?’) (*wh*-expression in object position) > and ‘what’ in English < e.g. **What** is fragrant? (*wh*-expression in subject position), **What** do you like? (object *wh*-expression)>, it is object questions that were produced earlier (except for ‘bin1go3’ (‘who’)- questions in Cantonese.). Obviously, this sequence cannot be explained by conceptual accounts. There must be some other factors at work other than cognitive ones.

To account for this asymmetric phenomenon in the monolingual data, Stromswold (1988) proposed The Government Hypothesis. The Government hypothesis developed from the framework of Government and Binding Theory (GB Theory) assumed that syntactic difference caused this asymmetric development. According to GB Theory, object questions differ from subject questions and adjunct questions in how the *wh*-trace is governed. The Empty Category Principle in GB theory states that :

Traces must be properly governed.

A properly governs B iff A theta-governs B or A antecedent-governs B.

A theta-governs B iff A governs B and A theta-marks B.

A antecedent-governs B iff A governs B and A is co-indexed with B.

(Haegeman 1991: 404)

Wh-trace, as one type of trace, is also subject to this constraint. The government of

wh-trace is achieved in the same two ways: either theta-governed / lexically-governed or antecedent-governed. Lexical-government applies in object-questions where the trace is governed by a verb while antecedent-government applies in subject-questions and adjunct-questions where the *wh*-trace is governed by the *wh*-expression via a chain. Lexical-government is thought to be more accessible to children than antecedent-government, for the trace after the verb can be easily identified with the knowledge of argument structure. This, in Stromswold's view, explains why object questions emerge earlier than subject-questions and that argument questions are acquired earlier than adjunct questions. If this reasoning is on the right track, we can further infer from the empirical evidence from both monolingual and bilingual data that besides cognitive factors, linguistic knowledge of argument structure also conspires to produce this acquisition order.

Nevertheless, the above account still fails to accommodate the data that in Cantonese *binlgo3* ('who') in subject position is acquired earlier than in object position. Cheung (1995) suggested a semantic way to look into this phenomenon of asymmetry. As verb types are highly correlated with acquisition order, different types of verb assign different theta-roles to their arguments. The external argument of action verbs is usually assigned the role of agent by the action verb and carries the semantic feature of [+animate, +human] while the internal argument could be either assigned the role of theme or patient and carry the feature of [\pm animate, \pm human]. Since *binlgo3* ('who') carries the semantic feature of [+animate, +human], Thus in mapping theta roles, it's not surprising that children will map *binlgo3* onto the external argument position before mapping it onto the internal position. Hence we observe that *binlgo3* who-subject questions are acquired before *binlgo3* who-object questions. Going through the 13 *binlgo3* who-subject questions in the bilingual data, it is found that there are 9 cases in which the verb assigns the external argument the role of agent which carries the semantic feature [+human] such as *daa2* ('beat'), *sik1* ('know'), *sung3* ('send'), *gau3* ('rescue'). It seems that the question of why *who*-subject questions are acquired before *who*-object questions is readily accounted for. Whether this way to look at the phenomenon of asymmetry in acquiring other types of *wh*-questions in the bilingual

data is plausible needs further investigation. One point we are very certain of is that as far as the acquisition order of *wh*-questions is concerned, the bilingual child's developmental patterns with that of the monolingual children. This further corroborates the assumption that the core principles that determine the nature of language acquisition are the same for both monolingual and bilingual children.

5.2 Placement of *wh*-expressions in the bilingual child's English

As is well-known, syntactically in English *wh*-expressions must undergo movement while in a language like Cantonese there is no overt movement of *wh*-expressions. All the *wh*-expressions in Cantonese remain in-situ. One question is how a child knows whether *wh*-expressions should undergo movement or not. One widely accepted answer to this question within the framework of GB Theory is that movement of *wh*-expressions at syntactic level is subject to parameterization. Since children are thought to be endowed with universal principles which hold for all languages and with parameters along which languages vary, it is assumed that given positive evidence, a child learning either of these two languages will realize that *wh*-expressions will either move or stay in the base-generated position and set the language-specific value of the parameter.

Earlier on we mentioned that it has been documented that the placement of *wh*-expressions in the initial position of an utterance is correct right from the beginning for monolingual English-speaking children. There are only a few cases in which *wh*-expressions are found in their base-generated positions. In Eve's case, for instance, out of 299 *wh*-questions she produced during the period when her MLUw reached 2.09-3.53, i.e. when she was in Klima & Bellugi's (1966) second developmental stage, 5 questions with *wh*-expressions in-situ were found, which accounted for 2% of the total number of *wh*-questions she produced. But when examining the contexts in which this type of *wh*-questions occurred, we found that they fell into the category of either 'imitation' of the care-taker's utterances or the category of 'occasional form'. They should not be counted as counterexamples to the previous observation that even in early

utterances all *wh*-expressions are preposed by monolingual English-speaking children.

The same observation holds true for monolingual Cantonese-speaking children. It has also been observed that from the start when the first *wh*-questions were found in the data, all the *wh*-expressions appear in their base-generated positions in conformity with adult grammar.

Following the assumption that “the core principles that determine the nature of human speech must be the same for both types of speaker. The brain of the bilingual will in essence operate in the same fashion as that of the monoglot, determining the organization of linguistic capacities on the same biologically determined criteria” (Beardsmore 1986:120), we expect that the bilingual child’s *wh*-questions will to a large extent resemble those produced by monolingual children both in English and in Cantonese.

The search result on the bilingual child’s acquisition of Cantonese *wh*-questions shows that all the *wh*-expressions appear in their base-generated positions which conforms to our expectation. There is only one case in which the *wh*-expression *dim2(joeng2)* (‘how’) occurs in an unexpected position.

(1) TI 950216.txt Line: 165 (1;08)

*WIN: cow *dim2joeng2* *giu3* *gaa3*, Timmy?

*CHI: cow *giu3* *dim2*?

Here *dim2* which should occur preverbally has been placed after the verb. Nevertheless, this is not a position allowed in English. This deviant placement cannot be attributed to the child’s simultaneous exposure to English. Studying the rest of *wh*-questions produced by the child during the same period, we could identify only one *bin1*(‘where’)-question with the *wh*-expression occurring in postverbal argument position:

- (2) baai2 # hai2 bin1?
 place at where
 'where is it placed?'

