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# Processing Ambiguous Structures by Bilingual, Spanish, and English Readers

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## Introduction

Second language researchers are concerned with understanding how bilinguals acquire, process and use their second language (L2). The present study examined the processing strategies used by bilingual speakers (L1: Spanish; L2 English) when reading structurally ambiguous sentences in their L2, which either are or are not structurally ambiguous in their L1, compared to unilingual readers of either language. Through the use of on-line and comprehension methodologies it was possible to look at whether there was transfer from the L1 in the processing mechanism, or if processing strategies were like those used by native speakers of the L2.

## Methodology

Three groups of 10 undergraduate university students--unilingual Spanish readers, unilingual English readers, and bilingual (L2) readers-- read structurally ambiguous target sentences. The ambiguity was found in the final PP which could either be high-attached to the Verb, or low-attached to the second NP (e.g., The actor examined the kid from the museum). Sentences were followed by a comprehension task, in which the subject had to paraphrase the sentence beginning with the NP presented on the screen. For the target sentences, that NP was the ambiguous object of the preposition. Sentences were presented via computer and reading times (RTs) for each word were recorded.

## Results and Discussion

The on-line results showed that in general, the RTs for the bilinguals were similar to the Spanish readers. Both groups showed significant linear and cubic trends in RTs across the sentence, whereas the English group showed significant linear and quadratic trends. There was no significant difference between the bilingual and Spanish groups, but the differences between the English and bilingual groups and between the English and Spanish groups were significant for each of the content words. There was a significant end of clause (EOC) effect for the English readers who spent more time at the EOC marker than the L2 or Spanish readers. However, the comprehension results for the bilinguals were similar to those of the English group. Specifically, the

English and L2 subjects made significantly fewer VP attachments than did the Spanish subjects.

Results are discussed in terms of models of sentence comprehension, such as the garden-path (Fodor & Frazier, 1980; Frazier, 1987) and its recent refinement Construal Theory (Frazier & Clifton, 1996), and the Competition Model (CM) (Bates & MacWhinney, 1987). Construal predicts no differences in attachment between groups, since the type of structure used in this study is subject not to construal, but to universal processing principles. On the other hand, since the CM is more a model of semantic interpretation than of processing, it cannot make predictions about L2 processing. In contrast, we proposed the Signalling Hypothesis (SH) (Hoover, 1992; Hoover & Berdugo, 1996) as the best explanation for these results. The SH predicts that the surface form of a language signals to the speaker of that language the underlying syntactic functions of the words. For the bilingual and English readers in the present study, this means paying more attention and relying more on English word order, with the result that attachment preferences rely more on adjacency.

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