

# **Bilingual language acquisition and adverbial position in Spanish-English code-switching**

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The University of Alabama

UIC Bilingualism Forum | Friday, October 25, 2024

## Introduction

- Code-switching (CS) refers to the fluid alternation between two languages in a sentence or discourse
- Variety of theoretical approaches to CS (see Parafita Couto et al., 2023 for a recent overview)
  - Yet one central thread that spans multiple frameworks is the syntactic aspect of language mixing
- CS is not arbitrary
  - Bilinguals show that intraclausal switch restrictions are systematic
  - Has been noted in the literature for decades (Gumperz, 1967, 1977; Lipski, 1978; Poplack, 1980; Timm, 1975; Wentz, 1977; among others)
  - Parallel to the way monolingual utterances are constrained by grammar

(1) a. *Juana cree que yo vivo near the beach.*

Juana thinks that I live

‘Juana thinks that I live near the beach.’

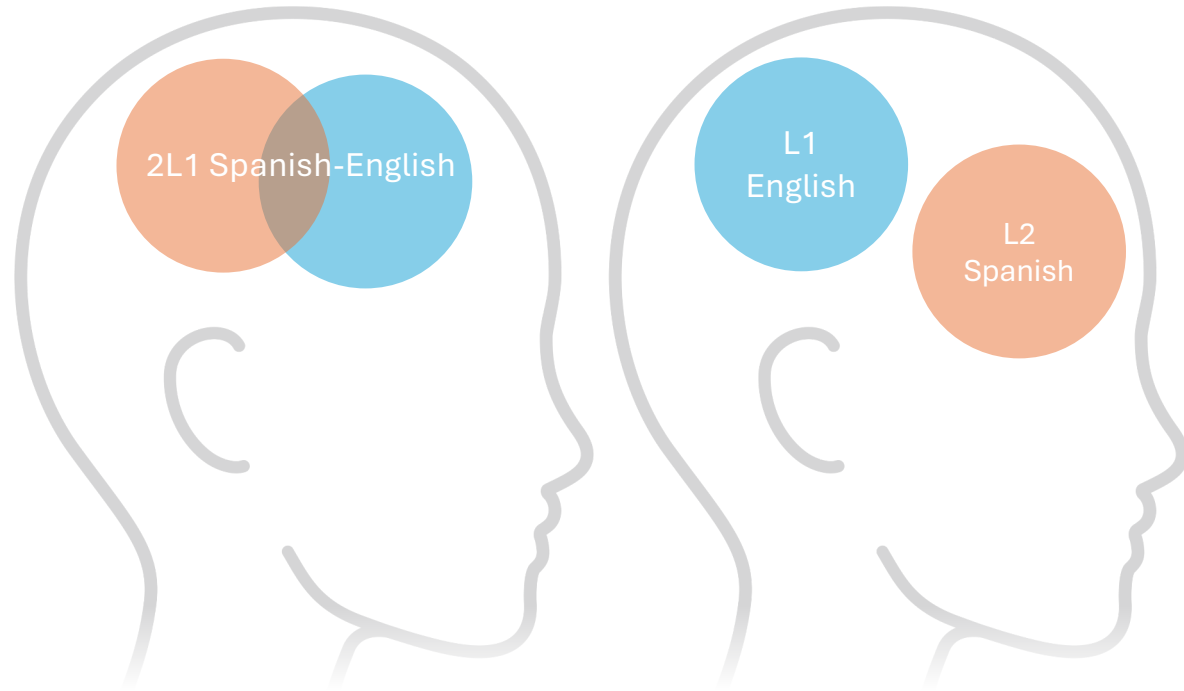
b. \* *Juana cree que yo live near the beach.*

Juana thinks that I

‘Juana thinks that I live near the beach.’