This indicates that by then the child was still at the initial stage of producing *wh*-questions. The analysis of the acquisition order of *wh*-expressions has already shown that argument questions are acquired before adjunct questions. And indeed no adjunct question was found before argument questions (e.g. *where*-question) in the data. So one possible explanation of this particular occurrence of *dim2* is that the child might not know the function of *dim2*, not to speak of knowing its syntactic category and its placement. The placement of this *wh*-expression in postverbal position which is often the place for object-questions suggests that the child might treat it as an argument question.

If our reasoning is on the right track, based on the distribution pattern of Cantonese *wh*-questions, one conclusion we can reach is that development of Cantonese *wh*-questions in the bilingual child is on a par with that of monolingual Cantonese-speaking children. The *wh*-expressions in Cantonese *wh*-questions always appear in their base-generated position. No evidence of delay, transfer or acceleration is detected so far as acquisition of Cantonese *wh*-questions is concerned.

As for the position of *wh*-expressions in English, again we expect that with UG principles such as Scope principle and *wh*-criterion at work, all the *wh*-expressions in the bilingual child's *wh*-questions will move to the initial position of utterances as in monolingual acquisition of *wh*-questions. The analyses on the available data, however, show that such an expectation is not met. Out of a total number of 101 cases in which the *wh*-expression should be preposed in the adult grammar (i.e. object *wh*-questions), 58% *wh*-expressions remained in-situ. Only 42% *wh*-expressions were preposed.

Going back to the distributional pattern of *wh*-expressions in the bilingual data, we can see that in all the *wh*-in-situ cases, *wh*-expressions occur in the object position, very

much like their Cantonese counterparts in the subject's Cantonese data. The main source of *wh*-in-situ comes from what-object questions which account for 95% of the *wh*-in-situ cases.

- (3) That's **what**? (2;01;02)
- (4) Me find the **what**? (2;03;16)
- (5) Bite the **what** ? (2;08;17)

When reviewing the data, we find that in Cantonese the frequency of the Cantonese counterpart 'mat1je5' in object positions is very high as well. Out of 125 'mat1je5' questions, 106 of them are object questions, taking up 85% of the total number. Since occurrence of the *wh*-expression 'what' in base-generated object position at surface structure is neither licit in English grammar nor is found in monolingual English-speaking children's data (except in echo questions or in an occasional form to achieve special discourse effect), the high frequency in this position in English obviously is the result of transfer from Cantonese. This is a typical example of transfer which involves "the incorporation of a grammatical property into one language from the other." (Paradis & Genesee 1996:3). For the bilingual child, Cantonese is the dominant language compared with the other language he is acquiring (see discussion of the bilingual development in the bilingual child in Section 3.1.3). Thus we argue that the high frequency of English *wh*-expressions in object position is the result of transfer of the in-situ property from Cantonese to English. The directionality of transfer is from the dominant language to the less dominant one.

Nevertheless, figures from other types of *wh*-expressions seem to complicate the picture. Though the frequency of *where*-object question is very high in the Cantonese data, accounting for 96% of the total occurrences of this type of *wh*-questions, in the English data, however, only 3% of *where*-object questions have *wh*-expressions remain in its base-generated position. *Wh*-expressions in the rest of 97% of *where*-questions have been preposed. The same happened in the case of *who*-questions in the bilingual data with only one case of *wh*-in-situ out of the total number of 13 occurrences. In addition, 100% *wh*-expressions get preposed in *how*-questions, *why*-questions and *whose*-questions. This raises the question of whether our previous observation of

transfer taking place in the bilingual child is generalizable. To clarify this question, we need to go back to the data again.

Firstly, let's look at *where*-questions in greater detail. In Cantonese and English, *bin1dou6* / *where* can occur in both argument position and adjunct position. The data show that throughout taping the child never uses '*bin1dou6*' ('*where*') to question the adjunct of a sentence. Instead, the word '*bin1dou6*' exclusively goes to object position. The words it often co-occurs with is '*heoi3*' ('*go*') and '*hai2*' ('*at*').

(6) ngo5 dou1dou1 heoi3 zo2 **bin1?** aa3? (2;01;22)
 my knife go ASP where SFP
 'Where has it gone?'

(7) baai2 # hai2 **bin1?** (1;08;25)
 place at where
 'Where is it placed?'

It's the same case with the English data in which no adjunct questions are found. All the 58 *where*-questions are exclusively in object position. Out of them, 56 are preposed, 2 remain in-situ. Among those 56 questions, however, 6 are with fixed combination of words.

(8) Where is it? / Where's it?

39 are constructed with elements partly fixed —Where's / Where is + N. Still other 4 cases also function as identifying questions but with copula missing:

(9) Where his leg? (2;08;17)

(10) Where the robbers now? (3;04;27)

Because of the formulaic and semi-formulaic nature of these utterances, it is reasonable to treat them as unanalyzed chunks stored in the child's memory rather than the result of applying any syntactic operations. So what is left now is 7 *where*-questions with *wh*-expressions preposed. Comparing this figure with the figure of *wh*-in-situ, we can see that preposed *where*-questions make up 78% of the total occurrences of novel *wh*-questions (i.e. 9 cases) while *where*-in-situ accounts for 22% of the total number. Still we cannot dismiss the possibility that in-situ *where*-object questions in the English data reflect the influence from Cantonese as '*bin1dou6*' in the bilingual data always occur in

object position. The influence coming from the dominant language, i.e. Cantonese *where*-questions is not so strong as that on the bilingual child's English *what*-questions.

Binlgo3 / *who*-questions occur not so frequently compared with *what*- and *where*-questions in the bilingual Cantonese and English data. In the bilingual Cantonese data *binlgo3*-questions occur both in subject position and object position. Similarly, English *who*-questions occur in these two positions as well. Among 13 *who*-questions in English, 9 are subject questions and the rest 4 are object questions. Since subject questions ask for information about subject of the sentence which usually takes the initial position, it is natural to find '*who*' in initial position. What is revealing is object questions, for in English, though at deep structure '*who*' may occur in object position, at surface structure it must be preposed. The data show that all 4 object questions are identifying questions. The *wh*-expression is preposed in 3, remains in-situ in 1. Since 3 preposed questions show property of formulaic expressions, e.g. 'Who are you? Who's that?' and one appears to be of the semi-formulaic structure 'who's + N', again we could not consider them to be the result of syntactic operations. Though there are too few *who*-object questions available in the data, we still cannot dismiss the possibility that transfer has taken place for we still have one in-situ case (2;11;12).

