

Qué libro is he referring to?: Preposition-stranding in Spanish-English 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, as the preposition is pied-piped with the DP

- (1) a. Elisa doesn't know [_{DP} **what friend**]_i Fernando is working [_{PP} **with t_i**].
- b. Elisa no sabe [_{PP} **con** [_{DP} **qué amigo**]]_i Fernando está trabajando **t_i**.
 Elisa not knows with what friend Fernando is working
 'Elisa doesn't know with what friend Fernando is working.'
- c. */? Elisa no sabe [_{DP} **qué amigo**]_i Fernando está trabajando [_{PP} **con t_i**].
 Elisa not knows what friend Fernando is working with
 'Elisa doesn't know what friend Fernando is working 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?

What is the availability of p-stranding in intrasentential code-switching (CS)?

Essentially, the question is:

- Is it possible to extract a Spanish DP out of an English PP? Or vice versa?

- (2) a. *Elisa no sabe* [_{DP} **qué amigo**]_i Fernando is working [_{PP} **with t_i**].
 Elisa not knows what friend
 ‘Elisa doesn’t know what friend Fernando is working with.’
- b. Elisa doesn’t know [_{DP} **what friend**]_i *Fernando está trabajando* [_{PP} **con t_i**].
 Fernando is working with
 ‘Elisa doesn’t know what friend Fernando is working with.’

P-stranding in English

Wh-elements in English occupy a higher syntactic position

- Generally considered the specifier of the Complementizer Phrase (Chomsky, 1986)

If the wh-element is originally the complement of a PP, it can be extracted, “stranding” the preposition in its lower position

- Can occur in matrix wh-questions, embedded wh-questions, and relative clauses (Law, 2006; Salles, 1995)
- At the same time, English allows pied-piping to be used prescriptively and/or in formal discourse (Biber et al., 1999)

- (3)
- a. $[_{DP} \textbf{What}]_i$ did you buy t_i ?
 - b. $[_{DP} \textbf{What money}]_i$ did you buy it $[_{PP} \textbf{with } t_i]$?
 - c. I don't know $[_{DP} \textbf{what friend}]_i$ you went shopping $[_{PP} \textbf{with } t_i]$.
 - d. Amy is the friend $[_{DP} \textbf{who}]_i$ I went shopping $[_{PP} \textbf{with } t_i]$.
 - e. $[_{PP} \textbf{With } [_{DP} \textbf{what money}]]_i$ did you buy it t_i ?

P-stranding in Spanish

Like English, *wh*-elements in Spanish occupy a higher syntactic position (i.e., SpecCP)

- However, they cannot be extracted from a PP, instead requiring the preposition to be pied-piped with the DP (Law, 2006)
- True for matrix *wh*-questions, embedded *wh*-questions, and relative clauses

- (4) a. ¿[_{PP} **Con** [_{DP} **qué dinero**]]_i lo compraste **t_i**?
 with what money it bought.2S
 ‘With what money did you buy it?’
- b. No sé [_{PP} **con** [_{DP} **qué amiga**]]_i fuiste de compras **t_i**.
 not know with what friend went.2S of purchases
 ‘I don’t know with which friend you went shopping.’
- c. Amy es la amiga [_{PP} **con** [_{DP} **quien**]]_i fui de compras **t_i**.
 Amy is the friend with who(m) went.2S of purchases
 ‘Amy is the friend with whom I went shopping.’

Crosslinguistic variation

How do we account for varying p-stranding 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^0 ” (Law, 2006, p. 647)
- Based on 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
- The condition does not require suppletion of specific items to apply (i.e., all or nothing)

Crosslinguistic variation

Under this analysis:

- English determiners, lacking suppletive forms, never incorporate and remain separate
 - [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)
 - [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*]]]

Results in an asymmetry

- In Spanish, the only option is to move the entire PP
- English can extract the wh-element

Framework

Generative approach to CS (Grimstad et al., 2018; MacSwan, 1999)

- Constraints are due to the interaction of the two grammars in question, specifically when there is a mismatch of features
- Mirrors exactly what happens in monolingual derivations (i.e., “no third grammar”)

Using this framework, specific predictions can be made about restrictions on p-stranding in CS

- Similar work using such an approach has targeted pronouns (González-Vilbazo & Koronkiewicz, 2016; Koronkiewicz, 2014), wh-questions (Ebert, 2014), pro-drop (Sande, 2018), sluicing (González-Vilbazo & Ramos, 2018), and more

Previous work

Spanish-English CS data has suggested that incorporation is dependent upon the features inherent to the preposition (Koronkiewicz, 2022)

- P-stranding was found to be accepted only with Spanish-to-English switches (i.e., a Spanish DP with an English preposition)
- Only with early sequential bilinguals; simultaneous bilinguals accepted p-stranding in both directions, perhaps suggesting a lack of D+P incorporation in Spanish
 - Consistent with other work looking at just Spanish that showed same distinction (Depiante & Thompson, 2013; Pascual y Cabo and Gómez Soler, 2015)

Previous work

However, the CS data from Koronkiewicz (2022) is quite limited in scope

- Only tested one preposition (*with/con*) (which does not undergo suppletion in Spanish)
- Did not test pied-piping nor matrix wh-questions

This study is a direct extension of that work

Research Questions:

Do US heritage speakers of Spanish accept...

