Experiment Results

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Abstract

A short summary of the results. There is a difference in the behaviour of subject and object NPs in both Russian and English. Russian singular bare subjects and English singular definite subjects require uniqueness. Russian plural bare subjects and English plural definite subjects require maximality. There is a slightly significant zooming-in effect: if a non-unique individual is prominent in the picture, it is more likely to be described by a bare (in Russian) or definite (in English) singular than a non-prominent one.

Both Russian bare and English definite singulars require uniqueness in the object position. However, Russian bare plurals do **not** require maximality in the object position. English definite plurals show a preference for maximal interpretation in the object position, albeit a relatively weak one.

The difference between all the distributions in Russian vs. in English is statistically non-significant.

1 Introduction

This report represents the results of the statistical analysis of a series of experiment on the interpretation of Russian bare nouns and English definite nouns. The research questions were the following:

- Do bare nouns in Russian presuppose the same uniqueness requirement as English definite nouns?
- Are bare plurals and bare singulars different in this respect?
- If an individual referred by a nominal is non-unique, does the discourse prominence of that individual influence the acceptability of a bare singular noun?
- Is there a difference in the intepretation of subject NPs and object NPs?

The experiments were focused on presentational contexts (I enforced the non-givenness of the individuals involved).

This report is structured as follows. There are two sections, each of them represents one of the two experiment series. Experiment 1 was targeted at subject NPs, and Experiment 2 was targeted at object NPs. Both experiments were conducted for both Russian and English.

2 Experiment 1: subject NPs

Experiment 1 tested subject NPs in intransitive clauses with the neutral word order (SVO for both languages).

2.1 Methods

The participants were introduced into a language game scenario:

Ann and Diana have a friend Ellie, who is not an English speaker. They help Ellie to learn English by playing a language game with her. Ellie takes a picture, looks at it, and says a sentence that she thinks is good to describe what's happening in the picture. The girls correct her, saying how good Ellie's sentences are.

Then they were presented a picture, a sentence, and a scale from 0 to 7 to rate how natural this sentence sounds if it was used by Ellie.

Ellie looks at this picture: (picture)
She says: (the sentence)
How natural does her response sound to you? (the scale)

The following parameters were manipulated:

- The number of the target NP,
- Uniqueness/maximality of the target individual/group of individuals (Uniq/Max, can be T or F),
- The centering of the target individual if not unique (Centered, can be T, F, or NA). This parameter has been added to control for a possible zooming-in effect if the participant can focus on one of the individuals in the picture easier than on others.[1]

I tested the following Russian and English sentences:

(1) **Devočka** igraet na skripke.
girl play.PRS.3SG on violin.PREP.SG
'The girl/A girl is playing the violin.'

(2) **Devočki** igrajut na skripke.
girl.PL play.PRS.3PL on violin.PREP.SG
'The girls/Girls are playing the violin.'

(3) The girl is playing the violin.

(4) The girls are playing the violin.

There were five experimental pictures and ten experimental sentences. Each sentence was tested with each picture. The pictures and the expected Russian judgments are presented in Table 1.

The experiment design consisted of five experimental blocks. Each of the blocks had two experimental sentences and four fillers (f-f-f-e-f-e). Each of the participants was presented all the five blocks.

[1] I re-performed this part of the experiment with better pictures.