“It is also striking that ... **switch types** ... **which occur within a single sentence**, are the ones which require the most skill. They tend to be **produced by the ‘true’ bilinguals** in the sample: speakers who learned **both languages in early childhood.**”  
(Poplack, 1980, p. 615-616)

## Study Aim



- Investigate to what extent the structural restrictions on intraclausal CS vary depending on acquisition
  - Do late L2 bilinguals acquire CS constraints similar to early bilinguals?
  - Test both groups' acceptability of code-switched adverbs

## Why late L2 code-switching?

- As with early bilinguals, L2 CS is not always a linguistic deficiency or crutch
  - L2 acquisition is associated with errors or gaps in the knowledge, so often it's assumed that CS must be a manifestation of that
  - But they can *choose* to switch, not just because they *have* to
  - For example, Gardner-Chloros (2009) notes that although it is common for late L2 bilinguals to use CS to get around “communicative stumbling blocks,” this is something that early bilinguals do as well
- Exhibit a “poverty of the stimulus” (Chomsky, 1980) regarding CS restrictions
  - Not all late L2 bilinguals, but potentially those whose exposure to the L2 is primarily academic, setting them apart from early bilinguals who are more likely to be exposed to CS in their input
  - “In the context of the second language classroom [...] learners receive no evidence, positive or negative, which could guide them in determining the appropriate CS patterns” (Toribio, 2001, p. 219)
- Issues of proficiency and/or language dominance are tied to CS patterns (Valdés, 1976; Zentella, 1997; among others)
  - Not known whether these issues are independent of acquisition

# Who are the bilinguals in CS studies?

CS articles published in the *International Journal of Bilingualism* since 2020

	STUDY	N	LANGUAGES	LOCATION
<b>Mixed and/or non-reported age of acquisition</b>	Balam et al. (2020)	106	Spanish-English	Belize, US, and Puerto Rico
	Ellison & Si (2021); Si & Ellison (2023)	28	Hindi-English	India
	Hennecke & Wiesinger (2023)	60	Spanish-English	US
	Heredia et al. (2022)	57	Spanish-English	US
	Kniaz & Zawrotna (2021)	28	Arabic-English	Egypt
	Liu et al. (2023)	31	Chinese-English	China
	Nguyen (2024)	45	Vietnamese-English	Australia
	Romanoswki (2023)	26	Polish-English	Australia
	Wang (2024)	65	Mandarin-English	US
	Yim & Clément (2021)	67	Cantonese-English	Canada
<b>Early bilinguals</b>	Koronkiewicz (2022)	24	Spanish-English	US
	Soesman & Walters (2021)	65	Hebrew-English	Israel
<b>Late L2 bilinguals</b>	Farooqi-Shah & Wereley (2022)	18	French-English	US

## Background

- Previous research (Giancaspro, 2015; Koronkiewicz, 2018; Toribio, 2001) has shown that late L2 bilinguals can acquire CS restrictions
  - Acceptability judgments of US L1-English L2-Spanish bilinguals
  - Typically compared to early bilinguals (i.e., heritage speakers of Spanish)
- Late bilinguals with low L2 Spanish proficiency and no prior experience with CS show “surface-level” judgments
  - For example, accepting switches where the word orders match (e.g., pronoun switches and present perfect auxiliary switches), which early bilinguals reject
- Late bilinguals with intermediate-to-advanced L2 Spanish proficiency and/or prior experience with CS show parallel judgments to early bilinguals
  - For example, rejecting subject pronoun and present perfect auxiliary switches



## What about other structures?

- Structures that have been tested in L2 CS so far have been limited, with most evidence coming from auxiliary verb and pronoun switches
  - We know that late L2 bilinguals can pattern like early bilinguals with switches where there is surface order equivalence
  - What happens when the two structures in their respective languages do not map on to one another word-for-word, but rather create a direct conflict?
- Does acquisition of the L2 order coincide with the acquisition of the CS order?

## Adverb Position

- Adverbs can appear in various positions: sentence-initial, pre-verbal, post-verbal, and sentence-final
  - Depending on the language (and the specific adverb), not all positions are grammatical (Alexiadou, 1997; Cinque, 1999; Travis, 1988; among others)
- Pre-verbal vs. post-verbal
  - Distinction is often accounted for via verb-raising (Pollock, 1989; Suñer, 1994; Zagana, 2002; among others)
  - **Verb-raising:** languages like French move the verb to a higher syntactic position, requiring post-verbal adverbs
  - **Non-raising:** languages like English do not have such movement, which results in pre-verbal adverbs
  - Spanish has been called a hybrid language (Ayoun, 2005), allowing both (see Camacho & Sánchez, 2017 for an analysis)

(2) a. She **quickly** ate the pizza.

b. \* She ate **quickly** the pizza.

