

Noun Phrases in Bimodal Bilingual Acquisition

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Overview

- Background
 - Our approach to questions about bilingual effects
 - Bimodal bilinguals as a way to address these questions
 - Today's area of interest: the nominal domain
- Previous studies on the nominal domain – monolingual and bilingual acquisition
- Our current study



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BACKGROUND

Research Questions

- How do the languages of a bilingual interact?
- How do children develop as bilinguals?
- How is this process different for bimodal bilinguals?

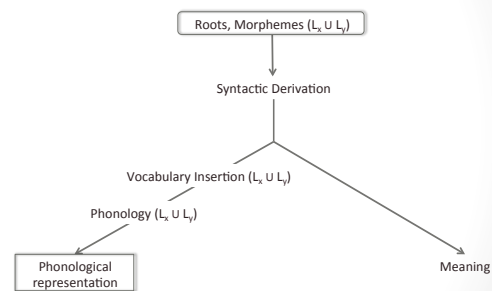
Here:

- Data from children acquiring **ENGLISH** and **AMERICAN SIGN LANGUAGE (ASL)**; or **BRAZILIAN PORTUGUESE (BP)** and **BRAZILIAN SIGN LANGUAGE (Libras)**.
- Model of *Bilingual Language Synthesis*, using concepts of *Minimalism* and *Distributed Morphology*.
- Conclusion: both languages are active and interact in multiple ways.



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Model – Language Synthesis




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Consequences of the model

- Roots and morphemes from both languages can contribute to a single output
→ 'transfer'
- At Vocabulary Insertion, elements from either language can be inserted, as long as all featural requirements are satisfied
→ code-switching
- When two independent sets of articulators are available, lexical items from **both** languages are possible
→ code-blending

Language Synthesis




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Bimodal Bilinguals


- Bilinguals using a sign language and a spoken language
- Studies with adult *Codas* (Emmorey et al. 2008)
 - Code-switching is rare
 - Code-blending is common (36% of all production; 98% of all mixing behavior); NB: *not* equivalent to SimCom.

A) So [now] he's like [you know scanning y'know the streets. He's walking back and forth] trying to figure out what to do



Casey & Emmorey (2009)

- Use of ASL structures in English is sometimes observed



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Binational Bimodal Bilingual (BiBiBi) Language Acquisition Project


- Simultaneous development of a sign language and a spoken language:
 - Brazilian Sign Language (Libras) and Brazilian Portuguese (BP) 
 - American Sign Language (ASL) and English (E) 
- Participants (kodas – kids of Deaf adults) - at least one Deaf parent; relatively equal exposure to both speech and sign.
- Longitudinal spontaneous production, ages 1;06-4;06 – weekly, alternating interlocutors
- Targeted experimental studies, ages 4-7



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Testing the model


- Our previous findings show language synthesis in several domains:
 - WH-Questions (Lillo-Martin, Koulidobrova, Quadros, & Chen Pichler 2012; Quadros, Lillo-Martin & Chen Pichler in press)
 - Null arguments (Koulidobrova 2012)
 - Information structure (Lillo-Martin, Quadros, Koulidobrova & Chen Pichler 2010)
 - Cyclicity (Chen Pichler, Quadros & Lillo-Martin 2010)
- Current project – testing within the nominal domain
 - Presence/absence (appropriateness) of the determiner
 - Order of DP-internal elements



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The nominal domain in four languages

	Articles	Modifiers
English	overt	Adj-N
ASL	0	Adj-N, N-Adj
BP	overt	N-Adj, Adj-N
Libras	0	N-Adj



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PREVIOUS STUDIES



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Article use – English

- Early emergence of first uses (as young as 1;04), but well-known omission of determiners in required contexts (Brown 1973; Demuth & McCullough 2009; Kupisch et al. 2009)
 - Considerable variability, but use of articles in ≥80% of required contexts by 2;06
- Continuing problems with appropriate use of definite vs. indefinite articles (Ionin et al. 2004; Schaeffer & Matthewson 2005)
 - Semantic/pragmatic factors