1. ...p-stranding in Spanish-English CS?
 - a. And does it vary by the lexical preposition? (i.e., *with/con*, *a/to*, *de/of*)
 - b. And does it vary by structure? (i.e., matrix wh-, embedded wh-, relative clause)

2. ... pied-piping in Spanish-English CS?
 - a. And does it vary by the lexical preposition? (i.e., *with/con*, *a/to*, *de/of*)
 - b. And does it vary by structure? (i.e., matrix wh-, embedded wh-, relative clause)

Predictions

For bilingual heritage speakers who allow p-stranding in English, but reject it in Spanish:

- Based on Koronkiewicz (2022), p-stranding should be accepted with Spanish-to-English switches (i.e., a Spanish DP extracted from an English PP), but rejected in the other direction
- Following Law (2006), this should occur regardless of the preposition or structure

For pied-piping, there should be no restriction:

- If it is allowed in both of their languages, it should be allowed in both switch directions
- Also, regardless of the preposition or structure

Hypotheses:

US heritage speakers of Spanish will...

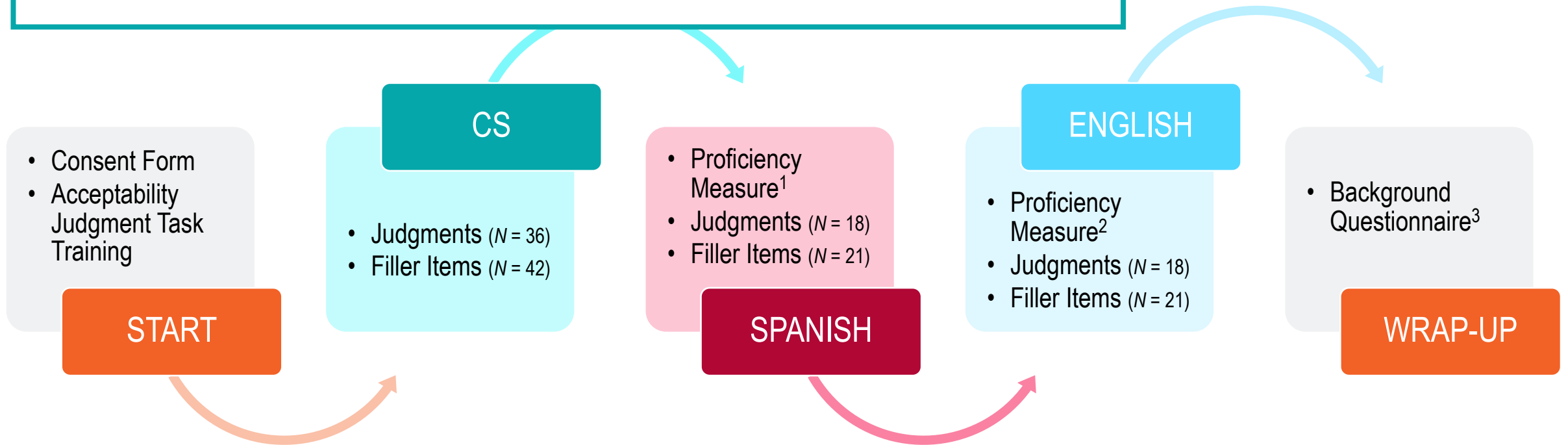
- ❑ ...**accept** p-stranding in CS **from Spanish-to-English**.
 - ❑ It will not vary by the lexical preposition (i.e., *with/con, a/to, de/of*).
 - ❑ It will not vary by structure? (i.e., matrix wh-, embedded wh-, relative clause)

- ❑ ...**accept** pied-piping in CS in **both directions**.
 - ❑ It will not vary by the lexical preposition (i.e., *with/con, a/to, de/of*).
 - ❑ It will not vary by structure (i.e., matrix wh-, embedded wh-, relative clause).

That guy pidió un vaso de agua.

Completely unacceptable Mostly unacceptable Somewhat unacceptable Unsure Somewhat acceptable Mostly acceptable Completely acceptable

¿Qué le parece esta oración?



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

² Modified English cloze test (O'Neill et al., 1981)

³ Bilingual Language Profile (Birdsong et al., 2012)

Participants

US heritage speakers of Mexican Spanish ($N = 21$)

- 19-38 years old ($M = 29.0$, $SD = 5.3$)
- Living in north/central Illinois
- Born in the US or arrived at a young age
- Language background:
 - Learned both Spanish ($M = 0.4$, $SD = 1.2$) and English ($M = 2.5$, $SD = 2.5$) from a young age
 - Intermediate/advanced level of Spanish ($M = 38.3$ out of 50, $SD = 7.1$) and advanced level of English ($M = 36.2$ out of 40, $SD = 2.3$)
 - Slightly English dominant ($M = 40.1$ out of ± 218 , $SD = 5.3$)
- All self-reported code-switchers
- Positive or neutral attitudes toward CS (Badiola et al., 2018)

Stimuli

Target CS stimuli ($N = 36$)

- 2 conditions: p-stranding or pied-piping
- 3 structures: matrix wh-questions, embedded wh-questions, and relative clauses
- 3 prepositions: *with/con*, *of/de*, and *a/to*
- 2 directions: Spanish-to-English or English-to-Spanish

Monolingual comparison stimuli ($N = 36$)

