Interference effects in Russian reflexives

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I. Background

Structure-based retrieval – only structural information is used for memory retrieval.

Cue-based retrieval – non-structural cues (i.e. gender, number) can be used for retrieval along with structural information.

II. Reflexive Processing

Badecker and Straub (2002) found that the reflexive is read slower in (b) than in (a):

a. **Distractor mismatch**

Jane thought that $Bill_i$ owed $himself_i$ another opportunity...

b. **Distractor match**

John thought that $Bill_i$ owed $himself_i$ another opportunity...

→ Similar interference effects were found by Chen et al., 2012; Clackson and Heyer, 2014; Jäger et al., 2015; Baumann and Yoshida, 2015; Patil et al., *unpubl. MS.*

→ The parser's sensitivity to a structurally inaccessible distractor has been interpreted in terms of retrieval interference, which is incompatible with the structure-based account.

→ Dillon (2011, 2013) proposed encoding interference as an alternative explanation. If it is true, interference effects are compatible with the structure-based account.

→ No interference effects found in many English studies (e.g., Nicol & Swinney, 1989; Sturt 2003; Dillon et al., 2013). Might be explained by the activation boost of the antecedent when processing the verb which directly precedes the reflexive.

V. Discussion

→ Encoding interference cannot account for our results since in neither experiment did we find the main effect of distractor match.

→ Retrieval interference as implemented in the cue-based retrieval model (Lewis and Vasishth, 2005) can explain our results under the assumption that at the moment of retrieval the baseline activation of the distractor is very high. For the present materials, it is indeed plausible to assume a high baseline activation of the distractor as it is in subject position and was recently introduced and retrieved (at the RC verb). A certain proportion of (fast) misretrievals of the highly activated gender-matching distractor might be responsible for the speed-up observed in the data.

→ Retrieval interference account can also explain the absence of interference effects in the experimental setups where reflexive follows the main verb: the main verb triggers retrieval of the reflexive's antecedent, which increases its baseline activation. Increased baseline activation of the antecedent, in turn, dramatically diminishes retrieval interference when the antecedent is to be retrieved in the following (reflexive) region.

III. 2×3 Design

I, Interference: match/mismatch between the antecedent and the distractor in gender.
II, Reflexive Type: gender-unmarked (*sebja*) vs. gender-marked (*samogo/samu sebja*).
III, Relative order: (between experiments) reflexive either precedes (Expt. 1) or follows (Expt. 2) the main verb.
→ 32 experimental items, 32 fillers, and 76 participants in each experiment

(1) a. **Distractor mismatch**

Aferistka_i, kotoruju torgovec nanimaet dlja ograblenija,
The swindler_fem whom a merchant_masc hires for a robbery,
sebja_i/samu sebja_i serjezno pereotsenivaet v sposobnosti k obmanu.
self_{acc(∅)}/herself_{acc(fem)} significantly overestimates in the ability to do trickery.

b. **Distractor match**

Aferistka_i, kotoruju torgovka nanimaet dlja ograblenija,
The swindler_fem whom a merchant_fem hires for a robbery,
sebja_i/samu sebja_i serjezno pereotsenivaet v sposobnosti k obmanu.
self_{acc(∅)}/herself_{acc(fem)} significantly overestimates in the ability to do trickery.

"The swindler_fem, whom a merchant_{masc/fem} hires for a robbery, overestimates her_{∅/fem} trickery skills".

