Bilingual preposition-stranding acceptability in heritage speaker Spanish, English, and code-switching

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Introduction

- Languages vary when extracting determiner phrases (DPs) from prepositional phrases (PPs) (Law, 2006; Salles, 1995)
  - ✓ ENGLISH, ✗ SPANISH
  - English allows for such extraction, referred to as *preposition stranding* (or *p-stranding*)
  - Spanish traditionally does not allow for p-stranding, as the preposition is pied-piped with the DP

P-STRANDING VS. PIED-PIPING

ENG P-STRANDING

(1) Chad doesn't know [$_{DP}$ **what friend**]$_i$ Kevin is traveling [$_{PP}$ **with** t_i].

SPAN PIED-PIPING

(2)

Fernando	no	sabe	[$_{PP}$ **con**	[$_{DP}$ **qué**	**amiga**]]$_i$	Sergio	está	viajando	t_i.
Fernando	no	knows	with	what	friend	Sergio	is	traveling	

'Fernando doesn't know with what friend Sergio is traveling.'

SPAN P-STRANDING?

(3) */?

Fernando	no	sabe	[$_{DP}$ **qué**	**amiga**]$_i$	Sergio	está	viajando	[$_{PP}$ **con** t_i].
Fernando	no	knows	what	friend	Sergio	is	traveling	with

'Fernando doesn't know what friend Sergio is traveling with.'

Puzzle

- This asymmetry between languages like Spanish and English creates a potential conflict:
  - What happens when a Spanish-English bilingual uses both their languages in the same sentence? Is p-stranding still available?
- Yet to be tested experimentally is the availability of p-stranding in intrasentential code-switching
- Essentially, the question is: Is it possible to extract a Spanish DP out of an English PP? Or vice versa?

CODE-SWITCHED P-STRANDING

SPAN-to-ENG

(4) *Fernando* *no* *sabe* [$_{DP}$ ***qué*** ***amiga***]$_i$ Kevin is traveling [$_{PP}$ **with** **t**$_i$].
Fernando no knows what friend

'Fernando doesn't know what friend Kevin is traveling with.'

ENG-to-SPAN

(5) Chad doesn't know [$_{DP}$ **what** **friend**]$_i$ *Sergio* *está* *viajando* [$_{PP}$ ***con*** **t**$_i$].
Sergio is traveling with

'Chad doesn't know what friend Sergio is traveling with.'

P-stranding in English

- Within a generative framework, wh-elements in English occupy a higher syntactic position, generally considered to be the specifier of the Complementizer Phrase (Chomsky, 1986)

(6) [$_{DP}$ **What**] did you buy **t$_i$**?

- If the wh-element is originally the complement of a PP, it can be extracted, "stranding" the preposition in its lower position (Law, 2006; Salles, 1995)

(7) [$_{DP}$ **What money**] did you buy it [$_{PP}$ **with t$_i$**]?

P-stranding in English

- In addition to matrix wh-contexts, p-stranding can also occur in embedded wh-contexts

(8) I don't know [$_{DP}$ **what friend**]$_i$ you went shopping [$_{PP}$ **with** t_i].

- As well as in relative clauses

(9) Amy is the friend [$_{DP}$ **who**]$_i$ I went shopping [$_{PP}$ **with** t_i].

- Pied-piping can also be used prescriptively and/or in formal discourse (Biber et al., 1999)

(10) [$_{PP}$ **With** [$_{DP}$ **what money**]]$_i$ did you buy it t_i?

P-stranding in Spanish

- Wh-elements in Spanish also occupy a higher syntactic position
  - However, they cannot be extracted from a PP, instead requiring the preposition to be pied-piped with the DP (Law, 2006)

(11) a. *	¿[$_{DP}$ **Qué**	**dinero**]$_i$	lo	compraste	[$_{PP}$ **con** **t$_i$**]?	
	what	money	it	buy.2S	with	
	‘What money did you buy it with?’					

(11) b.	¿ [$_{PP}$ **Con**	[$_{DP}$ **qué**	**dinero**]]$_i$	lo	compraste	**t$_i$**?
	with	what	money	it	buy.2S	
	‘With what money did you buy it?’					