(3) a. Ella **rápidamente** comió la pizza.

b. Ella comió **rápidamente** la pizza.

(4) a. She ate **rápidamente** la pizza.

b. Ella **rápidamente** ate the pizza.

c. She **quickly** comió la pizza.

d. Ella comió **quickly** the pizza.

## Adverb Types

- Adverbs are not a homogeneous group
  - Often categorized into semantic categories such as *time*, *place*, *manner*, and so on (e.g., see Zagana, 2002 for an overview of Spanish adverbs)
- Alexiadou (1997) proposes similar semantic categories, but also categorizes those into two broader syntactic types
  - **Complement-type adverbs:** thematically related to the verb and are generated within the complement domain (e.g., *carefully*, *completely*)
  - **Specifier-type adverbs:** not thematically related to the verb and are base-generated in the left periphery of the verb phrase (e.g., *always*, *frequently*)
- In English, both types are restricted to pre-verbal position
  - Alexiadou (1997) argues that such complement-type adverbs undergo adverb movement to a specifier position
- Spanish has variety
  - Specifier-type adverbs only allow pre-verbal position (like English)
  - Complement-type adverbs can appear pre-verbally and post-verbally (i.e., with adverb movement or without)

## Adverb in CS

- Adverbs in CS without adverb-position contrasts
  - With Haitian Creole-English CS (Hebblethwaite, 2010) and Chinese-English CS (Wang & Liu, 2016), adverbs found overwhelmingly in pre-verbal position (i.e., their position in both languages)
- In Spanish-English CS, where there is a contrast, early bilingual data shows that the language of the adverb dictates position (Koronkiewicz, 2022)
  - Spanish complement-type adverbs were acceptable both pre-verbally and post-verbally when switched, while specifier-type adverbs were more acceptable pre-verbally
  - English adverbs (regardless of type) when switched were preferred only in pre-verbal position

- (4) a. ✓ She ate rápidamente la pizza.
- b. ✓ Ella rápidamente ate the pizza.
- c. ✓ She quickly comió la pizza.
- d. ✗ Ella comió quickly the pizza.

# Research Question

- **Research Question 1:** Do late L2 bilinguals exhibit the same acceptability as heritage bilinguals regarding structural restrictions on **complement-type adverb** position in Spanish-English CS?
  - **Hypothesis 1:** Yes, they will
- **Research Question 2:** Do late L2 bilinguals exhibit the same acceptability as heritage bilinguals regarding structural restrictions on **specifier-type adverb** position in Spanish-English CS?
  - **Hypothesis 2:** Yes, they will

Adverb Type	Language	Pre-verbal position	Post-verbal position
Complement	Spanish	✓ <i>cuidadosamente</i> completed	✓ completed <i>cuidadosamente</i>
	English	✓ <i>carefully</i> completó	* completó <i>carefully</i>
Specifier	Spanish	✓ <i>siempre</i> completed	* completed <i>siempre</i>
	English	✓ <i>always</i> completó	* completó <i>always</i>



