**The Effects of Anaphor Form and Antecedent Type on Anaphoric Processing**

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**BACKGROUND**

The informativity of Anaphors

- Anaphors differ in terms of how much information they provide to help the listener in identifying the antecedent (e.g., Ariel, 1990; 1991; Givón, 1983; Murphy, 1985).

Speakers tend to use more informative anaphors when the antecedent is difficult to identify and less informative anaphors when the antecedent is easy to identify.

**Null vs. Overt Anaphors**

- Anaphors can be phonologically overt or phonologically null (i.e., unpronounced).
- Null anaphors are less informative than overt anaphors because they provide no information about the antecedent.
- During language processing, detecting a null anaphor is more difficult than detecting an overt anaphor because the presence of a null anaphor must be inferred from the surrounding context (e.g., Callahan, 2008).

**Previous ERP Studies of Null Anaphors**

- An ERP study (Kaam et al., 2004) of gapfill constructions involving null verb anaphors (e.g., form tool) in the blanks and fill the elephant) found a right anterior positivity between 300 and 500ms post-onset of the word following the null anaphor that was interpreted as reflecting the retrieval of the antecedent.
- Furthermore, an ERP study (Callahan et al., 2007) directly comparing null and overt VP anaphors (e.g., did you do vs. did it do) found a right anterior positivity between 300 and 500ms post-onset of the word following the null anaphor relative to that following the overt VP anaphor (see figure below), suggesting that this retrieval process is more costly for null anaphors.

**RESULTS**

**Frequency of Antecedent**

- ANTHETIC REGION (VP1)
- ANAPHOR/FINAL REGION

**ANAPHOR/FINAL REGION**

- Contrary to a previous study (van Gompel & Majd, 2004) that reported shorter first-fixation and first-pass reading times in the region following an anaphor with a low-frequency antecedent, no frequency effect was observed in the anaphor region or the final region.
- The failure to observe a similar effect may be due to the fact that the relevant regions were much larger in this study than in the previous study. Analyses using smaller regions are currently underway.

**ANAPHOR REGION**

- Longer first-pass and total reading times were observed for the anaphor region when it contained an overt rather than a null VP anaphor; however, raw reading times for this region are confounded by length differences between the null and overt VP conditions.
- Moreover, once the length confound was removed by performing the same analyses on residual reading times, the same pattern of longer first-pass and total reading times for the Overt VP condition was observed.
- We see this finding to evidence from a separate naturalness rating pre-test that suggested that Overt VP anaphors are slightly less natural than Null VP anaphors (where 1=very natural and 5=very awkward. Null VP Mean: 3.5, SD: .50. Overt VP Mean: 3.7, SD: .2).

**Anaphor Form**

- Longer first-pass and total reading times were observed for the anaphor region when it contained an overt rather than a null VP anaphor.
- We see this finding to evidence from previous ERP studies that null anaphors are associated with increased processing approximately 300-500ms post-onset of the next word.
- Null anaphors may be associated with increased processing load either because retrieval of the antecedent more costly or because null anaphors must be inferred from the surrounding context.

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**REFERENCES**