


# Methodological considerations for code-switching research: Language mixing as input during childhood



**Bryan Koronkiewicz**

*The University of Alabama*  
bjkoronkiewicz@ua.edu

HISPANIC LINGUISTICS SYMPOSIUM

**Bernard Issa**

*The University of Tennessee, Knoxville*  
bissa@utk.edu

OCTOBER 27, 2018

# Code-switching

## Structural constraints of intrasentential code-switching (CS)

- Consistently revealed to be a rule-governed phenomenon

## Commonly cited restrictions (Gumperz, 1977; Lipski, 1978, Timm, 1975; among others)

- Pronoun switched with a finite verb
- Auxiliary verb switched with a participle

- (1) a. *Ese hombre* ordered a glass of water.  
'That guy ordered a glass of water.'
- b. \* *Él* ordered a glass of water.  
'He ordered a glass of water.'
- (2) a. *Su hermano* **trains** at the gym regularly.  
'His brother trains at the gym regularly.'
- b. \* *Su hermano* **ha trained** at the gym every day.  
'His brother **has trained** at the gym every day.'

# Bilingual Heterogeneity

Bilingual is a broad term

- Since at least Mackey (1967, as cited in Romaine, 1995) factors such as proficiency, use, alternation and interference have been understood as points of divergence with regard to type of bilingualism

Proficiency is one of the better understood variables

- Can have a direct impact on the CS patterns of different bilinguals (Bentahila & Davies, 1991; Poplack, 1980; among others)

Other variables regarding bilingual participants' language background?

- Have not been extensively explored with regard to CS

**Goal:** The current study investigates the role of *language mixing as input during childhood* as it relates to CS intuitions.

# Methods in Bilingual Research

Problem: “Research dealing with bilinguals has often produced conflicting results” (Grosjean, 1998, p. 131)

Growing line of research targeting methodological concerns

- Research on bilinguals (De Houwer, 1998; Grosjean, 1998; among others)
- Research on CS specifically (Gullberg, Indefrey & Muysken, 2009; González-Vilbazo et al., 2013; MacSwan & McAlister, 2010; among others)

# Bilingual Language History

Relatively common for bilingual research to report participant data regarding:

- Proficiency
- Age of acquisition (and/or age of arrival)
- Sequence of acquisition (i.e., simultaneous vs. sequential)

Details about the linguistic input bilinguals received during acquisition process often unknown

- “What was the pattern of language use?” (Grosjean, 1998, p. 133)
- If reported at all, it is current language use

# Bilingual Input During Childhood

## Input matters

- Differences in parental language input patterns at home correlated with differences in child minority language use (De Houwer, 2007)
- Morphosyntactic acquisition is influenced by home input among bilinguals (Paradis, Tremblay & Crago, 2014)
- Input available to childhood bilinguals, i.e. heritage speakers, is inherently different from what monolinguals receive (Pascual y Cabo & Rothman, 2012)

Unclear if presence of mixed input (or lack thereof) plays a role in the development of intuitions regarding CS



**Research Question:** Does mixed language input during childhood affect CS intuitions?

- **RQ A:** Does mixed language input during childhood from *parents* affect CS intuitions?
- **RQ B:** Does mixed language input during childhood from *siblings* affect CS intuitions?