# Participant Overview

		HERITAGE				L2 SPANISH			
		<i>M</i>	<i>SD</i>	Min	Max	<i>M</i>	<i>SD</i>	Min	Max
<b>AGE</b>		<b>25.2</b>	11.4	19	68	<b>24.8</b>	6.6	19	40
<b>ENGLISH</b> <i>Proficiency Test</i> <i>Self Ratings</i>	Age of Acquisition	<b>3.0</b>	2.4	0	7	<b>0.1</b>	0.4	0	2
	Score	<b>37.0</b>	2.0	32	40	<b>38.8</b>	1.0	36	40
	Speaking	<b>5.9</b>	0.3	5	6	<b>6.0</b>	0.0	6.0	6
	Understanding	<b>5.8</b>	0.4	5	6	<b>6.0</b>	0.0	6.0	6
	Reading	<b>5.8</b>	0.5	4	6	<b>6.0</b>	0.0	6.0	6
	Writing	<b>5.7</b>	0.6	4	6	<b>6.0</b>	0.0	6.0	6
<b>SPANISH</b> <i>Proficiency Test</i> <i>Self Ratings</i>	Age of Acquisition	<b>0.4</b>	1.0	0	4	<b>13.2</b>	2.2	8	20
	Score	<b>38.5</b>	6.0	29	48	<b>35.9</b>	7.0	25	49
	Speaking	<b>5.7</b>	0.6	4	6	<b>4.5</b>	1.3	2	6
	Understanding	<b>5.2</b>	0.9	3	6	<b>4.2</b>	1.2	2	6
	Reading	<b>5.2</b>	1.0	3	6	<b>4.7</b>	1.2	2	6
	Writing	<b>4.6</b>	1.1	2	6	<b>4.2</b>	1.4	1	6
<b>DOMINANCE</b>	BLP Score	<b>23.2</b>	36.2	-33.3	92.3	<b>104.0</b>	30.8	40.9	160.8

# Stimuli

- Target stimuli ( $n = 16$ )
  - 2 x 2 x 2 x 2 design
  - **Language of the (ad)verb:** Spanish or English
  - **Adverb position:** Pre-verbal or post-verbal
  - **Adverb type:** Specifier-type or complement-type
  - **Adverb lexicalization:** *always/siempre* or *frequently/frecuentemente* for specifier-type, and *carefully/cuidadosamente* or *completamente/completely* for the complement-type
- Control stimuli ( $n = 16$ )
  - Same sentences but entirely in Spanish ( $n = 8$ ) or English ( $n = 8$ )

## Sample Complement-Type Stimuli

	ENGLISH	SPANISH	SPANISH-to-ENGLISH	ENGLISH-to-SPANISH
PRE	Henry <b>carefully reads</b> instructions.	Antonio <b>cuidadosamente lee</b> las instrucciones.	<i>Antonio</i> <b>cuidadosamente reads</b> instructions.	Henry <b>carefully lee</b> <i>las instrucciones.</i>
POST	* Henry <b>reads carefully</b> instructions.	Antonio <b>lee cuidadosamente</b> las instrucciones.	* <i>Antonio</i> <b>lee carefully</b> instructions.	Henry <b>reads cuidadosamente</b> <i>las instrucciones.</i>