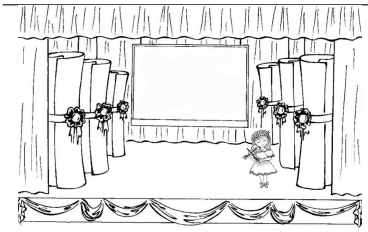
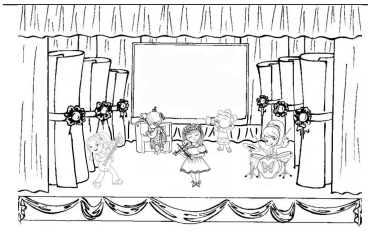
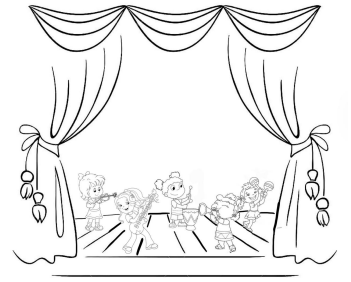
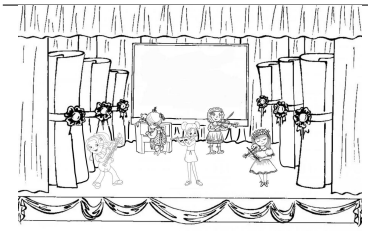
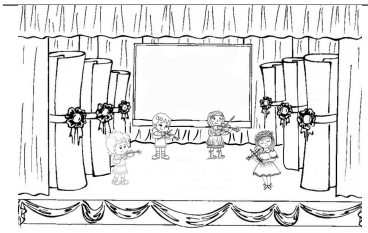
	Devočka igraet na skripke girl plays on violin 'The / A girl is playing the violin'	Devočki igrajut na skripke girls play on violin 'The girls / Girls are playing the violin'
	expected good	expected bad
	expected borderline	expected bad
	expected bad	expected bad
	expected bad	expected borderline
	expected bad	expected good

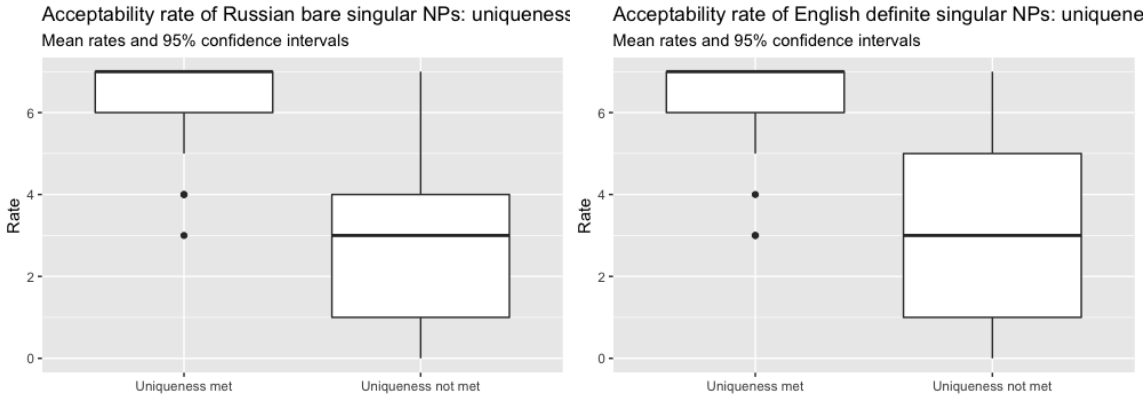
Table 1: The set of the experimental pictures with Dasha's judgments, Experiment 1

27 Russian speakers and 27 English speakers took part in the Experiment 1. A follow-up experiment on the zooming-in effect (see 2.2.2) involved two experimental blocks and was taken by 30 Russian speakers. All of the participants self-identified as monolinguals.

2.2 Results

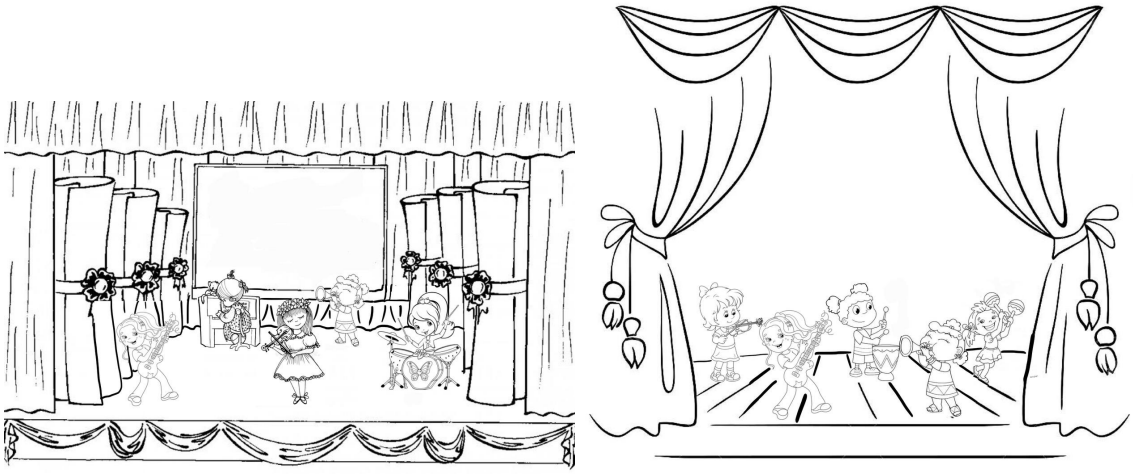
2.2.1 Singular subjects have to be unique