- 2 conditions: p-stranding or pied-piping
- 3 structures: matrix wh-questions, embedded wh-questions, and relative clauses
- 3 prepositions: *with/con*, *of/de*, and *a/to*
- 2 languages: Spanish or English

WITH / CON	ENGLISH		SPANISH	
	P-STRANDING	PIED-PIPING	P-STRANDING	PIED-PIPING
<i>Matrix wh-</i>	What guy is Ashley dancing with ?	With what guy is Ashley dancing?	Qué hombre está bailando Araceli con ?	Con qué hombre está bailando Araceli?
<i>Embedded wh-</i>	Emily doesn't know what friend Frank is working with .	Emily doesn't know with what friend Frank is working.	Elisa no sabe qué amigo Fernando está trabajando con .	Elisa no sabe con qué amigo Fernando está trabajando.
<i>Relative clause</i>	United is the company Ruby is flying with .	United is the company with which Ruby is flying.	United es la compañía que Roberta está viajando con .	United es la compañía con la Roberta está viajando.

WITH / CON	ENGLISH-to-SPANISH		SPANISH-to-ENGLISH	
	P-STRANDING	PIED-PIPING	P-STRANDING	PIED-PIPING
<i>Matrix wh-</i>	What guy está bailando Araceli con ?	With what guy está bailando Araceli?	Qué hombre is Ashley dancing with ?	Con qué hombre is Ashley dancing?
<i>Embedded wh-</i>	Emily doesn't know what friend Fernando está trabajando con .	Emily doesn't know with what friend Fernando está trabajando.	Elisa no sabe qué amigo Frank is working with .	Elisa no sabe con qué amigo Frank is working.
<i>Relative clause</i>	United is the company Roberta está volando con .	United is the company with which Roberta está volando.	United es la compañía que Ruby is flying with .	United es la compañía con la que Ruby is flying.

OF / DE	ENGLISH-to-SPANISH		SPANISH-to-ENGLISH	
	P-STRANDING	PIED-PIPING	P-STRANDING	PIED-PIPING
<i>Matrix wh-</i>	What class se está cansando Candela de ?	Of what class se está cansando Candela?	Qué curso is Charlotte getting tired of ?	De qué curso is Charlotte getting tired?
<i>Embedded wh-</i>	Jessica doesn't know what class Leonel se está cansándose de .	Jessica doesn't know of what class Leonel se está cansándose.	Julieta no sabe qué curso Lance is getting tired of .	Julieta no sabe de qué curso Lance is getting tired.
<i>Relative clause</i>	Inequality is the problem Teresa está hablando de .	Inequality is the problem of which Teresa está hablando.	La desigualdad es el problema que Tiffany is speaking of .	La desigualdad es el problema del que Tiffany is speaking.

TO / A	ENGLISH-to-SPANISH		SPANISH-to-ENGLISH	
	P-STRANDING	PIED-PIPING	P-STRANDING	PIED-PIPING
<i>Matrix wh-</i>	What book está haciendo referencia Diego a ?	To what book está haciendo referencia Diego?	Qué libro is Dylan referring to?	A qué libro is Dylan referring?
<i>Embedded wh-</i>	Mason doesn't know what country Natalia está viajando a .	Mason doesn't know to what country Natalia está viajando.	Matías no sabe qué país Nancy is traveling to .	Matías no sabe a qué país Nancy is traveling.
<i>Relative clause</i>	Warrenville is the town Víctor se está mudando a .	Warrenville is the town to which Víctor se está mudando.	Villa del Carbón es el pueblo que Vern is moving to .	Villa del Carbón es el pueblo al que Vern is moving.

Results roadmap

4

First look at age of acquisition of English

- Recall that previous research showed a difference between **simultaneous** and **sequential** bilinguals

Then a general overview of p-stranding and pied-piping

- Comparing their own languages: **English** vs. **Spanish** vs. **both switch directions**

