



Ambiguous Relative Clauses in Spanish-English Codeswitching Across Two Bilingual Communities

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Nicky Croom
James (Matt) Anderson



Abstract

Every language has its own distinct sentence structure in which a verb is assigned to a particular subject depending on its placement within a sentence. For example, in the sentence, "I do not like the boy who demanded an apology's teacher," it is clear the boy demands the apology, not the teacher. However, some sentences contain ambiguous verb allocations; These are called ambiguous relative clauses: "I do not like the teacher of the boy who demanded an apology." In this sentence, it is unclear as to whether it is the teacher or the boy who demands the apology. In the English language, people will generally conclude that the verb is applied to the boy rather than to the teacher. However, in other languages such as Spanish, this same sentence would typically be interpreted as the teacher demanding an apology, not the boy. While there are studies that explore subject to verb assignments in both English and Spanish, this research has only studied bilinguals in unilingual contexts. This dissertation project examines how Spanish-English bilinguals' code-switching affects verb allocations. More specifically, the project investigates this phenomenon in Tallahassee, Florida, and San Juan, Puerto Rico.

Introduction

Relative clauses, sometimes called "adjective clauses," are sentences used to give more information about a noun. These sentences contain a relative pronoun, a word that is used in place of the subject or noun (University of North Carolina at Chapel Hill). These pronouns include "who," "whom," "whose," "that," and "which." For instance, in the sentence "I want food that tastes good," the relative pronoun "that" is used to identify the noun "food" as being good. However, sometimes situations arise where it is unclear which subject or noun the relative pronoun is referring to. These sentences are called "ambiguous relative clauses" (Goal, Guzzo, and White). Sometimes the content of the sentence itself will cause people to easily identify the subject/object being referred to, thus removing ambiguity. For example, in the sentence "I read the book of the child that was in Spanish," the relative pronoun is clearly being used to modify the noun "book," which is called making a high attachment. Conversely, if the sentence is changed to "I read the book of the child that was sleeping in bed," the relative pronoun now applies to the child, not the book, called making a low attachment. However, sometimes the pragmatic content of the sentence does not resolve the ambiguity: "I read the book of the child that was in the garage." In the former sentence, it is unclear as to whether it is the book or the child that is in the garage. Research has shown that native speakers of different languages have attachment tendencies that vary based on the language at hand. For example, English speakers tend to have modest low attachment preferences (modification of the second subject/noun) while Spanish speakers have strong high attachment preferences (modification of the first subject/noun) (Goal, Guzzo, and White).

In bilingual communities, people smoothly use two languages within a conversation with fluency. When someone switches between two languages in a sentence or conversation, it is called "code-switching" (Centeno). This is not to be confused with borrowing which, when used between English and Spanish, is known as Spanglish; While Spanglish is when a Spanish and English word are combined to create a new word that technically does not exist in either language, code-switching is when both Spanish and English are used in a phrase (Centeno). This study explores if and how English-Spanish code-switching affects the interpretation of ambiguous relative clauses in two bilingual communities: Tallahassee, Florida and San Juan, Puerto Rico.

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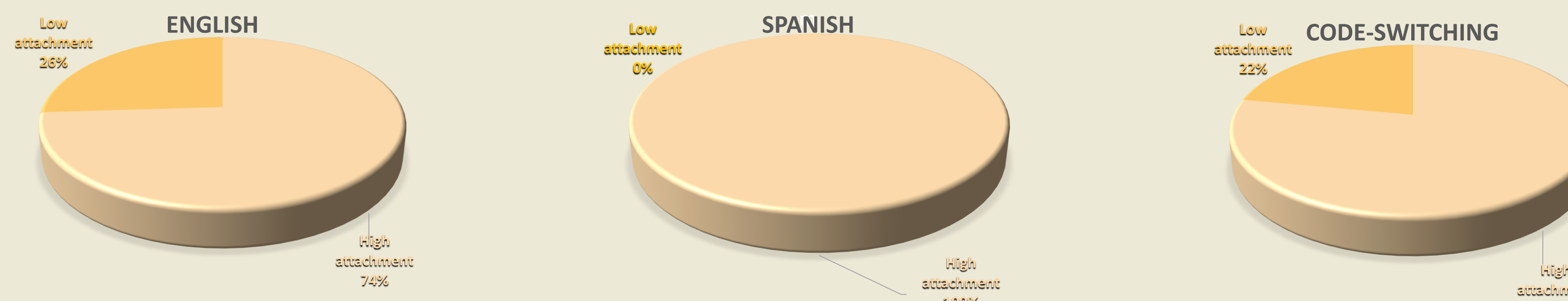
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Discussion

Spanish-English bilingualism varies in different communities. In Florida, since English is the majority language of the United States, bilingual Spanish speakers generally learn the language through their families. These people are considered heritage speakers who learned the language through direct contact with others. On the other hand, in Puerto Rico, English proficiency is acquired in a more formal setting (Perez Casas); Learning English is required in schools, during which people speak almost exclusively Spanish outside of class. Therefore, Floridian bilinguals often have an English dominance while Puerto Rican bilinguals are more likely to have a Spanish dominance.