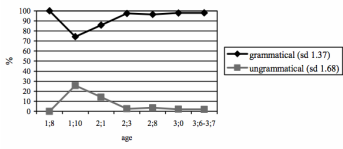


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Article use – BP

- Adult BP permits bare singular count nouns (generic / existential)
- Children produce both bare Ns and DPs with a determiner from as young as 1;08 (Lopes 2006)
- Ungrammatical uses disappear by 2;03

Figure 2: Mean percentage of (un)grammatical DPs and BNs for both children



Age	grammatical (ed 1.37) (%)	ungrammatical (ed 1.68) (%)
1;8	100	0
1;10	80	20
2;1	90	10
2;3	95	5
2;8	98	2
3;0	99	1
3;6-3;7	100	0



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Article use – cross-language findings

- Numerous studies show a difference between Germanic and Romance languages
 - children learning Romance languages reach ceiling performance much earlier than children learning Germanic languages

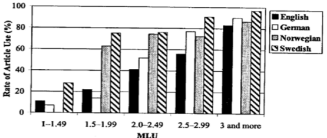



Figure 19.2 Article Suppliance in English, German, Norwegian, and Swedish


- Guasti et al. – Nominal Mapping Parameter (Chierchia 1998); Kupisch et al. – prosodic and other factors



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Article use – bilingual children


- Some evidence that the contrast between Romance and Germanic patterns can be seen in bilinguals, with some facilitative effects of cross-language influence (Kupisch 2007)
- What if one language lacks a morphological realization of articles?
 - One Serbo-Croatian / English bilingual child showed high rates of article omission in elicited production at 4;02 (Mede & Gürel 2010)
 - 4-year-old Turkish / English bilingual children show high rates of article omission in English (Geçkin poster on Thursday)



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Modifier placement

- Children acquiring pairs of Germanic/Romance languages may show evidence of cross-linguistic influence in adjective/noun placement.
- 3- to 5-year-old French/English bilinguals showed more Adj/noun reversals in both English and French than monolinguals (Nicoladis 2006)



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CURRENT STUDIES



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Research questions

- Is the acquisition of the nominal domain different for bimodal bilinguals as compared with monolinguals?
- Do bimodal bilinguals show bilingual effects similar to unimodal bilinguals?
- Are children's productions as expected given the possibilities for language synthesis?




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Possible areas of synthesis

Articles

- The sign languages do not have overt articles; the spoken languages do
- Possible synthesis: use of the sign language structures in the spoken languages, leading to...
 - lack of overt article
 - use of the incorrect article
 - mismatch of number / gender




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Possible areas of synthesis

Adjectives

Engl: Adj-Noun ASL: Adj-Noun, Noun-Adj
 BP: Noun-Adj, Adj-Noun Libras: Noun-Adj

- Use of the sign language structures in the spoken languages
 - for ASL>Engl, N-Adj order
 - for Libras>BP, N-Adj order only
- Use of the spoken language structures in the sign languages
 - for Engl>ASL, Adj-N order only
 - for BP>Libras, use of Adj-N order



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Article suppliance

Participants

- Two bimodal bilingual children acquiring English/ASL, one acquiring BP/Libras, age 2;0-3;01 (all boys)

Method

- Analysis of longitudinal spontaneous production data – selected speech target sessions
- Each file was hand-coded for each NP
 - Separated out pronouns and names
 - Completely Adult-Like (CAL) or Not Adult-Like (NAL)
 - If NAL, why
 - article omission, article misuse, gender/number mismatch, missing noun, other



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Examples

Missing article


- I want truck BEN 2;00
 TRUCK IX(truck-book)
- I want different doggy TOM 2;08
- Cow fell down BEN 2;06
- The rooster stays on airplane BEN 3;00
- esse mamãe bem[?] IGOR 2;11
 (target: Essa é a mamãe, muito bem?)

