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.

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 more than one language choice ➔ code-switching
A Minimalist-friendly Model of CS
(MacSwan 1998)

- An extra modality $\Rightarrow$ 2 simultaneous linearizations (Donati & Branchini 2009)
  - 2 modalities $\Rightarrow$ 2 PFs

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 (Gonzales-Villicosa & Lopez submitted; Bandi-Rao & den Dikken 2004)

Additional Assumption: Distributed Morphology (Halle & Maranz 1993; Idsardi & Rainy 2009)

- Atomic ROOTs enter the derivation and their featural requirements must be met.
- At VI, elements from either language can be inserted as long as PF requirements are satisfied $\Rightarrow$ code-switching

$\Rightarrow$ When two independent sets of articulators are used, lexical items from both languages are possible $\Rightarrow$ code-blending

What have we learned from bimodal bilingual research so far?

- They are unlike unimodal bilinguals:
  - Sign 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 (Timoney et al. 2009; van den Bogaerde & Baker 2005; Petitto et al. 2001)

$\Rightarrow$ 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 2009 [LIS-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)

<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>392</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.

Study 1: Sign structures in the spoken language despite lack of overlap (Lillo-Martin et al. 2010)
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

- O-V order
  (1) BP: "em casa a vovó taí" (Igor 2;10; unimodal)
  Target BP: "A vovó está em casa?"
  Is grandmother at the house?
  (2) Eng: Chocolate eat (Ben 2;01; bimodal)
  ASL: HOT CHOCOLATE IX EAT
  Doubling
  (3) sleeping mouse sleeping (Ben 2;01; unimodal)
  SPC
  (4) stuck it (Ben 2;03; unimodal)
  VH
  (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. structures must be "surface"-compatible with English and BP, respectively.

- Not the case!

Discussion of Study 1 – 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 monolinguals and unimodal bilinguals

<table>
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<tr>
<th>Subject</th>
<th>Lang's</th>
<th>Age Range</th>
<th>Sess'ns</th>
<th># Ut's</th>
</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>3;03 – 4;03</td>
<td>4</td>
<td>1911</td>
</tr>
</tbody>
</table>

Data

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of utterances</th>
<th>Number of utterances 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≥24mo.)
- Stage III (MLU≥3.0, age≥36mo.)

Results

- Stage II: NS rate is not significant
- Stage III: significant NS rate compared to Carlo
  - z-ratio=2.509, p two-tailed <.0002; Bonferroni p<.001
  - z-ratio=4.679, p two-tailed <.0002; 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.

(7)
- a. TOM 85 (1;10.26)
  - i. I don’t like kings because they are really mad at me.
  - ii. I need this to be a castle.
  - iii. 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.
  - iii. LEX 15 (4;01.11)
  - i. I know where this goes

Not the case!
Discussion of Study 2

• prn can be inserted alongside English VP because there is no competition for insertion at VI.

☞ code-blend

Additional prediction
(minimalist CS + DM)

• Sign languages mark agreement and aspect, but neither is obligatory; no evidence for T
• If the sign language is influencing the spoken language, the only errors predicted are a) omission and b) default (Elsewhere Condition, Kiparsky 1976)

Study 3: Violations

• Monolingual and unimodal bilingual children do not produce errors of commission in verbal morphology. They either omit inflection entirely or supply it correctly.

Results – BP Verbs

Results – BP Aux

Results – Eng. Verbs

Results – Other

Results – Inflected

Results – Uninflected
Results – Eng. Aux

<table>
<thead>
<tr>
<th></th>
<th>BEN 2:01</th>
<th>BEN 2:06</th>
<th>TOM 2:06</th>
<th>TOM 2:07</th>
<th>TOM 3:01</th>
<th>TOM 3:05</th>
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<tbody>
<tr>
<td>Other</td>
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<tr>
<td>Omission</td>
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<td>Incorrect Uninflected</td>
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<tr>
<td>Incorrect Inflected</td>
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<td>Target Uninflected</td>
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Monolingual English comparison

Discussion of Study 3

- The bilingual children do not seem to produce more incorrect uninflected forms than monolinguals (range for both: 3%-14%)
- Ben’s few incorrect inflected forms are not unlike those of monolinguals (e.g. ‘falled’) (some of Tom’s also)
- Almost all Tom’s incorrect inflected aux forms involve insertion of an unneeded ‘be’ form (Joy—never)
- Tom’s incorrect inflected verbs ~4% of all verbs (Joy .5%)
- About half of Tom’s incorrect inflected verb forms involve use of –s with 1st person subject
- Other (random?) incorrect inflected verb forms remain for Tom

Examples: Incorrectly inflected verbs

(11) Tom (2:06)
   a. I needs this […]
   b. I’m bounces
   c. Looked! [imperative]

(12) Tom (2:07)
   a. I sticks
   b. I need to stirring it
   c. I’m stand-upped [I’m standing up]

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

Summary

- We have demonstrated that 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 Ig. 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 monomodal 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

- Donati, C., & Branchini, C. (2009). Simultaneous grammars: two word orders but only one morphology. ESSLLI.