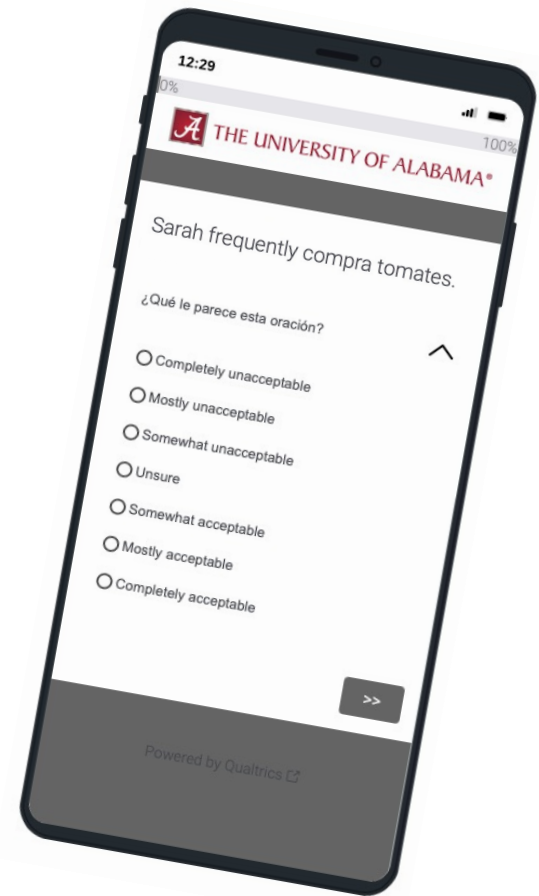
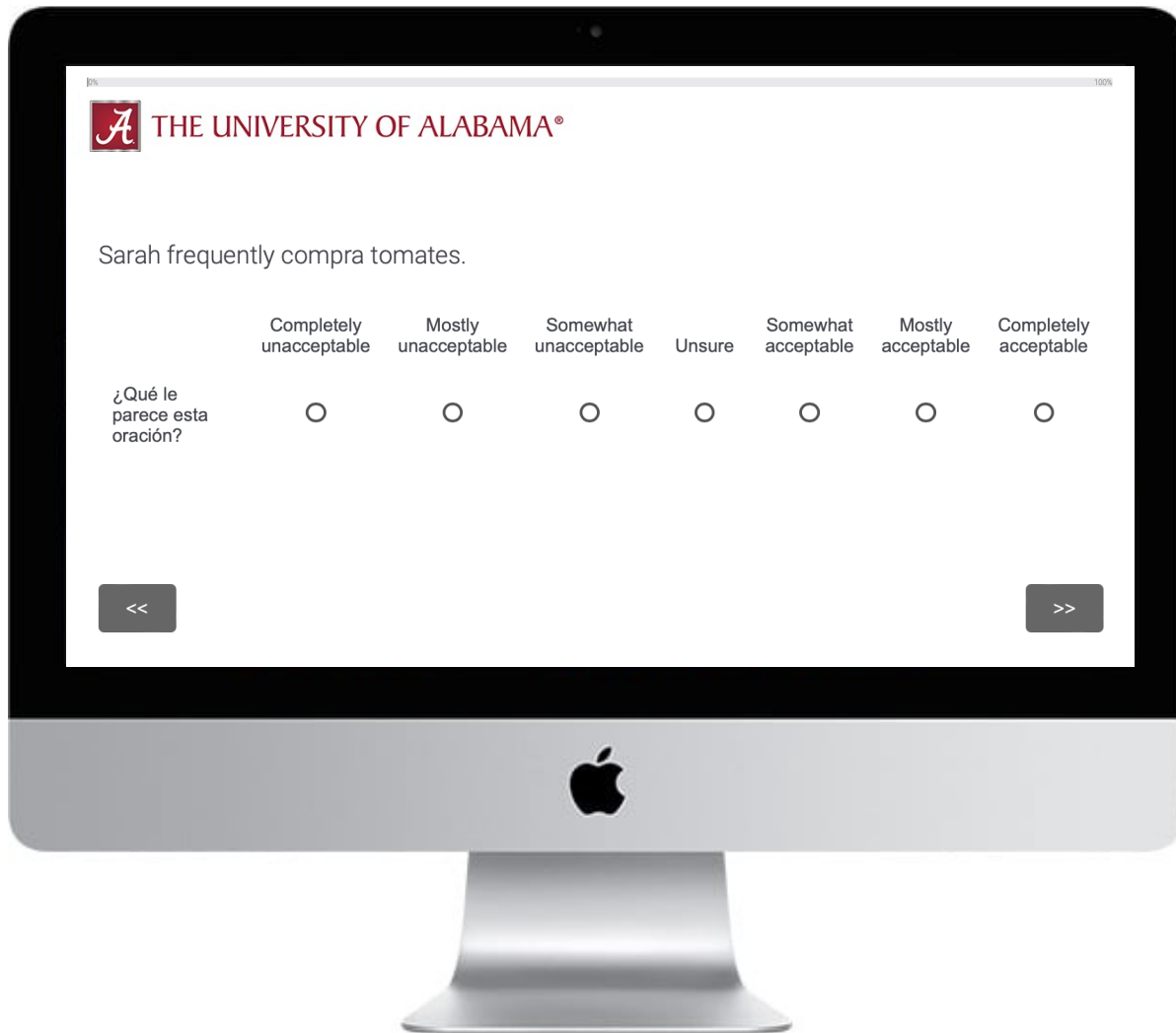
## Sample Specifier-Type Stimuli

	ENGLISH	SPANISH	SPANISH-to-ENGLISH	ENGLISH-to-SPANISH
PRE	Hannah <b>always speaks</b> English.	Juana <b>siempre habla</b> español.	<i>Juana</i> <b>siempre speaks</b> English.	Hannah <b>always habla</b> español.
POST	* Hannah <b>speaks always</b> English.	* Juana <b>habla siempre</b> español.	* <i>Juana</i> <b>habla always</b> English.	* Hannah <b>speaks always</b> español.

