

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

Diane Lillo-Martin Helen Koulidobrova
University of Connecticut
 Ronice Müller de Quadros
Universidade Federal de Santa Catarina
 Deborah Chen Pichler
Gallaudet University

UIC Bilingualism Forum
 April 14, 2011



Acknowledgments

- Warm thanks to:
 - Bimodal bilingual children and their families
 - Research assistants and collaborators
- Financial support from:
 - Award Number R01DC009263 from the National Institutes of Health (National Institute on Deafness and Other Communication Disorders). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIDCD or the NIH.
 - The Gallaudet Research Institute.
 - CNPq (Brazilian National Council of Technological and Scientific Development) Grant #200031/2009-0 and #470111/2007-0.

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 more than one language choice

➔ **code-switching**

A Minimalist-friendly Model of CS

(MacSwan 1998)

- An extra modality → 2 simultaneous linearizations (Donati & Branchini 2009)
- o2 modalities → 2 PFs

7

Additional Assumption: Distributed Morphology

(Halle & Marantz 1993; Idsardi & Raimy 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 → code-switching

☞ When two independent sets of articulators are used, lexical items from both languages are possible → code-blending

8

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 Dikken 2004)

9

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 (Emmorey et al. 2008; van den Bogaerde & Baker 2005; Pettito et al. 2001)
- ☞ 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])

10

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)

11

Study 1: Sign structures in the spoken language despite lack of overlap

(Lillo-Martin et al 2010)

Subject	Lang's	Age Range	Sess'ns	# Utt's
Ben	ASL / E	2;01 – 2;03	2	715
Tom	ASL / E	2;00 – 4;00	4	592
Igor	Libras / BP	2;01 – 2;10	4	1035

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

12

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)

13

Overall characterization of utterances

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

14

Breakdown of non adult-like utterances

15

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

16

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 !

19

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

18

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

Subject	Lang's	Age Range	Sess'ns	# Utts'
Tom	ASL / AE	1;11 – 4;05	14	2222
Lex	ASL / AE	3;03 – 4;03	4	1933

20

Data

Subject	Number of utterances	Number of uttrs. with verbs	Number of null subjects
TOM	2222	1102	131
LEX	1933	1058	123

After Serratrice, Sorace & Paoli (2004):

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

21

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

Subject	Stage 3 (%)	Stage 2 (%)	Stage 1 (%)
ENGMean	~45	~25	~10
Carlo	~15	~10	~5
KODAMean	~25	~20	~10
LEX	~40	~25	~10
TOM	~25	~15	~10

Rate of null subjects (percent)

22

Results

- Stage II
 - NS_{Tom/Lex} \approx NS_{Eng. monoling.} – not significant;
 - NS_{Tom/Lex} > NS_{Carlo} – significant ($P_{two-tailed} < .0002$; Bonferroni $p < .001$)
- Stage III: significant
 - NS_{Tom/Lex} > NS_{Eng. monoling.} : z-ratio = 2.509, $P_{two-tailed} < .0002$; Bonferroni $p < .001$
 - NS_{Tom/Lex} > NS_{Carlo} : z-ratio = 4.679, $P_{two-tailed} < .0002$; Bonferroni $p < .001$

✗ Hypothesis for Stage III is not confirmed

23

Examples (stage III)

- Q are pushing circles. (Lex)
- And then Q wanna make a train. (Lex)
- Q done should make sounds. (Lex)
- Q likes throwing spiderwebs. (Tom)
- Q sticks here. (Tom)
- Mister Conductor said Q won't crashed# he said (Lex)
- It says Q hafta build a king for the king horsies. (Tom)

24

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.


- TOM 85 (3;10.26)
 - I don't like kings because they are really mad at me.
 - I need this to be a castle.
 - Where's the outside (door)?
- LEX 27 (3;09.26)
 - Because we need to pull all the puzzles together.
 - But I am trying to clean up because I want to go.
- LEX 35 (4;03.11)
 - I know where this goes

✗ Not the case !

24

Discussion of Study 2

- pro* can be inserted alongside English VP because there is no competition for insertion at VI.

