Code-blending in Early Hong Kong Sign Language

FUNG, Hiu Man Cat
Centre for Sign Linguistics and Deaf Studies
Department of Linguistics and Modern Languages
The Chinese University of Hong Kong
cat_cslds@cuhk.edu.hk

1 Research questions

§ To investigate code-blending produced by a deaf child, CC
§ What are the code-blending patterns in early Hong Kong Sign Language (HKSL)?
§ What are the grammatical constraints for code-blending?

2 Background

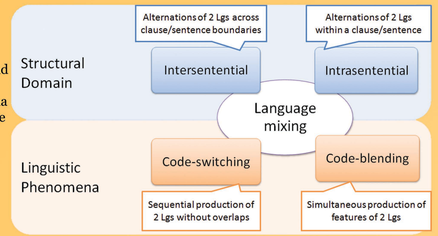
§ Bilinguals acquire more than one language during the period of primary language development (Genesee 1988).
§ Channels of communications: (i) *auditory-vocal mode*; vs. (ii) *visual-gestural mode*

2.1 Bimodal bilingualism

§ *Unimodal bilinguals* are who acquire two or more language of the same modality, i.e. bilinguals of two spoken languages or bilinguals of two signed languages
§ *Bimodal bilinguals* or *cross-modal bilinguals* are who acquire one spoken language and one signed language (Maxwell 1990; Johnson 1992; Berent 2004; Plaza-Pust and Morales-López 2008)

2.2 Language mixing and code-blending

Figure 1 Structural domain and linguistic phenomena of language mixing



§ *Code-switching* refers to the alternations of two languages without overlapping.
§ Bimodal bilinguals often mix the two languages simultaneously, i.e. *code-blending*.
§ Words produced by deaf children 'can be mouthed, whispered or spoken with voice' (Van den Bogaerde and Baker 2005:156).
§ In this paper, code-blending also include the co-articulations of signs with speech being ***mouthed, whispered or spoken with voice***.

3 Previous studies of language mixing

3.1 Code-switching in spoken languages

3.1.1 Adult grammar of code-switching in spoken lgs

§ Different types of grammatical studies:
(i) Constraints specific for code-switching (Poplack 1980; Sankoff and Poplack 1981; among others)
(ii) Only one language govern the entire utterance, e.g. Matrix Language Framework model (Myers-Scotton 1993; Jake et al. 2002, 2005)
(iii) Nothing else govern the code-switching utterances except the grammar of the two languages (Mahootian 1993; MacSwan 1999, 2000, 2005a; Chan 2003, 2008; Cantone 2007)

3.1.2 Early mixing in spoken languages

§ Different views of early mixing:
(i) *Unitary Language System Hypothesis*: early mixing reflects that the bilingual children have not yet differentiated the two languages
(ii) *Dominant Language Hypothesis*: children mix the grammatical morphemes of the dominant language into the non-dominant language (Petersen 1988).
The directionality of mixing indicates which language is more dominant in the children (Lanza 1992, 1996)
(iii) *Continuity Hypothesis*: children should have the same grammar as adult from early on and code-switching in children should be constrained by the same principles of Universal Grammar (Cantone 2007)

3.2 Code-blending in signed languages

§ Five pairs of language were studied so far:
(i) English and American Sign Language (ASL)
(ii) French and Langues des Signes Québécoise (LSQ)
(iii) Dutch and Nederlandse Gebarentaal (NGT)
(iv) Italian and Lingua dei Segni Italiana (LIS)
(v) Cantonese and Hong Kong Sign Language (HKSL)

3.2.1 Code-blending in hearing bimodal bilinguals

§ The code-blending studies in signed languages concentrate on hearing bilinguals born to deaf parents, also named as Codas (Children of Deaf Adults).
§ Emmorey, Borinstein, and Thompson (2005) studied 11 English-ASL Codas for the language mixing in narratives and the conversations with another Coda. Bimodal bilinguals produced code-blending more than code-switching. More than 95% ASL signs co-occurred with English words. In a later study, Emmorey, Borinstein, Thompson and Gollan (2008) reported that the same group of English-ASL Codas produced utterances of code-blending (29.27% in narratives and 35.03% in conversations) more frequently than code-switching (5.66% in narratives and 3.72% in conversation). The percentage of code-blended verbs (67.5%) was much more than nouns (6.67%).
§ Similar results are reported in the study of 10 Italian-LIS Codas (Bishop et al. 2006) that code-blending (57%) are more frequent than code-switching (36%). Verbs (34% in code-blending, 45% in code-switching) appear more frequently in mixed utterances than nouns (33% in code-blending, 30% in code-switching).

