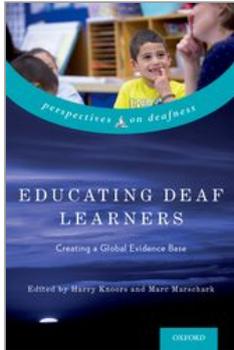


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Awareness of Hong Kong Sign Language and Manually Coded Chinese by Deaf Students Learning in a Sign Bilingual and Co-enrollment Setting

A Hong Kong Case Study

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Abstract and Keywords

This chapter reports on a study that explored whether severely and profoundly deaf students studying in a sign bilingual and co-enrollment environment were aware of the existence of two forms of signing—Hong Kong Sign Language (HKSL) and manually coded Chinese (MCC)—in the learning environment, and how they differentiated one form of signing from the other. To investigate this issue, we recruited 18 severe to profoundly deaf students studying in this environment to participate in a language differentiation task, a questionnaire survey, and a focus group discussion. Results showed that there was growing language awareness between HKSL and MCC among the students, and their language differentiation ability was correlated with HKSL but not Cantonese or written Chinese proficiency. Data from the other two

tasks found interesting preferences for communication modes in class, subject to the hearing status of the teachers as well as pedagogical motivations.

Keywords: sign bilingualism, co-enrollment, language awareness, deaf students, deaf teacher

Introduction

As a consequence of the promotion of inclusive deaf education in recent years, signed language support is no longer confined to deaf schools in many countries and may be brought into mainstream settings attended by deaf students. It is usually rendered by Deaf teachers/paraprofessionals, hearing itinerant teachers for the deaf, or sign interpreters (Humphries & Allen, 2008; McKee, 2005). To some extent, such signed language support indirectly promotes bimodal bilingualism of these deaf students although it is usually not the primary goal but deaf students' "rights to access to information."

The inertia of promoting bimodal bilingualism for deaf students seems to stand against the accumulative research findings of bilingualism over the past decades. In spoken languages, results suggest a cognitive advantage rather than disadvantage. Constant code switching between languages, for instance, reflects the bilingual language user's linguistic sophistication rather than confusion. It may also lead to a heightened metalinguistic awareness of the similarities and differences between two linguistic systems (Bialystok, 2001; Bialystok & Barac, 2012; Bialystok, Peets, & Moreno, 2014; Grosjean, & Li, 2013). On the sign bilingual front, research on bimodal bilingualism features code blending to be more prominent than code switching. The facility of using both the oral and manual articulators simultaneously is one reason; another more important reason is the possibility of accessing (p.118) two grammatical systems simultaneously during linguistic processing (Donati & Branchini, 2013; Emmorey, Borinstein, & Thompson, 2005; Fung & Tang, submitted; Lillo-Martin, Quadros, Koulidobrova, & Chen Pichler, 2010; van den Bogaerde & Baker, 2005). Co-activation of two lexicons is also observed among bimodal bilinguals, adults and children alike (Ormel & Giezen, 2014). Taken as a whole, this body of research underscores the possibility of cross-linguistic or cross-modal transfer of knowledge of two linguistic systems in bimodal bilinguals, both in terms of language acquisition and language processing.

In recent years, deaf school education where the philosophy of sign bilingualism found its origin in the early 80s is being replaced gradually by inclusive education. However, as said, the adoption of natural signed language in regular school settings is not automatic. The increasing popularity of cochlear implantation seems to make signed language look superfluous or an unfounded threat to deaf students' oral language development when they are educated in regular school settings. Even for research on the effectiveness of signed language on supporting deaf students' education, there are constant debates about the choice between natural signed language or manually coded spoken language

(Schiavetti, Whitehead, & Metz, 2004). In fact, it is common to find different forms of signing in sign bilingual classrooms, namely natural signed languages and other codes of communication such as manually coded spoken language (i.e., sign-supported speech), cued speech, fingerspelling, and the like. Learning under such conditions, deaf students need to glean classroom contents as well as linguistic input from the naturalistic and artificial forms of signing in the learning environment. This raises an empirical question of whether they are conscious of the distinctions between the variety of signing around them.

Apparently, what influences the decision to adopt either natural signed language or manually coded spoken language in teaching and learning can be boiled down to factors like the ideology of deaf education, educational settings, signing skills of the teachers of the deaf, as well as the educators' attitudes toward the utility of adopting natural signed language or manually coded spoken language as a medium of instruction, over and above their concern over whether these forms of signing support deaf students' academic attainment or literacy development. All these considerations aside, whether deaf students themselves mark a distinction and how they perceive the utility of the two forms of signing are left unexplored.

In this chapter, we report on a study that investigated the extent to which severely and profoundly deaf students educated in a sign bilingual and co-enrollment environment in Hong Kong developed an awareness that there are two different forms of signing—Hong Kong Sign Language (HKSL) and manually coded Chinese (MCC)—in their learning environment. We examined the strategies these deaf students (p.119) adopted to mark a characteristic distinction between the two forms of signing which intriguingly occur in the same visual modality. We also attempted to explore how they perceived the utilities of these signing varieties in supporting teaching and learning. In this chapter, MCC is defined as a form of artificial signing that is usually adopted to accompany speech; hence, it reflects, either in full or in part, the grammar of either Cantonese or written Chinese. In the Hong Kong context, written Chinese is pronounced via a Cantonese sound system. Although deaf students educated in such an environment are constantly exposed to input from HKSL, MCC, and Cantonese,¹ the language contact situation plus the possibility of cross-modal, cross-linguistic transfer also implies that there may be occasions for the use of MCC. Are deaf students cognizant of the existence of the two different forms of signing in their sign bilingual learning environment? We argue that acquiring such awareness is crucial because it enables us to examine

the extent of metalinguistic awareness that these bimodal bilingual deaf children normally demonstrate, on the assumption that they also engage themselves in switching between HKSL and MCC in the learning environment. More importantly still, as language learners, they need to attune to those data that necessitate HKSL acquisition, and this process also requires that they can differentiate HKSL from MCC the latter of which is based on the grammar of Chinese. In bilingual acquisition research, language differentiation at the phonological level may come as early as the first few months after birth. Cross-linguistic influence during the development of the two grammars occurs at a subsequent stage.

We will first provide a brief discussion on bilingualism and metalinguistic awareness, then a description of the forms of signing observed in the sign bilingual and co-enrollment environment in Hong Kong. Next, we will report on the methodology of the current study and results based on three tasks. Lastly, we will offer some implications for future research.

Bilingualism and Metalinguistic Awareness

According to Bialystok (2001), the term “metalinguistic” may be used as a qualifier for three distinct constructs: *knowledge, ability, and awareness*. *Metalinguistic knowledge* refers to knowledge *about*, not *of*, language. In the study of linguistics, knowledge of language refers to one’s intuitions about linguistic representations reflecting word order, morphological structure, thematic relations, and linguistic constraints, and the like. *Metalinguistic ability* refers to the capacity for using knowledge about language for certain tasks, as opposed to the capacity for using language in daily interactions. According to Bialystok, metalinguistic ability is an additional capacity, independent of the basic mechanisms that drive language acquisition and use. Accumulating intelligence, multilingualism, and education are (p.120) factors underlying the growth of such a capacity. Last, *metalinguistic awareness* is associated with the attention given to the mental representations of linguistic structures in real-time processing. It is a cognitive process, as the user’s attention actively focuses on the domain of knowledge that reflects properties of linguistic structures, sometimes independently of its meaning.

Do bilingual children demonstrate stronger metalinguistic awareness than their monolingual counterparts? Earlier studies by Tunmer and Myhill (1984) observed that fluent bilinguals demonstrated increased metalinguistic abilities, laying the foundation for literacy acquisition and academic achievement. Galambos and Hakuta’s (1988) longitudinal studies found that bilingual children from ages 4;6 to 8;0 were better than monolinguals at judging grammaticality in syntactic tasks, but only the older bilinguals were better at determining ambiguity in sentences. In Galambos and Goldin-Meadow (1990), they compared Spanish-English bilinguals with English and Spanish monolinguals at ages from 4;5 to 8;0 and found that bilinguals displayed a faster transition from content-based to form-based judgments when attempting to detect and correct ungrammaticality, although less of an effect was found with explaining grammatical anomalies.