Both Russian bare singulars and English definite singulars have to be unique. In Russian, **a singular bare noun received significantly higher ratings in the unique context compared to a non-unique context** (mean rates 6.26 (SD 0.7) vs. 2.8 (SD 1.4), p 0.001). A similar result was received for English definite singular NPs (mean rates 6.18 (SD 0.42) vs. 3.3 (SD 1.78), p 0.001). A linear mixed effects model showed that **there is no significant difference between English and Russian results** (β = -0.17, p = 0.634.)

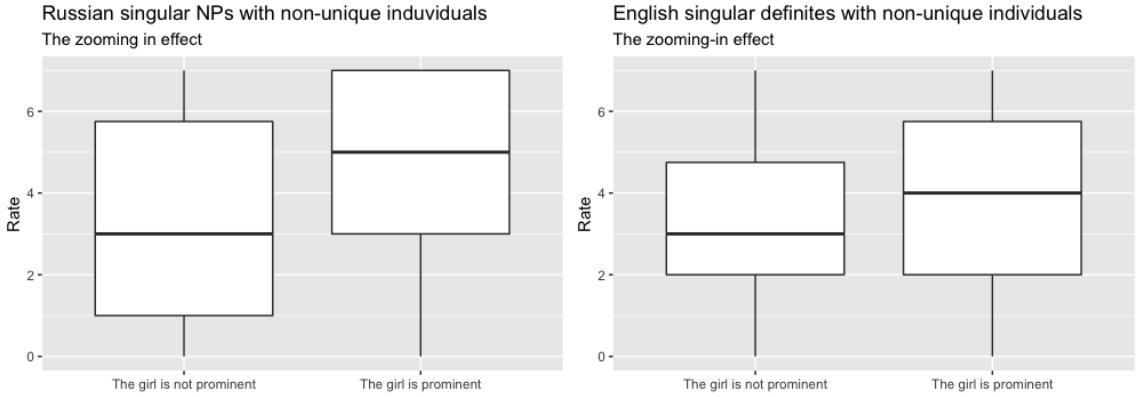


2.2.2 There is a significant prominence effect in both Russian and English

I tested a hypothesis that discourse prominence can affect judgments of singular bare NPs in Russian and definite singular NPs in English. That is, if an individual is non-unique but somehow prominent (e.g., centered and more noticeable), it is more likely to be described by a singular NP that normally requires uniqueness. I compared the following two pictures and tested if a sentence like *The girl is playing the violin* can describe them.