To determine whether *how*-questions, *why*-questions and *whose*-questions in the bilingual English data are immune to transfer, a detailed review of the raw data is in need. In adult Cantonese grammar, the *wh*-expression '*dim2gaai2*' can occur "either at the beginning of the sentence or between the subject and the verb." (Matthews & Yip 1994:329). The bilingual Cantonese data show that except for one case in which '*dim2gaai2*' appears in a deviant syntactic position (see discussion of this case above), in all the rest of *dim2gaai2* ('*why*')-questions, the *wh*-expression takes sentence initial position.

- (11) *dim2gaai2* *li1* *gaan1* *uk1* *hou2* *zing6* *ge2*? (3;04;13)
 why *this* *CL* *house* *very* *quiet* *SFP*
 'Why is this house very quiet?'

(12) dim2gaai2 lei5 mei6 cit3 hoi1 ge2? (3;04;27)

why you not cut open SFP

'Why do you not cut (it) open?'

(13) dim2gaai2 jau5 loeng5 go3 bo1bo1zai2 ge2? (3;05;25)

Why exist two CL small ball SFP

'Why are there two small balls?'

Considering that the initial position is a licit position in both languages, English *why*-questions may not be revealing for our discussion of the phenomenon of transfer. However, the parents' diary also keeps the instance of the child putting '*why*' between the subject and verb.

(14) The snail **why** live in the water? (3;04)

Since this position is only allowed in Cantonese, it is most likely that the child's Cantonese also exerts some influence on the child's *why*-questions as in (14).

Other unclear cases as to whether transfer has taken place or not are *whose*-questions and *how*-questions in the child's English. Like '*why*', the counterpart of '*whose*' in Cantonese can also appear in the sentence initial position. Moreover, in the bilingual data, only one case of *whose*-question is found. No inference can be reliably made based on a single example. As for *how*-questions, by the time taping stopped, all cases recorded are formulaic expressions:

(15) How about this?

(16) How are you?

or semi-formulaic expressions:

(17) How about + VP

a. How about get the police? (2;09;23)

b. How about will <&br> [//] break this one? (3;02;03)

Since they might well be prefabricated structures stored in the child's repertoire, we could not address the issue of autonomous vs. interdependent development based on these data.

The above discussion of acquisition of each type of *wh*-expression in English by the bilingual child indicates that in the Cantonese/English bilingual data, one developmental stage can be identified whereby the placement of English *wh*-expressions in *wh*-questions is influenced by his Cantonese grammar. The effect of influence is more obviously seen in the cases when *wh*-in-situ position is obligatory in the child's dominant language, i.e. Cantonese, but not allowed in the child's recessive language, viz. English. The Cantonese-based distribution pattern also renders support to the interdependence hypothesis, i.e. during the language acquisition of bilingual children, two grammars may interact with each other. The direction of influence goes from the dominant language to less dominant one as seen in the case of *wh*-questions in the present subject.

5.3 Subject-auxiliary inversion in the bilingual child's *wh*-questions in English

The absence / presence of subject-auxiliary inversion in the bilingual child's English data, as reported in Section 4.3.3, is strongly correlated with the placement of *wh*-expressions. When *wh*-expressions remained in-situ, not a case of inversion was attested. One may impute lack of inversion to the absence of CP in the child's grammar. However, Table 16 shows that subject-auxiliary inversion has been found in yes-no questions when the child was 2;01. Since one condition for the occurrence of subject-auxiliary inversion in English is the availability of projection of CP which provides a landing site for the auxiliary to move into, the presence of subject-auxiliary inversion is certainly an indicator that CP has been projected in the grammar. Therefore the hypothesis of absence of CP is not born out.

When looking further into the raw data, it is found that the structure in these *wh*-questions is mainly Cantonese-based. Not only do *wh*-expressions remain in their base-generated position, some null subject cases can also be identified.

- (18) draw what else? (2;01;02)
is what? (2;3;16)
shop what? (2;10;07)

Null subjects are also found in monolingual English-speaking children when their clausal structure is still at the VP stage. While null subjects are not allowed in adult English, they are quite acceptable in adult Cantonese grammar. Given the fact that null subjects are still prevalent when the bilingual child already had CP projection in his grammar and that the phenomena (*wh*-in-situ and null subject) can only be found in the child's dominant language – Cantonese, we argue that these *wh*-questions are the result of 'transfer'. The placement of *wh*-expressions shows that the development of questions in English is under the influence of the grammar of the dominant language. The existence of null subject in these *wh*-questions lends further support to the argument that the structure is Cantonese-based.

The bilingual data show that inversion in yes-no questions emerged earlier than in *wh*-questions with preposed *wh*-expressions. Since the same phenomenon can also be identified in the monolingual data, we argue that the time-lag between the emergence of inversion in yes-no and *wh*-questions might be attributed to language-internal factors.

5.4 Overall course of development of *what*-questions in the bilingual child

The present study of the bilingual acquisition of *wh*-questions assumes that the core universal principles that guide monolingual acquisition operate in the same way in bilingual acquisition. In other words, under the Scope Principle and the *Wh*-criterion, all *wh*-expressions in the bilingual English will undergo movement. Moreover, subject-auxiliary inversion takes place as a consequence of *wh*-criterion. But the child's grammar and adult grammar are not qualitatively identical. Moreover, structure building is conducted in a stepwise manner. In the sense of Radford (1996), children build up functional projections one layer at a time: IP is built on VP projection and CP is projected after IP has been projected. Thus the child's development of clause structure will undergo three stages from VP to IP and then to CP.

Among the different types of *wh*-questions produced by the bilingual child, *what*-questions were the earliest ones to appear in the bilingual data and were the most

frequent type of question. Thus we believe that the detailed study of development of what-questions can give us a window into the bilingual development of English *wh*-questions in general.

If we follow Klima & Bellugi's (1964) suggestion to set developmental stages, we can see that Stage I of the bilingual child's development covered months until the child reached 1;11 (MLUw 1.674). Stage II started from the month when the child was 2;00 (MLUw 2.336) to the month when the child was 3;05 (MLUw 3.337). Stage III could not be identified by the time our investigation stopped.