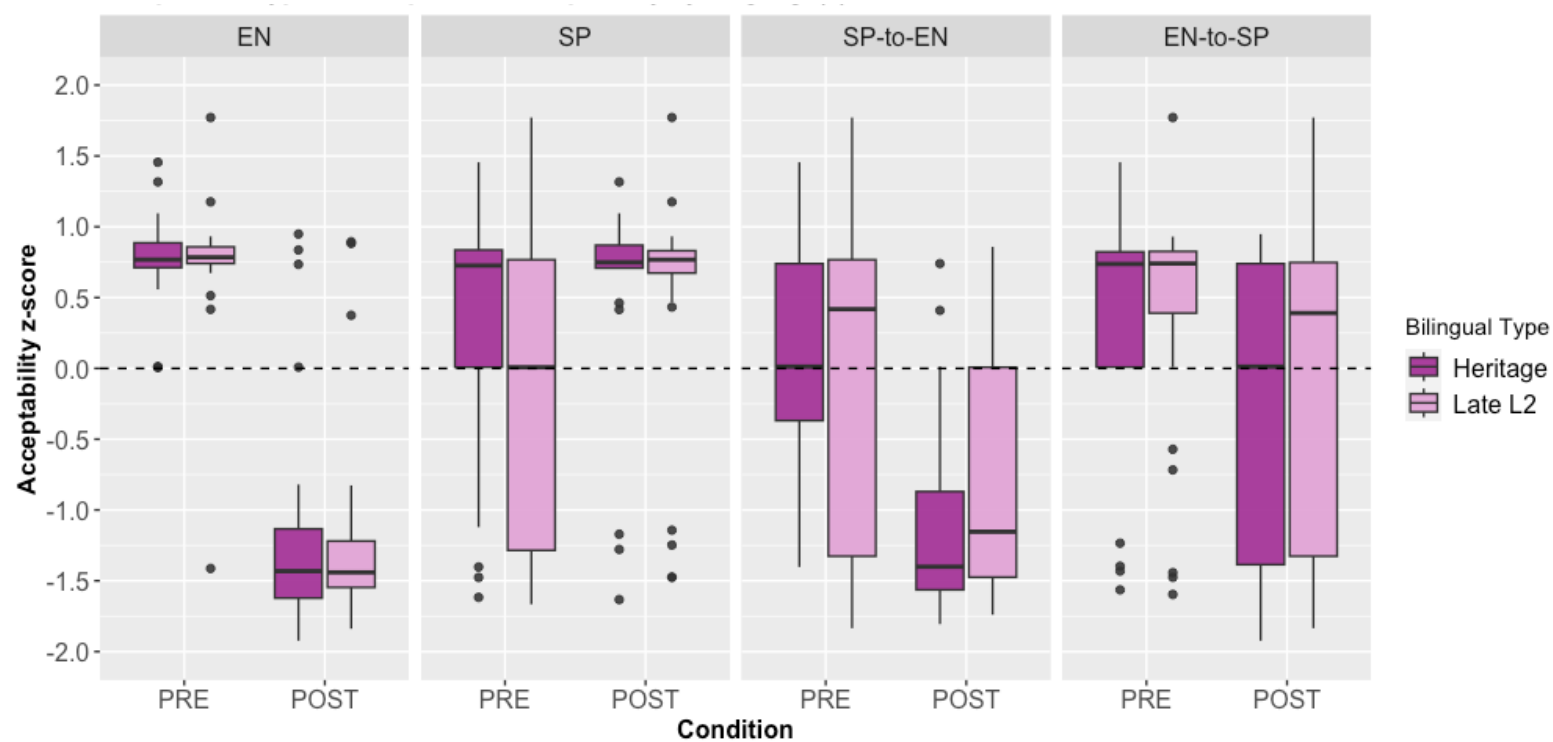
## Task Overview

- Written acceptability judgment task (AJT) via Qualtrics
  - Included training which primed them first to be in bilingual mode (González-Vilbazo et al., 2013)
- Evaluated CS and monolingual sentences (in separate blocks) on a 7-point Likert scale
  - 1 = *Completely unacceptable*; 7 = *Completely acceptable*
- Language background components:
  - Written proficiency measures in Spanish (Montrul & Slabakova, 2003) and English (O'Neill et al., 1981)
  - Bilingual Language Profile (BLP; Birdsong et al., 2012)