3.2.2 Code-blending in acquisition studies

§ A comparative study (Petitto et al. 2001) on bimodal bilinguals of French-LSQ and unimodal bilinguals of French-English involved six hearing children aged between 0;10-4;3, whose fathers/mothers reported himself/herself using one language to his/her children and the children are exposed to two languages regularly and consistently. The French-LSQ bilinguals produced 19-44% mixed utterances in which 94% are code-blending and 6% are code-switching. The results are similar to those of English-ASL Codas.
§ In the acquisition studies of Dutch and NGT (Van den Bogaerde and Baker 2005; Baker and Van den Bogaerde 2008), it is reported that deaf children at ages 3;0 produced less code-blended utterances (3-17%) than hearing children of the same age (18-47%) during the conversations with deaf mothers. The code-blending patterns of Dutch-NGT bilinguals reflected the deaf mother's linguistic input such that code-blended nouns (deaf children 56%, hearing children 52%) are more than verbs (deaf children 50%, hearing children: 38%).

3.3 Code-blending in Hong Kong Sign Language

3.3.1 Situation of the deaf in Hong Kong

§ Hong Kong deaf children acquire HKSL either from the input of deaf parents , siblings and/or peers at deaf school.
§ Due to the oralist promotion of the Education Bureau, deaf children are exposed to spoken Cantonese, Mandarin and English through speech training, school setting as well as daily exposure from hearing majority.
§ Due to hearing loss, deaf children have limited access to spoken language via auditory-vocal mode although they have full access to signed language via visual-gestural mode. The outcome of this kind of language acquisition is some form of 'mixed codes'.

3.3.2 Pilot studies in Hong Kong Sign Language

3.3.2.1 Code-blending in deaf adults

§ The utterance in (1) is one of the code-blended examples produced by a fluent Deaf signer.
§ There are two blends being semantically and morphosyntactically equivalent, namely (i) Cantonese *ngo* 'I' and HKSL *IX1* 'I', and (ii) *jatman* 'one dollar' and *ONE-DOLLAR* 'one dollar'. This kind of blend is labeled as ***bimodal match***.
§ On the other hand, the Cantonese verb *bei* 'give' and HKSL sign *GIVE3* 'give him/her' are classified to be ***bimodal mismatch***, i.e. the sign and speech units are semantically and/or morphosyntactically inequivalent. The sign *GIVE* is inflected for 3rd person object agreement while the Cantonese *bei* is simply the verb root meaning 'give'.
§ After the blend *GIVE3* and *bei*, the speech is not immediately followed by an overt object, say *keoi* 's/he'. The signer articulated an aspect marker *zo* in Cantonese instead and no corresponding aspect marker, such as *FINISH* 'finish' in HKSL (c.f. Tang 2009), can be found in the signing.
§ The proposition is completed only if we consider both the signs and speech together.

(1) Cantonese: ai ngo bei -zo jatman ai .
(sigh) I give -ASP one dollar (sigh)
HKSL: IX_1 $GIVE_3$ ONE-DOLLAR .
I give-3SG one dollar
'(Sigh), I have given him/her one dollar.'
(Cantonese-HKSL, Fung, Tang and Lam 2008a)

3.3.2.2 Code-blending in deaf children

§ Fung, Lam and Tang (2008b) reported in a pilot study of early HKSL code-blending that Cantonese-HKSL code-blended utterances contribute **more than 56.2%** in the data of a deaf child named CC (the same child in this study) at ages 4;9, 5;8 and 6;11.
§ Further classification of code-blending showed that 33.23% of the tokens are bimodal mismatch. An example of bimodal mismatch is shown in (2) in which a syntactic constituent 'green pen' is formed by Cantonese *luk* 'green' and HKSL *PEN* 'pen'.

(2) Cantonese: luk .
green
HKSL: PEN .
pen
'Green pen.'
(CC 5;8.24, Cantonese-HKSL, Fung, Lam and Tang 2008b)

4 Methodology

4.1 Language background of the child CC

§ The target of study , *CC*, has severe hearing loss who wears hearing aids.
§ His parents are both deaf and he has a younger deaf sibling.
§ His mother is a non-native deaf signer while father a near-native deaf signer.
§ The child was encouraged to talk until age 1;9 when systematic input in HKSL began.
§ Since K2 (around age 5), CC joined the Jockey Club Sign Bilingualism and Co-enrolment in Deaf Education Programme which encourages the development of both signed and spoken languages by deaf children.

