

Experimenting with single-pair vs. pair-list interpretations in Russian multiple wh-clauses

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ABSTRACT

The paper reports on an experiment that shows the preference of pair-list interpretations over single-pair interpretations in Russian multiple coordinated and non-coordinated wh-interrogatives and wh-exclamatives. Moreover, the paper points out that neither the Superiority effect nor the distinction between argument and adjunct wh-phrases determines the choice of an interpretation in interrogatives and exclamatives. In general, the results challenge the existing theories of multiple wh-interrogatives and open a new page in investigating multiple wh-exclamatives.

KEYWORDS wh-exclamatives · wh-interrogatives · single-pair · pair-list · Superiority effect · coordination

1 INTRODUCTION

Rudin (1988) argues for the following typology of placing multiple wh-phrases in an interrogative clause. The first group of languages (e.g., English) enables only one wh-phrase to move to SpecCP, with the rest of wh-phrases staying *in situ*. In the second group of languages, all wh-words undergo fronting. There are two types of such languages. In languages like Bulgarian, wh-phrases are fronted to SpecCP, whereas in languages like Russian, they may be fronted to a position within the IP domain. (Cf. also Bosković 1999, 2002 and Stepanov 1998 who add further refinements.) In the third group of languages (e.g., French), the movement of wh-phrases is dependent upon structural and contextual factors. In the fourth group of languages (e.g., Chinese), all wh-phrases stay *in situ*.

Another parameter relevant to wh-phrases is the Superiority effect, that is, the ordering of wh-phrases according to their positions in a syntactic structure (cf. Kuno & Robinson 1972, Pesetsky 2000 a.o.). The idea is that no wh-element can cross over another wh-element located higher in the structure.

To illustrate, consider the contrast between the following two interrogative sentences: sentence (1) is felicitous, whereas sentence (2) is not.

- (1) Who did what?
- (2) *What did who do?

The former sentence is felicitous because it conforms to the Superiority effect, whilst the latter sentence is infelicitous since it violates the Superiority effect. Some authors point out that the Superiority effect holds in Russian (Rudin 1988, Rojina 2011), some others provide evidence against the Superiority effect in Russian (Bosković 1999, 2002, Stepanov 1998). The third group of authors (Scott 2012) impose restrictions on the syntactic structures, demonstrating that Superiority effects occur in non-embedded coordinated interrogatives only when wh-phrases take argument positions ((3) vs (4)) or argument and adjunct positions ((5) vs (6)), but not two adjunct positions ((7) vs (8)).

- (3) Kto i čto govorit?
 who.NOM and what.ACC talk.3SG.PRS
 'Who is talking and what do they say?'
- (4) *Čto i kto govorit?
 what.ACC and who.NOM say.3SG.PRS
 Intended: 'What do they say and who is it that's talking?'
- (5) Kto i gde govorit ob etom?
 who.NOM and where talk.3SG.PRS about it.LOC
 'Who talks about this, and where?'
- (6) *Gde i kto govorit ob etom?
 where and who.NOM talk.3SG.PRS about it.LOC
 Intended: 'Where do they talk about this and who is it that's talking?'
- (7) Gde i kogda on govorit ob etom?
 where and when he.NOM talk.3SG.PRS about it.LOC
 'Where does he talk about this, and when?'
- (8) Kogda i gde on govorit ob etom?
 when and where he.NOM talk.3SG.PRS about it.LOC
 'When does he talk about this, and where?'

Rojina (2011, p.74) argues for a detailed cartographic approach to wh-phrases in Russian. According to this, wh-phrases respect the following hierarchy in terms of precedence (the symbol > means linearly precedes): subject (e.g., *kto* 'who', *čto* 'what') > D-link object (*kakoj* N 'which N') > human direct object (*kogo* 'whom') > indirect human object (*komu* 'to whom') > non-human object (*čto* 'what', *skol'ko* N 'how many/much N') > prepositional object (e.g., *s kem* 'with whom') > place & time adjunct (*gde* 'where', *kogda* 'when') > manner adjunct (*kak* 'how').

Even some of the empirical data in the literature is controversial: cf. example (79) in Scott (2012, p.102) presented here as (9-a) and example (103a) in Rojina (2011, p.56) presented here as (9-b). Both examples involve the use of Russian *gde* 'where' and *kogda* 'when'.

