

## CHAPTER THIRTY-EIGHT

# INFLUENCE UNINHIBITED: NULL SUBJECTS IN THE SPEECH OF ASL-ENGLISH BILINGUALS<sup>1</sup>

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### 1. Introduction

Much work in the field of bilingual language acquisition focuses on a particular set of questions that promise to not only shed light on the nature of the processes unique to the bilingual mind but also offer venues for exploration associated with language knowledge in general. The path to answering these questions is thorny and, undoubtedly, requires revisiting a number of assumptions guiding much of linguistic inquiry. This paper demonstrates that bimodal bilingual acquisition studies offer unique insights along the way. In particular, we argue that this study contributes to the untangling of factors potentially resulting in bilingualism effects in the domain of anaphora resolution: i.e. whether some model of cross-linguistic influence is needed independently.

It is well known that languages of bilinguals tend to exhibit interaction effects in various domains. A number of reasons for this phenomenon have been suggested, an influential one among which is cross-linguistic influence (Hulk & Müller 2000).

#### **CROSS-LINGUISTIC INFLUENCE (CLI)** (Hulk & Müller, 2000)

- a. ... occurs at the interface between two modules of grammar, [...] between pragmatics and syntax in the so-called C-domain.

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- b. "... occurs only if Language A has a syntactic construction which may seem to allow more than one syntactic analysis and, at the same time, Language B contains evidence for one of these two possible analyses."

However, cross-linguistic influence is clearly only one among a number of potential contributors to linguistic patterns of bilinguals. To that effect, an influential proposal, captured below, has been put forth by Sorace and colleagues; the proposal appeals to a general difficulty associated with knowing more than one language. This view has become known as the Interface Hypothesis (IH).

### INTERFACE HYPOTHESIS (IH)

- a. Due to "[...] processing limitations, intended as inefficient (incremental) access to knowledge, inefficient coordination of information, and/or inefficient allocation of resources." (Sorace & Serratrice 2009)
- b. "... structures involving an interface (i.e. an isomorphic correlation between the levels of structure [...] as well as between syntax and other cognitive domains may be problematic ..." (Sorace 2011)

In other words, in addition to (or despite) CLI, being bilingual is independently difficult: at points of coordinating information and languages (and choosing the right one), a bilingual may encounter problems. The aforementioned is particularly true at (certain) interfaces. *Prima facie*, the difficulty bilinguals face here is entirely divorced from any mutual influence between the languages. In fact, the former may obscure the latter. In this study, we aim to disentangle the contributions of these otherwise competing hypotheses in the domain of anaphora resolution. We focus on a well-documented domain of inquiry (subject omission in spontaneous production; henceforth 'null subjects,' NS) but examine a novel language combination (ASL-English).

It has been known for quite some time that both languages of a bilingual are always active; since one always needs to be inhibited/suppressed, bilinguals experience an additional processing load (Kroll et al. 2008). This may lead to an appearance in bilingual production of elements that signal a strategy for relieving the cognitive load associated with the processing difficulties, e.g. resumptive pronouns (Sells 1984). The aforementioned is expected to occur irrespective of the requirements for overt argument suppliance in each of the languages—i.e. even if both languages of the bilingual allow/require subjects to remain null.

The outcome of this view is that what *appears* on the surface to be a case of unidirectional influence from a non-null subject into a null-subject language may in reality be an independent bilingual effect, resulting from inhibiting one of the languages (Sorace 2011). Thus, even if CLI were in principle possible, its effects would lay hidden. Therefore, it seems that in order to isolate the presence of such

interaction, we need a combination of languages which suspends the effects of the IH by not forcing inhibition; in other words, what is needed is a pair of languages that can be produced simultaneously.

Emmorey et al. (2008) have argued that simultaneous access to two modes of conveying a message is precisely what differentiates bimodal (sigh-speech) from unimodal (speech-speech; sign-sign) bilinguals. Because neither language *is necessarily* inhibited, bimodal bilinguals differ from their unimodal counterparts in two ways:

(i) They dis-prefer code-switching (in favor of code-blending, cf. Emmorey et al. 2008 and Petitto et al. 2001).

(ii) The ‘bilingualism advantage’ in the executive control functions, ordinarily attributed to the ability to handle competing stimuli, is unexpected. This prediction is borne out (overview in Bialystok 2009): on relevant tasks, ASL-English bilinguals pattern with monolinguals and not with unimodal bilinguals.