Then a comparison of the different structures

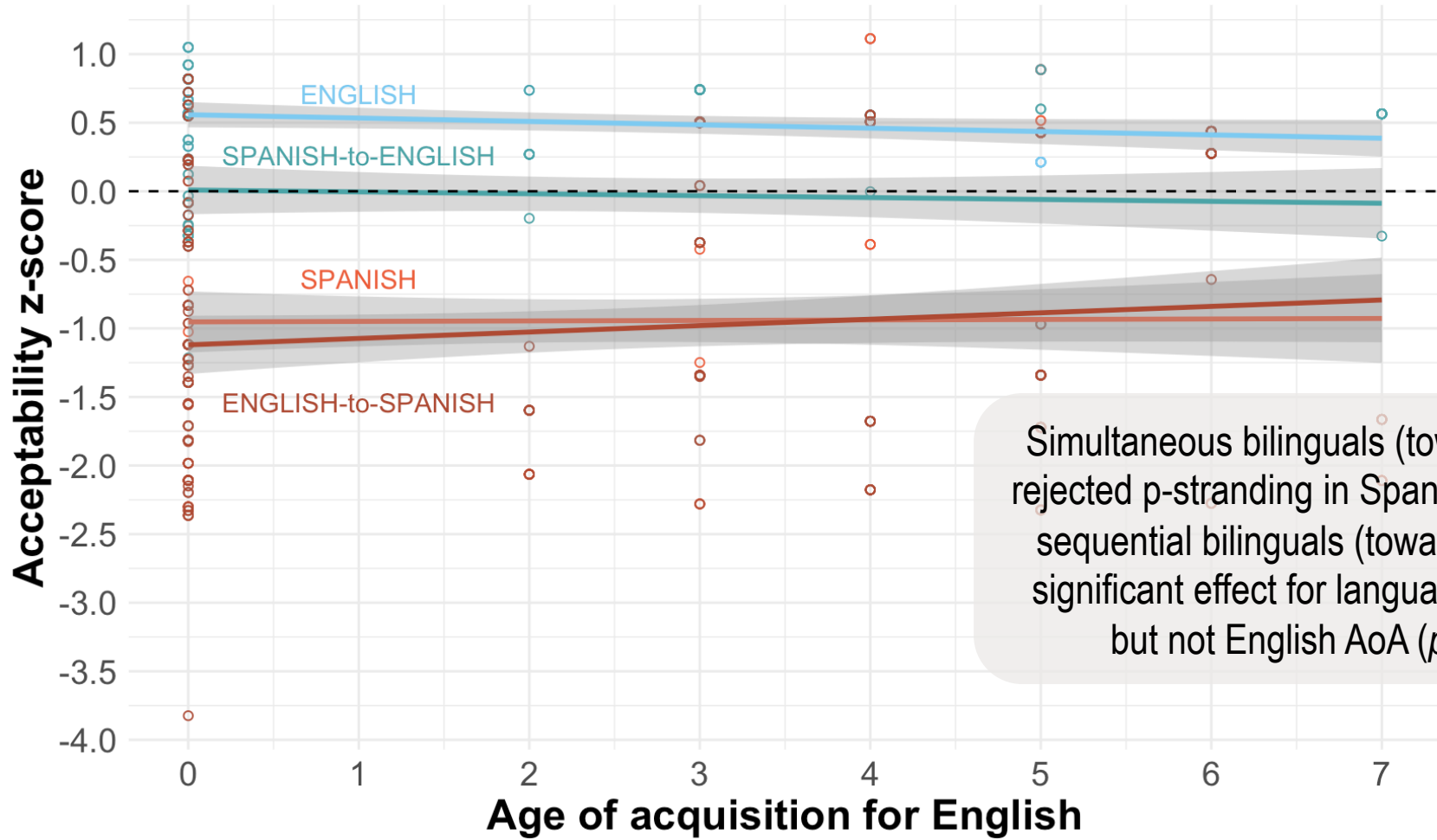
- Separated by **matrix wh-questions** vs. **embedded wh-questions** vs. **relative clauses**

Finally, a look at the different lexical prepositions

- One comparison of **with**, **of**, and **to** in English and in CS
- A separate comparison of **con**, **de**, and **a** in Spanish and in CS