P-stranding acceptability

- How do we account for varying acceptability across languages?
- According to Law (2006), some languages are subject to a syntax-morphology-interface condition
  - "Elements that undergo suppletive rules must form a syntactic unit X^o " (Law, 2006, p. 647)
  - Based on Spanish suppletive forms like *del* 'of the' (i.e., *de* + *el*) and *al* 'to the' (i.e., *a* + *el*)
    - Other languages with such forms: Portuguese, Italian, German, French, and so on
  - Importantly, the condition does not require suppletion of specific items to apply (i.e., it is all or nothing)

P-stranding acceptability

- Under this analysis:
  - English determiners, lacking any suppletive forms, never incorporate and remain as separate syntactic units
    - [$_{PP}$ [$_{P}$ **of**] [$_{DP}$ [$_{D}$ **the**] [$_{NP}$ north]]]
    - [$_{PP}$ [$_{P}$ **with**] [$_{DP}$ [$_{D}$ **the**] [$_{NP}$ wind]]]
  - Spanish determiners incorporate into prepositions (with or without suppletion) and form one syntactic unit
    - [$_{PP}$ [$_{P}$ ***de***] [$_{DP}$ [$_{D}$ ***el***] [$_{NP}$ *norte*] → [$_{PP}$ [$_{P+D}$ ***del***$_{i}$] [$_{DP}$ [$_{D}$ **t**$_{i}$] [$_{NP}$ *norte*]]]
    - [$_{PP}$ [$_{P}$ ***con***] [$_{DP}$ [$_{D}$ ***el***] [$_{NP}$ *viento*] → [$_{PP}$ [$_{P+D}$ ***con el***$_{i}$] [$_{DP}$ [$_{D}$ **t**$_{i}$] [$_{NP}$ *viento*]]]

P-stranding acceptability

- In Spanish then, the only option is to move the entire PP

(12)	Manuel	no	sabe	[$_{PP}$ [$_{P+D}$ **con qué**$_i$]	[$_{DP}$ **t**$_i$	**señora**]]$_j$	Ximena	está	discutiendo	**t**$_j$.
	Manuel	no	knows	with-what		lady	Ximena	is	arguing	
	'Manuel doesn't know with what lady Ximena is arguing.'									

- English, on the other hand, can extract the wh-element

(13) Chad doesn't know [$_{DP}$ **what woman**]$_i$ Megan is arguing [$_{PP}$ [$_P$ **with**] **t**$_i$].

Heritage speaker bilinguals

- So far the general differences between the grammars of Spanish and English have been discussed, but bilinguals are not just "two monolinguals in one"
- Heritage grammars differ from monolingual grammars (e.g., Silva-Corvalán, 1994; Montrul, 2008; among many others)
  - Research regarding US heritage speakers of Spanish has noted variation in a wide-array of linguistic structures including: definite articles (Montrul & Ionin, 2010), focus (Hoot, 2017), *gustar* (de Prada & Pascual y Cabo, 2011), causatives (Zyzik, 2014), and more
  - P-stranding has been shown to vary as well

Heritage Spanish p-stranding

- Depiante and Thompson (2013)
  - 1 experimental task with p-stranding in matrix wh-questions, embedded wh-, and relative clauses
    - Judgment task with p-stranding in Spanish sentences (n = 36)
    - Prepositions included: *a* 'to', *con* 'with', *de* 'of', *en* 'in', *por* 'for', *sobre* 'about'
  - 1 heritage speaker experimental group
    - US bilinguals (n = 28) learned Spanish and English from a young age
  - 1 Spanish-dominant control group
    - Spanish native speakers (n = 21) primarily from Cuba (≤ 2 years in the US)
  - In all three contexts, the heritage speakers found p-stranding more acceptable than the comparison group
    - As such, with this structure perhaps there is no grammatical asymmetry between Spanish and English for heritage speakers

Heritage Spanish p-stranding

- Cabo y Pascual and Gómez Soler (2015)
  - 3 experimental tasks targeting matrix wh-questions, embedded wh-, and relative clauses with *con* 'with' and *en* 'in'
    - Judgment task with p-stranding in Spanish sentences (n = 30)
    - Judgment task with pied-piping in Spanish sentences (n = 30)
    - Production task with "dehydrated" Spanish sentences (n = 10)
  - 2 heritage speaker experimental groups
    - US simultaneous bilinguals (n = 21) learned Spanish and English from birth
    - US sequential bilinguals (n = 12) learned English after age 6
  - 1 Spanish-dominant control group
    - Spanish native speakers (n = 11) from Mexico (until at least age 16)

Heritage Spanish p-stranding

- Pascual y Cabo and Gómez Soler (2015) found that the two experimental groups showed variability with p-stranding
  - Sequential bilinguals reject p-stranding in Spanish: ✓ ENG, ✗ SPAN
  - Simultaneous bilinguals allow p-stranding it in Spanish: ✓ ENG, ✓ SPAN
- Suggests that the construction has been extended from English for some but not all of the heritage speakers
  - It is "a domain of grammar vulnerable to crosslinguistic influence during the formative years" (Cabo y Pascual & Gómez Soler, 2015, p. 203)
- When looking at Spanish-English code-switching, there is a potential conflict for some
  - Age of acquisition of English plays a critical role