Recent research by Bialystok and Barac (2012) and Bialystok, Peets, and Moreno (2014) argued for a bilingual advantage in the domain of metalinguistic performance that requires a higher level of executive control. In their studies, they compared the performance of a series of English metalinguistic tasks by Anglophone children in French immersion programs with that of the English monolingual children in regular programs. Whereas the monolingual and bilingual children showed no obvious differences in judgments of grammaticality (i.e., judgments of correct or incorrect sentences), demonstrating their equivalent knowledge of linguistic structures, bilinguals performed

better than monolinguals in metalinguistic tasks that demanded a higher level of executive control and selective attention. One such task required them to judge the grammaticality of linguistic structures that were semantically anomalous. They confirmed that improvement in the executive control of bilingual children was a function of increased experiences in using the two languages in the immersion environment. In Bialystok and colleagues' (2014) study, the monolingual and bilingual children at grade two did not show significant differences in judging semantically anomalous sentences; but such a difference eventually emerged at grade five, with bilingual children performing significantly better than the bilingual children at grade two, and also better than monolingual children at equivalent grades. This study points to the significance of duration of exposure to both languages.

(p.121) Research findings of other studies also suggested that skills for inhibitory control can be transferred to other general cognitive domains. Costa, Hernández, and Sebastián-Gallés (2008) found that bilinguals' constantly exercising inhibitory control over one language while the other one is adopted in processing has a positive impact on their executive control even in other general cognitive tasks that deal with attention networks—alerting (i.e., achieving and maintaining an alert state), orienting (i.e., selecting information from sensory input), and executive control (i.e., monitoring and resolving conflict). In their study, bilinguals were faster in responding to task demands and more efficient in alerts and networks of executive control. For instance, compared with monolinguals, they were faster in responding to alerting cues and were less affected by tasks that required attentional demands for resolving incongruent information.

In the deaf education context, Singleton, Morgan, DiGello, Wiles, and Rivers (2004) argued for advantage of improved metalinguistic awareness among bimodal bilinguals. According to them, it is common for deaf bimodal bilinguals to engage in a cognitive mapping process in which they attempt to align the form-meaning mapping of linguistic units of a natural signed language with their spoken language counterparts, either in speech or in print. Since this metalinguistic mapping process is cognitively challenging, these researchers called for effective pedagogical strategies to support this development because of its obvious relationship with literacy development. Metalinguistic awareness at the discourse level, according to Rathmann, Mann, and Morgan (2007), may be observed where deaf children learn how to combine narrative skills with linguistic skills in the construction of a coherent narrative structure. They argued that development of those metacognitive skills such as how to represent perspective shift, reason,

and motives behind the characters in signed language narratives supports the corresponding development of a similar set of skills in written language narratives.

In sum, findings of the potential positive effects of bilingualism on the linguistic and cognitive development of young children are encouraging. However, the context of sign bilingual education is more complex than any ordinary bilingual classroom involving two spoken languages, like those French immersion programs in Canada or Spanish immersion programs in America. As mentioned above, in a sign bilingual classroom, deaf children are exposed to spoken language and at the same time to different forms of signing. The question is how deaf children mediate between the myriad of linguistic input from spoken language, natural signed language, and other forms of signing reflecting properties of the spoken language. Whether or how deaf learners perceive these forms of artificial signing as sources of linguistic input remains an open question.

(p.122) Natural Signed Language and Visual Communication Systems

With 95% of deaf children born to hearing families without any knowledge of a natural signed language, Knoors and Marschark (2012) argued that this phenomenon poses a huge challenge to supporting the signed language acquisition of deaf children in the home environment. The inadequacy of nonnative input by parents who are adult second language learners of signed language themselves and the inadequacy of spoken language input due to deaf students' hearing impairment make some education researchers query if this situation warrants optimal input for signed language acquisition or literacy development of deaf and hard-of-hearing (DHH) children (Mayer & Akamatsu, 2000; Mayer & Leigh, 2010). The situation is further complicated by the global trend of mainstreaming school-age deaf students with support of advanced hearing technology like cochlear implantation, which may potentially subdue the demand for natural signed language to support the children's overall development (Cripps & Supalla, 2012; Humphries et al., 2012).

Regardless of education settings, supporters for manually coded spoken language argue for a facilitative effect when deaf students are taught using this medium, for it lays a more solid foundation, so to speak, for the acquisition of spoken language and literacy skills, in English for example (Akamatsu, Stewart, & Mayer, 2002; Mayer & Leigh, 2010). Therefore, natural signed languages in different parts of the world have been "competing" with manually coded spoken language, the latter of which is often embedded in simultaneous communication in deaf

education. The extensive use of manually coded English by hearing teachers of the deaf in the midst of promoting use of natural signed language in the classroom was documented in Woodward and Allen (1988), and it still is a common phenomenon today.

Where the spoken language of the larger community is alphabetic and phonetic, such as English, manually coding this spoken language has led to the creation of varieties like Signed Exact English or Pidgin Sign English, some of which incorporate bound grammatical morphemes like “-ing” or “-ed” or alphabetically driven initialized signs into the signing system. In the Chinese context, MCC is generally character or word based. In Mainland China, there are also attempts to create signs that are based on the alphabetic “pinyin” system, and this form of signing is more or less the designated “language” second to speech in educating deaf students. In some extreme cases, natural signed language in the playground is perceived as “nonstandard” and thus avoided (Lin, Gerner de García, & Chen-Pichler, 2009; Yang, 2011). From a linguistic perspective, deaf children accessing education in this kind of classroom condition are undergoing monolingual rather than (p.123) bilingual education with input that Supalla and McKee (2002) would characterize as “impoverished.” In the American context, they argued that manually coded English is just an artificial signing system to supplement speech for deaf students’ comprehension. The language acquisition task still rests upon how much linguistic information they can access through the spoken language using hearing devices.

If language acquisition is contingent upon positive evidence based on naturalistic input, whether manually coded spoken language is a potential source of positive evidence for acquiring a spoken language by deaf students is questionable, especially during the initial stages of their language development. In fact, recent attempts in the wake of emergence of sign linguistic research are to promote use of natural signed language to support deaf children’s overall language development (Plaza-Pust, 2014; Plaza-Pust & López, 2008; Tang, Lam, & Yiu, 2014), development of literacy skills in spoken language (Wilbur, 2000), mathematics skills (Chamberlain & Mayberry, 2000), and cognitive development (Schick, de Villiers, de Villiers, & Hoffmeister, 2007). Goldin-Meadow and Mayberry (2001) also pointed out that exposure to an artificial visual communication system does not bolster language acquisition.

Is it easy to adapt a spoken language to a sign representation in the visual modality? Linguistic research to date has revealed certain distinguishable grammatical processing characteristics between signed language and spoken language (Brentari, 2011; Emmorey, 2007; Klima

& Bellugi, 1979). The size of the articulators is one reason why signs take longer to articulate than spoken words. Depending on the language pair, there may also be a lack of direct correspondence in terms of syllable-morpheme mapping between sign and speech. Therefore, adaptations from sign to speech and vice versa are bound to result in the change of the prosody of language articulation. For instance, except for compounds, lexical signs in HKSL are generally monosyllabic and monomorphemic, but there is a significant proportion of signs such as agreeing verbs or classifier verbs that are analyzable at the phrasal level and polymorphemic. Therefore, simultaneously aligning syllables and morphemes between sign and speech in the Chinese context should pose a big challenge in processing terms.

In the general literature, such discrepancies may lead to consequences such as longer duration in sign articulation or sign omission, especially of the functional categories of the language (Supalla, 1991; Supalla & Mckee, 2002; Wilbur & Pertersen, 1998). From the perspective of language acquisition, acquisition of functional categories offers deaf students knowledge of subtle linguistic principles to build the grammatical system. Therefore, failure to induce the acquisition of functional categories of the spoken language may lead to consequences of not achieving full mastery of linguistic knowledge, affecting the subsequent (p.124) development of spoken language literacy.