The data show that *what*-questions were found as early as when the bilingual child was at Stage I and were formulaic in nature in that they occurred with specific combination of words (morphemes) not replaceable by other words/morphemes, for example:

(19) What's this? (1;11)

Thus the early what-questions found in the data might well be prefabricated structures rather than products of syntactic operation involved in adult *wh*-question formation.

When the child entered Stage II (2;00), novel what-questions such as (20) began to show up. By novel, we mean they are not formulaic, not the result of imitation but used productively. The emergence of novel *wh*-question is significant for us to observe the development of this particular structure in the bilingual child.

(20) What under here? (2;00)

At the same time auxiliaries also occurred, indicating that the clausal structure might well be IP now.³¹

(21) Don't go the car. (2;00)

It's fall down here.

It cannot.

³¹ We take Haegeman (1991)'s view that auxiliaries appear under INFL.

Given the fact that by then no overt complementizer could be found in the child's data nor were there any cases of yes-no questions, we assume that CP had not been projected then. In that case, under the interaction of the UG principles and positive evidence from input, *wh*-expressions move up and adjoin to IP. However, example (20) is not a telling example due to the reason that it was a subject-question. A more revealing example was produced when the child was 2;01.

(22) What it is this one?

In (22), we can see that the *wh*-expression occurred immediately before the subject.³² It could not be analyzed as taking any position within the IP. We assume that *wh*-expression moved to an adjoined position and adjoin to IP.

At 2;01, yes-no questions began to appear in the data. Since the formation of yes-no question involves moving the auxiliary from head of IP to head of CP, its emergence of it may well be an indicator that the child's clausal structure had been extended from IP to CP. We expect that with the potential landing site of *wh*-phrase available, all *wh*-expressions could undergo movement from their base-generated position to Spec of CP. The data show, however, that the increasing number of novel *wh*-questions when the child was 2;03 was accompanied by an increasing number of cases of *wh*-in-situ. The occurrence of *wh*-in-situ reached its record high level during the period of 2;07 –2;08 and then dropped gradually when embedded clauses began to emerge (2;10). Since monolingual English-speaking children do not go through such

³² We consider 'it' in (22) a productive use rather than an element of the formulaic structure 'what is it', for in the same file 'it' has already being widely used very productively.

- e.g. (2;01;02) a. *Investigator: where can we find this number?
 *Child: no it's gone.
- b. *Investigator: yeah what did you eat?
 *Child: breakfast.
 *Investigator: &mm?
 *Child: it's breakfast.
- c. *Investigator: this one's a watch .
 *Child: can you clean it -?

a developmental stage where *wh*-expressions in *wh*-questions remain in-situ, we argue that the child has transferred the Cantonese-based *wh*-questions to English. This finding substantiates Paradis & Genesee's (1996) prediction that: "It [transfer] is most likely to occur if the child has reached a more advanced level of syntactic complexity in one language than in the other" (p. 3).

Additional evidence leading to the same conclusion that during this period two grammars interact with each other came from the bilingual child's use of 'what' to encode different meanings. As reported in Section 4.1 about the bilingual child's acquisition of *wh*-questions in Cantonese, by the time he was 2;09;08, the child was already able to use one question form 'zou6 mat1je5' to encode different meanings (see Table 9). In his English, the counterpart of 'mat1je5', i.e. 'what' was employed to encode not only identification but location and reason as well. Using 'what' to encode location may only be found in echo-questions or in occasional forms in monolingual English,

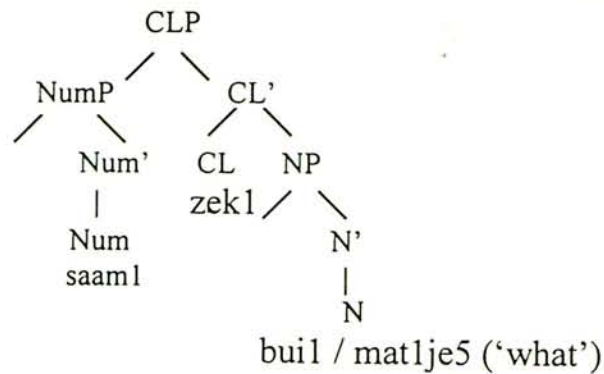
(23) A: I'm going to the park tomorrow.

B: You are going to what? Or: You are going to the what?

Therefore it is conjectured that such a rare use of 'what' to encode location in the bilingual child's English is activated by the multifunctionality of *wh*-expressions in Cantonese. If so, this will be an instance of bilingual bootstrapping which means that something that has been acquired in Language A activates a possible pattern in Language B (Gawlitzek-Maiwald & Tracy 1996).

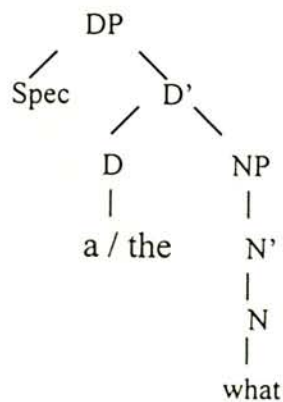
The same analysis of bilingual bootstrapping is found also applicable to the form 'a / the what' in the bilingual data. We argue that the bilingual child's knowledge of the position of 'mat1je5' ('what') in Cantonese nominals pushes up the use of 'a / the what' which is only found in adult echo questions.

The internal structure of Cantonese nominals can be captured with Figure 3, following Au-Yeung's (1997) analysis.³³



In syntactic configuration, 'mat1je5' ('what') in adult Cantonese apparently only occurs in the position of a head N, asking for some particular information.

When we look at the position of 'what' in 'a / the what', we find it similarly occurs not as a full-fledged maximal projection. Rather it seems to occur in a DP, very much like its counterpart 'mat1je5' ('what') in Cantonese nominals.