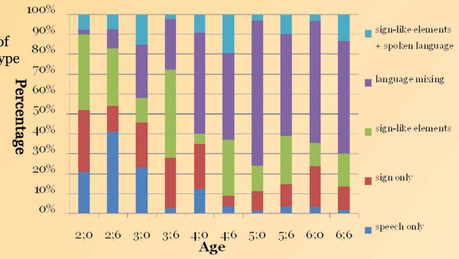
4.2 Data and methodology

§ CC's longitudinal data of half-yearly sessions from age 2;0 to 6;6 are taken from the Child HKSL Corpus.
§ Four tiers in ELAN: two gloss tiers, one mouth tier and one non-manual tier.
§ Data are extracted after 30 minutes of each recording. 25-minute-long data from each clip are analyzed.

4.3 Results

§ Total no. of utterances: 2471
§ 871 utterances are excluded (imitations, false start, incomplete utterances, unintelligible utterances, utterances of non-linguistic production (like manual or vocal interjections), and utterances in which part or all the articulators are out of screen)
§ 1600 utterances are included in analysis and classified according to
(a) Speech only (n = 158),
(b) Sign only (n = 254),
(c) Language mixing (n = 716),
(d) Sign-like elements only (n = 323), and
(e) Co-articulation of speech and sign-like elements (n = 149).

Figure 2 Percentage of utterances type



§ The monolingual utterances decrease through the entire observation period.
§ The percentage of language mixing utterances increased from age 2;0 to 5;0 and start to drop afterwards.
§ The percentage of mixed utterances outnumbered other type of utterances since 4;0 (varied from 43.48% to 72.86%).
§ Among the language mixing utterances, code-blends (n = 704) outnumbered code-switches (n = 9) in addition to 3 utterances in which both code-switching and code-blending occur within the same utterance.
§ For the code-blended utterances, we analyzed the data by extracting every code-blend from each utterance at two different levels: (i) ***lexical blend***; and (ii) ***phrasal blend***.

4.4.1 Lexical blends

§ Lexical blend is defined to be ***the co-articulation of sign and speech within X^o level without further projections.***

Simple lexical blends

§ In (3), the Cantonese word *pinggwo* 'apple' and the HKSL sign *APPLE* 'apple' are simultaneously articulated in different modalities. The sign and the word are semantically congruent. They are typical simple lexical blends found in the data.

§ We also observed several tokens of lexical blends which reflect a typical Cantonese development comparable to monolingual Cantonese hearing children. In (4), the Cantonese word *maamaa* 'horse' blends with the HKSL sign *HORSE* 'horse'. The monosyllabic word *maa* 'horse' is reduplicated into bisyllabic *maamaa* 'horse' without alternating the semantic meaning nor the syntactic properties of the word. Such kind of syllable reduplication is very common in child-directed speech of Cantonese speakers and in monolingual Cantonese children (Matthews and Yip 1994).

(3) Cantonese: pinggwo .
apple
HKSL: APPLE .
apple
'(This is) an apple.'
(CC 3;0.13, Cantonese-HKSL)

(4) Cantonese: maamaa.
horse
HKSL: HORSE .
horse
'(This is) a horse.'
(CC 3;0.13, Cantonese-HKSL)

Lexical blend with morphological/phonological reduction

§ In example (5), Cantonese *gaudim* 'nine o'clock' blends with HKSL *NINE* 'nine'. The sign *NINE* is phonologically reduced from the sign *NINE-O'CLOCK* that only the handshape remains unchanged. The movement from the wrist to neutral space and the non-dominant hand are dropped.

§ We also observed that multisyllabic Cantonese words are reduced to monosyllabic. In other words, some Cantonese syllables are not pronounced. In example (6), CC articulated the sign *SATURDAY* 'Saturday' with only the last syllable *luk* of *singkeiluk* 'Saturday' in Cantonese. The Cantonese word *singkeiluk* 'Saturday' is literally composed by *singkei* 'week' and *luk* 'six'.

§ Such kind of reduced phonological form like example in (5) and syllable reduction like example (6) are classified into lexical blend with morphological/phonological reduction.

(5) Cantonese: gaudim .
nine o'clock
HKSL: NINE .
nine
'(It's) nine o'clock.'
(CC 3;6.28, Cantonese-HKSL)

(6) Cantonese: luk .
six
HKSL: SATURDAY .
Saturday
'(Today is) Saturday.'
(CC 5;6.20, Cantonese-HKSL)

Other lexical blends

§ In (7), a compound sign *COLOR^PEN* 'color pens' is formed by the signs *COLOR* 'color' and *PEN* 'pen' accompanied with the Cantonese *ngaansikbat* 'color pen' which is also a compound forming from *ngaansi* 'color' plus *bat* 'pen'. Whether Cantonese has any in fluences to the formation of such HKSL compound or lexical blend remains an unanswered question because we need further verification and more data for the HKSL compounds.