Framework

- Adopting a generative approach to code-switching (Grimstad et al., 2018; MacSwan, 1999)
  - Constraints are due to the interaction of the two grammars in question, specifically when there is a mismatching of features
  - Mirrors exactly what happens in monolingual derivations (i.e., there is "no third grammar")
- Using this framework, specific predictions can be made about restrictions on p-stranding in code-switching
  - Similar work using such an approach has targeted pronouns (González-Vilbazo & Koronkiewicz, 2016; Koronkiewicz, 2014), wh-questions (Ebert, 2014), pro-drop (Sande, 2014), causatives (González-Vilbazo & López, 2012), sluicing (González-Vilbazo & Ramos, 2018), and more

RESEARCH QUESTIONS

Do US heritage speakers of Spanish accept p-stranding in Spanish-English code-switching?

And if so, does age of acquisition of English play a role?

Predictions

- Combining Pascual y Cabo and Gómez Soler's (2015) data with Law's (2006) analysis, the results should vary by group
- Simultaneous bilinguals: ✓ ENG, ✓ SPAN, ✓ SPAN-to-ENG, ✓ ENG-to-SPAN
  - P-stranding should be consistently acceptable in English, Spanish, and code-switching (in either direction)
  - If they allow p-stranding in English and Spanish, this would be evidence that they do not have D+P incorporation in either language, and as such the wh-element can be freely extracted regardless of the language context