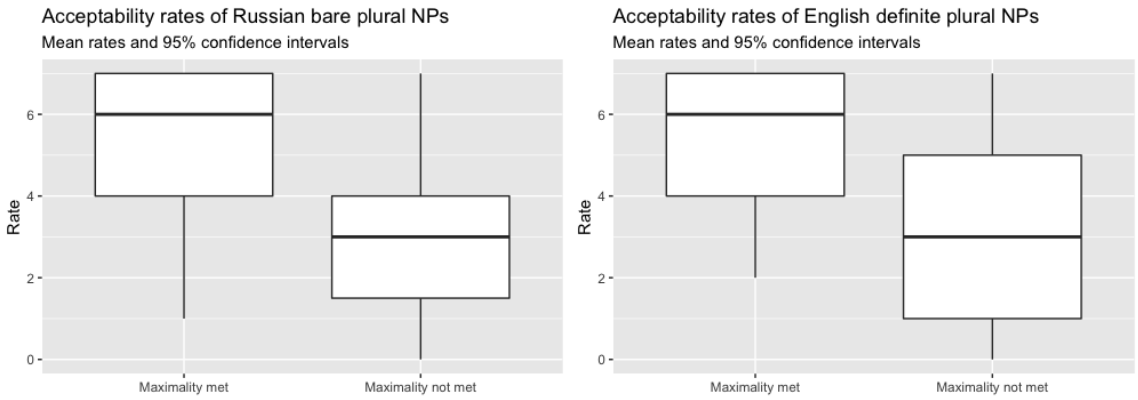


The results showed that a singular definite/bare NP cannot be considered totally acceptable if non-unique but prominent. However, Russian **singular bare NPs received significantly higher ratings in "prominent" contexts** (mean rates 4.36 (SD 1.44) vs. 3.3 (SD 1.84); β = -1.06, p $<$ 0.01). In English, this effect is also observed, although it is a slightly weaker dependency (mean rates 3.86 (SD 0.8) vs. 3.4 (SD 1.9); β = -0.47, 0.01 $<$p $<$ 0.05). Nevertheless, **the difference between the English and Russian results can be considered non-significant** (p = 0.705).



2.2.3 Plural subjects have to be maximal

Both Russian bare plurals and English definite plurals require maximality. In Russian, **bare plurals got significantly better rates if the context was maximal** (mean rates 5.3 (SD 0.41) vs. 3.07 (SD 1.85)). The same was observed for English (mean rates 5.4 (SD 0.51) vs. 3.18 (SD 1.9)). **The difference between Russian and English plurals can be considered non-significant** (β = -0.11, p = 0.771).



2.3 Conclusion for Experiment 1

The results can be summarized as follows:

- Both Russian bare singulars and English definite singulars have to be unique,
- Prominent non-unique individuals can (although marginally) be described with Russian bare singulars or English definite singulars,
- Both Russian bare plurals and English definite plurals have to be maximal,
- There is no significant difference between Russian bare nouns and English definite nouns in all of these respects.

3 Experiment 2

The second experiment targeted objects of transitive verbs. Again, I was comparing Russian bare nouns to English definite nouns. I used the context of the verbs *to carry* and *deržat'* 'to carry'.

3.1 Methods

The participants were presented the same language game scenario as in Experiment 2. The parameters I was controlling for were:

- The number of the target NP,
- Uniqueness/maximality of the target individual/group of individuals (Uniq/Max, can be T or F).

I tested the following Russian and English sentences:

(5) Devuška deržit **paket**.
girl carry.PRS.3SG bag.ACC/NOM.SG
'The girl is carrying the bag / a bag.'

(6) Devuška deržit **pakety**.
girl carry.PRS.3SG bag.ACC/NOM.PL
'The girl is carrying the bags / bags.'

(7) The girl is carrying the bag.

(8) The girl is carrying the bags.

In this way, there were four experimental pictures and eight experimental sentences. The pictures and the judgment expectations are given in Table 2.

There were four experimental blocks. Similarly to the setting of Experiment 1, each of the blocks contained two experimental sentences and four fillers (f-f-f-e-f-e). All of the participants rated all the blocks.

29 Russian speakers and 30 English speakers took part in the second experiment. All of them self-reported as monolingual speakers.

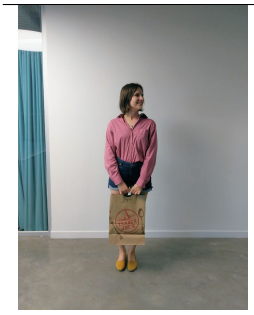
	Devuška deržit paket. girl carries bag 'The girl is carrying a bag / the bag.'	Devuška deržit pakety. girl carries bags 'The girl is carrying bags / the bags.'
	expected good	expected bad
	expected good	expected bad
	expected bad	expected good
	expected bad	expected good

