

Possessive pronouns do not c-command out of the noun phrase in Serbian

In this talk, we discuss potential cross-linguistic differences concerning binding principle C between articleless languages like Serbian and languages with articles like English. Based on the results of a Forced Choice Judgment and a Self-Paced Reading task, we will show that Serbian speakers are sensitive to Principle C effects and do not differ in this respect from English speakers. This speaks against existing accounts arguing that possessive modifiers can c-command out of the noun phrase in Serbian but not in English and ultimately against the assumption that Serbian and English crucially differ with respect to the structure of the noun phrase (NP vs. DP).

Condition C-effects arise in English, when a pronoun c-commands its antecedent, leading to a non-coreferential interpretation (1). Because the possessive pronoun in (2) is not in a position where it can c-command the rest of the clause, it can be coreferential with the R-expression (*John*).

- (1) He_i drank beer while John_i watched a soccer game.
- (2) His_i brother drank beer while John_i watched a soccer game.

For Serbian, it has been argued that it patterns with English concerning examples like (1) but not with respect to examples like in (2). According to Despić (2013), the possessive in (2) cannot bind the R-expression in Serbian, because in Serbian – in contrast to English – no DP prevents that possessives c-command out of the noun phrase. In order to test whether Serbian indeed disallows coreference with both a possessive pronoun and a personal pronoun in subject position, we conducted a Forced Choice Judgment Task with 35 native speakers of Serbian. The test design was adapted from Kazanina et al. (2007) and included 4 conditions: C1) a possessive modifier in subject position and a gender – matched Name as antecedent, C2) a possessive modifier in subject position and a gender – mismatched Name as antecedent, C3) a pronoun in subject position and a gender – matched Name as antecedent, C4) a pronoun in subject position and a gender – mismatched Name as antecedent.

- (3) **Njegovi/Njen**_j menadžer je pričao fanovima dok je **Jovan**_i /_{*j} potpisivao autogramе.
his/her manager aux talked fans while aux John signed autographs
'His_i/*Her_j manager talked to the fans while John_i signed autographs.' (C1/2)
- (4) **Oni/Ona**_j je pričao fanovima dok je **Jovan**_i /_{*j} potpisivao autogramе.
he/she aux talked fans while aux John signed autographs
'He_i/She_j talked to the fans while John_i signed autographs.' (C3/C4)

The results of this test are presented in Tables 1, 2 and Figure 1. They show that Serbian native speakers chose coreferential reading in examples with possessive pronoun and gender match (58.6% acceptance) and highly rejected all the other examples, in particular the examples with a gender-matched pronoun in subject position. For the statistical analysis, the results of the test items were introduced in a Generalized Linear Mixed-Effects Regression (GLMER) with choice (coreference/non-coreference) as the dependent variable and conditions (C-command and Gender) as the independent variables. Participants and stimuli were included as random factors. There is a statistically significant effect of both conditions, C-command and Gender ($p < .001$).

	C1	C2	C3	C4
coref	58.57%	1.90%	0.95%	1.43%
non-coref	41.33%	98.10%	99.05%	98.57%

Table 1. Acceptance of (non)coreference in %

	Estimate	Std. Error	z value	Pr (> z)
(Intercept)	-0.291	0.301	-0.96	0.33
Ccommand	4.75	0.599	7.93	2.2e-15***
Gender	4.325	0.546	7.92	2.3e-15***

Table 2. GLMER (fixed effects results)