- (9) a. Gde kogda ty ego videl?
 where when you.NOM he.ACC see.3SG.PST
 'Where did you see him and when?' Scott (2012, p.102): ex. (79)
- b. *?Gde kogda vy vystupaete?
 where when you.NOM.PL perform.2PL.PRS
 'Where do you perform when?' Rojina (2011, p.56): ex. (103a)

Despite the fact that the Superiority effect has mostly been studied from the syntactic viewpoint, there are some semantic papers which investigate whether it interacts with the well-known semantic distinction between single-pair and pair-list interpretations (henceforth SP vs. PL interpretations), cf. Stepanov (1998), Grebenyova (2003), Hagstrom (1998) among others. To illustrate, the English question (10) has a PL interpretation and does not favor an SP interpretation.

- (10) Who did what?
 Ann did cleaning, Bill did washing. (PL)
 * Ann did cleaning. (SP)

There are languages that allow for both types of interpretations, although the choice of interpretation is dependent upon syntactic factors. In the experiments conducted for this paper, we verified whether the SP vs. PL distinction interacts with the Superiority effect in Russian interrogatives and exclamatives. In doing so, we tested argument + argument and argument + adjunct wh-phrases.

As for the distinction between SP and PL interpretations itself, Bosković (2001, 2002) notices that CP-fronting of wh-phrases gives rise to PL interpretations, whereas IP-fronting of wh-phrases yields both types of interpretations. Since Russian exhibits IP-fronting, he assumes it to have both types of interpretations (cf. also Stepanov 1998). Grebenyova (2003) argues against SP

readings in multiple wh-interrogatives, and Rojina (2011) supports her claim. More generally, Grebenyova (2003) shows that, cross-linguistically, languages which allow SP readings are a subset of those which allow PL readings, and that Russian allows only PL readings. Kazenin (2002) and Gribanova (2009) introduce the difference between coordinated and non-coordinated multiple wh-interrogatives, which affects the choice of interpretation type. PL readings are available for non-coordinated multiple wh-interrogatives, whereas SP readings are available for coordinated multiple wh-interrogatives. Cf. the following two Russian examples.

- (11) a. **Kto kakoe** bljudo vzjal?
 who.NOM which.ACC dish.ACC order.3SG.PST
 ‘Who ordered which dish?’
 ?? John ordered pasta. (SP)
 John ordered pasta, Mary ordered pizza, ... (PL)
- b. **Kto i kakoe** bljudo vzjal?
 who.NOM and which.ACC dish.ACC order.3SG.PST
 ‘Who ordered which dish?’
 John ordered pasta. (SP)
 ?? John ordered pasta, Mary ordered pizza, ... (PL)

Later on, Scott (2012) points out that both types of interpretations are available for coordinated interrogatives. However, her study is silent about non-coordinated interrogatives. Overall, we see that, similar to the empirical data on the Superiority effect, the empirical picture of the interpretations of multiple wh-phrases is also controversial.

Consider now Russian multiple wh-exclamatives. They also exhibit multiple wh-fronting. Both coordinated and non-coordinated wh-phrases are possible, cf. (12).

- (12) Vot eto da, **kto (i) kakoe** bljudo vzjal!
 INTERJ who.NOM and which.ACC dish.ACC order.3SG.PST
 ‘You’ll never believe who ordered what dish!’

Several approaches have been proposed for the semantics of wh-exclamatives (Michaelis 2001, Zanuttini & Portner 2003, Rett 2008, 2011, Nouwen & Chernilovskaya 2015, a.o.). They all point out that uttering an exclamation indicates the speaker did not expect the observed state of affairs, perceives it as remarkable, and is surprised by it. Exclamatives with single wh-phrases (e.g., (13)) involve a reference to an individual that violates the speaker’s expectations. The literature cited above builds semantic approaches to exclamatives by extending (or widening) a given set of alternatives. Typically, in these analyses, the extending mechanism relies on one alternative.

- (13) What a great person you are!
- (14) You’ll never believe who cooked what!
 Ann cooked spaghetti. (SP)
 ?? Ann cooked spaghetti, Bill cooked risotto, ... (PL)

To illustrate, the exclamation (13) is interpreted in such a way that there is a point on a scale of greatness that exceeds some given point. Another example is the embedded exclamation (14) that typically refers to one individual (SP), rather than to several individuals (PL).

Consequently, it seems natural to suppose that exclamatives with multiple wh-phrases more typically refer to one pair of individuals rather than to several pairs of individuals. However, according to the judgements of a few native speakers, the one-pair interpretation is overridden by the several-pairs interpretation. Does this suggest that the latter one is more available than the former one? Does it come first to one’s mind? To illustrate, the embedded exclamation (14) might involve several pairs of individuals that violate the speaker’s expectations: Ann cooked spaghetti, Bill cooked risotto, Cindy cooked a steak. The interpretation with one pair of individuals is possible but seems to be less likely: Ann cooked spaghetti.

