

Trends in Resolving Implicatures Through Theory of Mind Between English Monolingual Students and Spanish-English & Japanese-English Bilingual Students at CSU

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Background

Bilingual education in the United States has a relatively short history, only existing since the mid-19th century. Ohio was the first U.S. state to officially adopt a bilingual education law that allowed German-English teaching with parent permission. The country would then revert to English-only instruction by the mid-1920s but would begin again with the Bilingual Education Act of 1968 which provided sufficient federal funding to local school districts where most states enacted bilingual education acts themselves. However, today there remains a lack of any formal federal law that requires states to provide bilingual education. This is the current stage that is set for my research into the rates and trends of bilingualism and its advantages among students at Colorado State University (CSU).

Rethinking Schools, *History of Bilingual Education*

Project Topic and Definitions

My topic is examining how learning a second language affects one’s ability to comprehend a difficult concept in the field of linguistics. It could be said that the process the mind endures when switching between lexicons and grammar systems has yet to be researched to its full potential. My chosen concept centers around our ability to understand our listener’s perspective in order to solve for hidden meanings of a sentence.

My research will utilize the following linguistic concepts:

- L1:** is the speaker’s first and often strongest language
- L2:** is the speaker’s second language
- Implicatures:** an utterance, action, or sentence that conceals a hidden or implied meaning.
- Theory of Mind (ToM):** the ability to understand that other speakers have separate perspectives than oneself.

Byrd, Cognitive Benefits of Being Bilingual, 22
Yule, Pragmatics, 35

Objectives

The main objective of this research was to establish a baseline comparison of the rates and trends of monolingual vs. bilingual college students in terms of using Theory of Mind to resolve implicatures. All subjects at the time of participation were currently enrolled at Colorado State University and had varying levels of foreign language knowledge. This was **NOT** meant to be a linguistically conclusive research project, but it has the potential to be the backbone of a more extensive study in the future. That being said, this research was conducted with the utmost sincerity and passion, and I was genuinely interested in the results.

Methods

Five in-depth interviews were conducted to identify which topics surrounding implicatures needed to be further studied. This information was then used to develop highly vetted and specific questions for three separate surveys: One for English monolingual subjects, one for Spanish-English bilingual subjects, and one for Japanese-English bilingual subjects.

The following are individual links to the three interview templates:

English Monolingual Subject Interview Template:
o <https://docs.google.com/document/d/1-MfLoDNJuUluA0Nvsqnwc5Zl8Uk0JH5d/edit?usp=sharing&ouid=107722250274363014507&rtpof=true&sd=true>

Spanish-English Bilingual Subject Interview Template:
o <https://docs.google.com/document/d/1JutYRivNwXLdz5TtV5xdTtHSG-Yr3T3y/edit?usp=sharing&ouid=107722250274363014507&rtpof=true&sd=true>

Japanese-English Bilingual Subject Interview Template:
o <https://docs.google.com/document/d/1NCjkyVeZArJ6Ni3LWvBQ3ilzORcl5I07/edit?usp=sharing&ouid=107722250274363014507&rtpof=true&sd=true>

The following are individual links to the three surveys conducted:

Link to English Monolingualism Survey
o <https://forms.gle/vs5VxrxADrpDEZX66>

Link to Spanish-English Bilingualism Survey
o <https://forms.gle/668YUhB5GH1mC3gZ6>

Link to Japanese-English Bilingualism Survey
o <https://forms.gle/HEpyxfoqcqhQZRDA6>