Interestingly, Supalla (1991) observes that deaf students exposed to manually coded English long enough still tend to modify it to fit a more natural language representation in the visual modality. In other words, deaf students need to make extra efforts to “nativize” an artificial visual communication system in order to cope with the demands of language acquisition or processing constraints. To date, use of simultaneous communication in deaf education remains controversial (see Marschark & Lee, 2014), probably due to a lack of research on the linguistic nature of this mode of communication, which we suspect can vary quite extensively among users.

Hong Kong Sign Language and Manually Coded Chinese: A Hong Kong Situation

In Hong Kong, HKSL is the natural language variety used by members of the Deaf community; Cantonese, a dialect of Chinese, is the spoken language and also the language of speech and language therapy.

However, written Chinese, which follows the grammar of Mandarin Chinese, is pronounced via the Cantonese sound system. In language acquisition terms, Cantonese is the first language of most typically developing children, and written Chinese is their second language.

However, the dialectal differences between the two grammatical

systems are marred by pronouncing written Chinese using the Cantonese sound system.

Deaf education in Hong Kong is primarily auditory-oral in both deaf school and regular school settings. In recent years, mainstream education for the deaf with hearing devices to promote speech is the norm, leaving little room for HKSL development in deaf education. The predominance of oralism in Hong Kong's deaf education also means that there have been no government efforts to manually codify Cantonese/written Chinese, giving HKSL more room to explore its existence.

The impact of MCC on deaf education is far greater in Mainland China than in Hong Kong. Note that HKSL and Chinese Sign Language share typological lineage to some extent (Sze, Lo, Lo, & Chu, 2013; Woodward & Allen, 1988). However, in Mainland China, the policy of teaching "pinyin" in basic education for the general mass indirectly encourages educators for the deaf to also use this alphabetic system to create artificial signs or simply fingerspell the Chinese characters in "pinyin" (Lin et al., 2009; Yang, 2011). In Hong Kong, Cantonese romanization is not taught to students, nor has Mandarin pinyin until recently. These factors have implications for the form of MCC that deaf students in Hong Kong are exposed to. In this chapter, we grouped the signing input of both Cantonese and written Chinese under the general terminology of "manually coded Chinese," as their grammatical differences are not the focus of the current study. In the Hong Kong context, (p.125) it is a kind of contact signing adopted by Deaf people in interactions with hearing people, or by teachers for the deaf when teaching in the deaf school. It may be accompanied with mouthing and/or vocalization (i.e., speech) to various degrees. Also, this form of contact signing seldom contains lexical signs for function words, fingerspelling, or alphabetically initialized signs (Tang & Sze, to appear).

As said previously, there is no direct one-to-one mapping between syllable and morpheme between HKSL and Cantonese/written Chinese. The discrepancy is pronounced because (a) Cantonese/written Chinese is rich in bisyllabic compounds while most lexical signs in HKSL are monosyllabic and (b) Chinese is regarded as inflectionally poor while HKSL is rich, as shown by the agreeing verbs or classifier verbs of HKSL. Hence, the discrepancy in linguistic organization between the two languages results in processing adaptations when Cantonese and written Chinese are represented orally as well as manually to the deaf students simultaneously. Examples are the lengthening of sign duration or repeating the movement of a sign to fit the prosody of bisyllabic

words in Cantonese. In addition, in fast signing or producing longer stretches of signing discourse, signs for functional categories in Chinese are either non-existent or omitted if they exist. In (1) below, we leave out the tone markers for ease of reading. In this example, the HKSL lexical signs are adopted in MCC, but a lot of function words in Cantonese (i.e., emboldened) are left unsigned. Obviously in HKSL, the entire description will be encoded by a series of classifier predicates.

(1) MCC: WATER TUBE BOIL
ONE^HUNDRED,

CAN: **Dong di** sei **hai** **go** si^gun bou-**dou** jat baak dou

Gloss: when CL water LocV CL test-tube boil-reach one
hundred degree

MCC: WILL CHANGE STEAM

CAN: **si**, **zau** will bin-sing sei^zing^hei **ga la**.

Gloss: time, FOCUS will change water^steam^gas sentence
final particles

“When the water in the test tube boils to 100°C, it will turn into steam.”

Investigating Deaf Students’ Language Awareness: Methods

In the current study, we asked (a) whether and how deaf students studying in a sign bilingual and co-enrollment environment differentiated between HKSL and MCC, (b) when they became aware of the two signing modes, (c) how they subscribed to the two signing modes themselves, and (d) whether there was an interaction between this awareness and their knowledge of HKSL, Cantonese and written Chinese. For the hearing and the Deaf teachers, we asked how they (p.126) perceived the functions of HKSL and MCC in teaching or in interacting with deaf students.

The sign bilingual and co-enrollment program (SLCO program) admits six deaf students each year into a class of twelve to twenty hearing students co-taught by a hearing teacher and a Deaf teacher. The Deaf teacher uses primarily HKSL; the hearing teacher adopts Cantonese in teaching the whole class. He/she may switch to HKSL or sometimes MCC, when (a) interacting with the deaf students, (b) communicating with the deaf teacher, and (c) there is a need to convey messages to the whole class spontaneously. hearing students included. Certainly for

some hearing teachers, their level of HKSL proficiency is also a factor accounting for the use of MCC, as they only started to learn HKSL when they joined the program. Sometimes these teachers also adopt MCC in certain pedagogical contexts, which we will describe below.

The current study involved 18 deaf students who were studying from Primary 4 to Secondary 1 at the time of the experiment. They were recruited based on three criteria: (a) they were exposed to HKSL consistently in a school environment from KG-3 onward, (b) they had severe to profound hearing loss (i.e., average loss in 500 Hz, 1 KHz, and 2 KHz higher than 70 dB in their better ears), and (c) they had no other disabilities. Their ages ranged from 9;8 to 15;0 (average age: 11; 11). Twelve of them were implanted at an average age of 2;4, and six began to wear hearing aids at age 1;5. Among them, four were born to Deaf parents, and they studied at three different grades. Two of them had a Mainland Chinese background, with exposure to Chinese Sign Language through either one parent or both. The rest of the deaf students were born to hearing parents.

There were two sets of procedures used in the current study, one for the students and one for the Deaf and hearing teachers. For the students, we invited them to complete an online language differentiation task and a questionnaire survey on language awareness. A week later, we invited them back for a focus group discussion led by a Deaf researcher assisted by a hearing researcher. For the hearing and Deaf teachers, we invited them to arrange a focus group discussion among themselves. Except for the language differentiation task, the data were qualitative in nature, so we deemed it necessary to triangulate the observations obtained from the deaf students and the Deaf as well as hearing teachers.

Elicitation Procedures for Deaf Students

Task 1: Language Differentiation

This task examined the students' abilities to differentiate between HKSL and MCC. The 32 stimuli were distributed over three categories: (a) signing that followed the grammar of HKSL with appropriate mouth gestures, (b) signing that followed the Chinese grammar with mouthing, and (c) signing that followed the Chinese grammar without mouthing. A native Deaf signer was recruited to produce the stimuli according to the three renditions stated. We decided to control for mouthing and mouth gestures in the stimuli in order to examine whether deaf students used them as cues for differentiating between MCC and HKSL. The sentences in MCC with mouthing represent the signing mode used by many oral deaf adults in Hong Kong, by teachers for the deaf at deaf school settings, and sometimes by native deaf signers when interacting with hearing people. We included a category of MCC without mouthing because we wanted to know how the students responded to this form of signing if mouthing was removed—that is, if the cue was absent. In HK, MCC without mouthing is observed sometimes among sign interpreters or deaf people when interacting with hearing people.