Moreover, as Zevakhina (2016) points out, in Russian single wh-exclamatives, adjunct wh-phrases (e.g., *kogda* ‘when’, *počemu* ‘why’) are less acceptable than argument wh-phrases (e.g., *kto*

‘who’, *čto* ‘what’). Thus, we predict that in Russian multiple wh-exclamatives as well, adjuncts are less felicitous than arguments.

On the basis of what is said above, we arrive at the following hypotheses:

Hypothesis 1: SP interpretations are preferred over PL interpretations in coordinated interrogatives.

Hypothesis 2: PL interpretations are preferred over SP interpretations in non-coordinated interrogatives.

Hypothesis 3: PL interpretations are preferred over SP interpretations in exclamatives, irrespective of whether exclamatives are (non-)coordinated. More specifically, Hypothesis 3 is divided into two hypotheses: Hypothesis 3A and Hypothesis 3B. According to **Hypothesis 3A**, PL interpretations are preferred over SP interpretations in coordinated exclamatives. According to **Hypothesis 3B**, PL interpretations are preferred over SP interpretations in non-coordinated exclamatives.

Hypothesis 4 tests valency (that is, argument vs. adjunct status of wh-phases) and says that two-argument exclamatives are preferred over one-argument and one-adjunct exclamatives, irrespective of which interpretation (SP or PL) an exclamative has. In other words, two-argument exclamatives with either an SP interpretation or a PL interpretation are evaluated as more felicitous than one-argument and one-adjunct exclamatives with either an SP or a PL interpretation.

Hypothesis 5 verifies the Superiority effect and states that the direct order is preferred over the inverse order in interrogatives. It is interesting to see whether this statement is true of exclamatives and whether it interacts with the valency factor formulated in Hypothesis 4.

2 METHODS

2.1 PARTICIPANTS

100 people voluntarily participated in the experiment. All the subjects were monolingual native speakers of Russian who had different levels of education and fields of work and who were recruited through social media. Their ages ranged from 20 to 30 years, with a mean age of 22 years. 50 participants were females and 50 were males.

2.2 MATERIALS AND PROCEDURE

The experiment had a 2 x 2 x 2 x 2 factorial design: Sentence type (interrogative vs. exclamative), Valency (argument + argument vs. argument + adjunct), Coordination (coordinated wh-phrases vs. non-coordinated wh-phrases), Superiority effect (direct word order vs. inverse word order). For the Valency factor, one-place vs. two-place verbal predicates were used. One-place verbal predicates had one wh-argument and additionally one wh-adjunct, whereas two-place verbal predicates had two wh-arguments only. All in all, the experiment included 32 sentences. Each of the 32 sentences received SP and PL interpretations. This yielded 64 critical items consisting of 64 pairs <illocutionary type, interpretation>, where the illocutionary type was either a wh-interrogative or wh-exclamative and the interpretation was either SP or PL. The following examples illustrate two interpretations for a wh-interrogative and for a wh-exclamative.

Wh-interrogative (coordinated; argument + argument; direct word order):

- (15) a. Kto i o čjom mečtaet?
 who.NOM and about what.LOC dream.3SG.PRS
 ‘Who dreams and about what?’ (literally)
- b. Ženja mečtaet o dome.
 Ženja.NOM dream.3SG.PRS about home.LOC
 ‘Ženja dreams about home.’ (SP)
- c. Lena mečtaet o putešestvii, Ženja mečtaet o
 Lena.NOM dream.3SG.PRS about journey.LOC Ženja.NOM dream.3SG.PRS about

dome.
home.LOC
'Lena dreams about travel, Ženja dreams about home.' (PL)

Wh-exclamative (non-coordinated; argument + adjunct; inverse word order):

- (16) a. O, kogda čto tsvetjot!
INTERJ when what.NOM blossom.3SG.PRS
'Wow, you'll never believe what blossoms when!'
- b. Ambrozija tsvetjot v avguste.
ragweed.NOM blossom.3SG.PRS in August.LOC
'Ragweed blossoms in August.' (SP)
- c. Ambrozija tsvetjot v avguste, žasmin tsvetjot v
ragweed.NOM blossom.3SG.PRS in August.LOC jasmine.NOM blossom.3SG.PRS in
fevrale.
February.LOC
'Ragweed blossoms in August, jasmine blossoms in February.' (PL)

All wh-exclamatives contain an interjection. This guarantees that the wh-clause expresses the speaker's surprise and is processed as an exclamative (rather than an interrogative).