³³ On Au-Yeung's account, this configuration shows that there is a head-complement relation between CL and the NP it selects. "This not only captures the fact that only in the presence of a lexical CL can the number of the head noun be counted, but also allows for the definite use of bare nouns (e.g. by CL-insertion – noted by the writer) and of CL-N phrases ..." (p. 51). The formal representation also puts the number and the classifier in a spec-head relation. This, again, is used to capture the fact that "the head of a NumP denotes an actual quantity and a CL has its default numeral content, these two categories have a numeral element as their common point... Hence, the NumP occupies the SpecCLP, establishing

Given the fact that the child is Cantonese dominant (see discussion in Section 3.1.3) and that 'a /the what' is not documented in monolingual children's data and can only be found in adult's echo questions, we argue that the exclusive occurrence of 'mat1je5' ('what') in Cantonese in the position of a head N within a maximal projection (i.e. CLP in our model) activates the placement of 'what' in a rarely-occurring position in his recessive language – English, that is, in a complement position inside DP. It was most likely that under the influence of Cantonese, the child treated the *wh*-expression in English both as part of a NP and as a NP , allowing both 'what' and 'a what' to co-occur in his grammar. This suggests that bilingual bootstrapping might have taken place.

The Cantonese-based distribution pattern persisted until 2;10 when embedded clauses began to appear in his English. The emergence of embedded clauses is an indication of the increase of syntactic complexity in English while facilitates its autonomous development of grammar, hence the reduction of the influence coming from the other language. To answer the question -- when such influence comes to the end, resulting in adult-like what-questions in the bilingual child is beyond the scope of our investigation, for by the time our taping stopped, a few instances of *wh*-in-situ were still detected in the data, indicating that interaction between two language systems still existed.

Thus far we have given a detailed discussion of the findings concerning acquisition order of *wh*-questions in both languages, placement of *wh*-expressions and development of subject-auxiliary inversion in English. The same acquisition order found in both the monolingual children and bilingual child strongly suggests that monolingual and bilingual acquisition are governed by the same UG principles. By studying the position of *wh*-expressions and subject-auxiliary inversion in the bilingual data, one developmental stage is identified in English whereby *wh*-questions constructed by the bilingual child reveal systematic influence from Cantonese. The

a spec-head agreement with CL⁰" (p. 52).

direction of influence is from the dominating language, i.e. Cantonese to the less dominant one, viz. English. Detailed study of the development of *what*-questions in the bilingual child lends further credence to the claim that during the process of developing two grammars in the bilingual child, the two language systems interact with each other, hence interdependence between them.

5.5 Conclusion

5.5.1 Summary of findings

The present study was conducted in order to achieve a better understanding of how a bilingual child approaches two grammars. The autonomous development hypothesis assumes that the development of two grammars in a bilingual child is along two separate tracks, each like that developed in monolingual children. The interdependent hypothesis, on the contrary, posits that during the process of developing two grammars in a bilingual child, the two language systems interact with each other, hence the interdependence between them. In order to investigate the validity of the hypotheses, we choose to work on two languages which are typologically distant. Monolingual data are drawn on wherever possible for comparison with the data from the bilingual child. Several aspects concerning the acquisition of *wh*-questions, such as acquisition order, placement of *wh*-expressions and subject-auxiliary inversion in *wh*-questions have been studied in a detailed manner.

The study of acquisition order in both Cantonese and English shows that both monolingual children and the bilingual child have exactly the same acquisition order, viz. argument-questions are acquired before adjunct questions. With the same *wh*-expressions which can occur either in subject position or in object position, object questions were always produced earlier. The Empty Category Principle in the GB Theory was proposed (Stromswold 1988) to account for this asymmetric development of different types of *wh*-questions. According to GB Theory, the *wh*-trace is either theta-governed / lexically-governed or antecedent-governed. Lexical-government

applies in object-questions where the trace is governed by a verb, while antecedent-government is found in subject-questions and adjunct-questions where the *wh*-trace is governed by a *wh*-expression via a chain. Lexical-government is thought to be more directly accessible, for the trace after the verb can be easily identified with the knowledge of argument structure. As a consequence, argument questions are acquired earlier than adjunct questions. In the same vein, object questions are acquired before subject questions. The similar acquisition order is consistent with the hypothesis that the UG principles that operate in the monolingual acquisition also work in the bilingual acquisition. The hypothesis of theta-role mapping is also proposed to account for the asymmetry in acquiring subject and object 'bin1go3'('who')-questions. Whether this way of looking at the phenomenon of asymmetry in acquiring other types of *wh*-questions in the bilingual data is plausible needs further investigation.

Both distributional patterns of *wh*-expressions and appropriate use of question forms to express different meanings show that the bilingual child's development of Cantonese *wh*-questions is on a par with that of monolingual child. In English, monolingual children's *wh*-questions are characterized by correct placement of *wh*-expression in the sentence initial position from the start. This was argued to be the result of interaction of UG principles and positive evidence available to the children. Assuming that children's clausal structure was built up in a bottom-up manner from VP to IP and then to CP, it is proposed that during the VP phase, *wh*-expressions are moved up to adjoin VP. When IP is projected, *wh*-expressions go one layer up to adjoin to IP. *Wh*-expressions will then occupy Spec of CP position when CP is projected. Inversion in *wh*-questions often comes after inversion in yes-no questions, or appears in both types of questions at the same time. Since the time-lag between emergence of inversion in *wh*-question and in yes-no questions is found in the bilingual data and the monolingual data as well, there is possibility that this is a developmental phenomenon.

In the bilingual English data, however, it was found that *wh*-expressions had variant placement patterns. A significant proportion of *wh*-questions, especially *what*-

questions were in-situ questions. Since the distribution pattern of in-situ *wh*-expressions bears a strong resemblance to the pattern of their Cantonese counterparts, we argue that transfer has taken place. A detailed study was conducted to examine the development of *what*-questions in the bilingual child. Instances of transfer could be found in the Cantonese-based placement of *what*-questions while bilingual bootstrapping could also be identified in some special use (e.g. to encode location and reason) and peculiar pattern (e.g. *a/the what*) of this question form. On the basis of these findings it is found that one developing stage could be identified whereby *wh*-questions constructed by the bilingual child reveals systematic influence of one language on the other. The direction of influence was from the dominant language, i.e. Cantonese to the less dominant one, viz. English. To this extent, the interdependent development hypothesis is supported.

5.5.2 Suggestions for further studies

It is believed that having a global picture of the development of both grammars in the bilingual child is very important to the future analysis of development of a certain structure in the same subject. Thus it will be more comprehensive and fruitful if investigation can be extended to other aspects of grammar, such as null arguments, negation, modality, etc. acquired by the same subject.

A more objective measuring rod for determining children's language dominance is sorely called for. It is believed that besides MLUm/w, comparison of type and token ratio of certain syntactic structures available in both languages, such as topicalization, relative clauses, can help determine the syntactic complexity in both languages and provide a more objective measure of language dominance.