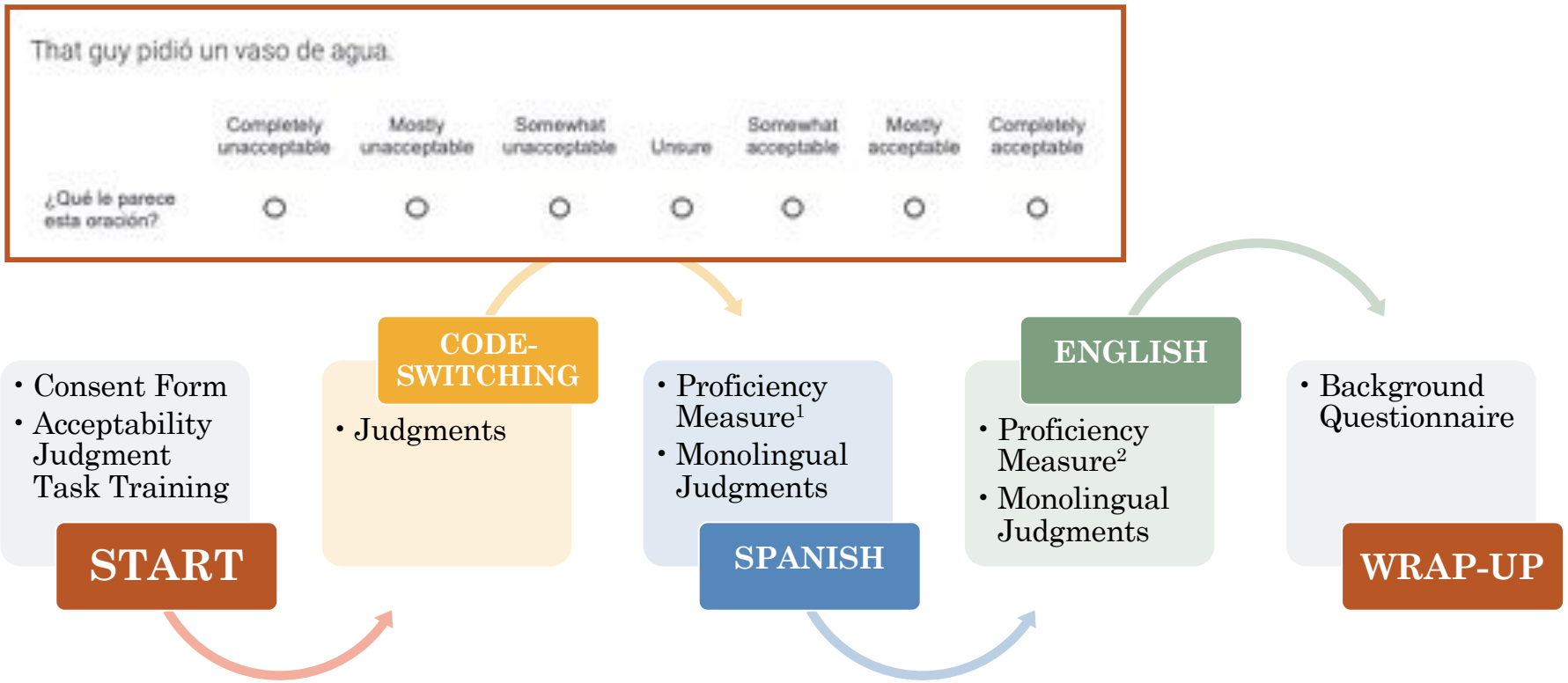
Predictions

- Sequential bilinguals: ✓ ENG, ✗ SPAN, ? ENG-to-SPAN, ? SPAN-to-ENG
  - If they allow p-stranding in English but not Spanish, this would be evidence that they have asymmetrical D+P incorporation, and as such the wh-element cannot always be freely extracted
  - Depends on which element(s) motivate(s) D+P incorporation (as these elements will always be in distinct languages when switched)
    - Determiner = ✓ ENG-to-SPAN, ✗ SPAN-to-ENG
    - Preposition = ✗ ENG-to-SPAN, ✓ SPAN-to-ENG
    - Both = ✗ ENG-to-SPAN, ✗ SPAN-to-ENG

HYPOTHESES

Simultaneous bilinguals will accept p-stranding in monolingual Spanish, monolingual English, and both code-switching contexts (i.e., Spanish-to-English and English-to-Spanish)

Sequential bilinguals will reject p-stranding in monolingual Spanish, but accept it in monolingual English, and at least some (if not all) code-switching contexts will be rejected



[1] Modified Spanish cloze test (Montrul & Slabakova, 2003)

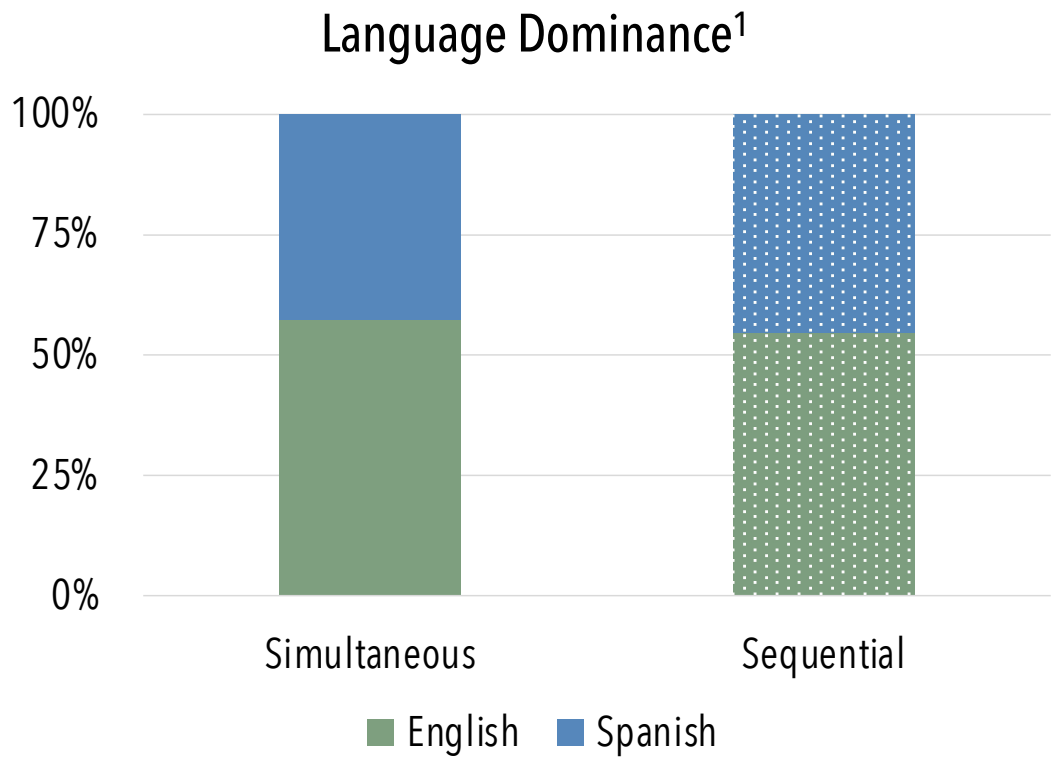
[2] Modified English cloze test (O'Neill, Cornelius, & Washburn, 1981)

