

Using more than just grammars during offline and online tasks by Spanish-English bilinguals



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Introduction

Observation: Spanish-English bilinguals evaluate grammatical code-switching expressions *as less grammatical* than their single language counterparts.

- Acceptability judgments are widely used for developing linguistic theory as well as norming experimental stimuli
- There is mixed evidence of processing differences between switching languages and maintaining a single language^[1]
- Misalignment between offline and online responses are likely due to other factors^[2]

Main Questions: What kinds of information are elicited from online, processing tasks and offline, judgment tasks? What factors may contribute to misalignment, if present?

Methods

- Spanish-English bilinguals were recruited through social media and Amazon Mechanical Turk
- Two surveys, using the same experimental stimuli but different experimental contexts, were distributed

Experiment 1:
Young Sylvia
• N_{participants} = 35
• N_{tokens} = 1088

Experiment 2:
Adult Sylvia
• N_{participants} = 37
• N_{tokens} = 1120

Experimental Design

Stimulus Type	Grammatical	Ungrammatical
English-Only	the turtle runs	the turtle run
English-Spanish	the turtle corre	the turtles corre
Spanish-Only	la tortuga corre	el tortuga corre
Spanish-English	la tortuga runs	las tortuga runs

Analyses

Reaction Times (Online Task)

- Reaction times were recorded for how long participants took to match an image with a given expression
- Reaction times were square root transformed before performing 4 x 2 ANOVAs

5-Point Likert Scale (Offline Task)

- Participants evaluated expressions for well-formedness from “Not well at all” (0) to “Extremely well” (4)
- 4 x 2 ANOVAs were performed on the numerical values

Forced Choice (Offline Task)

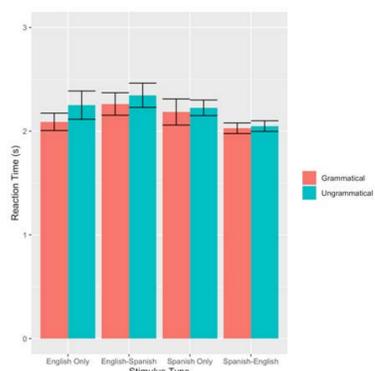
- Participants evaluated expressions for whether they were grammatical (1) or not grammatical (0)
- 4 x 2 ANOVAs were performed on the numerical values

Post-Hoc (Compare Experiment 1 & 2)

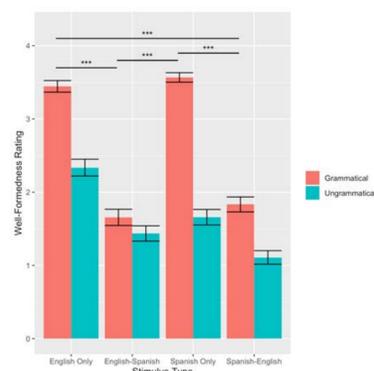
- 4 x 2 x 2 ANOVAs were performed on the numerical values to compare additional factor of study (experiments 1, 2)

Results

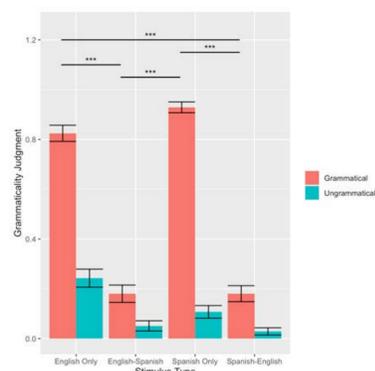
Reaction Times



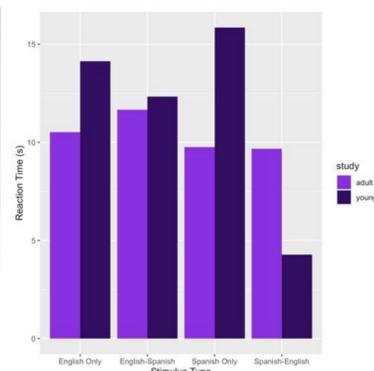
Likert Scale Ratings



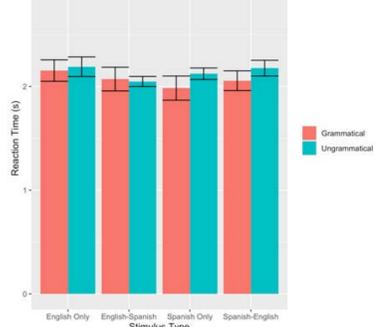
Forced Choice



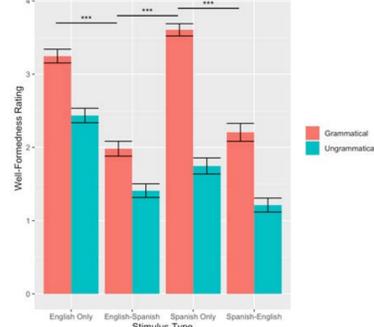
Experiment 1 vs. 2



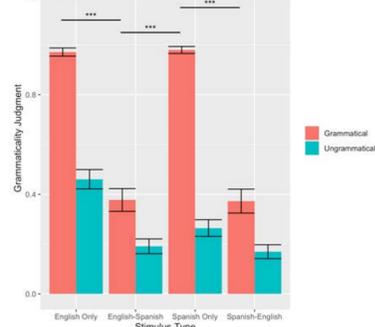
Reaction Times



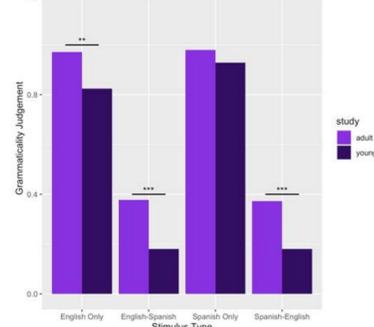
Likert Scale Ratings



Forced Choice



Experiment 1 vs. 2



Experiment 1: Young Sylvia



“Sylvia likes to practice both Spanish and English, but sometimes she says things wrong...”

Experiment 2: Adult Sylvia



“Sylvia is a Spanish-English bilingual, just like you...”

Discussion

- Online task was not affected by stimulus type nor grammaticality in either experiment
- Both offline tasks were affected by stimulus type and grammaticality in both experiments
- Participants in experiment 2 (Adult Sylvia) evaluated code-switching expressions more positively in the Forced Choice task than participants in experiment 1 (Young Sylvia)

Take Home Message

Spanish-English bilinguals utilize linguistic information other than grammatical knowledge when completing both online and offline tasks. Misalignment between these tasks suggest that Spanish-English bilinguals use different linguistic information between these tasks.

* = p<0.05, ** = p<0.01, *** = p<0.001

Selected References: ^[1]Bobb, S. C., & Wodniecka, Z. (2013). Language switching in picture naming: What asymmetric switch costs (do not) tell us about inhibition in bilingual speech planning. *Journal of Cognitive Psychology*, 25(5), 568-585. ^[2]Lewis, S., & Phillips, C. (2015). Aligning grammatical theories and language processing models. *Journal of Psycholinguistic Research*, 44, 27-46.

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