Table 16 in Chapter 4 shows that there is a time-lag between emergence of inversion in *wh*-question and in yes-no questions, viz, while inversion could be found in yes-no questions, the canonical declarative word order was kept in *wh*-questions. Since the same phenomenon could also be detected in monolingual data, it has been

suggested that this might be a developmental phenomenon. Some intralinguistic account is called for.

One condition for subject-auxiliary inversion to take place is that children realize that auxiliaries can move into the head of CP. Since formation of wh-questions involves both subject-auxiliary inversion and movement of wh-expressions to Spec of CP, it is argued that "inversion in wh contexts precedes inversion in yes/no questions" (Weinberg 1990:179). But to account for the time-lag between occurrence of subject-auxiliary inversion in yes-no question and in wh-questions, further explanation is in need. Weinberg (1990) proposes the doubly filled Comp filter to account for the data. To see how the doubly filled comp filter works, let us look at the examples below.

- (1) a. I wonder who you saw.
b. *I wonder who that you saw.

The examples show that there is a selection relation between the higher verb and the type of complement it selects. The verb 'wonder' selects an indirect wh-question. Thus sentence (1b) is ungrammatical for the following reason: The head of CP usually percolates its feature and gives an identifying index to its dominating phrase, viz. to CP phrase in this case, but in (1b), the selection restriction is not observed, for the head of CP 'that' cannot percolate wh-feature to its dominating phrase. This accounts for ungrammaticality of (1b) and shows that in a language like English, "if a complementizer must be indexed, it is either with the index of the category in its specifier or its head, the CP cannot contain a lexical head" (Weinberg 1990:173). This stipulation is also known as 'doubly filled Comp filter'. Nevertheless, the filter does not apply to matrix clauses for matrix clauses are not selected by any verbs. Considering the fact that there are some other languages which observe doubly filled Comp filter, it is held that the two values of existence/nonexistence of this filter must be part of the UG. For English-speaking children, however, given that negative evidence is not available, the default value they set concerning this parameter must be that English respects this doubly filled Comp filter, both in embedded clauses and in matrix clauses and they will not reset the value until they come across positive evidence in the language. This hypothesis, according to Weinberg (1990), accounts

for children's structure of *wh*-questions. In adult English, *wh*-question formation involves moving *wh*-expressions into Spec of CP and raising auxiliaries from I to C in matrix sentences. This movement superficially violates doubly filled Comp filter, for the head of CP apparently contains a raised lexical item. Therefore, as pointed out by Weinberg, it is not surprising that some children choose not to invert, just as Klima & Bellugi (1966) reported: "the auxiliary verbs are not inverted with the subject noun phrase in *wh*-questions" (p. 205). It is when children have enough evidence, especially evidence of *wh*-expressions moving from object position to the Spec of CP, to assume that in English matrix clauses there is no selection relation between any dominating phrase and elements in CP does children's grammar allows subject-auxiliary inversion in *wh*-questions. As to when children make such an assumption, the developmental schedule varies from person to person. That is why for some children inversion occurs concurrently in *wh*-questions and in yes-no questions; for some other children inversion emerges earlier in yes-no questions than in *wh*-questions.

This account proposed by Weinberg seems to work well in explaining the time-lag between emergence of subject-auxiliary inversion in yes-no questions and in *wh*-questions. The main argument given by Weinberg (1990), however, is not without problems. In her article, Weinberg (1990) emphasizes that the default value set by English-speaking children is that English respects the doubly filled Comp filter. According to Weinberg, the default value concerning the grammar of a language, being different from what children can deduce from evidence, would be the value chosen by children based on their first guess/hypothesis. This hypothesis should be the most restrictive one in the sense that it generates the smallest external language in order to avoid problems like overgeneralization and lack of negative evidence. Therefore, when setting the value for the doubly filled Comp filter, the default assumption that English-speaking children assume is that there exists a selection relation between a higher verb and the complement clause it takes rather than the other way round, i.e. there exists no selection relation between any dominating material and elements in the CP. Only on the basis of abundant positive evidence do children realize that in English matrix clauses there is no selection relation between any dominating phrase

and elements in CP. Since the default assumption contains more constraints in order to avoid the problem of overgeneralization and lack of negative evidence, the acquisition process on this account will be along the line of what Bowerman (1988) called “successive removal of constraints on rule application” (p. 97). This clashes with our intuition about a child’s acquisition process of building more complex structures on top of simpler ones (e.g. It is found that embedded clauses in the bilingual child’s English appeared much later (2;10) compared with the time simple clauses could be identified in the data (1;07)). Thus what is open to doubt is whether doubly filled Comp filter operates in children’s acquisition of matrix *wh*-question formation. If it does not, all the arguments built on doubly filled Comp filter concerning the time-lag between emergence of subject-auxiliary inversion in yes-no questions and in *wh*-questions will collapse. And the question remaining is: what is the intralinguistic factor that is responsible for this phenomenon? This is a question that needs further investigation.

Table 16 in Chapter 4 also summarizes the findings of the effect of *wh*-expressions on inversion. It seems that noninversion is more frequently found in certain types of *wh*-questions, e.g. why-questions. The same phenomenon is also found in monolingual data. Radford (1996) proposes operator – quantifier distinction to account for the phenomenon. He suggests that a *wh*-expression can function either as an operator or as a quantifier. When acting as an operator, it moves into Spec of CP. When functioning as a quantifier, it adjoins to IP. If a *wh*-expression move into Spec of CP, auxiliary movement will follow to meet both the *wh*-criterion and the economy principle which requires that no head could be left empty either at PF or LF. If *wh*-expressions adjoin to IP, there is no problem of empty head. Therefore one of the learning tasks for children is to decide whether a specific *wh*-expression is an operator or a quantifier or is both. Nevertheless, under this account given by Radford (1996), questions of learnability arise. Adult *wh*-questions all involve moving *wh*-expressions to Spec of CP and moving auxiliaries from head of IP to head of CP. What will be the positive evidence based on which children make a distinction between operator and quantifier? This would be an interesting topic to pursue in future studies.

