Cross-Language Influence, Code-Switching, and Code-Blending

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Bilingualism, cross-language influence and the architecture of the lg. faculty

○ How autonomous are a bilingual’s two languages?
○ Why do children (and adults!) mix languages within utterances?
○ How exactly do two separate grammars interact?
○ In what ways do the languages influence each other during development?
○ Can we account for bilingual phenomena without appealing to any special machinery?

We will argue that bimodal bilingual acquisition studies offer unique insights on these issues and on the architecture of the human capacity for language.

Who are bimodal bilinguals?

Bilingual

unimodal bilingual
(monomodal)

speech + speech

sign + sign

bimodal bilingual

(sign + speech
(coda or koda)

NOTE: “Sign” in these cases refers to full, national sign languages, not SimCom or invented sign systems such as SEE.

Cross-language influence

i. If the construction is at the syntax-pragmatics interface
ii. If structural (string) overlap between the two languages is observed
iii. Prior to the instantiation of the C-system

(adapted from Hulk & Müller 2000)

Bimodal bilingual data:

ii’. Children produce structures in their spoken language without surface overlap
iii’. Non-target structures continue past the evidence of the C-domain

Possible explanation

Bimodal bilingual children appear to be markedly different from unimodal bilinguals as well as monolinguals.

What we need is a theory that puts them in the same camp as unimodal language users and yet makes a reference to their being different.

Obvious difference: another simultaneously available articulatory channel

no longer a theory of “transfer” but a theory of (non-enforced) language choice at a particular juncture of structure building

code-switching
A Minimalist-friendly Model of CS
(MacSwan 1998)

- An extra modality ➔ 2 simultaneous linearizations (Donati & Branchini 2009)
- 2 modalities ➔ 2 Phonological Forms (?)

Additional Assumption: Distributed Morphology (Halle & Marantz 1993; Idsardi & Raimy 2000; Embick & Noyer 2007, i.a.)

- Roots, Morphemes (S, U L)
- Syntactic Derivation
- Vocabulary Insertion (S, U L)
- Phonology (S, U L)
- Meaning
- Phonological representation

Initial evidence from unimodal bilinguals

- Some “cross-language transfer” effects in young children may be a result of code-mixing/switching (Liceras et al 2008 for DP-related issues; Tieu 2009 for wh-production, 2010; Cantone 2007 for word-order)
- Similar phenomena in adults (González-Vilbazo & Lopez submitted; Bandi-Rao & den Boer 2004)

What have we learned from bimodal bilingual research so far?

- They are unlike unimodal bilinguals:
  - Signs and speech can co-occur simultaneously, resulting in code-blends
  - Strong preference for code blending (90%) over code-switching (<10%); majority (80%) of blends are congruent
- They are like unimodal bilinguals:
  - Same milestones for monolingual and bilingual vocabulary development (cf. Brackenbury et al. 2006)
  - Cross-language influence (Morgan 2000 [BSL-Eng], Donati & Branchini 2005 [BSL-It])

Binational Bimodal Bilingual (BiBiBi) Language Acquisition Project

We examine the simultaneous development of a sign language and a spoken language in two language pairs:

- Brazilian Sign Language (Libras) and Brazilian Portuguese (BP)
- American Sign Language (ASL) and English (E)
**Study 1: Sign structures in the spoken language despite lack of overlap** (Lillo-Martin et al 2010)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Lang’s</th>
<th>Age Range</th>
<th>Sess’ns</th>
<th># Utt’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben</td>
<td>ASL / E</td>
<td>2;01 – 2;03</td>
<td>2</td>
<td>715</td>
</tr>
<tr>
<td>Tom</td>
<td>ASL / E</td>
<td>2;00 – 4;00</td>
<td>4</td>
<td>592</td>
</tr>
<tr>
<td>Igor</td>
<td>Libras / BP</td>
<td>2;01 – 2;10</td>
<td>4</td>
<td>1035</td>
</tr>
</tbody>
</table>

All participants have at least one Deaf parent and relatively equal exposure to both sign and spoken languages.