Results/Discussion

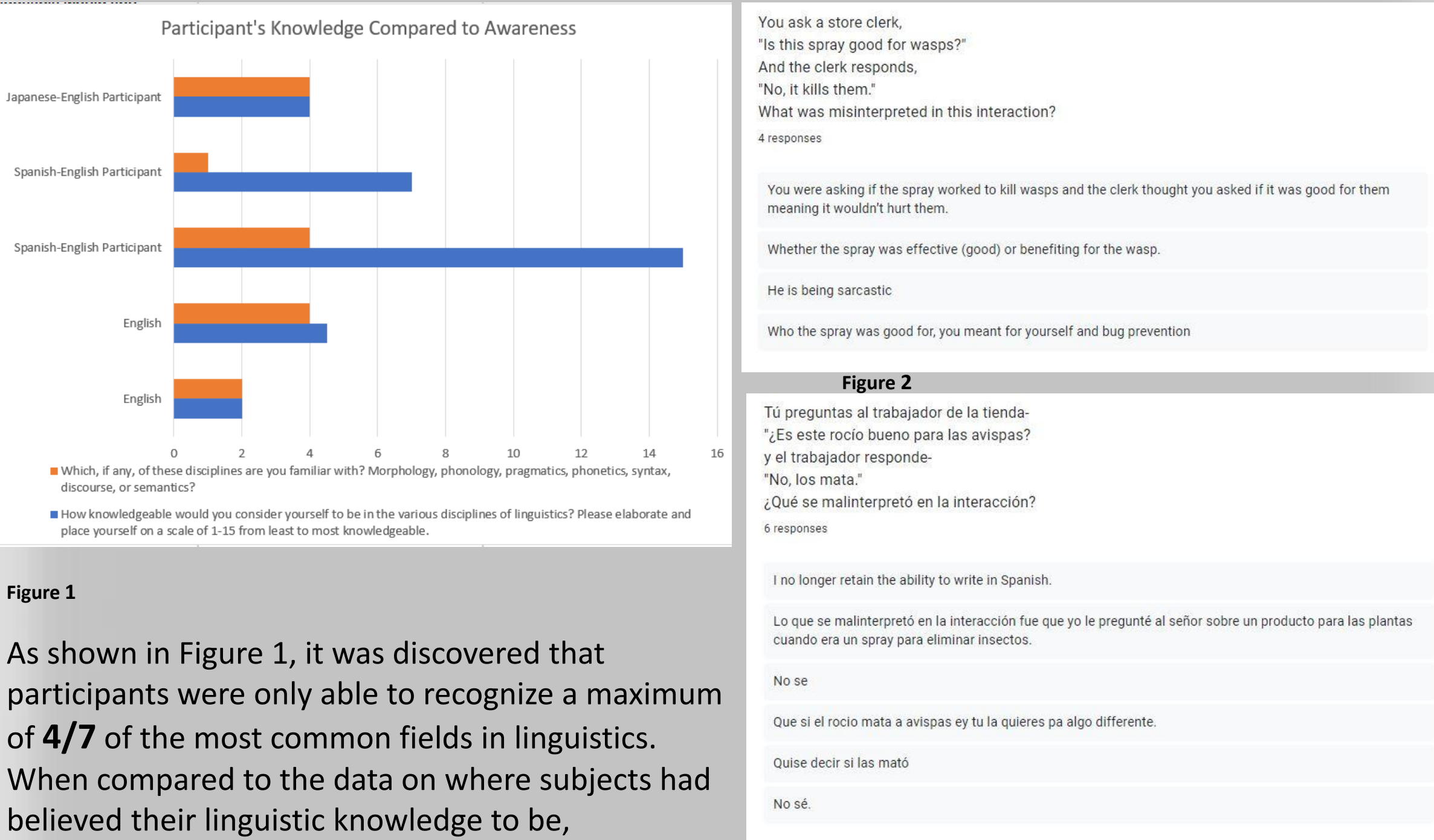
Results

RQ: To highlight any trends between attending monolingual and bilingual students at CSU concerning the utilization of Theory of Mind to resolve implicatures

Hypotheses:

- All subjects will unknowingly rate themselves higher in terms of linguistic knowledge compared to their true level
- Bilingual subjects will score higher on average than the control group of English monolinguals on questions testing for more complex implicatures

Findings:



the results show that the subjects rated themselves either **higher or equal to their true level of linguistic knowledge**. Furthermore, the data found in Figures 2 (English monolinguals) and 3 (Spanish-English bilinguals) demonstrates the following: On average, **more Spanish-English bilingual subjects** were able to understand that the store clerk **misunderstood the implicature behind “Is this spray good for wasps?”** compared to English monolingual subjects. The monolinguals remained on the surface of understanding the implicature while many bilingual subjects were able to elaborate and give more advanced responses. This trend was found in multiple questions and provides evidence for bilingual subjects having a higher understanding of implicatures through Theory of Mind capabilities.

Discussion

Throughout all the interviews and surveys, the majority of questions were easily understood and provided responses that were in line with the topics of their respective problems. The most challenging aspect was the short amount of time to gather data, as more than one semester would have yielded a more comprehensive result. This study was restricted by my limited access to qualified subjects, time allotted, and number of group members. The most substantial findings came from examining individual responses to long answer questions.

Overall, the results align with my hypotheses and demonstrate that on average bilingual subjects score higher on questions testing for more complex implicatures compared to monolinguals. Furthermore, on average, student subjects rated themselves to have a higher or equal level of linguistic knowledge compared to their true level.

Acknowledgments/Future Directions

This research project could not have been completed without help from the wonderful professors in CSU’s Languages, Literatures and Cultures department. Notably, Chisato Nii Steele and Carmen Martin Quijada were both extremely supportive and gave my surveys much needed exposure. Likewise, I would like to thank any friends or family that I pestered for opinions on grammatical structures in my survey questions. Their suggestions were vital in making sure my wording was as natural as possible.

I plan to use the data collected in this project to direct my future graduate research studies at CSU. There is much to be explored when it comes to the cognitive benefits received from learning a second language. Perhaps the next step could be to conduct additional in-depth interviews in order to accumulate a more comprehensive data set. Likewise, it would be beneficial to include more free response questions to further expand on any potential insights.

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