Participants

- US heritage speakers of Spanish ($N = 29$)
  - Participants removed from the dataset ($n = 5$) for either not being a self-reported code-switcher and/or for indicating a negative attitude toward code-switching (Badiola, Delgado, Sande, & Stefanich, 2018)
- Remaining participants ($n = 24$)
  - 19-49 years old ($M = 23.2$)
  - Born in the US ($n = 20$) or arrived at a young age ($M = 4.8$ years)
  - Learned both languages from a young age
    - Simultaneous heritage speakers who reported learning both languages from birth to before age 5 ($n = 13$)
    - Sequential heritage speakers who learned English later at age 5+ ($n = 11$)

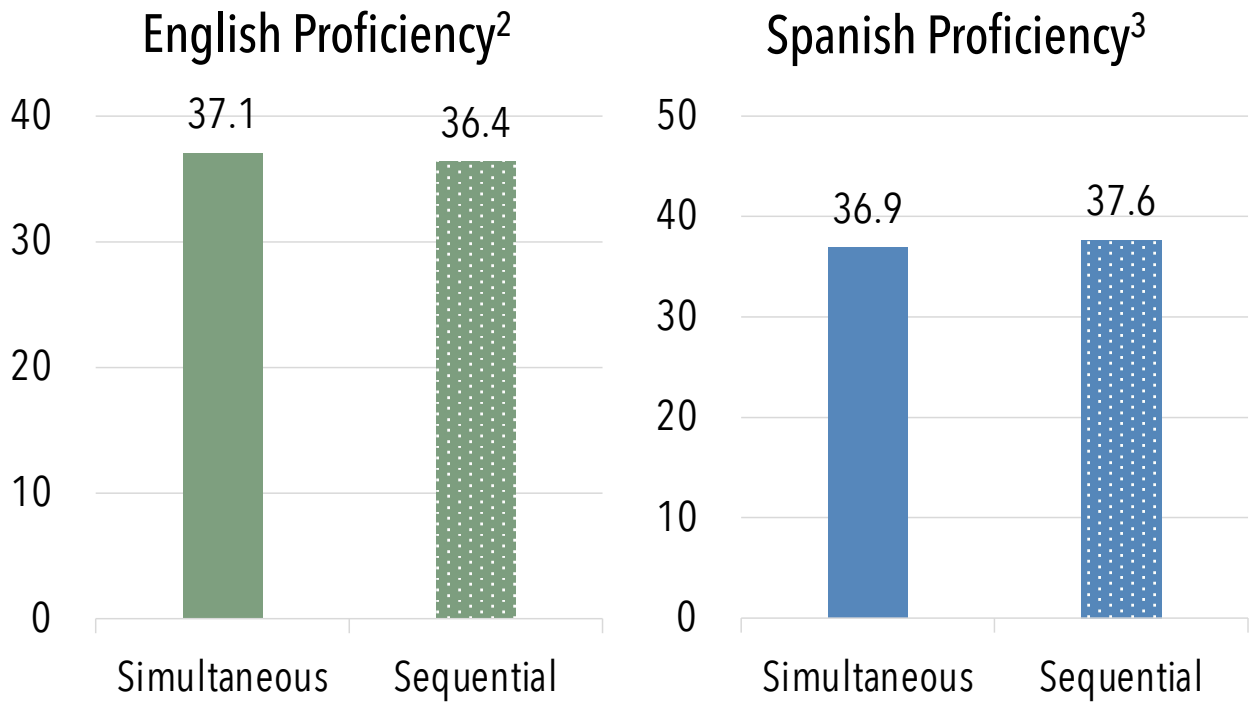
Comparable with regard to language dominance

- Both groups slightly English dominant (M = 26.1 out of ±218)



[1] Bilingual Language Profile (Birdsong, Gertken, & Amengual, 2012)