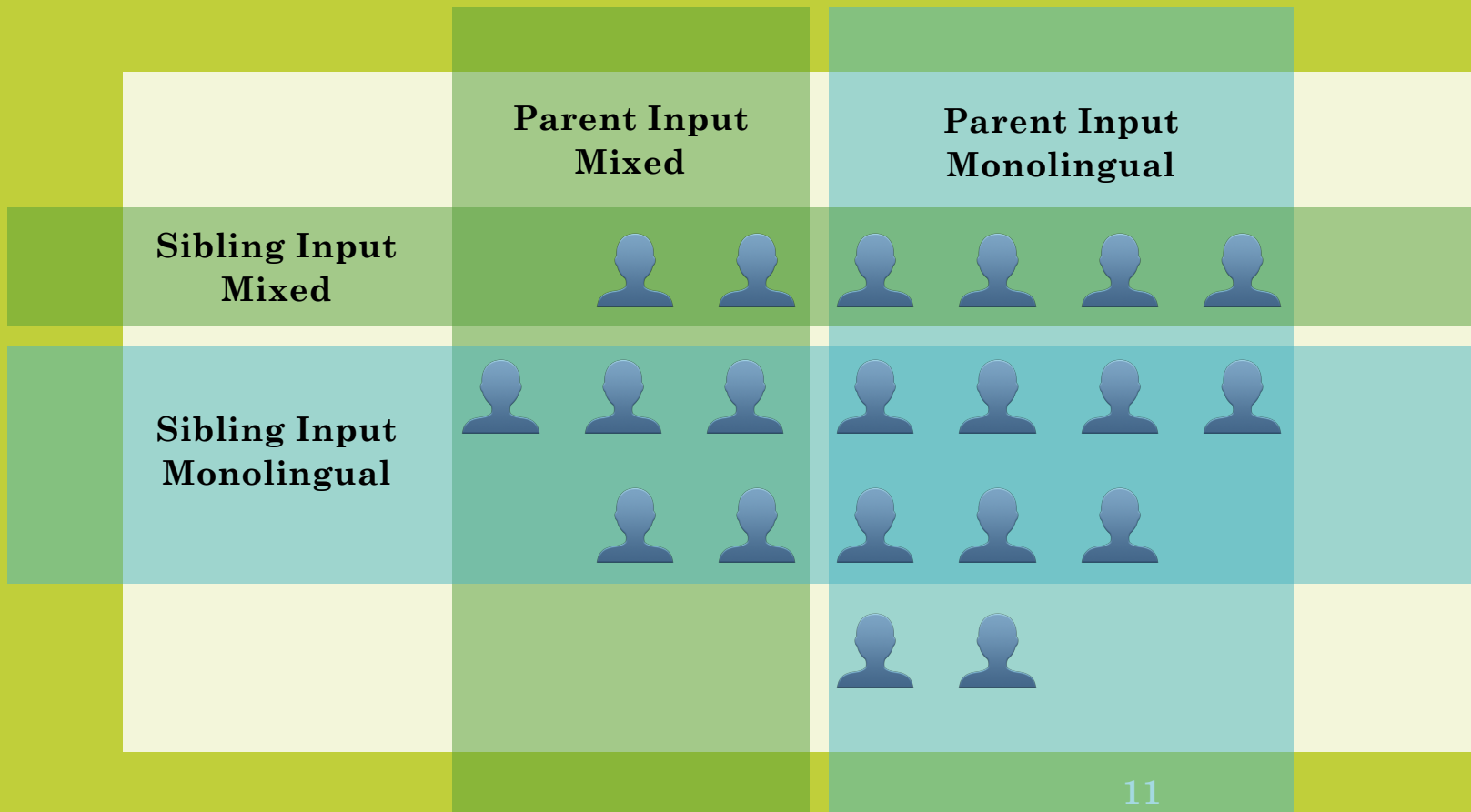
# Participants

## US Spanish-English bilinguals ( $N = 20$ )

- Learned both from a young age ( $M = 2.9$  years) (i.e., 2L1 bilinguals)
- 19-55 years old ( $M = 23.5$ )
- Born in the US ( $n = 17$ ) or arrived at a young age ( $M = 2.67$  years)
- More daily exposure to English ( $M = 68.8\%$ )
- Primarily of Mexican descent
  - Also Argentine, Colombian, Cuban, Dominican, Guatemalan, Peruvian and Spanish

## Grouped by Spanish proficiency level and language background

- *Diplomas del Español como Lengua Extranjera* (DELE) (Montrul & Slabakova, 2003)
- Self-reported data about mixed input from parents and/or siblings during childhood