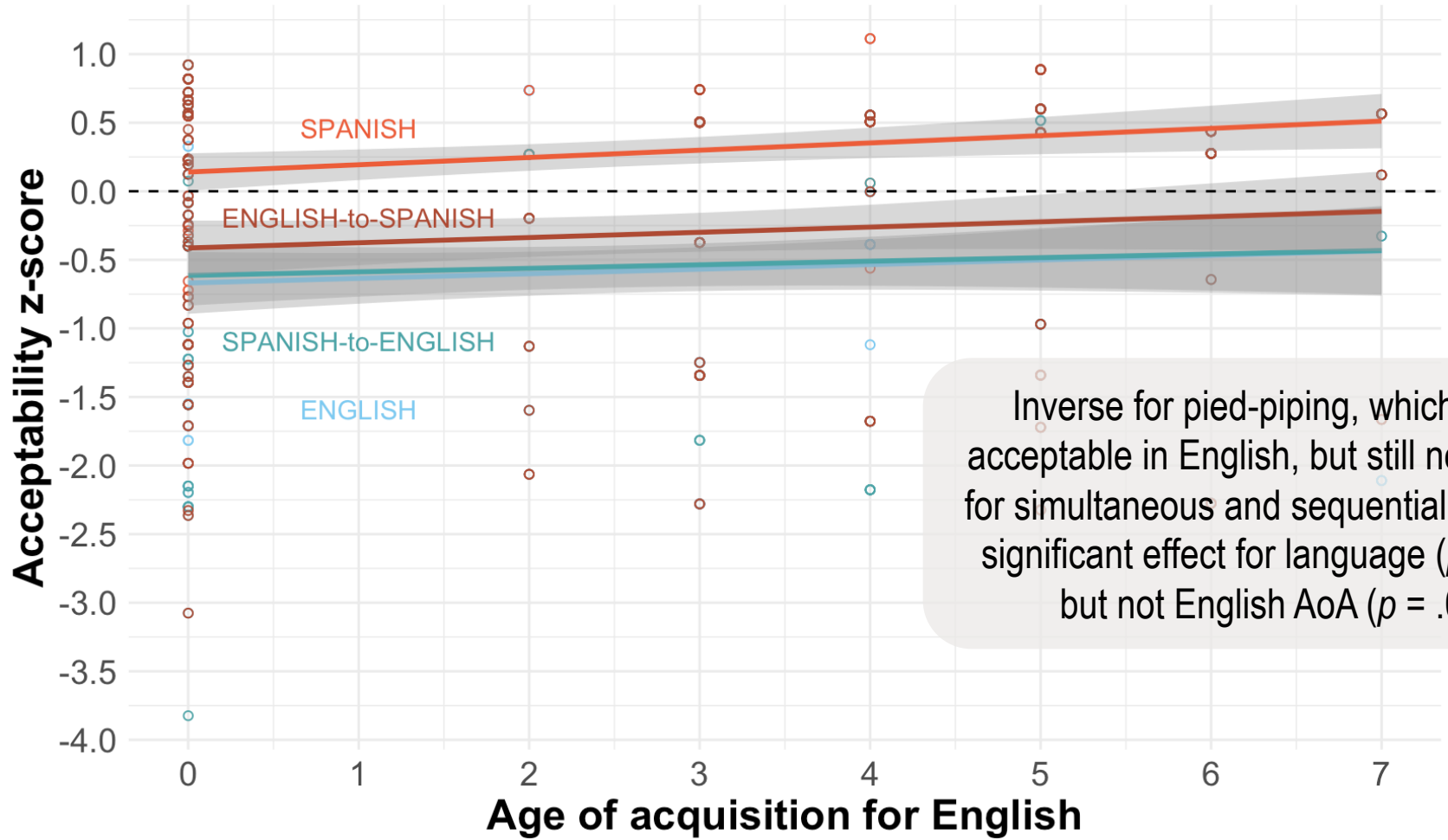
results

P-stranding ratings by language(s)



Simultaneous bilinguals (towards the left) rejected p-stranding in Spanish just like the sequential bilinguals (towards the right); significant effect for language ($p < .001$), but not English AoA ($p = .701$)

Pied-piping ratings by language(s)



Inverse for pied-piping, which is less acceptable in English, but still not different for simultaneous and sequential bilinguals; significant effect for language ($p < .001$), but not English AoA ($p = .052$)

Preliminary finding

4

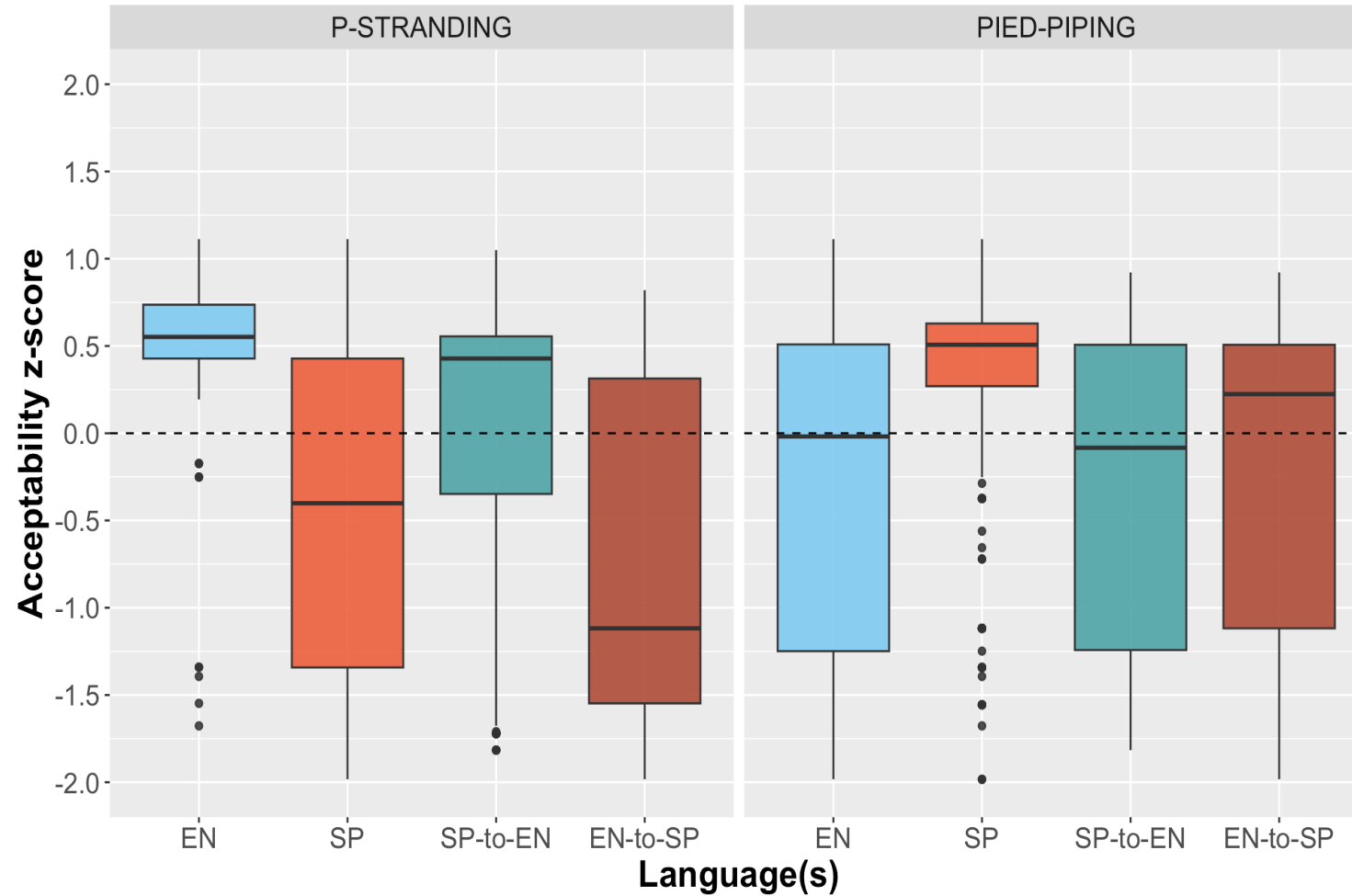
No differences regarding English age of acquisition