IV. Results
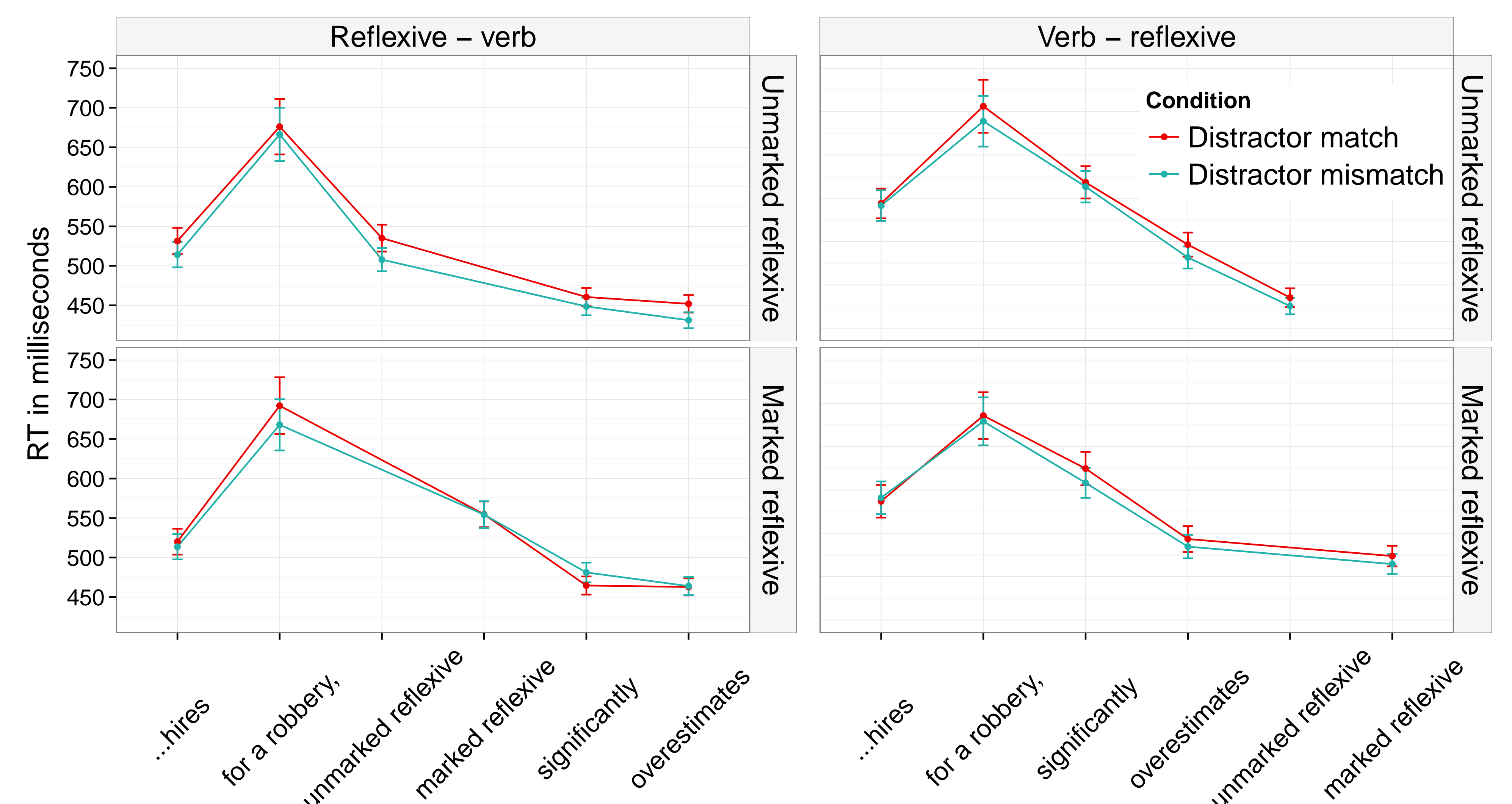
Accuracy. In both experiments we found a main effect of interference with more incorrect responses in match conditions. Word order "main verb - reflexive" elicited lower accuracy scores ($\beta = 0.15$, $SE = 0.05$, $z = 3.37$, $p < 0.001$).

Reading times. In the Experiment 1, where reflexive preceded the main verb, we found a significant interaction between reflexive type and interference on the word following the reflexive ($\beta = 0.013$, $SE = (0.005)$, $t = 2.66$). Pairwise comparisons revealed facilitatory interference in marked reflexives that did not reach significance (-0.013, $SE = 0.007$, $t = -1.87$) and was not present in unmarked reflexives. No significant interaction or main effect of interference was found in Experiment 2.

VI. Conclusion

→ Encoding interference is unlikely to explain the previously observed interference effects in reflexives. Therefore, encoding interference is not a plausible explanation to reconcile the observation of interference effects with a structure-based account of reflexive processing.

→ The relative position of dependent element with regard to the main verb is an important factor to keep in mind when studying syntactic dependencies and binding since retrieval triggered by the verb can mask the interference effects.

References

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