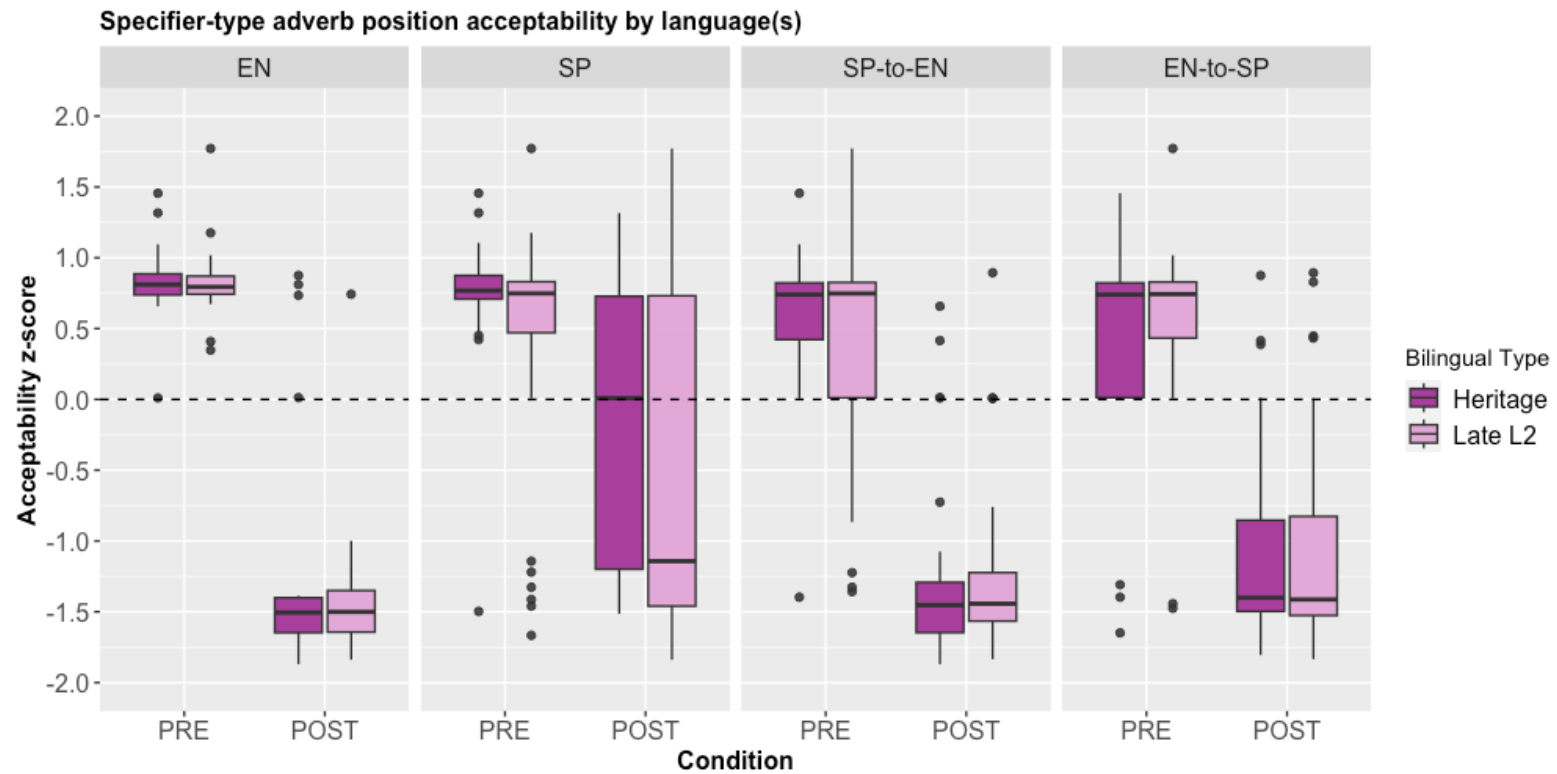




# Complement Type Adverbs



# Specifier Type Adverbs





## Linear Mixed Effects Models

- Two separate linear mixed-effects models (LMMs) were fitted
  - **Model 1:** Fixed effects of condition (preverbal, postverbal) and language(s) (English, Spanish, Spanish-to-English CS, English-to-Spanish CS) on acceptability scores, as well as random effects for participant and item
  - **Model 2:** Same fixed and random effects as Model 1 but also incorporated bilingual group
- **Complement-type adverbs:** Additional complexity of Model 2 did not provide a statistically significant improvement in model fit ( $p = 0.385$ )
  - Suggests no differences between the groups
- **Specifier-type adverbs:** Additional complexity of Model 2 did not provide a statistically significant improvement in model fit ( $p = 0.391$ )
  - Again, suggests no differences between the groups

## Main Findings

- Both groups showed differences in monolingual adverb position
  - Pre-verbal and post-verbal position acceptable for Spanish complement-type adverbs; however, Spanish specifier-type and English adverbs favored pre-verbal position, aligning with established syntactic patterns
- Both groups demonstrated more consistent judgments for English adverbs and greater variability in Spanish
  - Not surprising that Spanish, being the less dominant language for both, was more susceptible to variability in judgments
- CS acceptability ratings aligned with the language of the adverb, with only Spanish complement-type adverbs acceptable in post-verbal position
  - Supports Hypotheses 1 and 2, suggesting that late L2 bilinguals have acquired grammatical restrictions for adverb placement in their L2 and the rules governing CS
- Notably, these CS rules are acquired implicitly through increased proficiency and/or exposure rather than through any explicit instruction

## Implications

- Findings show that language dominance does not dictate L2 CS
  - Late L2 bilinguals do not solely rely on the syntactic structures of their dominant language when switching