This study explores if and how English-Spanish code-switching affects the interpretation of ambiguous relative clauses. Though existing research explores attachment preferences for English and Spanish speakers, this information is derived solely from unilingual contexts where languages remain separate in research on bilinguals. Thus, this investigation examines attachment preference tendencies during code-switching engagement. We investigate if different preferences are made when code-switching from English to Spanish versus Spanish to English, along with whether or not language dominance in different communities (Florida and Puerto Rico) affects attachment preferences.

In October of 2021, a survey was sent to people outside of the areas where the testing is taking place, specifically English/Spanish bilinguals in Atlanta. This data will be compared to that of bilinguals in Tallahassee and San Juan to test for consistency. In sentences containing ambiguous relative clauses in English, there was a moderate high-attachment preference (74% high). These results may differ from past studies that found a slight low-attachment preference in English students because of the influence of the participants' Spanish fluency; Since English speakers already only have a slight low-attachment preference and since the participants regularly speak both English and Spanish, their preferences are likely impacted by the strong high attachment preferences of Spanish speakers. On the other hand, in sentences containing ambiguous relative clauses in Spanish, there was a consistent high attachment preference (100% high). Finally, unsurprisingly, in sentences involving code-switching participants displayed a strong high attachment preference (78% high).



Before the final testing commences, a survey will be sent out to bilinguals in the Tallahassee community that test for the same information as the final survey in a simplified manner. This survey is being used to collect preliminary data to confirm that what we are looking for is there— If there is no noticeable evidence, there is nothing to find in the final experiment.

Once the preliminary data is attained, prospective participants will take a bilingual code-switching profile survey to assess whether or not they qualify for the study. This survey collects information about participants' code-switching: Their history with language switching, use of language switching, ease of language switching, and attitudes towards language switching. This information will also be used after the participants complete the final survey to examine if and how differences in attachment preferences are correlated to participants' code-switching; History of language switching can display language dominance, use of language switching can determine how much experience a person has with code-switching, and attitudes towards language switching can affect a person's ability to code-switch due to its importance to them and perception of the ability to code-switch.

Before taking the final survey, each participant takes an executive function test. This test audits participants' cognitive flexibility, control over oneself, and working memory via a running span task. Through the data collected, we can explore if differences in final data results are complementary to executive function skills.

The final survey combines audio and visuals to present participants with ambiguous and definite relative clauses and prompt them to select the subject or noun being referred to by the relative pronoun. These stimuli not only collect data on whether the participant has high or low attachment preferences but also the process that they go through to come to their conclusions. As participants' eyes fixate on different parts of the screen, their eye location is recorded. Thus, the time taken, where participants look when the subjects/nouns are voiced, and whether they choose high or low attachments are all recorded in each trial.

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Methods

This Qualtrics survey is intended for bilingual English/Spanish speakers outside of the areas where the testing is taking place. The survey is split into three sections: Code-switching, English, and Spanish. In each section, participants are provided with a variety of sentences, some containing ambiguous relative clauses and others containing definite relative clauses.

Survey to Other Communities

Like in the previous survey, this Qualtrics questionnaire is separated into three sections: English, Spanish, and code-switching. Participants listen to voiced sentences containing a mixture of ambiguous and definite relative clauses and must choose the subject or noun they believe the relative pronouns is referring to. These recordings were voiced by a bilingual speaker and the voice files were separated through Audacity. Each question is timed so that we may review the time each participant takes to complete each task. The survey itself is very similar to the final experiment, only without the visuals.

Preliminary Data Survey

This task has participants listen to increasingly long strings of letters and recall the last six letters voiced. To create the test, I recorded myself reading out each string of letters and cut each audio clip using Audacity. The audio was then added to a PsychoPy experiment that allows participants to view a list of potential letters and type out their response after each audio is played.

Executive Function Test

The final survey is to be conducted in the Eye-Tracking and Language Processing Lab. The test presents participants with sentences containing a combination of ambiguous and definite relative clauses in English, Spanish, and involving code-switching between the two. These sentences are voiced with images of each choice of subject on either side of a screen. Participants will be seated in front of a webcam eye-tracker to track their location of sight as the experiment progresses.

Eye-Tracking Test

Where the eyes fixate when a subject is voiced

Time it takes to make a choice

Whether the attachment preference is high or low

Data Analysis