The fact that bimodal bilinguals behave as though they do not inhibit their languages suggests that the examination of their linguistic development makes it possible to observe CLI while holding the effects of IH constant: if the cross-language interaction in the domain of anaphora resolution is generally masked by the forced language choice, then populations who are not constrained by it should perform differently. Thus, the inquiry into the rates of subject omission in the English of ASL-English bilinguals promises to illuminate CLI.

## 2. The study

### Prediction

The domain of subject omission offers a testing ground for CLI. First, C-domain plays a role in accounting for the distribution of NSs cross-linguistically. In particular, ASL allows a phonologically null element in the subject position in a variety of contexts and is further constrained by discourse factors/CP (Lillo-Martin 1991).

a. A: Did John send Mary the paper?

B: YES, Ø a-SEND-b.

“Yes, (he) sent (it) to (her).”

(Lillo-Martin 1991)

Second, non-NS languages occasionally allow subject omission, but this possibility is restricted to specific discourse configurations at the CP-edge (Sigurðsson 2011).

- b. Ø don't think I can make it tonight.  
 c. Ø should really go to the gym tomorrow.

(Weir 2009)

In other words, conditions on CLI are satisfied.

Previous studies on subject omission rates in bilingual production have demonstrated that the NS languages do not *influence* English in this manner (overview in Sorace 2011); instead, over-use of overt subjects has been reported in the respective NS languages. This finding suggests that either (i) unidirectionality must be built into the CLI (cf. Serratrice et al. 2004, Tsimpli 2011), or (ii) a bilingualism effect along the lines of the IH is to blame: overt subjects are elements relieving the processing load associated with “juggling” two languages. The latter, however, constitutes a *unimodal bilingualism effect*, since its main component is the forced inhibition of the one of the languages; it is “lifted” for ASL-English bilinguals. Therefore, a prediction arises:

### **PREDICTION**

Since NS is a CP-related phenomenon, and structural overlap is observed, cross-linguistic influence is expected between the null- and the non-NS languages: i.e. when compared to monolinguals, bilingual children acquiring ASL and English may exhibit a higher rate/prolonged stage of NSs in their English.

## **Method**

### **Participants**

We examine the non-NS language of two young hearing children of Deaf adults (Kodas<sup>2</sup>): TOM and LEX. TOM and LEX are balanced ASL-English bilinguals, with at least one Deaf parent (ASL input) and a number of hearing family members (English input). Each of the children has been attending an English-based preschool from an early age (before 2;00). We compare the rates of subject omission in spontaneous Koda English to monolingual and bilingual controls, replicating Serratrice et al. (2004) study of an Italian-English bilingual Carlo.<sup>3</sup>

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<sup>2</sup> We distinguish here between “Coda” and “Koda,” the former referring to an adult and the latter to the young hearing child of Deaf adults.

<sup>3</sup> Since unimodal bilinguals all exhibit similar behavior, irrespective of the type of NS in their NS-language, we take Carlo to be a representative of unimodal bilinguals acquiring a NS- and a non-NS languages.

## Materials and Procedure

The subjects are filmed biweekly for each language. Filming takes place at the child’s home, daycare, or at Gallaudet University; sessions range between 35-50 min.

Data were transcribed and analyzed using ELAN (<http://www.lat-mpi.eu/tools/elan/>). Only English-target sessions for each child were included.  $MLU_w$  was calculated based on Brown (1973). Independent tiers were created for coding purposes: utterances were coded based on the existence of finite verbs (“VU”) whose subject was omitted (“NS”). 10% of the coded material was subjected to the reliability check; 99.3% accuracy was attained. All non-linguistic utterances, repetitions and direct imitations were excluded from the analysis.

## Procedure

In total, 8365 utterances were analyzed. Following Serratrice et al. (2004), four stages of linguistic development were isolated: Stage 1 ( $MLU_w$  1.5-2.0), Stage 2 ( $MLU_w$  2.0-3.0) Stage 3 ( $MLU_w$  3.0-4.0), and Stage 4 ( $MLU_w > 4.0$ ). The raw numbers of NSs were converted into proportions.

