

# Effects of Implicit Word Retrieval in Bilinguals

Monica Martinez, Ziromara Machado, Daniela Ayon, Dr. Eve Higby, Dr. Judith Kroll  
University of California, Riverside

## Introduction

- This study explored how bilingual language production is affected by the organization of the bilingual lexicon (i.e., words stored in memory).
- We explored the effects of cognates - translations in two languages that have similar forms (e.g., *elephant* and *elefante* in English and Spanish).
- Bilinguals name cognates more quickly than non-cognates (Costa, Caramazza, & Sebastián-Gallés).
- However, naming pictures is slower immediately after naming a cognate than after naming a non-cognate (Broersma, Carter, & Acheson, 2016), and the size of the cognate facilitation effect is smaller (Acheson, Ganushchak, Christoffels, & Hagoort, 2012).
- The source of the cognate facilitation and its subsequent negative effect on the next trial is not well understood.
- Here we asked whether cognate effects arise during speech articulation or in retrieval from memory.

## Research Questions

- Does post-cognate slowing occur even when the cognate name was not produced?
- Does post-cognate slowing affect cognates and non-cognates similarly?

### Predictions:

- We expect to see slower naming of trials after cognates than non-cognates.
- We expect to see a smaller cognate facilitation effect, or perhaps even an interference effect, for cognates that are named after seeing (but not naming) another cognate.

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## Methods

### Participants

- 19 proficient Spanish-English bilinguals from UCR
- Average age: 21.5 years old, range 18-40
- Spanish was used on average 74% of the time at home before age 7; English was used 26% of the time.
- Average self-rated proficiency (scale of 1-10): 9.0 for English, 8.0 for Spanish (dominant in English)

### Design

- Blocked picture-naming design by language
- Color-naming trial followed by 2 object-naming trials (one critical trial and one filler trial)
- Four conditions (as pairs):
  - a) CC: cognate followed by cognate
  - b) CN: cognate followed by non-cognate
  - c) NC: non-cognate followed by cognate
  - d) NN: non-cognate followed by non-cognate
- 588 total trials, with 147 unique pictures presented two times in each language
- 192 critical trials

### Data Analysis

#### RQ1:

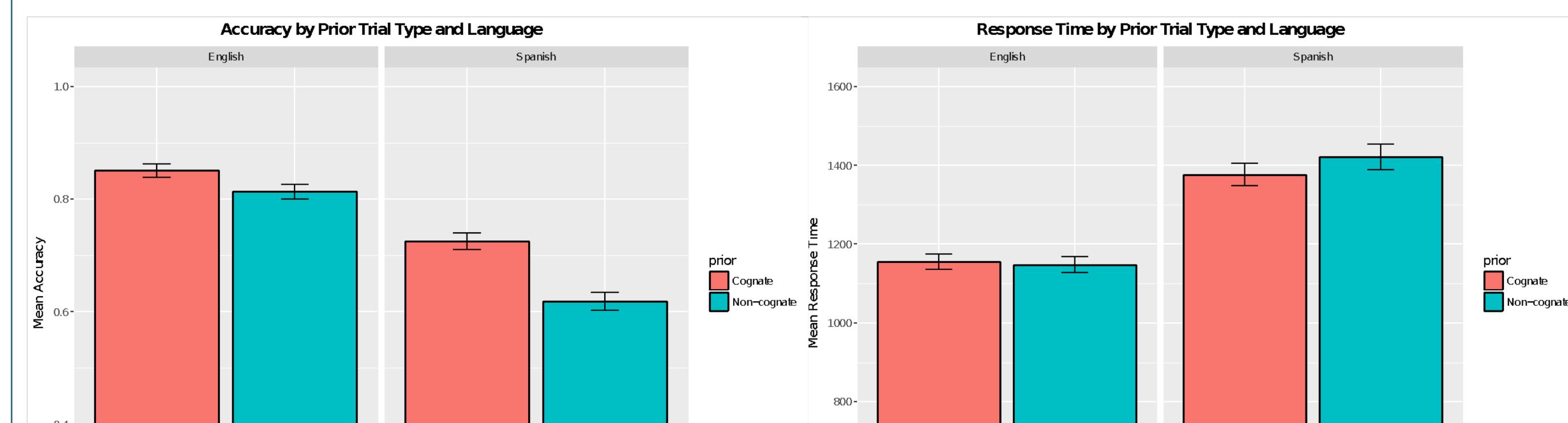
- Reaction times for object-naming trials in conditions A and B compared to conditions C and D