Control items were 16 questions and 16 exclamatives. Unlike questions, exclamatives structurally resembled assertions preceded with interjections. Half of the control items were more plausible and, consequently, were supposed to receive "4" or "5" values on the Likert scale (see below). The other half were less plausible and, therefore, were supposed to receive "1" or "2". Each of the 32 control sentences had two interpretations: *single answer* vs. *multiple answers*.

This yielded 64 control items. The following examples (17-a), (18-a) illustrate true and false types of Y/N-questions used as control items. The materials of the experiment are given in the Appendix.

Y/N-question (responses "4"/"5" are expected)

- (17) a. Devočki stradajut ot allergii?
girl.NOM.PL suffer.3PL.PRS from allergy.GEN
'Are the girls allergic?'
- b. Sonja i Anja stradajut ot allergii na rybu.
Sonja.NOM and Anja.NOM suffer.3PL.PRS from allergy.GEN to fish.ACC
'Sonja and Anja are allergic to fish.' *single answer*
- c. Sonja stradaet ot allergii na rybu, Anja stradaet
Sonja.NOM suffer.3PL.PRS from allergy.GEN to fish.ACC Anja.NOM suffer.3PL.PRS
ot allergii na apel'siny.
from allergy.GEN to orange.ACC.PL
'Sonja is allergic to fish, Anja is allergic to oranges.' *multiple answers*

Y/N-question (responses "1"/"2" are expected)

- (18) a. Voditeli vsega vodjat akkuratno?
driver.NOM.PL always drive.3PL.PRS carefully
'Do drivers always drive carefully?'
- b. Voditeli bez prav vsega vodjat akkuratno.
driver.NOM.PL without driver.license.GEN always drive.3PL.PRS carefully
'Drivers without driver license always drive carefully.' *single answer*
- c. Voditeli bez prav vsega vodjat akkuratno,
driver.NOM.PL without driver.license.GEN always drive.3PL.PRS carefully
voditeli s pravami vsega vodjat nebrežno.
driver.NOM.PL with driver.license.INST always drive.3PL.PRS carelessly
'Drivers without driver license always drive carefully, drivers with driver license always
drive carelessly.' *multiple answers*

64 critical items (with both interpretations) and 64 control items (with both interpretations) were distributed among 4 experimental lists. Each list included 16 critical items and 32 control items. Two lists included items with SP interpretations only (SP lists) and two other lists included items with PL interpretations only (PL lists). The order of control and critical items within a list was randomized.¹ The experiment was conducted via Google Forms platform.

To make the testing more accurate and independent, the stimuli were randomly divided into 2 groups. At the same time, all possible parameters for testing were included in each group (Valency, Word order, Coordination, Illocutionary type). Given the division of stimuli into 2 groups and the fact that we were testing 2 types of interpretations, 4 experimental sheets were prepared (both interpretations for each group tested separately).

Each list was answered by 25 subjects (4 lists x 25 subjects = 100 subjects). The four lists were randomly assigned to the subjects. Participants evaluated on a five-point Likert scale whether a given sentence might be interpreted in the suggested manner (from “1” meaning “a given interpretation does not match what a given sentence intends to convey” to “5” meaning “a given interpretation matches what a given sentence intends to convey”). In addition to the experimental materials, the lists included sociolinguistic questions about age and gender and a request to give permission to use the subjects’ personal data.

3 RESULTS

We carried out the Shapiro-Wilk test in R (R Core Team 2013) and it reveals that the participants’ answers for SP interpretations and the participants’ answers for PL interpretations considered separately do not obey the normal distribution ($W = 0.757$ and $p < 0.0001$ and $W = 0.67965$, $p < 0.0001$ respectively). Therefore, we applied a non-parametric test, namely we ran Cumulative Link Mixed Models for ordinal regression using the package *ordinal* and the function *clmm* in R (Christensen 2012). In all the tests reported below, subjects and items are random effects.