The present systematic longitudinal study focuses on the acquisition of wh-questions by a bilingual child acquiring a pair of typologically distant languages – Cantonese and English is the first of its kind. It has offered evidence for the interdependent development hypothesis. The findings are preliminary. It is believed that more data coming from subjects with the same pattern of language dominance, subjects with different patterns of language dominance, (for instance, from English dominant subjects), and balanced Cantonese-English bilingual children, will help better understand the issue of how Cantonese-English bilingual children acquire the two grammars and make any conclusion drawn more generalizable and convincing.

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Appendix I: Two sample files from the corpus

@Begin

@Participants: CHI Timothy Target_Child , LIN Linda Investigator ,
BEL Bella Investigator

@Age of CHI: 3;05;00

@Sex of CHI: Male

@Birth of CHI: 21-May-1993

@Date: 21-Oct-1996

@Tape location: TI081 (Side B)

@Time duration: 16:00-17:00

*LIN: what kind of lantern is this -.
*CHI: it's blue and green .
*LIN: it's a blue lantern , and that's not a green lantern .
*LIN: that's a purple lantern .
*CHI: purple and green .
*LIN: purple and blue .
*LIN: is that so -?
*LIN: yeah , purple and blue lantern .
*LIN: ok , now , < what are you doing just > [//] what were you doing
< just now -. > [>]
*CHI: < xxx > [<] here's dog .
*LIN: here's dog .
*CHI: dogs .
*LIN: dog !
*LIN: where's the dog -.
*CHI: here .
*LIN: will dog bite us -.
*LIN: will dog bite us -.
*CHI: no .
*CHI: what -.
*LIN: dog -?
*CHI: it's +...
*CHI: now it's very late now here .
*LIN: yes , it's very late .
*CHI: and me , to put some light .
*LIN: ok , we have to turn on the light , right -?
*BEL: we walk together -.
*LIN: yeah , shall we go together -?
*CHI: go to the park .
*LIN: go to the park -?
*LIN: but it's very dark outside -.
*LIN: why should we go to the park -.

*CHI: here is the park .
 %exp: the child is pointing at a lego park .
 *LIN: oh , here is the park .
 *LIN: ok , very good .
 *BEL: don't off .
 *BEL: I'm scared .
 *LIN: ok , what is inside this park -.
 *LIN: let me see .
 *LIN: oh , < there is a > [/] there is a airport .
 *LIN: oh , the park is very big-because there is an airport there .
 *LIN: look .
 *LIN: and also there is a car park there .
 *LIN: is that so -?
 *CHI: yes .
 *LIN: yes .
 *LIN: you are right .
 *LIN: then how many planes are here -.
 *CHI: this a +...
 *LIN: how many planes are on the airport -.
 *CHI: one and two helicopters and a boat .
 *LIN: two helicopters and a boat -?
 *LIN: is this a boat , too -?
 *CHI: no , < is that , is that > [/] it's a house .
 *LIN: it's a house .
 *LIN: well , why all the people are sitting in the house -.
 *LIN: why are they sitting there -.
 *CHI: because it's very late in the airport .
 *BEL: very late -?
 *LIN: it's very +...
 *LIN: are they waiting -.
 *LIN: are they waiting here < to get on the > [/] to get on board < the > [/]
 the plane -?
 *CHI: no .
 *BEL: what are they waiting for -.
 *LIN: no -?
 *CHI: they are inside like this .
 *CHI: is this a police wake up and he will go inside .
 *LIN: police -?
 *CHI: this engine he go inside here .
 *LIN: < why the police > [//] why will the police come -.
 *CHI: he will catch the xxx .
 *LIN: catch < the > [/] the bad guy -?
 *CHI: no , catch this one .

@End

@Begin

@Participants: CHI Timothy Target_Child, BEL Bella Investigator,
GRA Grandmother, SIS Sister