Five grammatical components—negation, modal, wh-question, classifier predicate, and verb agreement—commonly observed in HKSL were used to construct the stimuli, and we matched these components by translating the HKSL sentences into Chinese sentences. The first three components involved syntactic word order and the last two morphosyntax of HKSL. We included an additional component when constructing the stimuli, which involved longer signing discourses of more than one sentence. We assumed that expanding the number of sentences in a signing discourse would enable the students to access the cues involved in encoding some subtle properties of HKSL, such as the spread of nonmanuals, more readily.

Accompanied by a Deaf researcher, the deaf students had to categorize the stimuli into either (a) MCC or (b) HKSL. If they felt they could not make a judgment about the status of the stimuli, they clicked the category of “not sure.” The video instructions for the task were in HKSL.

Task 2: Students' Self-Reports on Language Awareness

In this task, we examined the extent to which the students were aware that the grammars of HKSL, Cantonese, and written Chinese were different. The students' self-reflections could be compared with their abilities for language differentiation between HKSL and MCC as demonstrated in Task 1. It was an online survey and the questions were

signed in HKSL. Accompanied by a Deaf researcher, the students were invited to watch the questions and choices all signed in HKSL. They then indicated their choices by clicking a button.

Task 3: Post Hoc Focus Group Discussions

Few studies have attempted to invite deaf students to articulate their awareness of the linguistic differences in modes of communication or the strategies they adopt in differentiating between the signing modes.

(p.128) Age and metacognitive abilities are the two major concerns as they may have an effect on the reliability of the observations.

Therefore, in the focus group discussions, we modified Gutiérrez's (2011) technique by engaging the students in a series of "language-related episodes" in which they were encouraged to scaffold their comments about the forms of signing among themselves. By directing their attention to the language issues in the metatalk, we could collect the qualitative data based on their metalinguistic awareness of the languages or forms of signing. According to Gutiérrez, metatalk as a form of overt metalinguistic activity is part and parcel of language learning. To warrant more detailed analysis of each of the participants, the students from each level were divided into two small groups, with two or three members per group. The Deaf researcher served as a facilitator during the discussion. The sessions were videotaped and transcribed for subsequent analysis. The Deaf researcher initiated the discussion with the following questions: (i) "Do you know the differences between MCC and natural HKSL?" (ii) "How do the two forms of signing differ from each other?" and (iii) "How do you come to know the differences?" To facilitate the discussions, they were invited to watch four pairs of test sentences selected from Task 1.

Elicitation Procedures for Deaf and Hearing Teachers

A focus group discussion was also conducted among the Deaf and hearing teachers of the SLCO program to document their attitude towards the use of HKSL and MCC in teaching. Specifically, we wanted to identify which pedagogical processes would invite the use of HKSL or MCC effectively. We decided not to incorporate a researcher to lead the discussion because the presence of an outsider might skew their views. A teacher who coordinated the discussion would make a record of the discussion, especially the possible relationships between the pedagogical processes and the respective forms of signing, with rationales behind their choices.

Results

Language Differentiation by Deaf Students

Our first research question was whether the deaf students in the SLCO program were able to distinguish natural signing from MCC. Table 6.1 summarizes the scores of the Deaf students based on the forms of signing adopted in the experiment. In this analysis, we used a score of at least 75% as an index of achievement and calculated the number of students who successfully displayed a clear awareness of the differences between the three forms of signing.

Table 6.1 shows that 13 out of 18 deaf students managed to differentiate between the three forms of signing fairly accurately. Most students (p.129)

Table 6.1 Deaf Students' Performance on Language Differentiation

Subjects	HKSL (Total = 16 items)	MCC (with mouthing) (Total = 8 items)	MCC (without mouthing) (Total = 8 items)
Subjects scoring at least 75% for all 3 tasks			
C1-1- CTY	100%	100%	100%
C1-2- HST	75%	88%	88%
C1-3- LKY	94%	75%	88%
C1-4- SMC	100%	100%	100%
C2-1- CYF	100%	88%	88%
C2-2- SMY	100%	100%	88%
C2-3- TWK	100%	100%	88%
C2-5- WCY	88%	100%	88%
C2-6- WSY	100%	100%	100%

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Subjects	HKSL (Total = 16 items)	MCC (with mouthing) (Total = 8 items)	MCC (without mouthing) (Total = 8 items)
C3-1- CKY	100%	75%	88%
C4-2- CWK	100%	100%	75%
C4-3- CWL	100%	100%	88%
C4-5- GTC	100%	100%	88%
<i>Mean</i>	96.63%	94.23%	89.42%
Subjects scoring less than 75% for any of the 3 tasks			
C1-5- TKH	94%	100%	63%
C3-2- CKW	69%	88%	63%
C3-5- OTN	56%	63%	38%
C3-6- TSM	88%	100%	0%
C4-1- CNW	94%	88%	50%
<i>Mean</i>	80.00%	87.50%	42.50%
<i>Overall Means</i>	92.01%	92.36%	76.39%

in this group, having been immersed in the SLCO environment for at least four years, have developed some degree of awareness that differences exist between natural signing and the signing that manually codes spoken language. In other words, they performed equally well in distinguishing the three forms of signing, although there was a slight dip with MCC without mouthing.

The remaining five deaf students, who achieved a score lower than 75% in any one form of signing, had relative ease in differentiating HKSL and MCC with mouthing only. However, difficulty arose in judging MCC without mouthing. One-way ANOVA (i.e., two groups of students times

three forms of signing) confirmed that there was no interactive effect but a significant main effect with judging HKSL and MCC without mouthing between the two groups of students. As both (p.130)

Table 6.2 ANOVA Results Between the Two Groups of Subjects

Forms of Signing	Results
MCC with mouthing	$F(1,16) = 1.266, p = 0.227$
MCC without mouthing	$F(1,16) = 38.970, p = 0.000^{**}$
HKSL	$F(1,16) = 8.892, p = 0.009^{**}$

(**) Significant at the 0.01 level.

groups of students performed quite well on MCC with mouthing, no significant difference was found between them (Table 6.2).

A set of pairwise T-tests was conducted to compare the students' performance on the three forms of signing independently. For the 13 stronger students (group 1), a significant difference was found between HKSL and MCC without mouthing only, while no significant differences were found either between HKSL and MCC with mouthing or between MCC with and without mouthing (Table 6.3). It seems that this group of students had no problem distinguishing HKSL and MCC, thus achieving a very high score with these two categories. However, when mouthing was removed from the stimuli, some students just associated the signing with HKSL, leading to poor performance and a significance difference when compared with HKSL.

With the five students (group 2 in Table 6.3) whose scores for the language differentiation task were under 75% with some forms of signing, results of the pairwise T-tests showed that a significant difference was found only between MCC with and without mouthing, while no significant difference was found either between MCC with mouthing and HKSL or between MCC without mouthing and HKSL (see Table 6.3). In other words, they could only distinguish HKSL and MCC with mouthing, leading to no differences in their performance on these two forms of signing. The percentage scores of Table 6.1 showed that they performed better in differentiating HKSL and MCC with mouthing, but their ability to differentiate MCC without mouthing from HKSL was rather low.

Table 6.3 Pairwise T-tests on the Three Forms of Signing and Two Groups of Students

Pairs of Signing		Group 1 (≥75%)	Group 2 (<75%)
MCC with mouthing	MCC without mouthing	$t(12) = 1.594, p = 0.137$	$t(4) = 3.207, p = 0.033^*$
MCC with mouthing	HKSL	$t(12) = -0.811, p = 0.433$	$t(4) = 1.809, p = 0.145$
MCC without mouthing	HKSL	$t(12) = -2.739, p = 0.018^*$	$t(4) = -2.683, p = 0.055$

(*) Significant at the 0.05 level.

(p.131) Taken together, it seems that a prominent cue for distinguishing HKSL from MCC lies in the students' awareness of the distinction between mouth gestures with HKSL and mouthing with MCC, the latter of which is reminiscent of speech. When mouthing was removed as a cue in MCC and deaf students were forced to rely on their grammatical knowledge of HKSL to mark the distinction, difficulty arose for both groups of deaf students, and even more so with those students whose scores were lower than 75% for one or more of the categories. Therefore, proficiency in HKSL seems to be an important factor determining their performance. When their HKSL proficiency improves, they became better at differentiating HKSL from MCC without mouthing.