 **code-blend**

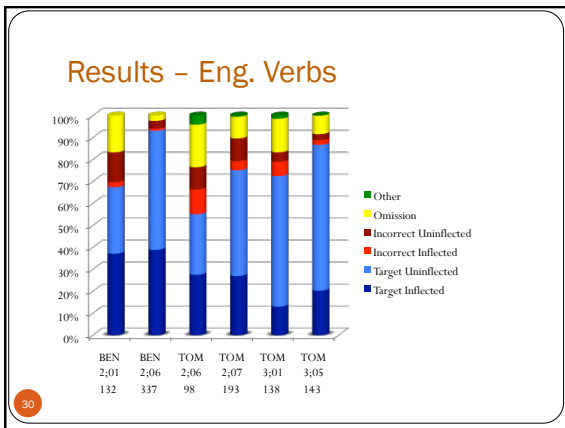
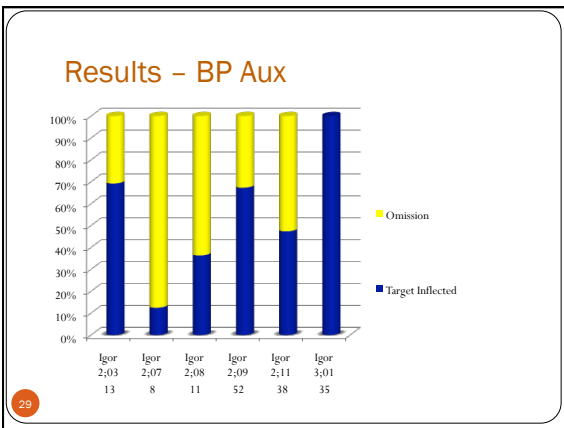
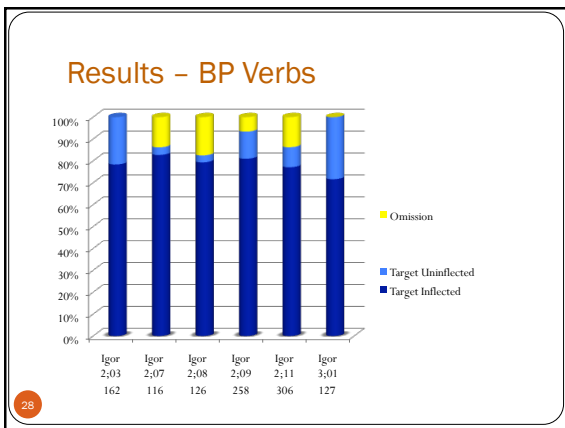
Additional prediction (minimalist CS + DM)

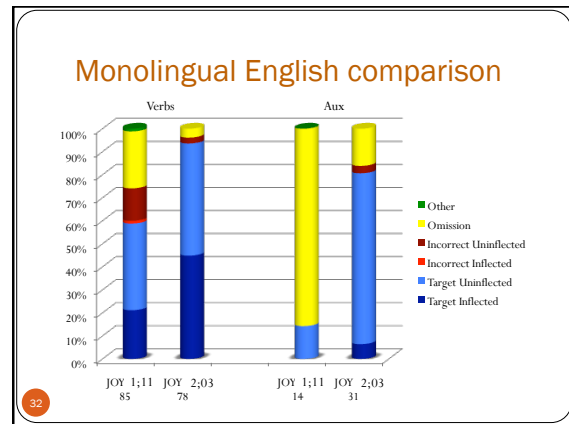
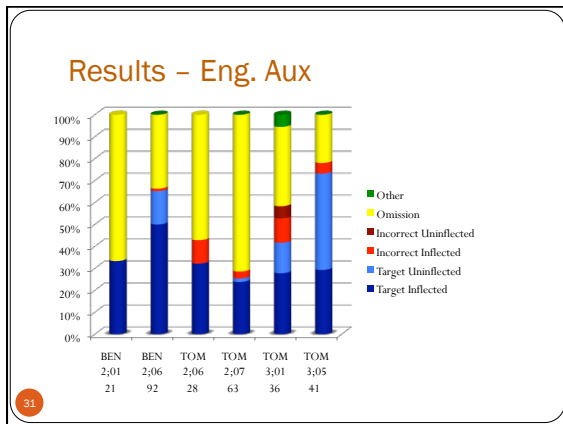
- Sign languages mark agreement and aspect, but neither is obligatory; no evidence for T
- If the sign language is influencing the spoken language, the only errors predicted are a) omission and b) default (Elsewhere Condition, Kiparsky 1976)

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.

