

# Methods in code-switching research: The value of monolingual judgments



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## Introduction

- There are various methodological concerns specific to code-switching (CS) research
  - For example, best practices in data collection/analysis
- There is a need for monolingual data in CS experiments
  - Originally proposed by González-Vilbazo et al. (2013), but not experimentally tested
- Comparisons in the pattern of acceptability for monolingual and code-switched stimuli can reveal important information that would otherwise be obscured

## Methods

### Participants

- Spanish/English bilinguals ( $N = 18$ )
  - Born and raised in Chicago, Illinois, USA
  - Age of acquisition of Spanish/English:  $\leq 6$  years
  - English proficiency:  $\geq 30$  (out of 40)
  - Spanish proficiency:  $\geq 35$  (out of 50)
  - Age range: 19 - 31 years
  - Median age: 22.6 years
  - Self-reported code-switchers

### Experimental Stimuli

- Spoken code-switched sentences involving pronouns in varied contexts (Cardinaletti & Starke, 1999); half the time the pronoun was in English ( $N = 72$ ) and half the time the pronoun was in Spanish ( $N = 72$ )
  - Unaltered (1)
  - Modification (2)
  - Coordination (3)
  - Cleft (4)
  - Hanging topic (5)
  - Prosodic stress (6)

- (1) a. **He** duerme durante el día.  
b. **Él** *sleeps during the day.*  
'He sleeps during the day.'
- (2) a. **Him** with the black hair duerme durante el día.  
b. **Él** con el pelo negro *sleeps during the day.*  
'Him with the black hair sleeps during the day.'

- (3) a. **He** and Alex duermen durante el día.  
b. **Él** y Alberto *sleep during the day.*  
'He and Alex/Alberto sleep during the day.'
- (4) a. Emilio dijo que es **him** that *sleeps during the day.*  
b. *Evan said it's él* que duerme durante el día.  
'Emilio/Evan said it's him that sleeps during the day.'
- (5) a. *Jennifer said that him*, duerme durante el día.  
b. Juanita dijo que **él**, *he sleeps during the day.*  
'Jennifer/Juanita said that him, he sleeps during the day.'
- (6) a. *She sleeps at night, but HE* duerme durante el día.  
b. Ella duerme durante la noche, pero **Él** *sleeps during the day.*  
'She sleeps at night, but HE sleeps during the day.'

- Spoken monolingual sentences in both English ( $N = 72$ ) and Spanish ( $N = 72$ ); monolingual equivalents of the code-switched sentences
  - Unaltered (7)
  - Modification (8)
  - Coordination (9)
  - Cleft (10)
  - Hanging topic (11)
  - Prosodic stress (12)

- (7) a. **He** sleeps during the day.  
b. **Él** duerme durante el día.
- (8) a. **Him** with the black hair sleeps during the day.  
b. **Él** con el pelo negro duerme durante el día.
- (9) a. **He** and Alex sleep during the day.  
b. **Él** y Alberto duermen durante el día.
- (10) a. Evan said it's **him** that sleeps during the day.  
b. Emilio dijo que es **él** que duerme durante el día.
- (11) a. Jennifer said that **him**, he sleeps during the day.  
b. Juanita dijo que **él**, duerme durante el día.
- (12) a. She sleeps at night, but **HE** sleeps during the day.  
b. Ella duerme durante la noche, pero **Él** duerme durante el día.

### Experimental Procedure

- Completed entirely online (via Ibex)
  - Background questionnaire, task training and practice
  - Aural acceptability judgment with 7-point Likert scale, where 1 = 'unacceptable' and 7 = 'acceptable'
  - CS stimuli first; then monolingual stimuli
  - Blocks of stimuli broken up by proficiency measures in English (O'Neill, Cornelius, & Washburn, 1981) and Spanish (DELE) as well as other non-linguistic tasks

## Results

### Code-switching Judgments in Isolation

Table 1. Mean average rating of code-switched stimuli by context

Context	<i>M</i>	<i>SD</i>	<i>N</i>
Unaltered	2.96	2.46	144
Modified	5.19	2.39	144
Coordinated	5.98	1.81	144
Cleft	4.86	2.43	144
Hanging Topic	2.41	2.02	144
Prosodically Stressed	4.35	2.60	144

- Three tiers of acceptability
  - Coordinated pronouns: Highest acceptability ( $M = 5.98$ ); significantly higher than all other contexts ( $p$  values  $< .05$ )
  - Modified, cleft and prosodically-stressed pronouns: Slightly reduced acceptability ( $M = 4.91$ ); patterned together ( $p$  values  $> .05$ )
  - Unaltered and hanging-topic pronouns: Lowest acceptability ( $M = 2.68$ ); significantly lower than all other contexts ( $p$  values  $< .001$ )

- These results would suggest for Spanish/English CS:
  - Unaltered and hanging-topic pronouns are completely unacceptable
  - Coordinated pronouns are completely acceptable
  - All other contexts are marginally acceptable

### Code-switching and Monolingual Judgments

Table 2. Mean average rating of monolingual stimuli by context

Context	<i>M</i>	<i>SD</i>	<i>N</i>
Unaltered	6.91	0.61	144
Modified	4.59	2.61	144
Coordinated	6.51	1.22	144
Cleft	5.26	2.31	144
Hanging Topic	4.53	2.76	144
Prosodically Stressed	6.87	0.57	144

- Modified, coordinated, cleft and hanging-topic contexts: No significant differences between monolingual and code-switched stimuli ( $p$  values  $> .05$ )
  - These contexts do vary in terms of acceptability, but the differences between them are not unique to CS

- Prosodically-stressed pronouns: Monolingual stimuli acceptability ( $M = 6.87$ ) significantly higher than CS ( $p < .001$ )
  - Confirms that the marginal acceptability of prosodically-stressed pronouns is unique to CS

- Unaltered pronouns: Monolingual acceptability ( $M = 6.91$ ) significantly higher than CS ( $p < .001$ )
  - Confirms that the unacceptability of unaltered pronouns is unique to CS

- More fine-tuned insight for Spanish/English CS:
  - Confirmed: Unaltered pronouns unacceptable and coordinated pronouns acceptable
  - Clarification 1: Hanging-topic pronouns disliked regardless of whether they were code-switched or not
  - Clarification 2: Marginal acceptability of modified and cleft pronouns is not unique to CS
  - Clarification 3: Marginal acceptability of prosodically-stressed pronouns is unique to CS

- For more a more detailed analysis of pronouns in CS see Koronkiewicz (2014)

## Conclusions

- This is only one possible way to use monolingual judgments to better inform data analysis of CS judgments
  - Beneficial first step to separate what is unique to CS
  - Could look at each monolingual language individually
  - Could be used at the individual participant level for issues like dialectal differences
- By including a monolingual comparison, we can isolate the effects that are unique to CS
  - Absent this data, the results may be unreliable
- The current work has a direct impact on future studies
  - Provides evidence in support of monolingual data in experimental CS research

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