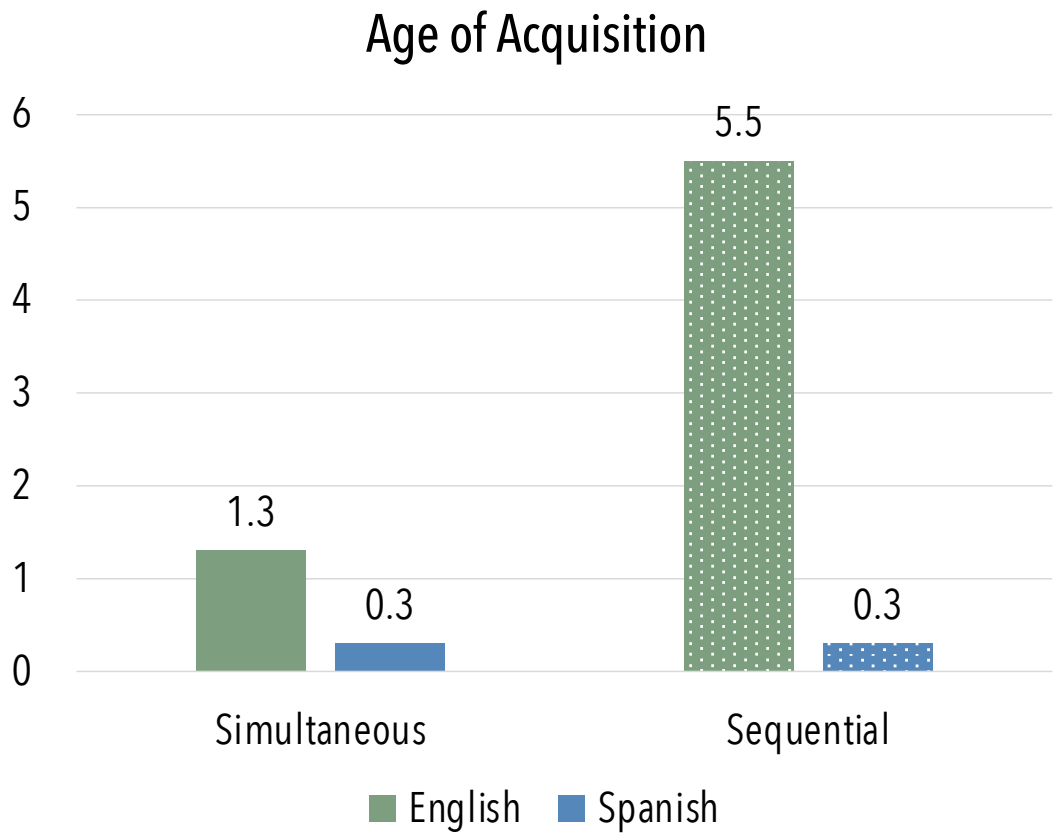
- Comparable with regard to language proficiency
  - Advanced English proficiency
  - Intermediate/ advanced Spanish proficiency



[2] Modified English cloze test (O'Neill, Cornelius, & Washburn, 1981)

[3] Modified Spanish cloze test (Montrul & Slabakova, 2003)

- Groups varied by age of acquisition for English, but not for Spanish



Stimuli

- Target stimuli with p-stranding ($N = 32$)
  - Half embedded wh- p-stranding and half relative clause p-stranding
    - Code-switched target sentences ($n = 16$)
    - Monolingual target equivalents for Spanish ($n = 8$)
    - Monolingual target equivalents for English ($n = 8$)
- Filler stimuli with various other types of constructions (and switches) ($N = 169$)
  - Targeted adverb order, auxiliary verbs, pronouns, and so on
    - Code-switched filler sentences ($n = 89$)
    - Monolingual Spanish filler sentences ($n = 42$)
    - Monolingual English filler sentences ($n = 38$)

EMBEDDED WH- STIMULI

SPAN-to-ENG

(14) *Manuel* *no* *sabe* ***qué*** ***señora*** Megan is arguing **with**.
Manuel no knows what woman

'Manuel doesn't know what woman Megan is arguing with.'

ENG-to-SPAN

(15) Bill doesn't know **what** **woman** *Ximena* *está* *discutiendo* ***con***.
Ximena is arguing with

'Bill doesn't know what woman Ximena is arguing with.'

SPAN

(16) *Manuel* *no* *sabe* ***qué*** ***señora*** *Ximena* *está* *discutiendo* ***con***.
Manuel no knows what lady Ximena is arguing with

'Manuel doesn't know what lady Megan is arguing with.'

ENG

(17) Bill doesn't know **what** **woman** Megan is arguing **with**.

RELATIVE CLAUSE STIMULI

SPAN-to-ENG

(18) *Leticia* *es* ***la*** ***chica*** that Gabe is going out **with**.
Leticia is the girl

'Leticia is the girl that Gabe is going out with.'

ENG-to-SPAN

(19) Lucy is **the** **girl** *que* *Arturo* *está* *saliendo* ***con***.
that Arturo is going-out with

'Lucy is the girl that Arturo is going out with.'