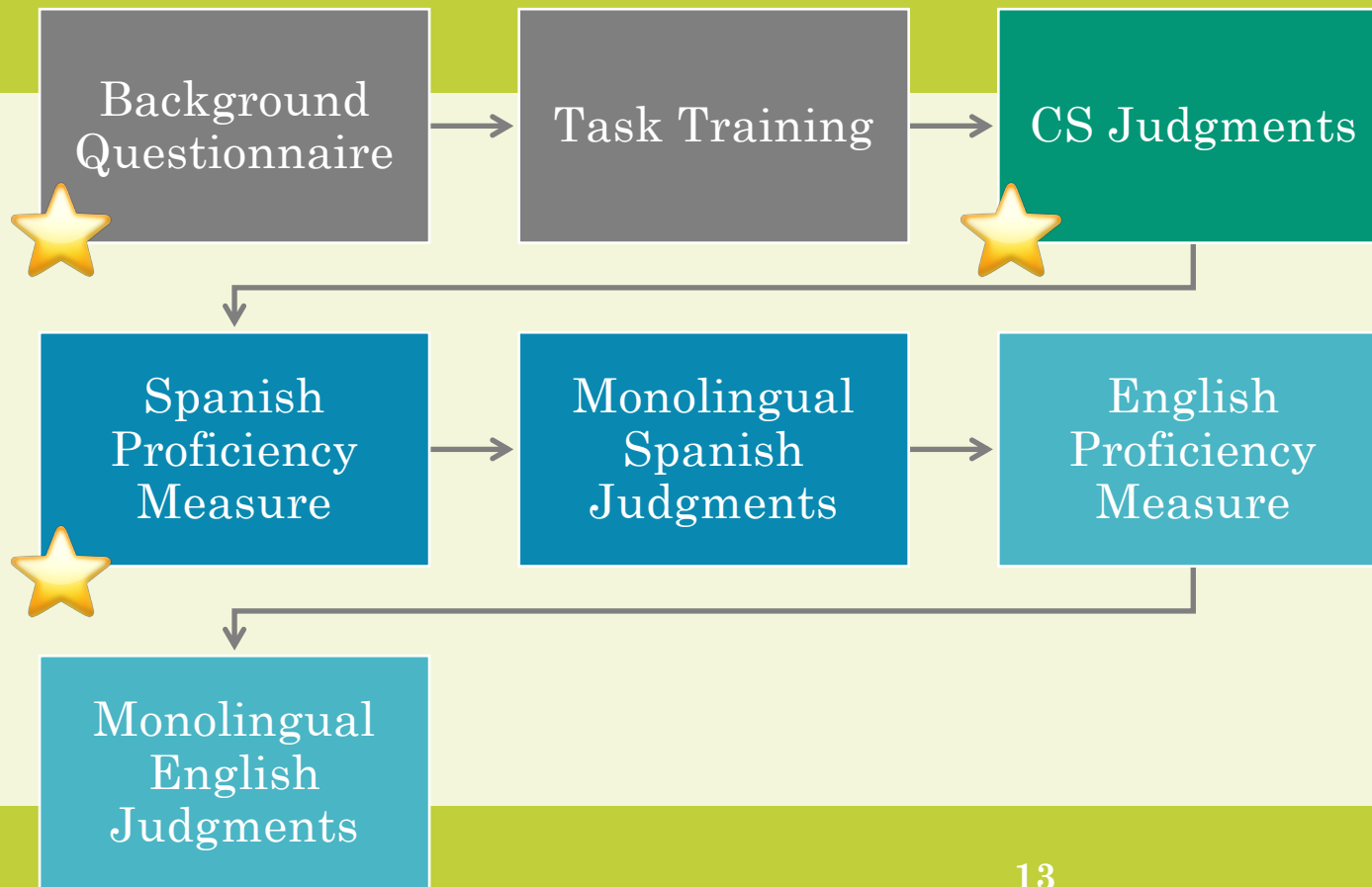
# Task

## Written acceptability judgment task (AJT)

- 7-point Likert scale (1 = lowest)
- Completed online via Qualtrics

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?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# Stimuli

## Spanish-English CS sentences ( $n = 24$ )

- Target structures:
  - Pronoun switches vs. lexical Determiner Phrase (DP) switches
  - Auxiliary switches vs. lexical verb switches
- All third person
- Balanced for:
  - Switch direction (Spanish-to-English vs. English-to-Spanish)
  - Number