@Age of CHI: 3;06;25

@Sex of CHI: Male

@Birth of CHI: 21-May-1993

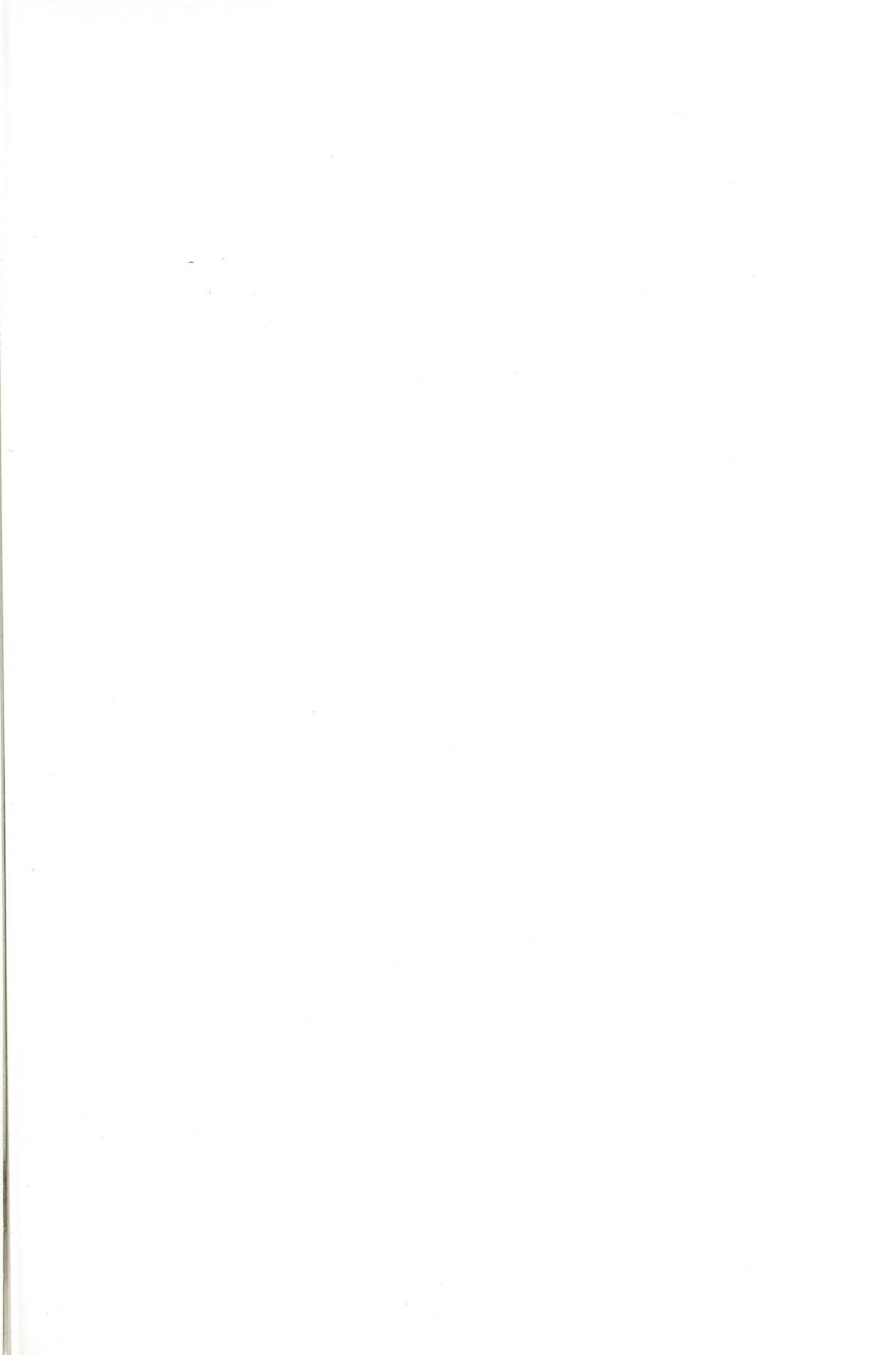
@Date: 16-Dec-1996

@Tape location: TI085 (Side A)

@Time duration: 16:00-17:00

- *CHI: hou2 laa3 , ngo5dei6 giu3 ging2caat3 lei4 laa1 .
*BEL: giu3 ging2caat3 ?
*BEL: daa2 din6waa2 laa1 .
*CHI: hou2 laa1 [/] < hou2 laa1 > [>] .
*BEL: < jau5 mou5 din6waa2 aa1 > [<] .
*CHI: hou2 laa1 .
*CHI: ngo5 bong1 lei5 , lei5 m4 hou2 +/-.
*BEL: hou2 , ngo5 co5 hai6 ji1 dou6 dang2 hou2 mou2 ?
*CHI: < lei5 > [/] lei5 m4 hou2 gong2 je5 aa3 .
*BEL: hou2 aa3 .
*CHI: < ngo5 > [/] ngo5 wan2 ging2caat3 .
*CHI: www .
%exp: the child rings the police .
*CHI: wai2 , ging2caat3 , lei5 lei4 zuk1 go2 dil pin1fok1 laa1 .
*CHI: aa3 - : .
*BEL: dak1 mei6 aa3 - .
*BEL: ging2caat3 gong2 mat1je5 aa3 - .
*BEL: ging2caat3 waa6 ji4gaa1 lei4 laa4 - .
*CHI: hai6 lo1 .
*BEL: jau5 gei2 do1 go3 ging2caat3 lei4 aa3 - .
*CHI: jau5 # sap6jat1 hou6 A lei4 aa3 .
*BEL: sap6jat1 hou6 A ?
*CHI: hai6 .
*BEL: 0 [=! Laughing] .
*BEL: ging2caat3 m4 hai6 daap3 ging2cel1 gaa3 me1 ?
*BEL: daap3 sap6jat1 hou6 A gam3 zaa2 ge2 ?
*BEL: 0 [=! Laughing] .
*BEL: jiu3 daap3 baalsi2 gaa4 ging2caat3 - .
*CHI: < daap3 > [/] jiu3 daap3 ging2caat3 cel1 sin1 dak1 gaa3 .
*BEL: ging2caat3 cel1 .
*BEL: sap6jat1 hou6 A .
*CHI: ngo5 zau6 lei4 dak1 laa3 .
*CHI: www .
%exp: the child imitates driving the police car .

*CHI: 0 [=! pretends to be the policeman] .
 *CHI: me1 si6 aa3 -.
 *CHI: ji1 dou6 jau5 +...
 *BEL: jau5 mat1je5 aa3 -.
 *CHI: pin1fuk1 aa3 .
 *CHI: saat3 sei2 keoi5 laa1 .
 *BEL: hou2 laa1 .
 *CHI: hai2 bin1 dou6 aa3 -.
 %com: the telephone rings .
 *BEL: ji2 , jau5 din6waa2 aa3 .
 *BEL: hai2 bin1 dou6 ?
 *BEL: hai2 po1 syu6 go2 dou6 lo1 -: .
 *BEL: hou2 do1 aa3 .
 *BEL: tau4sin1 teng1 dou2 hou2 daai6 seng1 aa3 go2 di1 pin1fuk1 .
 *BEL: hou2 cou4 aa3 .
 *CHI: haa2 ?
 *BEL: dim2 syun3 le1 ?
 *BEL: < lo2 me1 saat3 keoi5 aa3 > [>] -.
 *CHI: < gam2 dou1 jau5 ge2 > [<] .
 *BEL: < pan3 saat3cung4seoi2 > [/] pan3 saat3cung4seoi2 .
 *CHI: www .
 *CHI: 0 [=! shoots towards the trees] .
 *CHI: < hai2 go2 dou6 aa3 > [=! Shouts] .
 *BEL: hai6 ?
 *CHI: < hai2 go2 dou6 aa3 > [=! Shouts] .
 *BEL: dim2 aa3 , jau5 mou5 coeng1 aa3 -.
 *CHI: ngo5 jau5 aa3 .
 *BEL: se6 keoi5 laa1 .
 *CHI: www .
 *CHI: 0 [=! shoots] .
 *CHI: ji4gaa1 jau5 hou2 do1 ging2caat3 lei4 zo2 laa3 .
 *CHI: faai3 di1 # ging2caat3 # faai3 di1 zuk1 +...
 *CHI: saat3 zo2 keoi5 .
 *CHI: www .
 %exp: the child is shooting the bats .
 *BEL: dak1 mei6 aa3 -.
 *BEL: sei2 zo2 mei6 aa3 -.
 *BEL: jiu3 gam2joeng2 se6 ge2 ?
 *BEL: jau5 gei2 do1 zek3 pin1fuk1 aa3 -.
 *CHI: loeng5 zek3 gaa3 laa3 .
 *BEL: loeng5 zek3 ?
 *BEL: saat3 gam3 loi6 ge2 ?
 *CHI: www .
 *BEL: 0 [=! Laughing] .
 @End.



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