SPAN

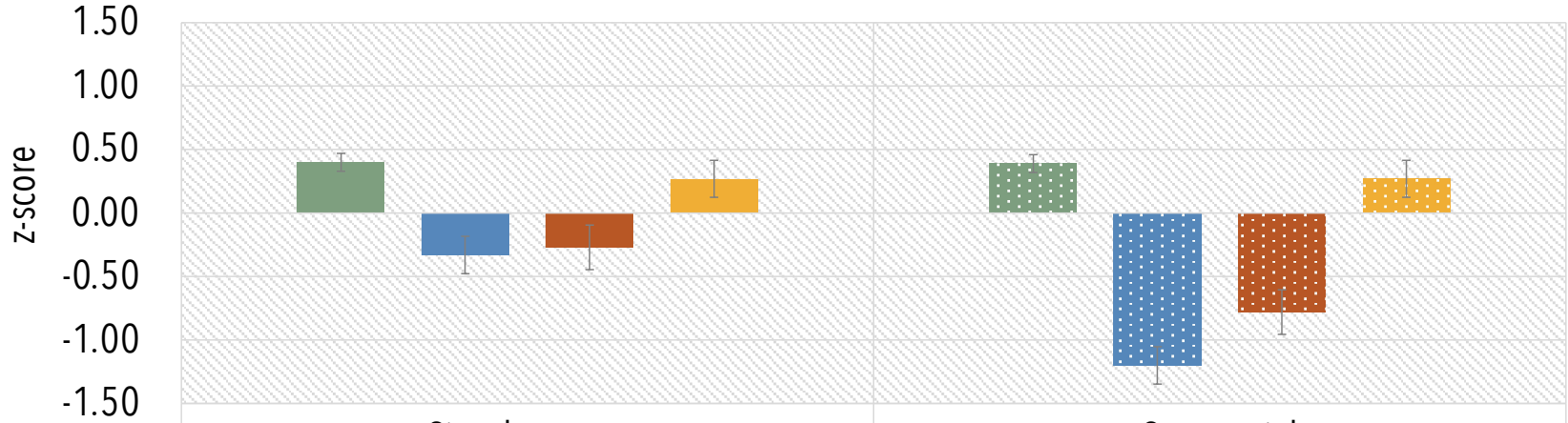
(20) *Leticia* *es* ***la*** ***chica*** *que* *Arturo* *está* *saliendo* ***con***.
Leticia is the girl that Arturo is going-out with

'Manuel doesn't know what lady Megan is arguing with.'

ENG

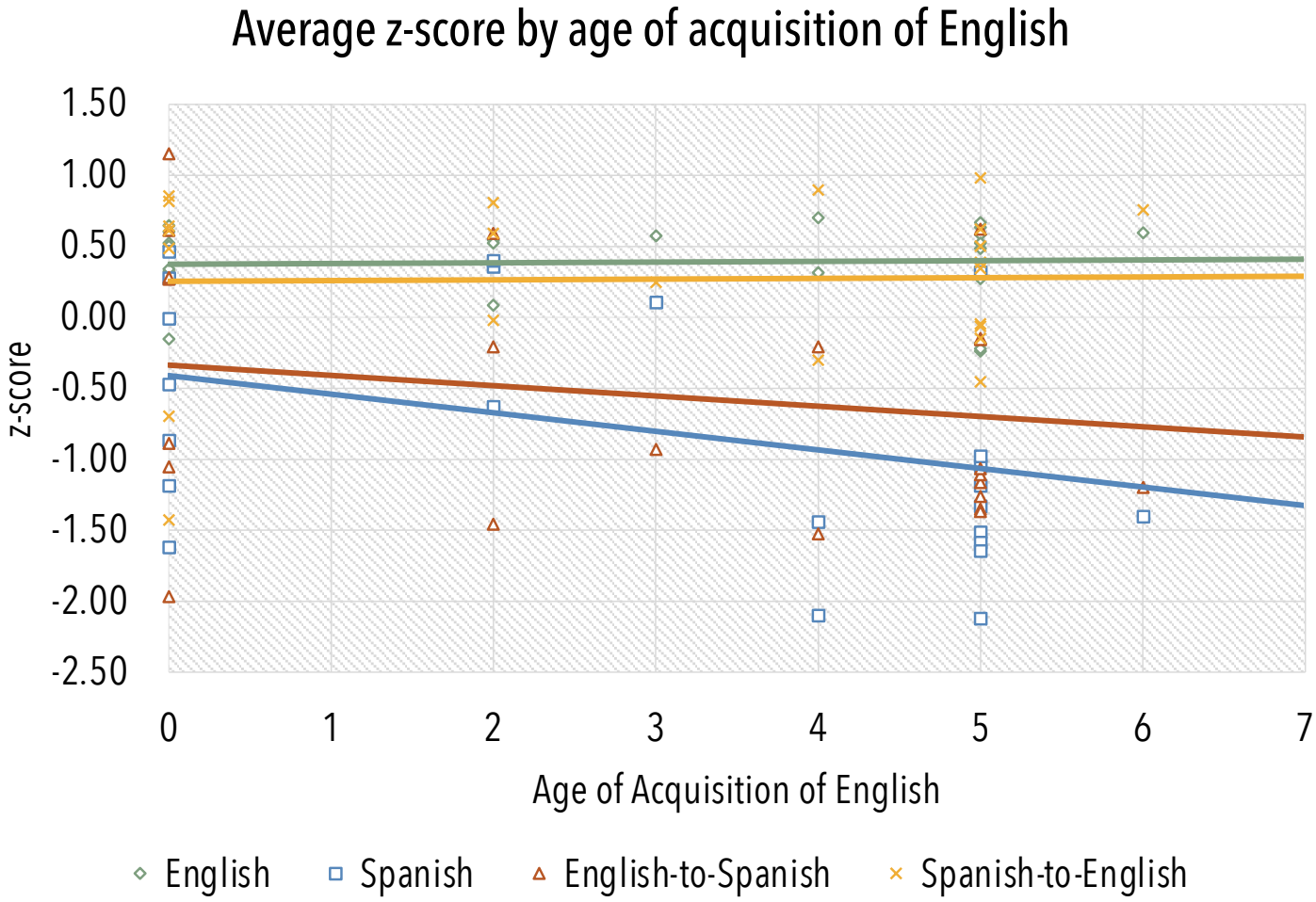
(21) Lucy is **the** **girl** that Gabe is going out **with**.