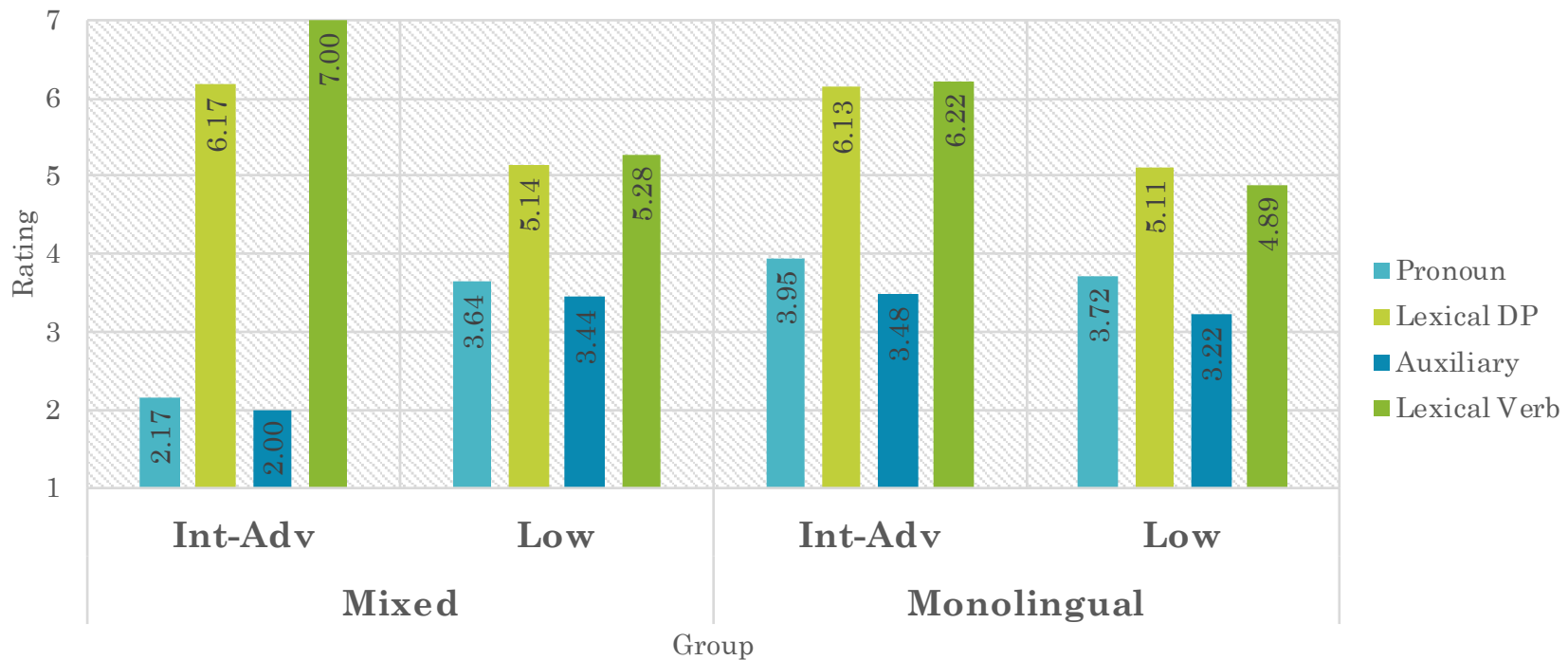
## Distractor/filler CS sentences ( $n = 30$ )

- (1) a. *Ese hombre* ordered a glass of water.  
'That guy ordered a glass of water.'
- b. \* *Él* ordered a glass of water.  
'He ordered a glass of water.'
- (2) a. *Su hermano* **trains** at the gym regularly.  
'His brother trains at the gym regularly.'
- b. \* *Su hermano* **ha trained** at the gym every day.  
'His brother **has trained** at the gym every day.'