**Coding**

- Excluded routines, interjections, and complete imitations
- Coded (spoken) utterances as Completely Adult-Like (CAL), Fragment Adult-Like (FAL), or Non Adult-Like (NAL)
  - Potentially sign-influenced word order
  - Other (generally, missing/null elements)

**Overall characterization of utterances**

Structurally, utterances mostly adult-like, but with some interesting exceptions in word order and word omission.

**Breakdown of non adult-like utterances**

**Examples**

(1) BP: em casa a vovó taí

Target BP: A vovó está em casa?

(2) Eng: Chocolate eat (Ben 2;01; bimodal)

ASL: HOT CHOCOLATE IX EAT

(3) sleeping mouse sleeping (Ben 2;01; unimodal)

(4) SPC stuck it (Ben 2;03; unimodal)

(5) bug go where (Tom 2;04; unimodal)

**The nature of cross-language influence in the speech of BiBi’s**

Recall:

ii’. Only for structures that are “surface”- compatible with both languages, i.e. with English and BP, respectively.

BUT

(1)-(4) are not compatible with BP/English

☞ Not the case!
Discussion of Study 1 –
e.g. Doubling

- Doubling in ASL and LSB results from choosing a (null) functional element with a strong [+focus] feature
  - Morphological fusion of the focus head with the focused element permits both copies to be pronounced (Nunes & Quadros 2004)

- If this head is chosen during a ‘spoken language’ derivation, the non-target structure will result

**code-blend**

Study 2: Sign structures in the spoken language past C-domain (Koulidobrova 2010)

- ASL is a null subject language (Lillo-Martin 1986, 1991)
- Prediction: ASL/Eng bilingual children should pattern with a) monolinguals
  - b) unimodal bilinguals acquiring a NSL/non-NSL

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</tr>
</thead>
<tbody>
<tr>
<td>Tom</td>
<td>ASL / AE</td>
<td>1;11 – 4;05</td>
<td>14</td>
<td>2222</td>
</tr>
<tr>
<td>Lex</td>
<td>ASL / AE</td>
<td>1;01 – 4;01</td>
<td>4</td>
<td>1933</td>
</tr>
</tbody>
</table>

Data

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of utterances</th>
<th>Number of uttrs. with verbs</th>
<th>Number of null subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOM</td>
<td>2222</td>
<td>1102</td>
<td>131</td>
</tr>
<tr>
<td>LEX</td>
<td>1933</td>
<td>1058</td>
<td>123</td>
</tr>
</tbody>
</table>

After Serratrice, Sorace & Paoli (2004):

- Stage II (MLU ≥ 2.0; age ≥ 24ms.)
- Stage III (MLU ≥ 3.0; age ≥ 36ms.)

Koda NS rate as compared with Carlo (It/Eng) and Eng. monolinguals (4, CHILDES)

Results

- Stage II
  - NS_TIM > NS_TIM was not significant;
  - NS_TIM > NS_TIM was significant (Bonferroni p < .001)

- Stage III: significant
  - NS_TIM > NS_TIM / ratio = 2.509, Bonferroni p < .001
  - NS_TIM > NS_TIM / ratio = 4.679, Bonferroni p < .001

Hypothesis for Stage III is not confirmed

Examples (stage III)

(6) a. Ø are pushing circles. (Lex)
   b. And then Ø wanna make a train. (Lex)
   c. Ø done should make sounds. (Lex)
   d. Ø likes throwing spiderwebs. (Tom)
   e. Ø sticks here. (Tom)
   f. Mister Conductor said Ø won’t crashed# he said (Lex)
   g. It says Ø hafta build a king for the king horsies. (Tom)
The nature of cross-language influence in the speech of BiBi’s

Recall:
iii'. Cross-lg influence will go away by the time C-domain is in place.

