

Are negative quantifiers accessible?

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[Introduction] The general view in syntactic literature is that binding constraints can make antecedents syntactically inaccessible. However, several studies showed that antecedents which are ruled out by syntactic binding constraints still influence online processing of anaphora [1-3] in some stages. This suggests that a cue-based retrieval mechanism [4] has to play a role as well during some stages of anaphora resolution. As in the syntactic literature, in semantic accounts like Discourse Representation Theory (DRT), formal constraints are formulated in terms of accessibility of the antecedent. In DRT, non-referential NPs form inaccessible antecedents [5, 6], which might thus be expected to be discarded as potential antecedents in an early stage of processing. In this experiment, we generalize these findings by looking at inter-sentential anaphoric relations. Using an eye-tracking reading experiment, we examined the role of accessibility in pronoun resolution in online sentence processing.

[Method] Test items (N=32) with $2 \times 2 \times 2 = 8$ conditions consisted of short storylines read by Dutch native speakers (N=48), in which an anaphoric pronoun in the second sentence could refer back to antecedents introduced in the first sentence. The first sentence contained a subject, which stereotypically referred to a male character, and an object, which could refer to either a male or female character. The second sentence contained a subject that was either a male or a female pronoun, thus either matching or mismatching the subject's gender (SUBJ MATCH vs. SUBJ MIS) and the object's gender (OBJ MATCH vs. OBJ MIS). The object was preceded either by *een* 'a' (a REFERENTIAL or accessible antecedent) or by the negative determiner *geen* 'no' (a NON-REFERENTIAL or inaccessible antecedent). An example stimulus is given in (1) (regions of interest between square brackets).

(1) [₁De professor] [₂had] [₃{een / geen} {zoon / dochter}.]
[₄De laatste paar jaar] [₅moest {hij / zij}] [₆op bijna alle] [₇feestdagen werken].
The professor had {a / no} {son / daughter}.
The past few years, {he / she} had to work during almost all the holidays.

[Results] The results, analyzed with linear mixed-effects models with subjects and items random effects, show that there is a very consistent slowdown in early measures, starting on the verb in the NON-REFERENTIAL condition due to SUBJ MIS, while this slowdown does not occur for OBJ MIS. This suggests that a non-referential object is not considered as a potential antecedent for pronoun resolution. In addition, we found a slowdown in the REFERENTIAL condition for both SUBJ MIS and OBJ MIS, again mainly in early measures. This shows that, when an antecedent is accessible, it is considered as a potential resolution, and processing difficulties arise when it does not match the pronoun. Finally, mainly in Region 5 we found that only in case of SUBJ MIS, OBJ MIS led to a slowdown in the REFERENTIAL condition, while there was neither an effect of OBJ MIS in the NON-REFERENTIAL condition, nor an effect of OBJ MIS in the SUBJ MATCH condition, irrespective of referentiality.

[Conclusions] The results suggest that accessibility has an effect on pronoun resolution from early on. This is not in line with the assumption that the resolution process is solely cue-based, and is contrastive to studies that showed that inaccessible antecedents still influence online processing. Instead, in this study inaccessible antecedents appear to be ruled out as a potential resolution in an early stage, irrespective of their properties matching the pronoun. Thus, inaccessibility seems to block an antecedent from being considered as a potential resolution, as would be predicted by theories like DRT. However, a cue-based component has to play a role too, as demonstrated by the general slowdown on accessible but mismatching antecedents. Future studies have to refine to what extent the resolution process is cue-based and what semantic and syntactic constraints play a role at which stages of processing.

References

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