- Unlike previous research (Koronkiewicz, 2022), simultaneous bilinguals in the current study showed the distinction regarding p-stranding, not just sequential bilinguals

Going forward, all participants are kept in the same group

results

P-stranding and pied-piping acceptability by language(s)



Most consistent finding is the expected: p-stranding received acceptable ratings in **ENGLISH** and pied-piping received acceptable ratings in **SPANISH**

Significant effect for language ($p < .001$), and a significant interaction between language and condition ($p < .001$)

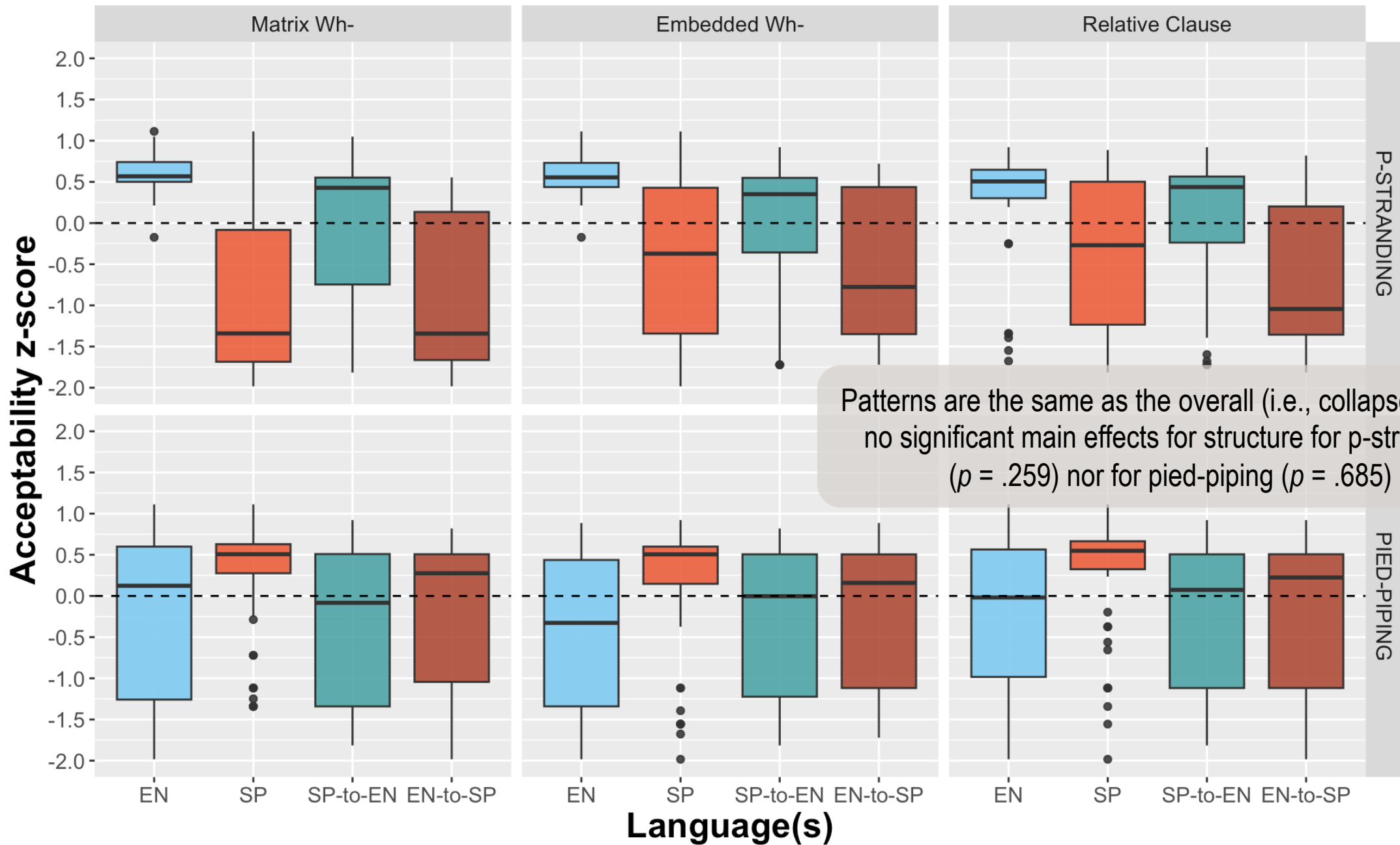
For p-stranding:

EN / SP-to-EN > **SP** > **EN-to-SP**

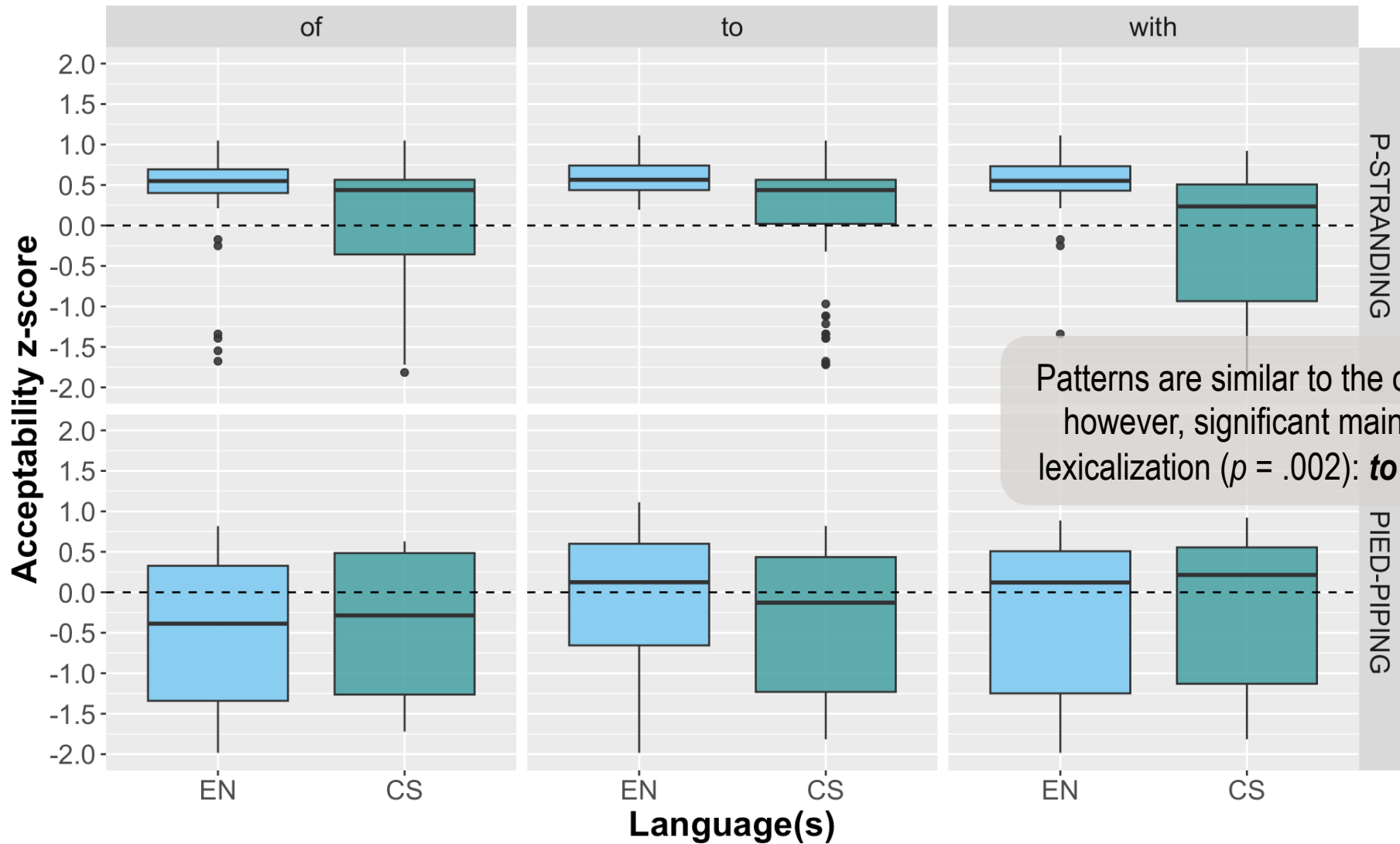
For pied-piping:

SP > **EN-to-SP** > **EN / SP-to-EN**

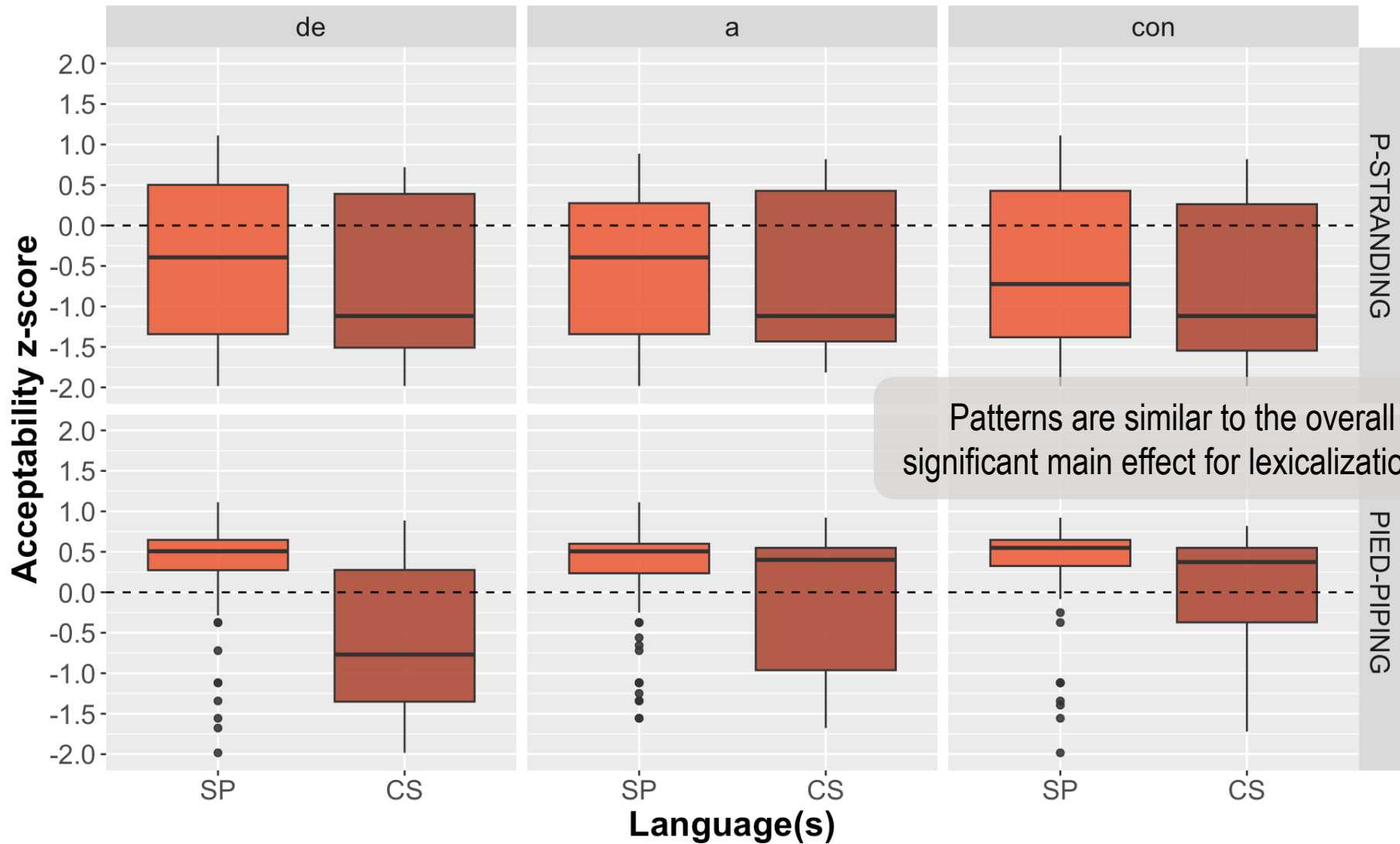
Structure acceptability by language(s)



English preposition acceptability by language mode



Spanish preposition acceptability by language mode



Summary

Acquisition of English did not play a role

- Unlike previous research, **simultaneous** and **sequential** bilinguals showed similar patterns

Broadly there is a divide based on the language of the preposition

- P-stranding more acceptable in English and Spanish-to-English CS
- Piped-piping more acceptable in Spanish and English-to-Spanish CS

No differences found regarding syntactic structure

- Matrix wh-questions, embedded wh-questions, and relative clauses followed the same patterns

Lexical preposition did have an effect, but only for English

- However, it did not vary by condition: *to* > *with* > *of*

Hypotheses:

US heritage speakers of Spanish will...

- ...accept p-stranding in CS from Spanish-to-English.
 - It will not vary by the lexical preposition (i.e., *with/con, a/to, de/of*).
 - It will not vary by structure? (i.e., matrix wh-, embedded wh-, relative clause)
- ...accept pied-piping in CS in both directions.
 - It will not vary by the lexical preposition (i.e., *with/con, a/to, de/of*).
 - It will not vary by structure (i.e., matrix wh-, embedded wh-, relative clause).

What does this mean?

Generally confirms and expands the previous syntactic findings regarding p-stranding in Spanish-English CS

- More evidence that the preposition is driving the pattern, perhaps suggesting D+P incorporation is driven by the preposition, not the determiner
- In line with Law's (2006) analysis:
 - It does not seem to be tied to whether or not the specific preposition undergoes suppletion in Spanish
 - It seems to be the same process regardless of the specific syntactic structure

What about the difference with the English prepositions?

- Because it did not vary by condition (e.g., *to* was more acceptable in both p-stranding *and* pied-piping), seems to be a consequence of the lexical collocations in those stimuli, perhaps due to frequency
- Perhaps *traveling to* or *moving to* is a more common/natural phrase than *getting tired of* or *speaking of*

What does this mean?

Complicates our understanding of pied-piping

- At least for these individuals, this particular syntactic structure is not parallel between the two languages
- However, it is not simply an inversion of the p-stranding results either
 - Not the case that in English they use only p-stranding and in Spanish they use pied-piping
- Have not done a fine-tuned analysis, so it is unclear why pied-piping received ratings toward the middle of the scale
 - Unclear if it is individual variation (i.e., some accept it, while others reject it) or something else entirely

Lingering questions

What is going on with pied-piping in English?

- Without incorporation forcing it, why should it be an option?
 - Is it individual variation? Prescriptive influence?

What's different about these simultaneous bilinguals?

- Why did they not show acceptance of p-stranding in their Spanish?

What about reduplication?

- Can bilinguals have the best of both worlds, combining pied-piping and p-stranding, similar to Icelandic (Jónsson, 2008)?

Manuel no sabe con qué señora Megan is arguing with
'Manuel doesn't know with what lady Megan is arguing with'

Conclusion

Solid second step in understanding p-stranding availability in Spanish-English CS

- Suggests these bilinguals have D+P incorporation in Spanish, which also presents itself in switched contexts sometimes
- Suggests the properties of the preposition and not the determiner dictate incorporation, whether in a switched context or not

Shows how bilingual data can be used to better understand the syntactic underpinnings of linguistic theory

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