Evaluation and reading time of predicate agreement with conjuncts

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Abstract

This paper aims to investigate possible patterns of predicate agreement with coordinated pronominal subjects in Russian. We have conducted two experiments to examine the effect of two factors on acceptability and reading time of different verbal forms, namely: the order of conjuncts exhibiting different grammatical features ('1sg – 2sg' or '2sg – 1sg') and the order of subject and verb (SVO or OVS). The experimental results showed the differences in the agreement patterns related to the word order as the respondents more often allowed the less frequently encountered closest adjunct agreement in OVS-stimuli than in SVO-ones.

Keywords: Closest Conjunct Agreement, Personal Hierarchy, Coordinate Subject

Strategies of agreement with coordinated subject

With respect to phi-features, a coordinated subject may contain more than one value, therefore, there is a need for some sort of a strategy for choosing the form of an agreeing predicate. Three basic strategies are described in the literature. The first one is *resolution*: the value is calculated depending on what values the conjuncts have. For example, the person feature can be chosen based on the *person hierarchy* (Zwicky 1997); in the meantime, the number feature can be simply copied from the one that the coordinate phrase has, which is always plural. The second strategy is *partial agreement*: a predicate gets all the values from one of the conjuncts, for example, the linearly closest (closest conjunct agreement, CCA (Al Khalaf 2015)), and the second conjunct is ignored. Finally, if none of these strategies is applied, the default agreement can appear as a last resort option (Nevins, Weisser 2018). Predicate agreement with coordinated subjects has also been investigated by means of the experimental methods, mainly speech production ones, and great variability has been observed, cf. (Timmermans et al. 2004) for German and Dutch and (Marušič et al. 2015) for Slovenian.

Russian prescriptive grammars provide only one strategy of personal agreement with a coordinated subject – the one that is based on the person hierarchy. However, corpus research show that the CCA in person and gender

is possible and facilitated by the postverbal subject position (Corbett 1985). Taking into consideration the experimental findings in other languages, we suppose that the acceptability of different person agreement strategies in Russian should be experimentally investigated.

Research design

Two experiments that differ in the word order of stimuli (SVO and OVS) were conducted using the 1–7 Likert scale and the self-paced reading task. Both experiments shared the same lexicalizations and the 4×2 AJ experimental design that featured two independent variables: the verb form representing all three agreement strategies (1pl, 1sg/2sg, and 3pl, all in non-past tense) and the conjunct order (*ja i ty* 'me and you' and *ty i ja* 'you and I'). Each experiment consisted of eight experimental lists containing 32 target stimuli and 32 grammatical and ungrammatical fillers. In (1) one can see the stimuli structures of the SVO and VSO experiments respectively.

(1) a. [*ja i ty / ty i ja*] V Obj P NP
b. Obj P NP V [*ja i ty / ty i ja*]

Results: the ratings

The results of the acceptability judgment task are presented in fig.1 below. All the ratings were z-transformed and then statistically processed with the use of linear mixed modeling (LMM) and a posterior Tukey's HSD test.

The SVO-experiment involved 107 native Russian speakers (19–72 y.o., *mean*=38.59, *sd*=11.77). The final LMM (formula: z-scores ~ 1 + verb_form) included respondent's ID as random effect (formula: ~1 | id). The model's total explanatory power is substantial (conditional R^2=0.42) and the part related to the fixed effects alone (marginal R^2) is of 0.39. The pairwise comparisons show the significant difference between all four verb forms: 1pl is rated highest, followed by 3pl, 1sg, and 2sg. There is no difference between two conjunct orders within each verb form (the blue and the green lines in the plot). The OVS-experiment involved 126 respondents (17–76 y.o., *mean*=34.54, *sd*=11.5). The final LMM (formula: z-scores ~ 1 + conjunct_order * verb_form) included respondent's ID and sentence ID as random effects (formula: (~1 | id) + (~1 | sentence_id)). The model's total explanatory power is substantial (conditional R^2 = 0.39) and the part related to the fixed effects alone (marginal R^2) is of 0.28. The conjunct order is significant for 1sg and 2sg but not for 1pl and 3pl.

The overall low level of the target ratings in comparison to the grammatical fillers we relate to a pragmatically unusual context of the stimuli. Given that, the superiority of the resolution form 1pl is obvious. In the meantime, the CCA in the OVS-order is observed: the conjunct order '1sg – 2sg' is rated higher when following the 1sg verb form, and the same is true for the 2sg forms. The non-partial agreement strategies are rated the same independently of the conjunct order or the word order.