# Mean Rating by Proficiency and Parent Input

4

results

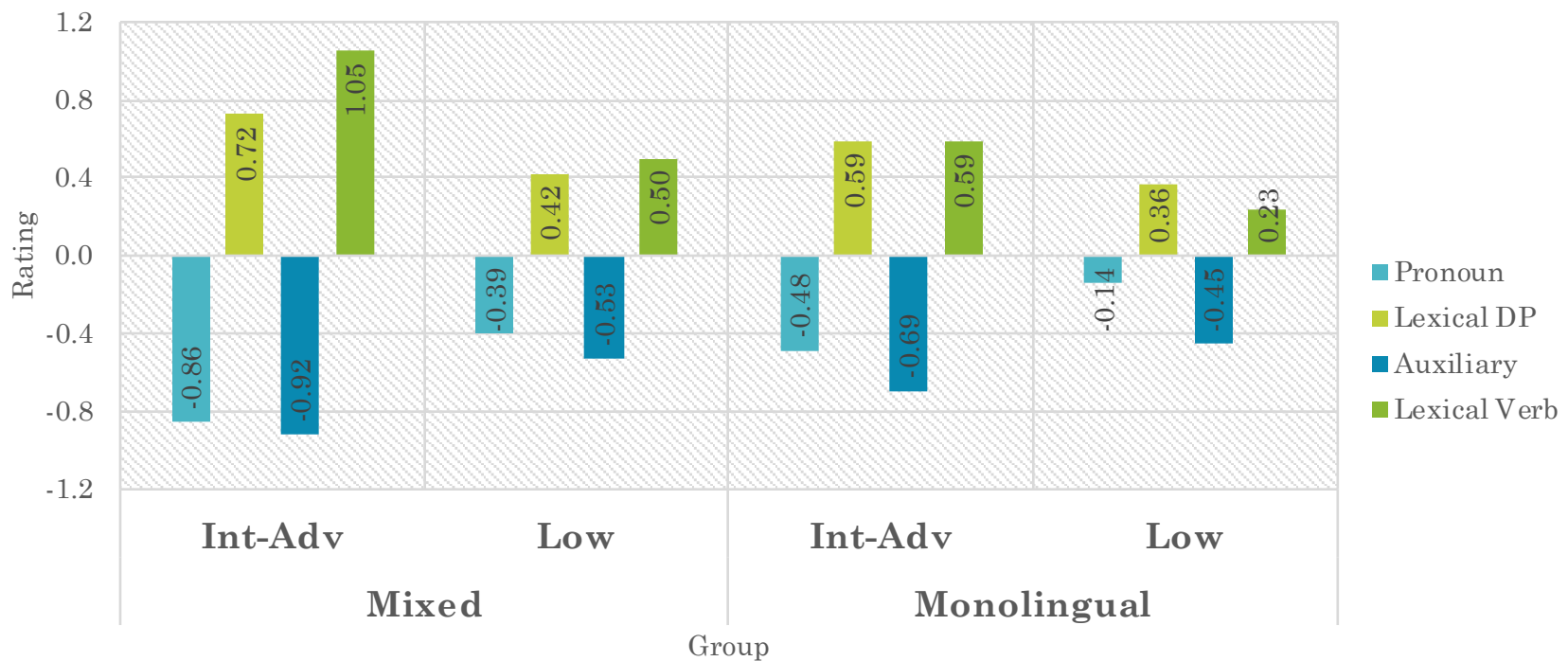




# Mean z-score by Proficiency and Parent Input

4

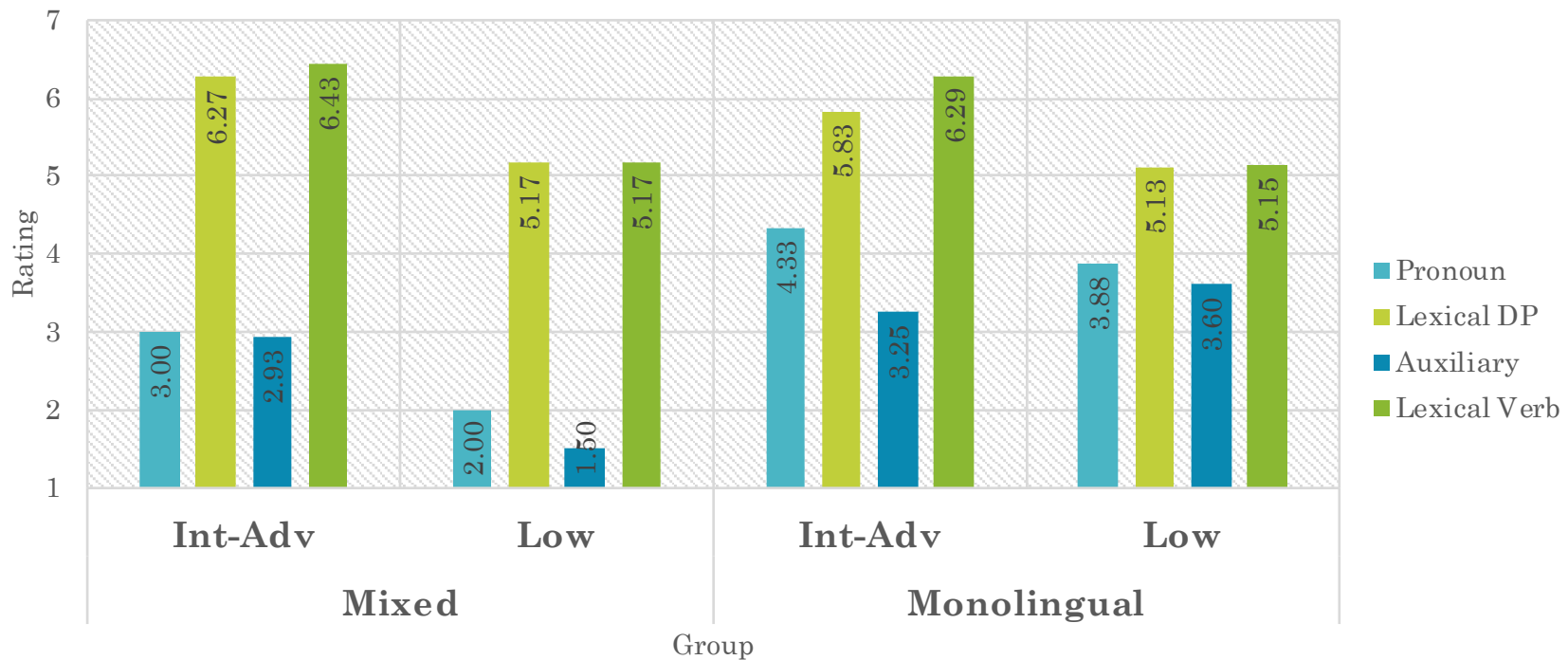
results



# Mean Rating by Proficiency and Sibling Input

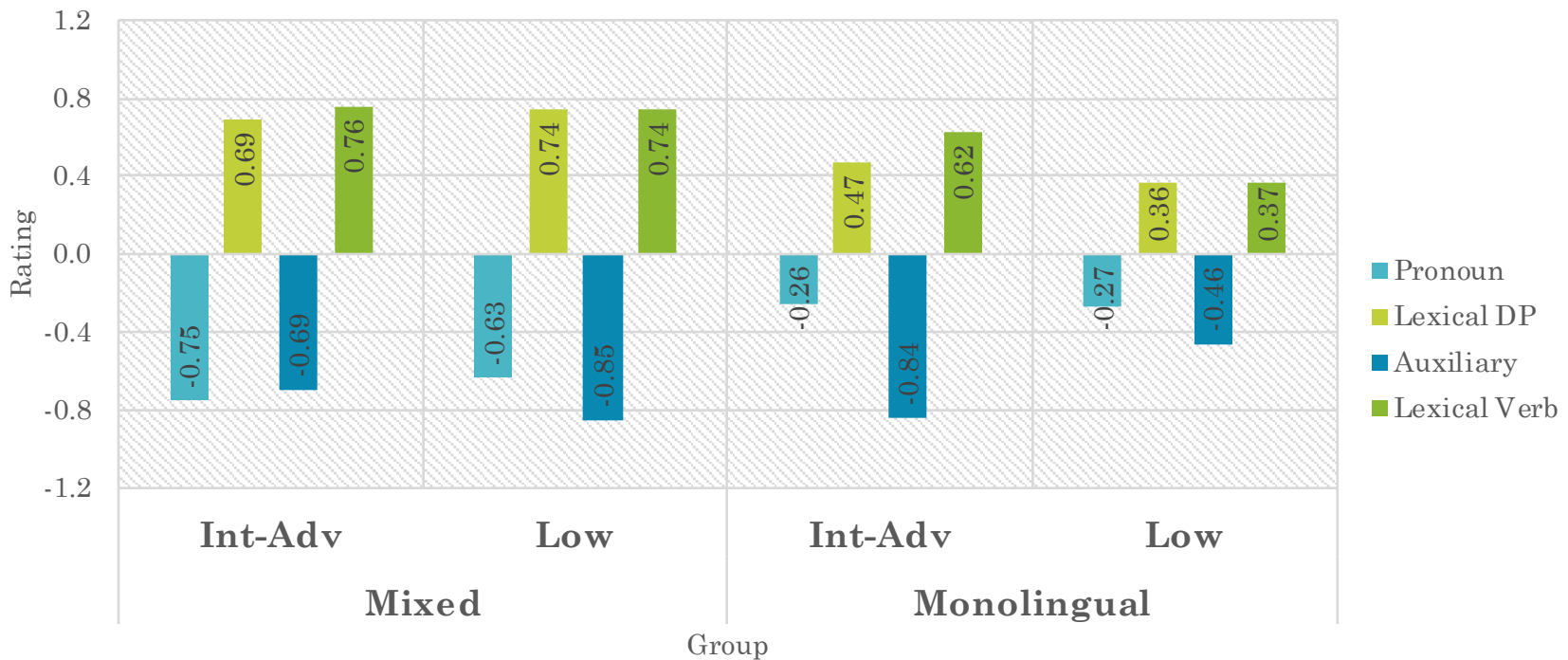
4

results



# Mean z-score by Proficiency and Sibling Input

4



results

# Statistical Analysis

## Linear regression models

- Separate models for each group (Parent Input, Sibling Input) and for each switch type (Pronoun/Lexical DP, Auxiliary/Lexical Verb)
- Scores on the AJT as the outcome variables, type of input received as the predictor variables and proficiency as a control variable

# Statistical Analysis

Reporting having received mixed input from parents did not predict responses on AJT for either switch type

