The Influence of English on Spanish Sentence Comprehension among Early Spanish-English Bilinguals

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Introduction

Does knowledge of English influence Spanish sentence comprehension in early Spanish-English bilinguals?

- Causative sentences are present in English but not in Spanish.
- High proficiency Portuguese-English bilinguals comprehended causative constructions (ungrammatical in Portuguese but grammatical in English) as fast as English speakers (Fernandez and Souza, 2016).
- The aim of the current study was to determine whether early Spanish-English bilinguals process causative sentences in Spanish (which are technically ungrammatical) by using their knowledge of English grammar.

Do early Spanish-English bilinguals show ERP components for grammatical or semantic violation for causative constructions in Spanish?

- ERP Components are present when the brain tries to make sense of language.
- Ungrammatical sentences elicit syntactic and semantic revision in language processing.
- Causative constructions are ungrammatical in English and Spanish, these sentences function as control sentences, as well as transitive constructions which are grammatical in both English and Spanish.
- A Left Anterior Negativity (LAN) component is a fast, automatic syntactic analysis and initial detection of a syntactic error (Friederici et al., 2003).
- A N400 component is evident when a syntactic mismatch or anomaly during linguistic analysis occurs or when reanalysis of an initial syntactic structure is needed: an attempt to fix an error.
- An N400 component is observed when semantic anomalies are present.

Methods

Participants

<table>
<thead>
<tr>
<th>Early Spanish-English Bilinguals</th>
<th>Age</th>
<th>Age of Acquisition</th>
<th>Language Proficiency (self rating)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 8</td>
<td>Mean 23.25</td>
<td>Spanish 0.2</td>
<td>Spanish: Mean=6.2 SD=0.06</td>
</tr>
<tr>
<td>SD 4.03</td>
<td>English 2.8</td>
<td>English: Mean=6.4 SD=0.5</td>
<td></td>
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</tbody>
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Stimuli

- Causative: Spanish: Los maestros trocaron a los niños alrededor del patio durante el recreo.
- Pseudo-Causative: Spanish: Los maestros sudaron a los niños alrededor del patio durante el recreo.
- Transitive: Spanish: Los maestros persiguieron a los niños alrededor del patio por diversión.

ERP Components are present when the brain tries to make sense. Findings

- P600 component is evident when a syntactic mismatch or anomaly during linguistic analysis occurs or when reanalysis of an initial syntactic structure is needed: an attempt to fix an error.
- An N400 component is observed when semantic anomalies are present.

Results

Smoothed ERP Graphs

- Early Spanish-English bilinguals showed several ERP components.
- An N400 and LAN were observed while participants were listening to the pseudo-causative sentences while only a LAN was seen for causative sentences.
- At the direct object article in the causative construction, there is evidence of fast grammatical analysis (LAN). At the direct object noun we also found a fast detection of grammatical violation.
- In the pseudo-causative construction at the direct object article we found both LAN and N400. These suggest that there is a fast analysis of a grammatical error followed by detection of a semantic error. At the direct object noun for pseudo-causative construction we did not observe any ERP components.
- These findings suggest that bilinguals are using L2 syntax to process syntactic information in L1. Knowledge of English in early Spanish-English bilinguals influences Spanish sentence comprehension.

References & Acknowledgments


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