BUT

(7) a. TOM 85 (3;10.26)
   i. I don’t like kings because they are really mad at me.
   ii. Where’s the outside (door)?

b. LEX 27 (3;09.26)
   i. Because we need to pull all the puzzles togethers.
   ii. But I am trying to clean up because I want to go.

c. LEX 35 (4; 03.11)
   i. I know where this goes
   ☞ Not the case!

Discussion of Study 2

- If pro and an overt pronoun do not compete at VI, pro might be inserted alongside an English VP
  ☞ code-blend

Additional prediction

  - TP does not have to be language-uniform
  - What sounds like I_v might, in effect, be I_E

- Sign languages mark agreement and aspect, but neither is obligatory
  - Suggestion: T_ASL is underspecified for tense-features

Additional prediction

- Unimodal environment:
  - Both [T_vE*[T_vE*[V_E[U]]]] and [T_vE*[T_vE*[V口中]]] (T_vE more specified: Subset Principle) ➔ code-switch impossible
  - Inflectional morphology is either a) omitted or b) default

- Bimodal environment:
  - Both [T_vE*[T_vE*[V_E[U]]]] and [T_vE*[T_vE*[V口中]]]
  - At VI, if T is overt, [T_vE*[T_vE*[V口中]]] b/c T_vE and T_ASL don’t compete ➔ code-blend is possible
  - Inflectional morphology is either a) omitted or b) default
  - Inflectional morphology is either a) omitted, b) default, or c) bearing incorrect tense morphology

Study 3: Violations

- Monolingual (cf. Harris & Waxler 1996) and unimodal bilingual children (cf. Serratrice 2001 for overview) do not produce errors of commission in verbal morphology. They either omit inflection entirely or supply it correctly (though see some exceptions in Döpke 2002).

Results – BP Verbs
Results – BP Aux

Results – Eng. Verbs

Results – Eng. Aux

Monolingual English comparison (JOY, UConn CLESS database)

Examples: Incorrectly inflected verbs

(11) Tom (2;06)
  a. I needs this [target: I need this...]
  b. I’m bounces [target: I’m bouncing]
  c. Looked! [target: Looked!]

(12) Tom (2;07)
  a. I stuck [target: I am stuck]
  b. I need to stirring it [target: I need to stir it]
  c. I’m stand upped [target: I’m standing up]

(13) Tom (3;01)
  a. I don’t be seeing my frogs [target: I don’t see my frogs]
  b. I went too fast [target: It went too fast]
  c. I goed over there instead [target: I will go over there]

Discussion of Study 3

- The bilingual children do not seem to produce more incorrect uninflected forms than monolinguals (range for both: 3%-14%) ~ omission-default

  BUT

- Tom’s incorrect inflected verbs ~4% of all verbs (JOY ~5%)
  - About half involve use of a with 1st person subject
  - Almost all Tom’s incorrect inflected aux forms involve insertion of an unneeded ‘be’ form (JOY ~ never)
  - Other (random?) incorrect inflected verb forms remain for Tom ~ code-blend?
Summary

- The standard account of cross-linguistic influence between the languages of a bilingual (Hulk & Muller 2000, i.a.) does not account for the data that arise during the examination of linguistic patterns of bimodal bilinguals.
- To date, BiBi’s are alone in the camp of defying the standard account.
- We argue that the basic difference lies in the availability of an extra articulatory channel, which allows for a) sign language structures in the spoken language, and b) blends that appear inconsistent with each of the grammars individually.

Open questions

- Will an account like this be able to correctly explain all the cases where cross-language influence is or is not seen—in our bimodal data as well as in unimodal bilinguals?
- Along the lines of MacSwan, i.a., we would expect any ‘constraints’ on cross-language influence to be like ‘constraints’ on code-switching—no more than the requirements on the two languages themselves.
- Testing of these questions is in progress.

Selected bibliography