Table 1. Rates of NS in Koda’s English

Child	Stage	Age	$MLU_w$	# of VUs	# of NS (proportion)	Total # utter.
TOM	1	1;11.21-2;03.13	1.2-1.96	42	11 (.26)	239
	2	2;04.15-3;03.00	2.14-2.55	509	92 (.18)	1426
	3	3;05.08-4;05.01	3.03-3.45	1102	131 (.12)	2222
	4	4;07.09-4;11.09	4.09-4.3	504	46 (.09)	1045
	Total	1;11.21-4;11.09	1.2-4.3	2157	280 (.13)	4932
LEX	1	-----	-----	-----	-----	-----
	2	3;03.12	2.91	177	49 (.28)	336
	3	3;08.27-4;03.11	3.1-3.75	1058	123 (.17)	1134
	4	4;08.27-4;09.20	4.5	533	33 (.06)	1179
	Total	3;03.12-4;09.20	2.91-4.5	1708	205 (.12)	3448

To summarize the predictions: since the unique nature of bimodal bilinguals allows for the lack of inhibition of the other language, subjects of this study do not fall under the umbrella of IH, i.e. no ‘resumptive’ overt subjects are expected. This allows the CLI effects to rise to the surface: if it is necessarily unidirectional, then

Kodas will not omit subjects at a higher rate than reported for monolingual or bilinguals English learners. On the other hand, if the previously reported bilingual data betray the effects of the IH alone, it is possible that ASL-English bilinguals will allow an ASL element (null) where the English one (overt) is due.

### Results

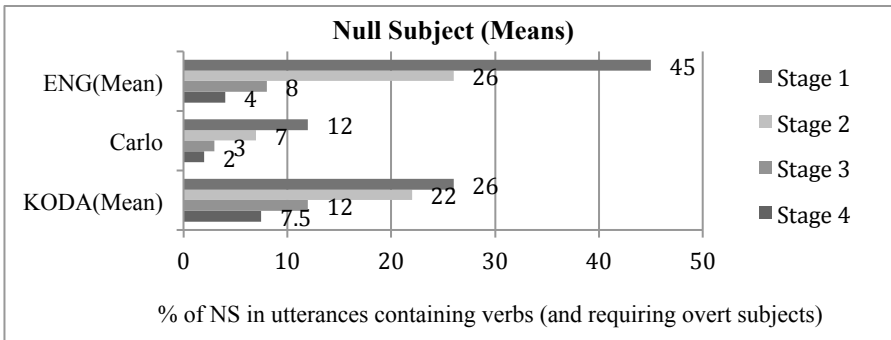
As Table 1 (2<sup>nd</sup> column from the left) shows, both TOM and LEX omit subjects in their English.

#### EXAMPLES AT STAGES 3-4

- |  |   |
|--|---|
| <p>a. Inv: It's a window. You are right.<br/>         TOM: This is gonna be a cool.<br/>         Inv: It is going to be cool. Yeah.<br/>         TOM: Can <u>Ø</u> give me this?</p> | <p>b. Inv: mmhm<br/>         LEX: Because he need to go chug fast<br/>         LEX: Because my train is fast.<br/>         LEX: Mister Conductor said <u>Ø</u> won't crashed# he said</p> |
|--|---|

Both individual and mean results were compared to the results of a unimodal bilingual Carlo<sub>Italian-English</sub> and four English monolinguals as reported in Serratrice et al. (2004). The results are presented graphically in Figure 1.

Figure 1. The rate of NSs as means (reported in percentages for ease of exposition)



The proportion of the NS in TOM's and LEX's English is higher than what has been reported for controls. The difference (individual and as means) was measured in z-scores. The analysis confirmed that at all Stages, the rate of subject omission by TOM is different from monolinguals ( $p=.0218^4$  at Stage 1 and  $p<.0005$  for

<sup>4</sup> All *p*-values reported are two-tailed.

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Stages 2-4) and from Carlo ( $p < .0002$ , Stages 1-4). The analysis of LEX's data yielded similar results: at all Stages, he omits arguments at a significantly higher rate when compared to monolinguals and Carlo ( $p < .0002$ ). The results remain the same if the data are compared as means ( $p < .0002$ ).

### 3. Discussion

In this study, we set out to examine the presence of cross-linguistic interaction effects in bimodal bilingual anaphora resolution. Some researchers have argued that in this domain, this interaction is necessarily unidirectional. However, independent factors (i.e. IH) have been implicated in contributing to the directionality in this domain. Our study shows that when the latter is held constant, the true nature of the former rises to the surface. Table 2 illustrates that TOM and LEX pattern with neither monolingual English- nor balanced unimodal bilingual language learners. Crucially, this is true for Stages 3-4. That is, at the age approaching 5;00, the rate of subject omission in the English of Kodas hovers above 5%, while for both monolinguals and Carlo it is well below that.