#### RQ2:

- Reaction times for object-naming trials in condition A versus B
- Reaction times for object-naming trials in condition C versus D

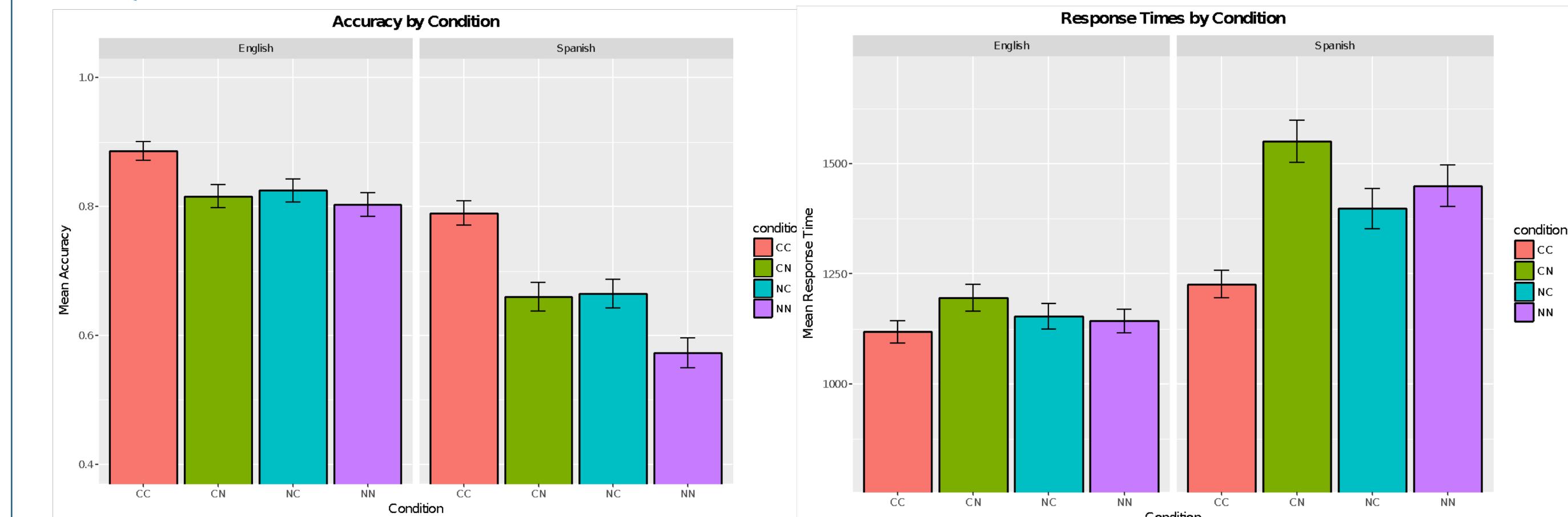
## Results

### RQ1



Unlike Broersma et al. (2016) we found no evidence of post-cognate slowing in either English or Spanish. Participants were just as fast naming pictures that came after cognates than non-cognates.

### RQ2



After cognate color-naming trials, participants were faster for cognates but slower for non-cognates, compared to after non-cognate color-naming trials.

Unlike Acheson et al. (2012) the cognate facilitation effect was larger after cognate trials than after non-cognate trials.

## Discussion

- We found post-cognate effects even when the participants did not actually say the cognate name.
- Seeing cognates produced either facilitation or interference, depending on whether they were naming a cognate or a non-cognate afterwards.
- There was no cognate facilitation or interference after having seen a non-cognate.
- These results suggest that cognate effects are localized to the word retrieval stage, rather than the production/articulation stage.
- The effects were similar in both languages, but more exaggerated in the non-dominant language.
- This study may indicate that cognates produce dual-language activation even when they are not named and that this has downstream effects.
- A follow-up study would be to increase the time between the two trials (inter-stimulus interval) to see if the effects weaken or disappear.

## Contact

mmart108@ucr.edu

## References

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