Average z-score by language(s) and bilingual type



	Simultaneous	Sequential
English	0.40	0.39
Spanish	-0.33	-1.20
English-to-Spanish	-0.27	-0.78
Spanish-to-English	0.27	0.27

Two-way ANOVA testing the effect of language(s) and bilingual type on z-score revealed an interaction, $F(3,375) = 7.777$, $p < .001$
Post hoc analysis: (i) simultaneous bilinguals overall more accepting of p-stranding than sequential bilinguals, regardless of language; (ii) parallelism between language of the preposition (i.e., ENG = SPAN-to-ENG, SPAN = ENG-to-SPAN)


Average z-score by age of acquisition of English
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
z-score
0
1
2
3
4
5
6
7
Age of Acquisition of English
English
Spanish
English-to-Spanish
Spanish-to-English

Results Summary

- Results pattern as predicted by bilingual group
- Simultaneous: ✓ ENG, ✓ SPAN, ✓ ENG-to-SPAN, ✓ SPAN-to-ENG
  - Generally accepted across the board, with a slight preference for p-stranding in English and Spanish-to-English
- Sequential: ✓ ENG, ✗ SPAN, ✗ ENG-to-SPAN, ✓ SPAN-to-ENG
  - Strong rejection of p-stranding in Spanish and English-to-Spanish
  - English prepositions permit p-stranding, and Spanish prepositions block it, regardless of the language(s) of the sentence
- There is a parallelism between the monolingual and code-switching in that the results align depending on the language of the preposition

HYPOTHESES

✓ Simultaneous bilinguals will accept p-stranding in monolingual Spanish, monolingual English, and both code-switching contexts (i.e., Spanish-to-English and English-to-Spanish)

✓ Sequential bilinguals will reject p-stranding in monolingual Spanish, but accept it in monolingual English, and at least some (if not all) code-switching contexts will be rejected …and "some" = English-to-Spanish because of the Spanish preposition

Limitations

- Limited lexical items (i.e., only *with/con*)
  - Known idiosyncratic variation with p-stranding depending on the particular preposition (Biber et al., 1999)
- Perceptive nature of acceptability judgment task data
  - Unclear if production data would show the same patterns
- Other possible variables regarding the heterogeneity of the participant group
  - Only investigated age of acquisition of English

Lingering Questions

- What is the status of pied-piping?
  - Testing the availability of it in code-switching could help tease apart differences between simultaneous and sequential bilinguals
  - More generally, although it is possible in both languages, it's not entirely clear why it is an option in English without incorporation forcing it
- What about reduplication?
  - Can bilinguals have the best of both worlds, combining pied-piping and p-stranding (à la Icelandic, Jónsson, 2008)?
  - *Manuel no sabe* ***con*** *qué señora* Megan is arguing **with**

Conclusion

- Clear first step toward understanding p-stranding availability in Spanish-English code-switching
  - Suggests no D+P incorporation in simultaneous bilinguals' grammars = free extraction
  - Suggests sequential bilinguals have D+P incorporation in Spanish, which also presents itself in switched contexts sometimes
    - Specifically, it seems the properties of the preposition and not the determiner dictate incorporation, and as such the language of the preposition dictates whether there is p-stranding or not
- This data helps us better understand the syntactic underpinnings of both D+P incorporation and p-stranding

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