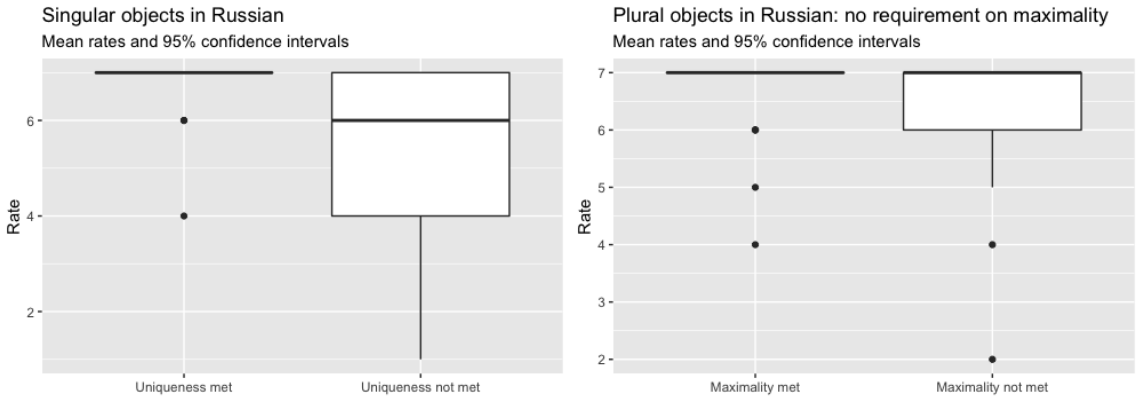
Table 2: The set of the experimental pictures with Dasha's judgments, Experiment 2

3.2 Results

In contrast to Experiment 1, Experiment 2 showed that the uniqueness/maximality requirement disappears in the object position.

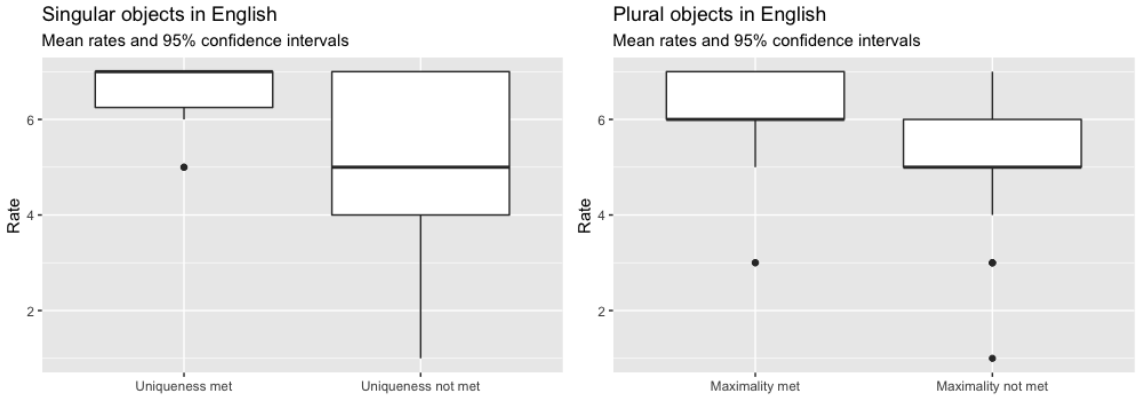
3.2.1 Russian

In Russian, **singular bare objects receive significantly better ratings if the context implies their uniqueness**: mean rates are 6.83 (SD 0.31) vs. 5.35 (SD 1.45); LMER β = -1.48, p < 0.001. However, **plural bare NPs were considered fine in both maximal and non-maximal contexts** (mean rates 6.345 (SD 0.56) vs. 6.724 (SD 0.77)), and there is no significant difference between the ratings of a plural bare NP in both contexts (β = 0.38, p = 0.065).



3.2.2 English

English definite singulars were rated significantly higher if used in a context implying uniqueness (mean rates 6.6 (SD 0.625) vs. 5.03 (SD 1.122); β = -1.63, p < 0.001). In contrast to Russian, **English definite plurals are more likely to be maximal**. They received significantly higher ratings in a context implying maximality in comparison to a context without such implication (mean rates 6.04 (SD 0) vs. 5.27 (SD 1.3). . However, this requirement is relatively weak (β = -0.77, p = 0.027).



The linear mixed effects model didn't find a significant difference between English and Russian data.

3.3 Conclusion for Experiment 2

- In both Russian and English, singular bare/definite objects have to be unique,
- In Russian, plural bare objects don't have to be maximal,
- In English, plural definite objects are more likely to be maximal, although this dependency is weak,
- There is no significant difference between English and Russian overall.