§ Some form of mouthings like *fu* in (8) is ambiguous. We cannot determine whether it is a syllable from the Cantonese word in *lofu* 'tiger' or it is an obligatory non-manual feature accompanied in the lexical sign *TIGER* 'tiger'. The non-manual feature and the mouthing look too similar and we are not able to distinguish whether it is a Cantonese word or a mouth gesture for the lexical sign. This kind of data required further verifications in future studies.

(7) Cantonese: ngaansikbat .
color pens
HKSL: COLOR^PEN .
color pens
'(These are) color pens.'
(CC 6;0.28, Cantonese-HKSL)

(8) Cantonese: ?fu .
?tiger
HKSL: TIGER .
tiger
'(There is a) tiger.'
(CC 4;0.23, Cantonese-HKSL)

4.4.2 Phrasal blends

§ Phrasal blend refers to ***a blend that constitutes a syntactic phrase***, in other words, code-blends other than lexical blends. They are further classified into three subtypes.

Type A phrasal blends

§ Type A phrasal blends are ***formed by a XP in one language and a lexical head X^o in another language***. Most items are semantically congruent, i.e. sign and speech carry the same semantic meanings.
§ Examples like (9) are cases where the sign and speech occur at different level. It happens that the same concept 'take medicine' is express at VP level in Cantonese [$_{VP}$ *sik* [$_{NP}$ *joek*]] 'eat medicine' but V^o level in HKSL [$_{Vo}$ *TAKE-PILLS*] 'take pills'.
§ Other Type A phrasal blends are examples like (10). The first phrasal blend in (10) is a Cantonese phrase blending with a HKSL sign. The Cantonese VP [$_{VP}$ *tai* [$_{NP}$ *syu*]] 'read books' co-articulates with the HKSL noun *BOOK* 'book'. Another phrasal blend in the same utterances is a Cantonese word blending with a HKSL phrase. The Cantonese verb *lo* 'take' and the HKSL VP *TAKE-a* 'take from there' are articulated at the same time. The sign *TAKE* is inflected for the spatial loci, therefore, forming a VP.

(9) Cantonese: sik joek .
eat medicine
HKSL: TAKE-PILLS .
take pills
'(I need to) take some pills.'
(CC 4;0.23, Cantonese-HKSL)

(10) Cantonese: tai syu . lo .
read book take
HKSL: BOOK . $TAKE_A$ IX_1 SELF .
book take-LOC I self
'(I want to) read a book. Let me take (one) from there.'
(CC 4;6.21, Cantonese-HKSL)

Type B phrasal blends

§ Type B phrasal blends consist of ***one phrase in speech and another phrase in sign***.

§ The semantic meaning of sign and speech can be congruent like the examples in (11) and (12).
§ In (11), both languages are DPs, namely [$_{DP}$ *keoi* [$_{NP}$ *zeze*]] 's/he elder sister' and [$_{DP}$ IX_3 [$_{NP}$ *ELDER-SISTER*]] 's/he elder sister'. There is a one-to-one mapping of *keoi* with IX_3 and zeze with *ELDER-SISTER* in this phrasal blend.
§ In (12), both signs and speech are composed of VPs such that Cantonese [$_{VP}$ *fong hai doui*] 'put be here' and HKSL [$_{VP}$ *PUTa*] 'put-LOC' carry the same semantic meaning 'put over here'. In this case, the two VPs share the same verb root 'put'.

(11) Cantonese: keoi zeze .
s/he elder sister
HKSL: IX_3 ELDER-SISTER .
s/he elder sister
'(I want to talk to) that elder sister (but not you).'
(CC 4;6.21, Cantonese-HKSL)

(12) Cantonese: fong hai dou .
put be here
HKSL: ... PUT_a .
put-LOC
'Hey, put (it) over here.'
(CC 6;0.28, Cantonese-HKSL)

§ Apart from semantically congruent Type B phrasal blend, we also encounter blends like example in (13) that the sign and speech compensate different syntactic components. CC articulates a Cantonese phrase *tai-haa* 'see-PRT' simultaneously with a HKSL phrase *SEEa* 'see-LOC'. Cantonese verb *tai* 'see' is followed by a verbal delimitative particle *haa* indicating the meaning 'have a ...' (c.f. Matthews and Yip 1994). *Tai-haa* 'see-PRT' is an imperative structure meaning '(let me) take a look'. On the other hand, the sign SEEa 'see-LOC' is an inflected form of the verb SEE with a spatial loci which is one of the arguments of the verb. In this kind of phrasal blend, sign and speech share the same verb root 'see' but the rest of the signs and speech compensate each other to form a complete proposition.