Next, we reorganized the scores of the students according to (a) the grammatical components embedded in a single sentence (i.e., morphosyntax and syntactic word order) and (b) longer signing discourses with more than one sentence. The percentages within each category represent a composite score based on the three forms of signing, HKSL and MCC with and without mouthing. Our assumption with grouping the stimuli in this manner was that the linguistic contrasts in terms of the morphosyntax and syntactic word order between HKSL and Chinese might be due to the students' growing grammatical competence in these languages. In this analysis, again, we grouped the data using 75% as a threshold for analysis. The results are summarized in Table 6.4.

Results of paired samples T-tests in Table 6.5 show no significant differences between any forms of signing for the students in group 2 whose scores of the language differentiation task were under 75%. It seems that without a sufficient level of competence of the grammars of HKSL and Chinese, specifically Cantonese, these students had difficulty in making appropriate distinctions, especially when the stimuli involved more advanced morphosyntactic constructions such as those in HKSL.

Embedding the grammar in a longer signing discourse had little effect on their performance. For the students in group 1, significant differences were found between morphosyntax and syntactic word order and between morphosyntax and longer signing discourse but not between syntactic word order and longer signing discourse. The mean percentage scores for syntactic word order and longer signing discourse showed comparable performance, but a gap was found with morphosyntax in their performance, suggesting that this grammatical component demanded more advanced knowledge of both grammars of HKSL and Chinese to mark appropriate distinctions.

Taken together, the analysis suggested that the ability to differentiate between the forms of signing was contingent upon whether the students had attained a sufficient level of grammatical knowledge of the respective components in HKSL and Chinese to make a judgment. Their ongoing development of the morphosyntax of HKSL was suggestive of (p.132)

Table 6.4 Language Differentiation Based on Grammar and Longer Signing Discourse

Subject	Sentence Level		Longer signing discourse (Total = 8 items)
	Morphosyntax (Total = 12 items)	Syntactic word order (Total = 12 items)	
Subjects scoring at least 75% for all 3 tasks			
C1-1-CTY	100%	100%	100%
C1-3-LKY	75%	100%	88%
C1-4-SMC	100%	100%	100%
C1-5-TKH	75%	92%	100%
C2-1-CYF	92%	92%	100%
C2-2-SMY	92%	100%	100%

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Subject	Sentence Level		Longer signing discourse (Total = 8 items)
	Morphosyntax (Total = 12 items)	Syntactic word order (Total = 12 items)	
C2-3-TWK	92%	100%	100%
C2-5-WCY	92%	100%	75%
C2-6-WSY	100%	100%	100%
C3-1-CKY	83%	100%	88%
C4-1-CNW	75%	92%	75%
C4-2-CWK	92%	92%	100%
C4-3-CWL	92%	100%	100%
C4-5-GTC	92%	100%	100%
<i>Mean</i>	89.29%	97.62%	94.64%
Subjects scoring less than 75% for any of the 3 tasks			
C1-2-HST	67%	83%	100%
C3-2-CKW	67%	75%	75%
C3-5-OTN	50%	67%	38%
C3-6-TSM	75%	58%	75%
<i>Mean</i>	64.58%	70.83%	71.88%
<i>Overall Mean</i>	83.08%	91.6%	89.58%

such an effect. Even the group of deaf students whose scores were at least 75% still faced difficulty in differentiating signing involving the morphosyntax of HKSL. Nevertheless, as most of these students had been in the program since kindergarten, increasing immersion experiences in a sign bilingual environment positively impacted their HKSL development and at the same time allowed them plenty of opportunities to appreciate the differences between HKSL and MCC as well as oral languages. Did their language awareness correlate with their proficiency of the target languages? To address this issue, we conducted a correlation analysis using the following scores: (a) language differentiation, (b) Cantonese narratives, (c) written Chinese narratives, and (d) HKSL narratives. The narratives were based on the Frog Story (Mayer, 1969) and

Table 6.5 Results of Pairwise T-tests Between Grammatical Components and Longer Signing Discourse

Variable 1	Variable 2	Group 1 ($\geq 75\%$)	Group 2 ($< 75\%$)
Morphosyntax	Syntactic word order	$t(13) = -3.894, p = 0.002^{**}$	$t(3) = -0.792, p = 0.486$
Morphosyntax	Longer signing discourse	$t(13) = -2.188, p = 0.048^*$	$t(3) = -0.753, p = 0.506$
Syntactic word order	Longer signing discourse	$t(13) = 1.114, p = 0.286$	$t(3) = -0.096, p = 0.929$

(*) Significant at the 0.05 level.

(**) Significant at the 0.01 level.

(p.133) scored by native users of the target languages based on criteria such as contents, language, and coherence. The correlation analyses revealed a significant relationship between the students' performance on HKSL narratives and language differentiation; however, no significant relationship was found between language differentiation and Cantonese or written Chinese narratives (Table 6.6). In other words, the students seemed to be using their knowledge of HKSL as a reference against which they differentiated the different forms of signing. Further investigation is needed to examine whether a relationship exists between language differentiation and written Chinese and Cantonese proficiency.

In summary, immersed in a sign bilingual environment with sustained HKSL and oral/written Chinese input for five to seven years, these students had developed an awareness about characteristic distinctions associated with the signing of natural HKSL and MCC. The data suggest that they initially ascribed mouthing to signing based on

spoken language and mouth gestures to HKSL. They seemed to be adopting this distinction as a general rule of thumb in differentiating the forms of signing they were exposed to in the learning environment.

Table 6.6 Correlations Between Language Differentiation and Cantonese, Written Chinese, and HKSL Narratives

	Cantonese Narratives	Written Chinese Narratives	HKSL Narratives
Language differentiation	$r = 0.410, p = 0.091$	$r = 0.359, p = 0.144$	$r = 0.641, p = 0.004^{**}$
Cantonese narratives	—	$r = 0.695, p = 0.001^{**}$	$r = 0.070, p = 0.782$
Written Chinese narratives	—	—	$r = 0.134, p = 0.595$

* Significant at the 0.05 level.

(**) Significant at the 0.01 level.

(p.134) This may explain why when mouthing was removed in the stimuli, the students had difficulty making consistent judgments about which grammar the signing was based on. This ability for language differentiation was associated with their developing competence in HKSL.

Students' Self-Reports on Language Awareness

Table 6.7 summarizes the students' self-reflections upon whether they perceived differences in the grammars of Cantonese, written Chinese, and HKSL.

In Table 6.7, a great majority of the deaf students agreed that the grammar of HKSL was different from that of Cantonese or written Chinese (see Q1 and Q2). On the other hand, 10 students (55.56%) thought the

Table 6.7 Language Awareness

No.	Questions	Choice of Responses (Total = 18)		
		Different	Same	Not sure
1	Do you think the grammars of natural signing (i.e., HKSL) and speech (i.e., Cantonese) are different?	88.89% (16)	11.11% (2)	0%
2	Do you think the grammars of natural signing (i.e., HKSL) and written Chinese are different?	72.22% (13)	22.22% (4)	5.56%(1)
3	Do you think the grammars of speech (i.e., Cantonese) and written Chinese are different?	44.44% (8)	55.56% (10)	0%
4	Do you think the grammars of natural signing (i.e., HKSL) and “sign & speak at the same time” (i.e., manually coded Chinese) are different?	83.33% (15)	11.11% (2)	5.56%(1)
		I can	I cannot	Not sure

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No.	Questions	Choice of Responses (Total = 18)		
		Different	Same	Not sure
5	When you see someone sign (naturally), can you tell whether his/her signing follows the grammar of HKSL?	83.33% (15)	11.11% (2)	5.56% (1)
6	When you see someone “signs & speaks at the same time,” can you tell whether his/her signing follows the Chinese grammar?	55.56% (10)	38.89% (7)	5.56% (1)
		Always	Sometimes	No
7	Do you watch the Deaf teacher’s signing in class?	38.89% (7)	61.11% (11)	0%
8	Do you listen to the hearing teacher in class?	22.22% (4)	61.11% (11)	16.67% (3)

(p.135) two spoken language grammars were the same, and only eight (44.4%) thought they were different (see Q3). Hence, their awareness about the grammatical differences between Cantonese and written Chinese was rather weak. This was in stark contrast to their awareness about the grammatical differences between HKSL and MCC, as 15 students (83.3%) agreed that they were different (see Q4).

