

Distant relatives: Resumptive pronouns can inherit agreement features of implied antecedents

Maayan Keshev & Aya Meltzer-Asscher, Tel-Aviv University

How do items interact during encoding and retrieval processes in incremental parsing? What types of linguistic representations are relevant for these processes? In recent years, agreement attraction effects (i.e. the sensitivity of agreement relations to features of structurally irrelevant distractors) were established as a window to constituents' representation in incremental production and comprehension (e.g. Eberhard et al., 2005; Wagers et al., 2009). In this study we ask whether the discourse function of the distractor can modulate agreement attraction effects. We investigate definitional copular sentences like (1), in which an NP is defined by another noun modified by a relative clause. We examine gender agreement attraction effects in Hebrew, between a resumptive pronoun (RP) inside the relative clause and the defined noun, a distractor which is structurally illicit antecedent for the RP (see the translated example 2). A similar phenomenon is described in theoretical linguistics as "fake indexicals" (Kratzer, 2009).

- (1) A fork is a utensil that you can eat small portions of food with
(2) A { fork.M / spoon.F } is a utensil.M that you can eat with { it.M / it.F } food.
Mismatch Match Grammatical Ungrammatical

In two experiments, we found attraction effects in this structure. **Experiment 1** (N=48), a self-paced reading experiment, showed that reading times on and following the RP in ungrammatical filler-RP sentences decreased significantly when the distractor matched the RP ($p=.009$). Similarly, in **Experiment 2** (N=32), acceptability ratings for this condition were higher than for the mismatching distractor condition ($p<.001$). No corresponding effects were observed in the grammatical conditions (Exp. 1 interaction $p=.047$; Exp. 2 interaction $p<.001$) (Figure 1A,B). In **Experiment 3** (N=32) we wanted to test whether this intrusion profile is due to the semantic association between the filler and the distractor, or to their shared discourse referent. We therefore compared the effect in the definitional ungrammatical conditions (3a) to the effect in ungrammatical sentences of the structure in (3b) with the same filler-distractor pairs. The use of "another x that..." in (3b) implies that the first NP can be subsumed under the category of second NP ("implied semantic identity" sentences), but the two nouns refer to distinct discourse entities. We replicated the attraction effect in definitional sentences ($p<.001$), with no corresponding effect in "implied semantic identity" sentences (interaction $p<.001$, Figure 1C).

- (3) a. Dan said that the {fork.M/spoon.F} is usually a utensil.M that ...
b. Dan said that the {fork.M/spoon.F} is near another utensil.M that ...
you can eat with it.F small portions of food.

To our knowledge, our results provide first evidence in comprehension for (i) discourse association effects on agreement processing; (ii) attraction of an external (non-filler) noun, crossing the relative clause boundary. The results suggest that the construction of agreement relations is sensitive not only to the syntactic or semantic features of the distractor noun, but to its discourse representation; namely, the online interpretation of the sentence can modify representations of syntactic features. Under a cue-based retrieval model of attraction (see Jäger et al., 2017 for review), this would require a mechanism of discourse model-specific cues which results in co-activation of the target and the distractor. For the marking and morphing model (Bock et al., 2001), the findings suggest that message-level representations can modulate the consolidation of the morphosyntactic agreement features, and that this occurs even when features are not semantically meaningful (grammatical gender).

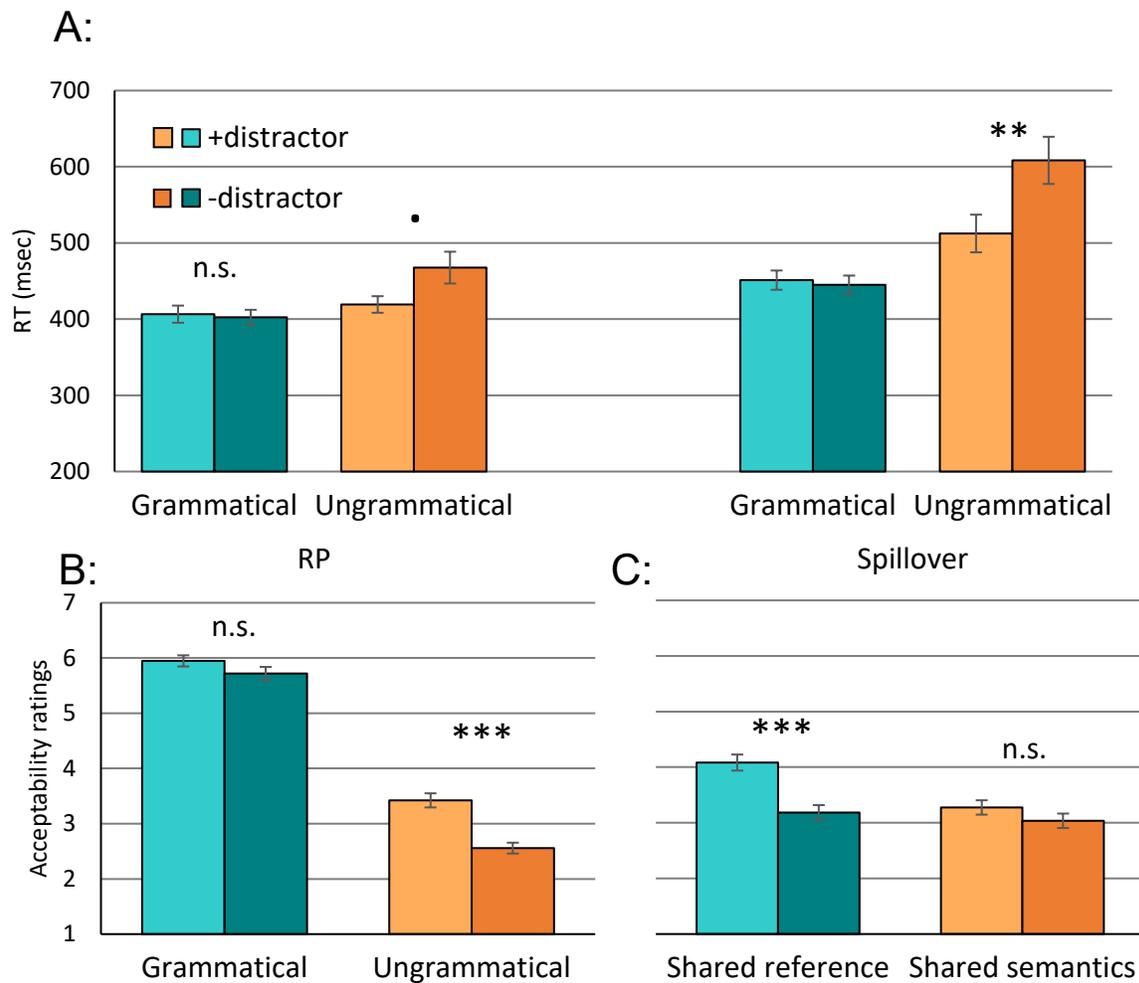


Figure 1. Results of Experiments 1-3. **A:** Mean RTs on and following the RP in Exp. 1. **B:** Mean acceptability ratings in Exp. 2. **C:** Mean acceptability ratings in Exp. 3. Analyses were conducted with a linear mixed-model regression; • $p < .10$; ** $p < .01$; *** $p < .001$; Error bars mark ± 1 SE.

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