(13) Cantonese: tai-haa .
see-PRT
HKSL: SEE_a .
see-LOC
'Let me take a look (the book) over there.'
(CC 4;6.21, Cantonese-HKSL)

Type C phrasal blend

§ For Type C phrasal blend, we refer to the sign and speech together forming a syntactic constituent, i.e. a phrase is formed by two different modalities. It is noted that in such kind of data, sign and speech are incongruent in both semantic meaning and grammatical categories. This kind of phrasal blends are rare in our data (n = 8). Examples in (14) and (15) are both VPs that the argument of the verb is articulated in the other modality. In (14), the verb *EAT* 'eat' is articulated in HKSL while the internal argument *bengbeng* 'biscuit' in Cantonese . In (15), the verb *bei* 'give' is articulated in Cantonese while one of the arguments *BISCUIT* 'biscuit' is articulated in HKSL. The sign and speech together form a syntactic constituent, VP in these two cases.

(14) Cantonese: bengbeng .
biscuit
HKSL: EAT .
eat
'(I) eat biscuits.'
(CC 2;6.17, Cantonese-HKSL)

(15) Cantonese: bei .
give
HKSL: BISCUIT .
biscuit
'Give (me) biscuits.'
(CC 3;0.13, Cantonese-HKSL)

5 Discussion

§ Given the above types of lexical blend and phrasal blend attested in our data, what are the grammatical constraints of code-blending?
§ At the lexical level, most blends come from simple blends such as example in (3). The mapping of the sign and word are always constrained to congruent semantic meaning. Through the developmental stage, CC also reflects some forms of child language development using reduplicated words of Cantonese like monolingual children like (4). A further question is why the child inserts the lexical items twice for the same semantic concept? Does it reflect the bilingual competence as well as structures of bilingual lexicons?
§ Looking at the lexical blend with morphological/phonological reduction, CC only drops the non-head syllables of Cantonese or using the mouthing to disambiguate the sign. It seems that CC has some competence of the word/sign-internal structures but further investigation is required to account for such type of lexical blend.
§ For Type A and Type B phrasal blends, we found that they are always constrained to the head of XPs shared by the two languages. Taking (12) as example, both Cantonese *fong hai dou* 'put here' and HKSL *PUTa* 'put-LOC' are built from V^o 'put' although the phonological realization of the verbs are different in two languages.
§ Even in semantically incongruent phrasal blend, we still find that X^o glue together the Cantonese phrase and the HKSL phrase like example in (13). *Tai-haa* 'see-PRT' and *SEEa* 'see-LOC' share the same verb root 'see'. The code-blends suggest that they are systematically constrained in that head of XPs shared by the two languages.
§ How about the Type C phrasal blends which the sign and speech articulated simultaneously together form a syntactic constituent? These data suggest that the linearization of words/signs is free because of the availability of articulators. Similar utterances are also found in Italian-LIS studies of hearing children born to deaf families as given in example (16). Donati and Branchini (2009) argued that word order differences are the result of different PF linearizations, thus, only one syntactic structure is generated but linearized twice. If this is the case, a further question is whether unimodal bilinguals need such linearization processing even when they articulate two languages within the same modality. We leave these questions for further studies.

(16) Italian: io !
I
LIS: WIN !
win
'I won!'
(Italian-LIS, Donati and Branchini 2009:10(24))

6 Conclusion

§ This study investigates the early code-blending in a Cantonese-HKSL deaf bilingual, CC, from age 2;0 to 6;6.
§ Extracting different types of lexical blend and phrasal blends from the language mixing data, we observe that lexical blends are constrained to the semantic meanings of the lexical items.
§ When the lexical blend displays some form of morphological/phonological reduction, CC always follows the morphological rules of either language by dropping the non-head part of the word/sign.
§ Phrasal blends are always constrained to the shared head X^o of the XPs.
§ Further investigation is required for the Type C phrasal blend where the speech and sign articulate simultaneously form a syntactic constituent.

This paper is part of the preliminary results of the MPhil thesis entitled *Code-blending in Early Hong Kong Sign Language: A Case Study*.

TISLR 10 - Purdue University - Sept 30-Oct 2, 2010