The students' responses to Q5 and Q6 partially corroborated their high scores in the language differentiation task. When asked whether they could judge someone's signing as following the grammar of HKSL, 15 of the 18 students (83.33%) were quite positive (see Q5). This result suggested that they could readily perceive the grammar of HKSL if someone was signing naturally. When the signing was accompanied with speech, as in MCC with mouthing, only 10 students (55.56%) replied that they could judge the signing as following the grammar of Cantonese/written Chinese (see Q6); seven of them (38.89%) claimed they could not; one (5.56%) responded "not sure." In other words, judging whether the signing followed the grammar of HKSL was easier than whether it followed the grammar of Chinese. It is possible that studying in this environment where both forms of signing co-occur, deaf students would initially rely on mouth gesture or mouthing to distinguish categorically HKSL from MCC.

Table 6.7 also summarizes how frequently the students access the lesson contents through signing or speech. Regardless of their hearing levels or speech perception abilities, relying on the signing of the Deaf teachers in class was a common strategy of all students: Seven of them (38.89%) chose "Always" and 11 (61.11%) chose "Sometimes" (see Q7). Paying attention to the speech of the hearing teachers was also quite common: 11 of them (61.11%) chose "Always" and four of them (22.22%) chose "Sometimes." Three students (16.67%) said they did not pay attention to the speech of the hearing teacher in class at all (see Q8). Their level of hearing loss ranged between 105 and 120 dB and their speech perception scores between 0% (two students) and 60.8% (one student). Obviously, classroom learning to these deaf students was primarily through the signing mode. On the other hand, four students (22.22%) said they "always" paid attention to the speech of the hearing teachers. These students had a lesser degree of hearing loss (between 72 and 108 dB) and relatively better speech perception abilities (between 93.33% and 100%). Interestingly, two of the students said they also "always" watched the signing of the Deaf teachers, and the other two said they did so "sometimes." Eight students (44.44%) chose the option "Sometimes" for Q7 and Q8, suggesting that they paid

attention to the instruction of both the Deaf teacher and the hearing teacher in class.

Apparently, with a Deaf teacher and a hearing teacher in a sign bilingual classroom, the students became flexible enough to capitalize on the linguistic resources of both Cantonese and HKSL to access the (p.136) lesson contents. The choice is not random but is systematically mediated by the deaf students themselves to achieve comprehension, subject to their speech perception abilities and familiarity with HKSL. For these students, consistent engagement in classroom discourses in both HKSL and Cantonese enabled them to access comprehensible input for language acquisition.

Focus Group Discussions: Deaf Students

To further verify the findings of the language differentiation task and language awareness survey, we conducted a focus group discussion with the deaf students. We will present the results according to two major themes that we picked up from the discussions: (i) how the deaf students differentiated HKSL from MCC, and (ii) what their views were regarding the roles of HKSL and MCC in the development of Chinese.

From the metatalk, almost all deaf students were able to provide some accurate metalinguistic descriptions about the properties of HKSL and MCC, although the depth of their linguistic characterizations varied according to their grade levels. A summary of the grammatical properties as described by the deaf students during the discussions can be found in Table 6.8.

Most deaf students talked about the differences in syntactic word order, facial expressions, and mouthing and mouth gestures. They generally associated mouthing and Chinese word order with MCC, and facial expression or mouth gesture with HKSL. Two examples of metatalk are provided below; they are quite elaborate in terms of the depth of metalinguistic descriptions:

Table 6.8 Grammatical Properties Described by the Deaf Students

Properties	MCC	HKSL
Lexical items	One sign for one word in Chinese	One sign for a few words in Chinese
Morphosyntax	NA	Use of classifier predicates, verb agreement

Properties	MCC	HKSL
Syntax	Chinese word order	Syntactic position of function words (e.g., negators)
Prosody	Choppy, a lot of pauses, slow, protracted	Fluent, short, dynamic
Discourse	Presentation of information in a serial manner	Role shift to express multiple events serially or simultaneously
Mouthing	Yes	Little or none
Facial expression	Expressionless	Rich
Head or body movement	No	Yes

(p.137)

(2) THE_THIRD_VIDEO NATURAL_SIGNING. "IX_1 ELDER_BROTHER EAT ICE_CREAM SWEET NOT", IX [i.e., the sign NOT] PLACE_IN_FRONT NOT BUT PLACE_AT_THE_END. WHAT, MANUALLY_CODE_CHINESE, "IX_1 ELDER_BROTHER EAT NOT EAT ICE_CREAM", PLACE_IN_MIDDLE

"The third video is natural signing. In the sentence 'My brother does not eat ice cream and sweets,' the sign 'not' is not placed in front, but at the end (of the sentence). How about manually coded Chinese? In the question 'Does elder brother eat ice cream?' the sign 'not' is placed between the two verbs."

(C1-5-TKH, S1, profound, deaf child of hearing parents)

(3) BECAUSE FIRST HAVE SIGN_AND_SPEAK_AT_THE_SAME_TIME CAN_SEE THE_OTHER WHAT, MOUTH_CLOSE, NATURAL_SIGNING

“You could see mouthing during signing in the first video. As for the other, the mouth is closed, and it is natural signing.”
(C2-2-SMY, P6, moderate to severe, deaf child of deaf parents)

The form of the lexical items, signing prosody, and head or body movements were also considered as cues for differentiating the different forms of signing. Some students noticed that one Chinese character was often represented by one sign in MCC, but a few Chinese characters might be represented by one sign in HKSL. They also managed to point out that the prosody of MCC and HKSL was different. While MCC looked quite “choppy,” lacked rhythm, and contained a lot of pauses, HKSL was “smooth” in rhythm and “fluent” (i.e., seamless). Deaf students at the junior levels primarily commented on the lack of correspondence between the number of signs in HKSL and the number of characters in MCC, as shown by the comments made by C4-5-GTC and C3-1-CKY below:

(4) SEE SEEM NATURAL_SIGNING WHAT TWO WORD
THREE WORD GO_TOGETHER CHANGE ONE SIGN
FINISH BUT IX_3 BUT THE_OTHER IX_3
MANUALLY_CODED_CHINESE ALWAYS ONE
CHARACTER SIGN ELDER_BROTHER ELDER_BROTHER,
NOT EAT

“It seems to me that natural signing may cover two or three Chinese characters in one sign; however, in manually coded Chinese, each character is expressed by one sign, like repeating the sign ELDER_BROTHER twice for ‘elder brother’ in Chinese and signing two signs NOT and EAT to express ‘not eating’.”

(C4-5-GTC, P4, profound, deaf child of deaf parents)

(p.138) Some students noticed that there was head or body movement in the longer signing discourses in HKSL but it was not observed in MCC. They also pointed out that HKSL represented “events in the form of conversations.” What the children meant was the use of role shift where signers assumed the roles of different participants in the conversation. See (5):

(5) BODY_SHIFT_TO_ONE_SIDE
BODY_SHIFT_TO_OTHER_SIDE MEANING
TWO_PERSON_GO_TOGETHER SEEM
TWO_PERSON_GO_TOGETHER IMAGINE PERSON_ONE
PERSON_TWO TALK_TO_EACH_OTHER

“The body shifting to one side and then to another means there is a conversation going on between two participants.”