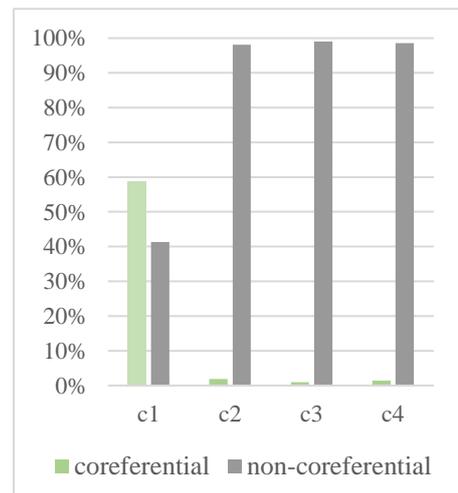


Figure 1. Acceptance of (non)coreference in 4 conditions

Following the methodology of Kazanina et al. (2007), a self-paced reading task with 46 native speakers of Serbian was conducted in order to empirically test whether they do indeed differentiate between constructions like (3) and (4). According to Kazanina et al. (2007), cataphoric pronouns trigger a search for a suitable referent in order to resolve their reference, but only if there is no violation of principle C (C1 and C2). Their study reveals for English an effect of reading times (rts) between condition C1 (possessive-gender match) and C2 (possessive-no gender match) but not between condition C3 (pronoun-gender match) and C4 (pronoun-no gender match). Slowdown of rts is observed only in C2. If possessives c-command out of their noun phrase as suggested by Despić (2013), no difference in reading times is expected in Serbian between C2 and C4. If, however, the results of the offline study are confirmed, Serbian should behave like English. The mean reading times per condition are shown in Table 3 and Figure 2. For the statistical analysis, the results of the test items were introduced in a Linear Mixed-Effects Regression (LMER) with (log transformed) reaction time as the dependent variable and conditions (C-command and Gender) as the independent variables. Participants and stimuli were included as random factors. There is a statistically significant effect of both conditions, C-command ($p < .0$) and Gender ($p < .001$), as well as the interaction ($p < .01$).

	Ccommand	Gender	Mean rts (ms)
C1	Possessive	Match	515
C2	Possessive	Mismatch	558
C3	Pronoun	Match	494
C4	Pronoun	Mismatch	511

Table 3: Average rts on critical word per condition

Fixed effects:	Estimate	Std. Error	df	t value	Pr(> t)
(Intercept)	6.1578	0.0423	49.8758	145.52	< 2e-16 ***
Ccommand1	-0.0739	0.0198	993.9008	-3.73	0.00021 ***
Gender1	0.0593	0.0198	991.9443	2.99	0.00286 **
Ccommand1: Gender1	-0.1014	0.0397	993.5791	-2.56	0.01074 *

Table 3. LMER (fixed effects results)

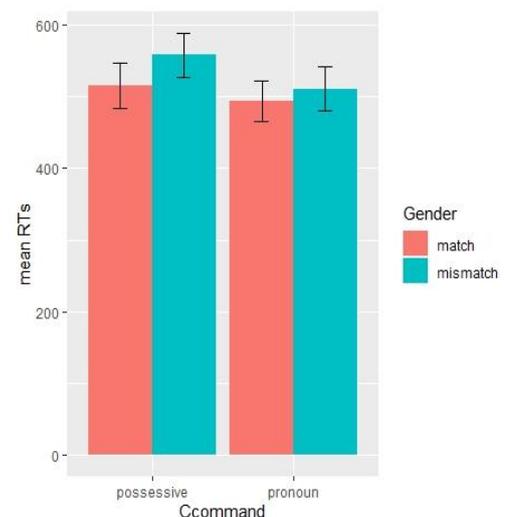


Figure 2. Average rts on critical word per condition

The results of the self-paced reading task reveal that there is indeed a difference in reading times between the two conditions in Serbian. This indicates that the Serbian native speakers show the same behavior as speakers of a DP language like English: they actively search for an antecedent following a cataphoric pronoun in examples with a possessive modifier (and gender match) but not in examples with a pronoun and subject position (and gender match), suggesting that c-command only applies in the latter case. As a consequence, this suggests that Serbian possessives do not c-command out of their phrase and patterns with the behavior of possessives in DP languages like English. Based on the results from both offline and online experiments, it follows that a DP shell prevents c-command out of the noun phrase in Serbian as well and that Serbian possessives (just like the English possessives) are not positioned in the Spec of DP or in D°, but somewhere lower as in Spec of PossP from where they do not c-command the R-expression (cf. Kayne, 1994; Bašić, 2004).

References: Bašić, Monika. (2004) Nominal subextractions and the structure of NPs in Serbian and English. Master's thesis, Universitetet i Tromsø. Despić, M. (2013). Binding and the structure of NP in Serbo-Croatian. *Linguistic Inquiry*, 44 (2), 239-270. Kayne, R.S. (1994). The antisymmetry of syntax. Vol. 25. MIT Press. Kazanina, N., Lau, E.F., Lieberman, M., Yoshida, M., & Phillips, C. (2007). The effect of syntactic constraints on the processing of backwards anaphora. *Journal of Memory and Language*, 56(3), 384-409.