These findings lead to several conclusions. First, consistently with the view that an ability to use two languages simultaneously defines the difference between unimodal and bimodal bilinguals, Kodas do not mirror controls. Second, it seems that the IH does play a role in capturing bilingualism effects in anaphora resolution: not needing to inhibit one of the languages reveals effects otherwise obscured/prohibited by the forced language choice. Further, some NSs in the English of Kodas are clearly inconsistent with English morpho-syntax while being grammatical in ASL; thus, it is plausible to view them as a case of "influence of ASL." Thus, the data offered in this paper illustrate that this "influence" is not unidirectional.

A natural question arises with respect to the Kodas' ASL. That is, if we are correct insofar as bimodal bilinguals do not inhibit their languages (at least to the same extent as unimodal bilinguals), we expect the consequences of the IH to remain suspended for ASL as well: the commonly reported over-suppliance of overt subjects will not result. We leave this prediction for future research.

The results of the examination of NS rates in the English of ASL-English bilinguals demonstrate that cross-linguistic influence exists and it is not unidirectional. This finding, of course, would have been impossible to obtain from a population other than bimodal bilinguals. Independently, another conclusion arises: if what we observe in the English of the Kodas in this study is the appearance of the NS from ASL in an otherwise English clause, and this appearance is related to the (lack of) forced language choice in bilinguals, then it

seems that the theory of CLI has morphed into the theory of a language-choice, rather than a theory on cross-linguistic influence (cf. Lillo-Martin et al. 2011).

## References

- Bialystok, Ellen. 2009. Bilingualism: The good, the bad, and the indifferent. *Bilingualism: Language and Cognition* 12 (1): 3-11.
- Brown, Roger. 1973. *A First Language*. London: Allen and Unwin.
- Emmorey, Karen, Borinstein, Helsa, Thompson, Robin, and Tamar Gollan. 2008. Bimodal bilingualism. *Bilingualism: Language and Cognition* 11 (1): 43-61.
- Hulk, Aafke, and Natasha Müller. 2000. Bilingual first language acquisition at the interface between syntax and pragmatics. *Bilingualism: Language and Cognition* 3 (3): 227-244.
- Kroll, Judith, Bobb, Susan, Misra, Maya, and Taomei Guo. 2008. Language selection in bilingual speech: Evidence for inhibitory processes. *Acta Psychologica* 128 (3): 416-430.
- Lillo-Martin, Diane, Helen Koulidobrova, Ronice Müller de Quadros, and Deborah Chen Pichler. 2011. Bilingual language synthesis: Evidence from WH-questions in bimodal bilinguals. *Proceedings of the BUCLD 36*. Cascadilla Press.
- Lillo-Martin, Diane. 1991. *Universal Grammar and American Sign Language: Setting the Null Argument Parameters*. Dordrecht: Kluwer Academic Publishers.
- Petitto, Laura Ann, Katerelos, Marina, Levy, Bronna, Gauna, Kristina, Tetreault, Karine, and Vittoria Ferraro. 2001. Bilingual signed and spoken language acquisition from birth: implications for the mechanisms underlying early bilingual language acquisition. *Journal of Child Language* 28: 453-496.
- Sells, Peter. 1984. Syntax and semantics of resumptive pronouns. *Linguistic Review* 4 (3): 261-267.
- Serratrice, Ludovica, Sorace, Antonella, and Sandra Paoli. 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.
- Sigurðsson, Halldor. 2011. Conditions on argument drop. *Linguistic Inquiry* 42: 267-394.



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ENGLISH BILINGUALS

- Sorace, Antonella, and Ludovica Serratrice. 2009. Internal and external interfaces in bilingual language development: Beyond structural overlap. *International Journal of Bilingualism* 13 (2): 195-210.
- Sorace, Antonella. 2011. Pinning down the concept of “interface” in bilingualism. *Linguistic Approaches to Bilingualism* 1 (1): 1-33
- Tsimpli, Ianthi. 2011. *Linguistic Approaches to Bilingualism* 1 (1): 101–103.
- Weir, Andrew. 2009. Subject drop in informal English. Ms. Available online at [www.isle-linguistics.org/resources/weir2009.pdf](http://www.isle-linguistics.org/resources/weir2009.pdf). Accessed on April 20, 2010.