(C1-3-LKY, S1, profound, deaf child of hearing parents)

When asked about how they became aware of the cues for differentiating between the different forms of signing, only those deaf students who managed to differentiate HKSL and MCC accurately were able to articulate this awareness in concrete terms. Two students at Secondary 1 indicated quite firmly that they had intuitions for differentiating between the different forms of signing. The Secondary 1 and Primary 5 students claimed that their frequent contact with both forms of signing could be the reason why they knew how to characterize them differently. Some younger ones from Primary 4 and 5 were less clear about the reasons, but they reported that their teachers had clarified the two forms of signing to them explicitly. Three students at the junior level expressed that they did not know how they managed to distinguish one form of signing from the other, but they just did.

As a whole, these deaf students have developed various levels of metalinguistic awareness about certain characteristic distinctions between HKSL and MCC. Their awareness varied on a continuum of explicitness. Students at the senior levels could afford more explicit metalinguistic statements about HKSL and MCC, while the junior ones focused more on the signing forms at the lexical level or implicit intuitions.

According to the students, both HKSL and Cantonese were the two major languages they adopted to access the lesson contents in class, although they recognized that they could communicate with their Deaf or hearing teachers using other visual modes of communication, such as MCC. Twelve of the 18 students (66.66%) said they interacted with their hearing teachers in Cantonese. The remaining six who did not choose Cantonese commented that they would use MCC and/or written Chinese. When asked about the modes of communication (p.139) that they thought would facilitate spontaneous access to lesson contents, almost all students chose both HKSL and spoken language, the latter of which could be Cantonese and written Chinese. Only a few students voted for MCC, in addition to HKSL. In sum, these students appreciated

the flexibility in terms of access to linguistic resources and lesson contents as provided by the sign bilingual and co-enrollment environment.

Although these students acknowledged the importance of HKSL in classroom instruction, they also accepted MCC as a tool that indirectly demonstrating the linguistic differences between HKSL and Cantonese/ written, despite the fact that a majority of students held an ambivalent attitude toward this artificial communication system. During the metatalk, the deaf students brought up some evaluative judgments about the two forms of signing. Many of them commented that HKSL was “dynamic,” “smooth,” and “seamless,” thus facilitating faster and more effective comprehension of information. On the other hand, 16 of the 18 deaf students had rather negative comments about MCC. According to them, it was “unclear,” “incomprehensible,” “boring,” and “not dynamic enough.” One deaf student (C2-2-SMY) claimed that “Clever students learnt Chinese idioms via natural signing, only stupid students learn Chinese idioms first using MCC and later using natural signing.” Only four students gave either neutral or positive comments on MCC, such as supporting the learning of Chinese and reading skills, or filling the gaps in speech.

One specific pedagogical function that some deaf students consistently alluded to was using MCC to understand certain formal properties of Chinese. Scanning their comments, we suspect that it was the growing proficiency of both HKSL and Chinese but not speech perception abilities that created an effect on their preferred choice of communication codes. As their proficiency in HKSL and Chinese improved, all Secondary 1 students asserted that natural signing was useful for explaining the meaning of the Chinese characters and idioms. It had the advantage of showing which Chinese characters were adopted in a word or an idiom, and how the characters appeared in a sequence. In other words, MCC was used only to artificially represent the characters of words or idioms in sequence, which did not necessarily bear any significant relationship to the words’ actual meanings.

In sum, the comments made by the deaf students during the metatalk were quite informative. While they appreciated the efficiency of HKSL in facilitating effective comprehension of the lesson contents, they agreed that MCC could be used to help them understand the character sequence of Chinese words and idioms, although they did not seem to appreciate the effectiveness of this type of signing.

(p.140) Focus Group Discussions: Deaf and Hearing Teachers

To address the issue concerning the relationship between the forms of signing and pedagogical processes in the classroom, we invited the Deaf and hearing teachers to organize two focus group discussions among themselves. One meeting was held among two hearing and two Deaf teachers of the secondary SLCO program, and the other one was held among three hearing teachers and seven Deaf teachers of the primary SLCO program. The hearing teachers had worked in the SLCO environment from two to six years and had acquired good signing skills. The Deaf teachers had taught in the program for one to six years. They had received basic training in sign linguistics and deaf education after joining the program. From their discussions, all teachers agreed that HKSL had to be the primary language of instruction to support the students' comprehension of lesson contents, especially the complex concepts involved in Mathematics and General Studies. HKSL was the major language of management talk in class, such as giving instructions to students and explaining classroom routines and task arrangements. It was also used in spontaneous classroom interactions such as comprehension checks or clarification requests. The teachers also stated their preference for using HKSL to deliver the lesson contents in class. According to them, deaf students found it easier to comprehend the contents if explained in HKSL. Both the Deaf and the hearing teachers commented that HKSL was effective in explaining new or abstract concepts such as "reflection or refraction in physics." Some hearing teachers added that when they had to interpret for the Deaf teachers or students, they preferred HKSL because of efficiency of information delivery. HKSL was also used to support some pedagogical processes involving audiovisual resources because of the lack of subtitles with some video programs. In the last situation, they agreed that HKSL-Cantonese interpretation by the hearing teachers was necessary.

Besides HKSL, both the Deaf and the hearing teachers commented that MCC could be adopted as an auxiliary code to fulfill some specific pedagogical goals. Like the students, they cited the teaching of Chinese lexical items and specific grammatical components as examples. The teaching of jargons in Mathematics (e.g., 畢氏定理 "Pythagorean theorem"), Chinese two- and three-syllable compounds (e.g., 清香 >/ "fragrant," 三文治 "sandwich"), and four-character idioms (e.g., 樂於助人 "be happy to help people") lend themselves to the alternate use of HKSL and MCC. According to the teachers, HKSL was excellent for clarifying the meaning of the abstract concepts involved. When comprehension of the concepts was achieved, they would then sign the word according to the character sequence to facilitate character/word recognition, although the meaning of the signs combined did not

necessarily yield a direct correspondence with the (p.141) meaning of the words. Obviously, signing under this condition did not serve any communicative purpose but functioned as a mnemonic to assist the deaf students in remembering the character sequence of words. Also, according to the teachers, MCC with mouthing was also adopted to help deaf students remember the mouth movements or to distinguish different Chinese words or characters that shared a similar HKSL sign “HAPPY,” such as “開心” <open-heart>, “快樂” <quick-happy>, and “高興” <high-charged>. In this regard, the use of MCC became a source for training of mouth movement, to facilitate speech reading.

At the grammatical level, the teachers reported that MCC was adopted to highlight the morphological process of reduplication in Chinese (e.g., 綠油油 <green-oil-oil> “lush greenery,” where the character “油” [oil] is reduplicated). Again, MCC would serve as a mnemonic to heighten the students’ awareness about the specific morpheme for and the sequence of morphemes in reduplication in Chinese. Using MCC to draw deaf students’ attention to word order differences between HKSL and Chinese was also considered quite effective. The Deaf teachers said that HKSL was most effective when explaining the meaning of Chinese and English sentences, and presenting the examples in MCC helped deaf students see the contrasts in word order between HKSL and Chinese. This explanation from the teachers corroborated the deaf students’ comments. Both Deaf and hearing teachers agreed it was important to draw the deaf students’ attention to the linguistic differences between HKSL and Chinese, and MCC performed the pedagogical function of presenting the Chinese data metalinguistically in the signing mode, but it was certainly not adopted for explanation, which would be the job of HKSL.

Discussion

These results above suggest that deaf students studying in a sign bilingual and co-enrollment school setting can develop metalinguistic awareness about the characteristic distinctions between HKSL and MCC. In addition to an enriched linguistic exposure to different languages and different forms of signing, this environment encourages both deaf and hearing students to constantly engage themselves in code switching or code blending between HKSL and Cantonese/written Chinese, and, on some occasions, code switching between HKSL and MCC. When HKSL and MCC are placed in tandem to fulfill the requirements of certain pedagogical processes, it seems that both the teachers and the deaf students are conscious of the roles each variety of signing plays in promoting learning. In other words, this learning context provides ample opportunities for the deaf students, and (p.142) probably the hearing students, to formulate and verify hypotheses about the characteristic distinctions of the languages, or the different forms of signing that occur in the school environment. We suggest that these learning experiences in turn enhance the deaf students' development of metalinguistic awareness about the languages they are exposed to. Moreover, the fact that they can differentiate between HKSL and MCC also implies that such ability facilitates their access to appropriate naturalistic input for the acquisition of HKSL. We hypothesize that this constant comparison of linguistic structures at the metalinguistic level may also ultimately support the acquisition of Chinese as well as the related literacy skills in the long run.