Switch Type	Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	Fit
Pronoun / Lexical DP	Intercept	-0.32	1.25	--	0.80	$R^2 = 0.18$ $F(2,17) = 1.9$ $p = 0.18$
	Parent Input	0.57	0.72	0.20	0.44	
	Proficiency	0.07	0.03	0.49	0.07	

Switch Type	Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	Fit
Auxiliary / Lexical Verb	Intercept	-0.54	1.55	--	0.73	$R^2 = 0.20$ $F(2,17) = 2.13,$ $p = .15$
	Parent Input	0.73	0.90	0.20	0.43	
	Proficiency	0.09	0.04	0.51	0.06	

# Statistical Analysis

4

Mixed sibling input significantly predicted larger difference between pronoun and Lexical DP switches

- Participants who reported receiving mixed sibling input had an effect that was 1.63 points larger than those who did not when controlling for proficiency

Switch Type	Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	Fit
Pronoun / Lexical DP	Intercept	0.66	0.91	--	0.47	$R^2 = 0.44$ $F(2,15) = 5.82$ , $p = .001$
	Sibling Input	1.63	0.68	0.55	0.03*	
	Proficiency	0.02	0.03	.18	0.44	

Switch Type	Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>	Fit
Auxiliary / Lexical Verb	Intercept	0.05	1.27	--	0.97	$R^2 = 0.30$ $F(2,15) = 3.14$ , $p = 0.07$
	Sibling Input	0.64	0.90	0.17	0.51	
	Proficiency	0.07	0.04	0.43	0.11	

results

# Summary

All groups exhibited the expected grammatical distinctions

- Lexical DP switches > pronoun switches
- Lexical verb switches > auxiliary verb switches

Variability at the group level

- Pronoun switches more unacceptable (as compared to lexical DP switches) for mixed sibling input during childhood

Why didn't auxiliary switches (as compared to lexical verb switches) pattern the same?

