

## The role of structural and semantic factors in the coreference preferences of interpersonal verbs

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One of the many factors that have been shown to affect coreference in a text is implicit causality (IC). Studies have shown that this verbal semantic bias directs inferences about the cause of an event and modulates coreference preferences (Garvey et al., 1974; Bott & Solstad, 2014; Contemori & Dussias, 2019). For example, in “*Thomas bored Stephanie because...*” the verb *to bore* suggests that something about Thomas caused Stephanie’s boredom (directing attention to the NP1 of an active sentence), whereas in “*Thomas treasured Stephanie because...*”, the verb *to treasure* implies that there was something about Stephanie that caused Thomas’ appreciation (directing attention to the NP2 of an active sentence). This semantic bias is in competition with well-known structural cues that affect coreference, namely, subjecthood/first mention (Crawley et al. 1990; Järvikivi et al., 2005). However, it is not clear the extent to which the two cues determine coreference in sentences like above.

To investigate this, 47 English and 30 Spanish speakers participated in a sentence continuation task. To tease IC bias and subjecthood apart, we used active (*Thomas bored Stephanie because...*) and passive sentences (*Stephanie was bored by Thomas because...*), since the latter reverse the mapping between subjecthood and semantic roles. In English disambiguation was given by gender, while in Spanish we used number (*La maestra aburrió a las alumnas porque... ‘The teacher (sg-female) bored the students (pl-female) because...’*). Our predictions were as follows: if subjecthood affects the magnitude of the effect of the IC bias, we would expect more continuations referring to the biased argument when it is encoded as the subject of the sentence rather than as a non-subject.

In general, our participants preferred to complete the sentences with pronominal forms (Spanish 96.1% null and overt pronouns, English 95.8% overt pronouns) and following the IC biased argument, regardless of voice. Generalized Linear-Mixed Models showed that with NP1 verbs (i.e., verbs that favour NP1 in active sentences) there was tendency to prefer IC biased continuations more when the causer of the event was encoded as the by-phrase in passives than when it was the subject in actives, but the difference was not significant (English: 74.4% vs. 69%,  $p = 0.1$ ; Spanish: 59.3% vs. 58.3%,  $p = 0.8$ ). With NP2 verbs (i.e., verbs that favour NP2 in active sentences), however, participants preferred IC biased continuations significantly more frequently when the causer was realized as an object in the actives rather than as a subject in the passives (English: 66.5% vs. 79.1%  $p < 0.001$ ; Spanish: 65.7% vs. 73%,  $p = 0.031$ ).

Our study shows that the magnitude of the implicit causality effect differs in active and passive structures but not in the expected direction. That is, our participants preferred the semantically biased argument relatively more often when it was encoded as a non-subject than when it was encoded as a subject, but only for NP2 verbs. We hypothesize that this might be related to changes in information structure: we found more IC congruent continuations when the cause was a part of the focus of the previous sentence, and it is often the case that the focus of one sentence becomes the topic of the next one (Goldberg, 2006).

## References

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