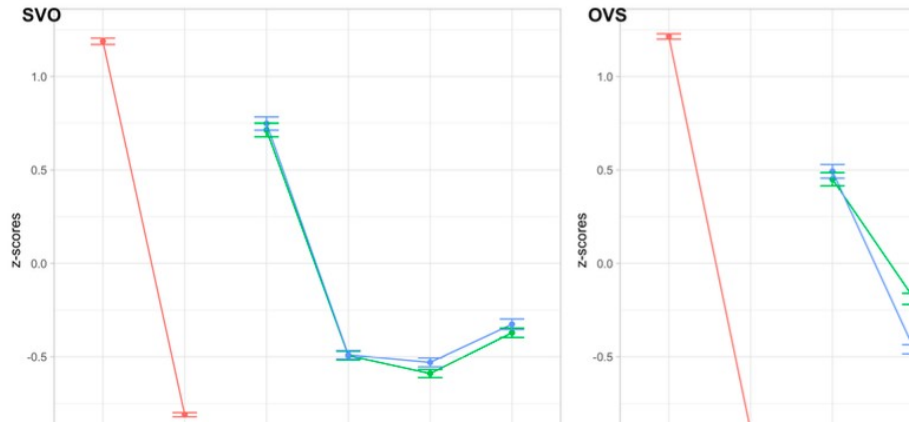

Figure 1. Normalized ratings from SVO & OVS experiments by the verb form.

Results: the reading time

The starting hypotheses concerning the self-paced reading component of the experiments were the following: (i) in the SVO-experiment the verb forms differing from the basic 1pl would be read slower; (ii) in the OVS-experiment the first conjunct mismatching the verb person feature would be read slower than the matching one.

Neither of these predictions is borne out by the results. In the SVO-experiment the pairwise comparison with the use of the Student's t-test does not show any differences in the reading time of verbs between the two conjunct orders for any of the verb forms. In the VSO-experiment there is no difference found in the reading time of first nor second conjuncts, however, conjunctions are read faster when the conjunct order is *ja i ty* for the stimuli with every verb form except the 2sg, see fig.2 below.

These results are unexpected. The SVO-experiment shows that although different verb forms are clearly on different levels of acceptability, they all take the same amount of time to read and process. In turn, the OVS-experiment was presumably more likely to demonstrate the signs of the reanalysis. The alternative hypothesis, leading to other predictions, is that it is only after the first conjunct that a reader starts processing the whole coordinated phrase. In the stimuli with the singular verb forms where the verb stands close to the matching pronoun the conjunction *i* should be read slower because this pronoun can constitute a subject by itself. Meanwhile, in the stimuli with the plural verb forms, there should be no such pattern as the second pronoun is needed to match the verb number. Since this hypothesis is not confirmed either, the most suitable explanation for the data seems to be methodological. The pronouns *ja* and *ty* and the conjunction *i* are monosyllable and overall short words, which were presented separately, and it could influence a reader's pace of passing the experiment.

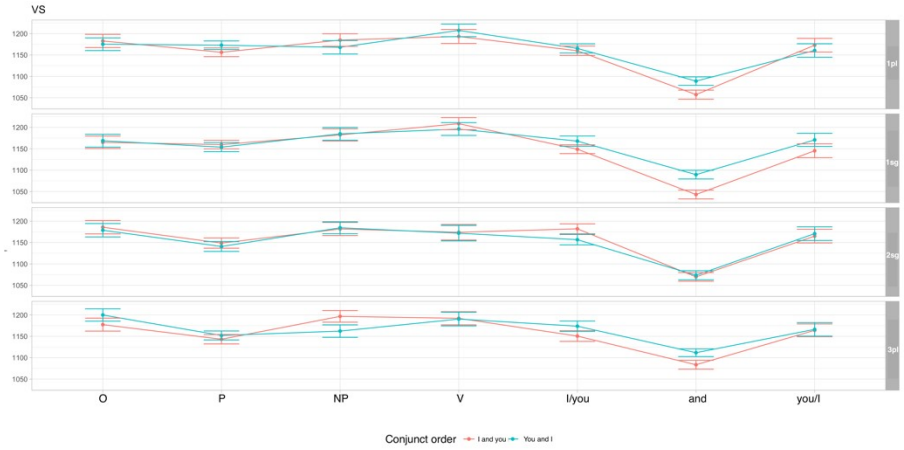

Figure 2. The mean reading time (in ms) of each element in OVS-stimuli.

Conclusion

All three agreement strategies (person hierarchy resolution, CCA, and default agreement) are possible in Russian in the sense that they all are rated higher than the ungrammatical fillers. The postverbal subject position does indeed facilitate the partial agreement strategy compared to the preverbal position, hence, the previous conclusions based on the corpus data are confirmed. Another interesting result is the acceptability of the default agreement which is even higher than the partial agreement.

Acknowledgements

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