- Perhaps due to saliency

**Research Question:** Does mixed language input during childhood affect CS intuitions?

- **RQ A:** Does mixed language input during childhood from *parents* affect CS intuitions?
- **RQ B:** Does mixed language input during childhood from *siblings* affect CS intuitions?





# Implications

## 2L1 bilingual linguistic competence

- All groups exhibited expected distinctions in grammaticality
- Suggests that source of input (and/or language proficiency) does not have a bearing on the development of certain CS restrictions

## So why are there differences?

- 2L1 bilingual linguistic performance
- Suggests that such factors do effect the actual use of CS
- Similar to attitudes toward CS (Badiola, Deglado, Sande & Stefanich, 2018)

# Looking Forward

Data collection on a follow-up study is currently underway

- More participants

Broader impact in that, minimally, such language background data should be reported in CS studies

Highlights the need for future research

- Investigate variables regarding bilingual participants' language background and use and how these variables relate to CS

# References

- Badiola, L., Delgado, R., Sande, A., & Stefanich, S. (2018). Code-switching attitudes and their effects on acceptability judgment tasks. *Linguistic Approaches to Bilingualism*, 8(1), 5-24.
- Bentahila, A., & Davies, E. E. (1983). The syntax of Arabic-French code-switching. *Lingua*, 59(4), 301-330.
- De Houwer, A. (1998). By way of introduction: Methods in studies of bilingual first language acquisition. *International Journal of Bilingualism*, 2(3), 249-263.
- De Houwer, A. (2007). Parental language input patterns and children's bilingual use. *Applied Psycholinguistics*, 28(3), 411-424.
- González-Vilbazo, K., Bartlett, L., Downey, S., Ebert, S., Heil, J., Hoot, B., . . . Ramos, S. E. (2013). Methodological considerations in code-switching research. *Studies in Hispanic and Lusophone Linguistics*, 6(1), 119-138.
- Grosjean, F. (1998). Studying bilinguals: Methodological and conceptual issues. *Bilingualism: Language and Cognition*, 1(2), 131-149.
- Gullberg, M., Indefrey, P., & Muysken, P. (2009). Research techniques for the study of code-switching. In B. E. Bullock & J. A. Toribio (Eds.), *The Cambridge handbook of linguistic code-switching* (pp. 21-39). Cambridge, UK: Cambridge University Press.
- Gumperz, J. J. (1982). *Discourse strategies* (Vol. 1). Cambridge, UK: Cambridge University Press.
- Lipski, J. (1978). Code-switching and the problem of bilingual competence. In M. Paradis (Ed.), *Aspects of bilingualism* (pp. 250-264). Columbia, SC: Hornbeam Press.
- Mackey, W. F. (1967). *Bilingualism as a world problem*. Montreal: Harvest House.
- MacSwan, J., & McAlister, K. T. (2015). Naturalistic and elicited data in grammatical studies of codeswitching. *Studies in Hispanic and Lusophone Linguistics*, 3(2), 521-532.
- Montrul, S., & Slabakova, R. (2003). Competence similarities between native and near-native speakers: An investigation of the preterite/imperfect contrast in Spanish. *Studies in Second Language Acquisition*, 25(3), 351-398.
- Paradis, J., Tremblay, A., & Crago, M. (2014). French-English bilingual children's sensitivity to child-level and language-level input factors in morphosyntactic acquisition. In T. Grüter & J. Paradis (Eds.), *Input and experience in bilingual development* (pp. 161-180). Philadelphia: John Benjamins.
- Pascual y Cabo, D., & Rothman, J. (2012). The (il) logical problem of heritage speaker bilingualism and incomplete acquisition. *Applied Linguistics*, 33(4), 450-455.
- Poplack, S. (1980). Sometimes I'll start a sentence in Spanish y termino en espanol: Toward a typology of code-switching. *Linguistics*, 18, 581-618.
- Romaine, S. (1995). *Bilingualism* (2nd ed.). Hoboken, NJ: Wiley-Blackwell.
- Timm, L. A. (1975). Spanish-English code-switching: El porque and how-not-to. *Romance Philology*, 28(4), 473-482.