What enhances the use of HKSL in learning and social interactions in the school environment? Singleton and Morgan (2006) summarized a number of studies in which they described the differences in deaf-deaf as well as hearing-deaf interactions in the home and classroom contexts. They argued that the presence of a Deaf teacher in the classroom is beneficial to deaf students' classroom learning because Deaf teachers know how to use Deaf-sensitive strategies like eye gaze to engage deaf students' attention in classroom interactions. They further argued that joint attention is a prerequisite for effective information exchange, especially in the signing modality. In the sign bilingual and co-enrollment setting in Hong Kong, the fact that HKSL is one of the languages of instruction in addition to Cantonese is made possible by the presence of Deaf teachers. It is possible that joint attention between the Deaf teacher and students in the classroom enables access to lesson contents as well as naturalistic input in HKSL. Linguistically, Deaf teachers serve the important function of providing naturalistic input in HKSL for both deaf and hearing students. Pedagogically, the division of labor in terms of the language of

instruction, primarily HKSL by a Deaf teacher and Cantonese by a hearing teacher, allows deaf and sometimes hearing students to access information flexibly in the classroom. Moreover, being Deaf role models themselves, Deaf teachers also support the deaf students to learn how to negotiate with the hearing world from a Deaf perspective.

Immersed in such a learning environment, deaf students become adept at constantly switching their communication codes subject to the domains of conversations and the hearing status of the participants. One such domain that may potentially induce constant attention to code choice is classroom instruction. The self-reports and metatalk have affirmed a functional role of HKSL in classroom learning through discussions in HKSL. This language, according to the deaf students, supports effective comprehension of spontaneous classroom interactions, abstract subject knowledge, and metalinguistic discussions.

(p.143) While most deaf students endorsed HKSL as a primary language of instructions, a few also opted for MCC, in addition to HKSL and Cantonese. These students came from a group that exhibits better speech perception abilities, thus enabling them to accept a wider range of signing options in the classroom. As it stands, the crux of the matter is to identify which pedagogical functions necessitate the use of HKSL or MCC to support learning. Such a process of identifying a specific language or signing option to fulfill particular pedagogical functions certainly underscores the continuously negotiated decisions on code choice between the students and the teachers in the classroom. Clearly, both the students and the teachers regard HKSL as most important for effective classroom communication, especially for presentation, clarification, and feedback. However, to highlight the properties of Chinese metalinguistically, such as word order syntax or the character sequences of Chinese words and idioms, the deaf students as well as the Deaf and hearing teachers agreed to adopt MCC as a supplement to HKSL and Cantonese.

Another theme that the teachers identified during the focus group discussion was the factors that underlie the sociolinguistic context of language use. One such factor is the level of HKSL proficiency of the participants in the classroom. According to the hearing teachers, they would adopt HKSL in small group discussions involving deaf students as far as possible, especially when they perceived that the hearing students had better HKSL skills. Some hearing teachers acknowledged that their dominant language was Cantonese while HKSL was just their second language that they started to develop when joining the program; therefore, their falling back on MCC when interacting with

deaf students is understandable. Indeed, the hearing teachers were aware of this artifact of language use. Another context determining the use of MCC was when the hearing teacher needed to convey messages to the whole class of hearing and deaf students spontaneously in the presence of the Deaf teacher. Under such circumstances, the Deaf teacher would be cued to pick up the messages through the MCC of the hearing teacher.

Both the teachers and students said they were cognizant of the specific functions of HKSL and MCC in class. They had reached a consensus that HKSL was for clarification of meanings, abstract concepts, grammatical or cross-linguistic descriptions, and the like, while MCC was usually restricted to metalinguistic demonstrations such as word forms or word orders. Some of these strategies are similar to those adopted in the study by Berke (2013), in which certain shared reading techniques adopted by Deaf parents also involved the raising of metalinguistic skills to maximize the deaf child's exposure to English in print through American Sign Language (ASL). They included word definition, explanations about the differences in spelling between two (p.144) similar-looking words, or the differences between ASL and English, as well as translation through ASL.

In sum, the deaf students' performance in the language differentiation task, their self-reflections about the linguistic differences between the two forms of signing, and their tendency of tuning themselves to the Deaf and hearing teachers' language of instruction so readily revealed their highly proficient skills of linguistic adaptations. Evidentially, over time, they became aware of which teacher was responsible for which language, as well as the linguistic differences between a signed language and a spoken language, even when the latter is represented in the same signing modality. This language awareness should potentially pave the way for their access to appropriate linguistic input for bilingual acquisition, and more importantly, subject knowledge when learning in a sign bilingual classroom.

Conclusion

Deaf students studying in a sign bilingual and co-enrollment program team-taught by a Deaf and a hearing teacher displayed a growing metalinguistic awareness and capacity for distinguishing HKSL from MCC, and this performance correlated with the students' HKSL proficiency. They initially used mouth gesture and mouthing to categorize the two forms of signing. From the students' self-reports, they could achieve a sufficient level of understanding of the characteristic distinctions between HKSL and MCC by Primary 4, after four to five years of immersion in a sign bilingual and co-enrollment learning environment. We suggest that intrinsic to this environment is the Deaf teacher, whose presence offers the students the flexibility of accessing linguistic input and lesson contents in class through HKSL, in addition to Cantonese by the hearing teacher who can also sign. Because research on language use in a sign bilingual classroom having a Deaf teacher and a hearing teacher is limited, more fine-grained analysis of the linguistic resources embedded in this kind of classroom interactions would shed light on bilingual acquisition in a classroom condition.

The study also revealed that immersing deaf students in a linguistically rich environment potentially enhances their growth of metalinguistic awareness of the ontological differences between HKSL and MCC. The results offer a different angle in our awareness of the functions of HKSL and MCC in classroom learning. The evidence justifies the use of a natural sign language to meet the constantly shifting demands for information access in classroom learning. Although the students' attitudes toward MCC for effective communication were less than positive, the evidence does not reject the use of MCC altogether.

(p.145) Instead, this visual communication system was perceived by the teachers and the students alike as a tool for fulfilling some specific pedagogical functions, which potentially heightened the students' metalinguistic awareness of the linguistic differences between HKSL and Chinese.

The current study represents the first attempt to investigate deaf students' awareness of HKSL and Chinese when both languages are transmitted in the signing modality. The results are preliminary, and future research is certainly necessary. In future, grammaticality judgments that are commonly adopted to measure the metalinguistic knowledge of monolingual or bilingual children are necessary, especially in light of the proposal of cognitive advantage that bilingual children demonstrate in various studies involving spoken language. It is important to examine whether deaf students studying in a sign bilingual environment with input from HKSL and Cantonese/written Chinese also

demonstrate this advantage. It is also important to further identify the pedagogical processes in which HKSL or MCC may play a part. Although the debate between adopting a natural signed language or a manually coded spoken language in educating deaf students will continue for some time among educators for the deaf, the results of the current study contribute to the tenet that deaf students have the ability to differentiate the two forms of signing to support their language acquisition and classroom learning, so long as the two signing varieties are placed alongside each other with clearly spelt out functional roles. We argue that this facility is made possible through collaborative teaching between a Deaf teacher and a hearing teacher, and collaborative learning between deaf and hearing students in a co-enrollment classroom.

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Note

(p.146) References

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Notes:

(1) In fact, deaf students in Hong Kong are also exposed to English as well. However, in this chapter, we only focus on the Chinese-related spoken languages.