Inappropriate article (doesn't fit context)

- a cracker is over there TOM 2;03
- he's not the friend BEN 2;06
- da azul (target: o carrinho azul) IGOR 2;07

Gender error


- um televisão (target: uma televisão) IGOR 2;11



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Results

Child	Sess'n	Age	#Utts	#DPs	NAL	*art
BEN	25	2;00	257	158	.79	.75
	48	2;06	151	77	.43	.39
	62	3;00	209	109	.23	.18
TOM	28	2;01	64	2	0	0
	37	2;03	160	64	.42	.38
	39	2;05	152	61	.54	.44
	50	2;08	113	39	.26	.20
	64	3;01	205	86	.44	.24
IGOR	1	2;01	329	101	.07	.07
	3	2;02	191	47	.09	.06
	8	2;03	239	95	.09	.08
	25	2;07	336	135	.31	.23
	33	2;10	162	78	.12	.09
	35	2;11	400	234	.15	.07



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Articles – Summary

- BEN and TOM show high levels of article errors (omission and commission) up through age 3;00 at least
- IGOR uses a large number of bare nouns judged acceptable, but also unacceptable ones at rates higher than monolinguals
- In the longitudinal data, remaining nominal errors are mainly number / gender issues – including over-use of plural (in singular contexts) and wrong gender choice of articles (BP)



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Modifier placement – SP

- Analysis of spontaneous production data (English)
 - examination of same sessions used for article study
- Results

	Age	DPs with mod	Non-target Order
BEN	2;00	4	0
	2;06	21	0
	3;00	37	0
TOM	2;01	1	0
	2;03	6	0
	2;05	5	0
	2;08	6	0
	3;01	26	0



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Modifier placement – EP

- Elicited production (English, ASL, BP, Libras)
- Method

One experimenter shows child sheet with two pictures, one highlighted. Second experimenter has matching sheet without highlight. Child must describe picture so that E2 can select appropriate picture.

12 items; all utterances containing an Adj and Noun scored for word order



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Participants

- Kodas – larger group of children ages 4-7 (with at least one Deaf parent; relatively equal exposure to both languages); and four Deaf children with Deaf parents, using a cochlear implant for spoken language

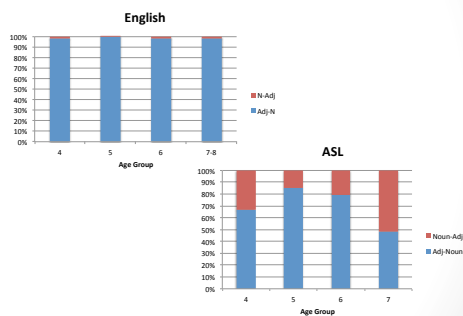
Number at each age range:

	4	5	6	7-8
English	2	10	8	3
ASL	1	7	6	2
BP	1	4	0	3
Libras	1	6	2	1



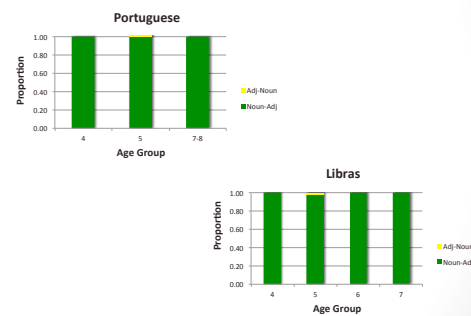
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Results – US



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Results – Brazil



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Modifiers – Summary


- Overwhelmingly, the children use only the target language structures for Adj~Noun placement in all four languages



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General Discussion – 1

- Potential bilingual effect:
 - extended use of 'null D' from the sign languages in the spoken languages -> missing article; wrong article; gender/number errors
- No effect observed:
 - Adjective-Noun reversals
- Two issues ...




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General Discussion - 2

- Article-related errors: Older children
 - More data (limited) – older koda children continue to omit/misuse articles

*art in a subset of the EP participants:


IKE (4;09)	.61
JAY (4;09)	.09
FAY (5;00)	.14
SUN (5;11)	.09
ZIG (6;01)	.08



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General Discussion – 3


- Why don't the ASL/English bilingual children use N-Adj in English, as French/English bilingual children do?
- Differences between French and ASL wrt post-nominal adjectives:
 - French – noun raising
 - ASL – adjoined / reduced relatives
- Acquisition data suggests that this structure (adjoined Adj.) cannot be compatible with English DP. Further research on adult ASL modifier structure needed.



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Limitations / future work


- Adult ASL modifier structure
- No direct monolingual comparison data
- Still need a detailed semantic/pragmatic analysis
- Further analysis of gender/number errors
- Bimodal utterances



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Conclusions

- The nominal domain is a fruitful source of information about bilingualism effects
- We see areas of potential effects and areas of no effects
- Such studies will help to constrain theories of language synthesis



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