- Both groups exhibited similar syntactic preferences, demonstrating the stability of certain grammatical constraints across different bilingual backgrounds
  - Challenges the notion that the timing or context of language acquisition alone significantly impacts linguistic outcomes in CS
- Can and should investigate structural constraints on CS alongside other grammatical features in Second Language Acquisition research
  - Findings indicate that bilinguals internalize the rules governing CS comparably to how they learn the rules of each language independently
  - CS should be viewed as an integral component of bilingual grammatical knowledge, enhancing our understanding of how multiple grammatical systems coexist and influence one another during language acquisition

## Limitations & Future Directions

- Tested only four specific lexical pairs, which may not capture the full diversity of adverb placement patterns
  - Given the idiosyncratic nature of adverbs, future research should include a broader range of adverbs to ensure consistency in observed patterns
- The study focused on one language pair (Spanish and English) that has (partially) overlapping adverb position availability
  - Investigating additional language pairs could reveal more syntactic differences
  - For example, studying French-English bilinguals could highlight more direct conflicts in adverb positioning
- Reliance on a single method of data collection (acceptability judgments) limits the findings
  - Incorporating production data through semi-spontaneous speech or elicited responses would provide a more comprehensive view of adverb position in CS

## Conclusion

- The study provides further insights into the structural constraints governing CS and their acquisition among different types of bilinguals
- These findings continue to challenge the view that late L2 bilinguals' grammatical knowledge of CS is inherently distinct from that of early bilinguals

# ¡Gracias!

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