Name	Lang's	Age Range	Sess'ns	# Verbs
Ben	Engl	2;01 – 2;06	2	582
Tom	Engl	2;06 – 3;05	4	740
Igor	Libras / BP	2;03 – 3;01	6	1252





- ### Examples: Incorrectly inflected verbs
- (11) Tom (2;06)
- I needs this [...]
 - I'm bounces
 - Looked! [imperative]
- (12) Tom (2;07)
- I stucks
 - I need to stirring it
 - I'm stand-upped [I'm standing up]
- (13) Tom (3;01)
- I don't be seeing my frogs
 - I will went too fast
 - I goed over there instead [I will go over there]
- 33

- ### 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
- 34

- ### 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 lg. structures in the spoken language, and b) blends that appear inconsistent with each of the grammars individually.
- 35

- ### 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
- 36

Selected bibliography

- Brackenbury, T., Ryan, T., & Messenheimer, T. (2006). Incidental word learning in a hearing child of deaf adults. *Journal of Deaf Studies and Deaf Education*, 11(1), 76-93.
- Cantone, K. & Miller, N. (2005) Code-switching at the interface of language-specific lexicons and the computational system. *JBR 9(2)*, 205-225.
- Chen Pichler, D., R. de Quadros and D. Lillo-Martin (2010) Effects of bimodal production on multi-cyclicity in early ASL and Libras. In J. Chandice, K. Franich, K. Iserman and L. Keil (eds.) *BRICLD 34* proceedings supplement. <http://www.bu.edu/linguistics/BRICLD/proc.html>.
- Donati, C. & Branchini, C. (2009) Simultaneous grammars: two word orders but only one morphology. *ESLLI*.
- Emmorey, K., Bornstein, H., Thompson, R. & Gollan, T. (2008) Bimodal bilingualism. *Bilingualism L&C 11(1)*, 43-61.
- González-Villhazo, K. & López, L. (submitted) Little v and Parametric Variation. *Natural Language and Linguistic Theory*.
- Halle, M. & Marantz, A. (1993) Distributed Morphology and the pieces of inflection. In Hale, K. & Keyser, S.J. (Eds.), *The View from Building 20*, 111-176. Cambridge, MA: MIT Press.
- Koulidobrova, E. (to appear). Mechanics of "transfer": Evidence from null subjects in the speech of an ASL/English bilingual. In *Proceeding of SLBP 2010*, UMD College Park, MD.
- Liceras, J. M., Spradlin, K. T. & Fernández Fuertes, R. (2005) Bilingual early functional-lexical mixing and the activation of formal features. *International Journal of Bilingualism 9(2)*, 227-252.
- Lillo-Martin, D., Quadros, R.M., Koulidobrova, H. & Chen Pichler, D. (2010) Bimodal bilingual cross-language influence in unexpected domains. *Proceedings of GLLA 2009*.
- MacSwan, J. (2000) The architecture of the bilingual language faculty: Evidence from code-switching. *Bilingualism L&C 3(1)*, 37-54.
- Petros, L.A., et al. (2001) Bilingual signed and spoken language acquisition from birth: Implications for the mechanisms underlying early bilingual language acquisition. *Journal of Child Language 28(2)*, 453-496.
- Quadros, R. de, D. Lillo-Martin and D. Chen Pichler (2010) Two languages but one computation: Code-blending in bimodal bilingual development. Presented at 10th Congress on Theoretical Issues in Sign Language Research (TISLR), West Lafayette, IN.
- Serratrice, L., Sorace, A., & Paoli, S. (2004). Crosslinguistic influence at the syntax-pragmatics interface: Subjects and objects in English-Italian bilingual and monolingual acquisition. *Bilingualism: Language and Cognition*, 7(3), 183-205.
- Tiesi, L. (2010) Reexamining cross-linguistic influence in bilingual acquisition of wh-questions. *Proceedings of the 2010 Annual conference of Canadian Linguistic Association*.
- 37. Andersen Bogaerde, B. & Baker, A. E. (2005) Code-mixing in mother-child interaction in deaf families. *Sign Language & Linguistics 8(1/2)*, 151-174.