The difference between critical and control items is significant: $z = -5.404$, $p < 0.0001$, cf. also Tables 1–2. This means that, following the purpose of the experimental design (see the previous section), control items are evaluated either as plausible or not plausible, whereas speaker’s judgments on critical items vary.

groups	name	variance	std.dev.
item ID	(intercept)	1.086	1.042
subject	(intercept)	2.515	1.586

Table 1: Dispersion and standard deviation of random effects (subjects and items)

	estimate	std.error	z
1 2	-3.4002	0.3662	-9.285
2 3	-2.4073	0.3645	-6.604
3 4	-1.7588	0.3636	-4.837
4 5	-0.7653	0.3626	-2.110

Table 2: Threshold coefficients and their values

In what follows, we consider SP and PL interpretations separately. For SP interpretations, there is no interaction between Sentence type and Superiority effect, Sentence type and Coordination, and Sentence type and Valency (all p 's > 0.05). Pairwise comparisons between the levels of Sentence type, Coordination, or Superiority effect are non-significant (all p 's > 0.1). However, pairwise comparisons between the levels of Valency are tentatively significant at the level 0.1. For PL interpretations, there is also no interaction between Sentence type and Superiority effect, Sentence type and Coordination, and Sentence type and Valency (all p 's > 0.05). Pairwise comparisons between the levels of Sentence type are significant ($p = 0.02$), cf. Table 3. However, pairwise comparisons between the levels of Superiority effect are only tentatively significant ($0.1 > p > 0.05$) and are non-significant between the levels of Coordination and between the levels of Valency (all p 's > 0.1).

To compare the independent samples of SP and PL interpretations of interrogatives and exclamatives, we use the Wilcoxon rank sum test. It reveals a significant preference for PL interpretations over

¹Randomizing was obtained with help of Python 3.6.1.

Predictors	answers		
	Odds Ratios	CI	p
1 2	0.04	0.02 - 0.08	<0.001
2 3	0.09	0.04 - 0.18	<0.001
3 4	0.21	0.10 - 0.43	<0.001
4 5	0.81	0.40 - 1.65	0.556
sent_type [question]	1.83	1.07 - 3.14	0.029
Random Effects			
σ^2	3.29		
τ_{00} id	4.53		
τ_{00} sentence	0.39		
ICC	0.60		
N _{sentence}	32		
N _{id}	50		
Observations	800		
Marginal R ² /			
Conditional R ²	0.011/0.604		

Table 3: Ordinal regression for interrogatives and exclamatives with PL interpretations

SP interpretations in both interrogatives ($W = 68144, p < 0.0001$) and exclamatives ($W = 89178, p = 0.002$), cf. Figure 1. Also, in both sentence types, the point “5” on the Likert scale received around 50% of responses. These two results suggest that, although SP and PL interpretations are available in interrogatives and exclamatives, both sentence types are more likely to have PL interpretations.

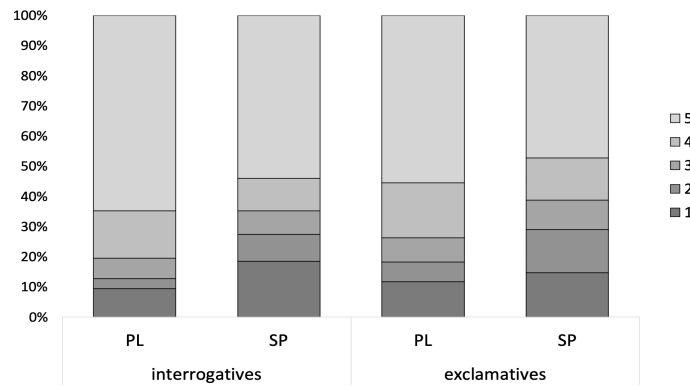


Figure 1: Distribution of ratings for SP and PL interpretations of interrogatives and exclamatives

The points “4” and “5” indicate the felicitousness of a given interpretation. Using them, we carried out a test to verify whether there is a relation between Interpretation and Sentence type. In order to do so, we ran χ^2 statistic. It transpires that Interpretation and Sentence type are not related to each other: $\chi^2(df = 3, N = 1121) = 0.042556, p = 0.8$. This suggests that both interpretation types that are evaluated as felicitous are equally distributed between interrogatives and exclamatives.

The Wilcoxon rank sum test shows that, in coordinated interrogatives, PL interpretations receive significantly higher points than SP interpretations: $W = 23166, p = 0.002$. Therefore, Hypothesis 1 is not supported. In non-coordinated interrogatives, the same test reveals that PL interpretations receive higher rates than SP interpretations: $W = 17216, p = 0.007$. This supports Hypothesis 2. Furthermore, the Wilcoxon rank sum test demonstrates that PL interpretations and SP interpretations are almost equally distributed in coordinated exclamatives ($W = 17950, p = 0.0534$). Consequently, Hypothesis 3A is not confirmed. Non-coordinated exclamatives facilitate PL interpretations ($W = 22539, p = 0.02$). Hypothesis 3B is confirmed. Cf. also Figure 2 below.

The distribution of interpretation ratings in Valency and Sentence type is presented in Figure 3. The distribution of interpretation ratings in Superiority effect and Sentence type is presented in Figure 4.

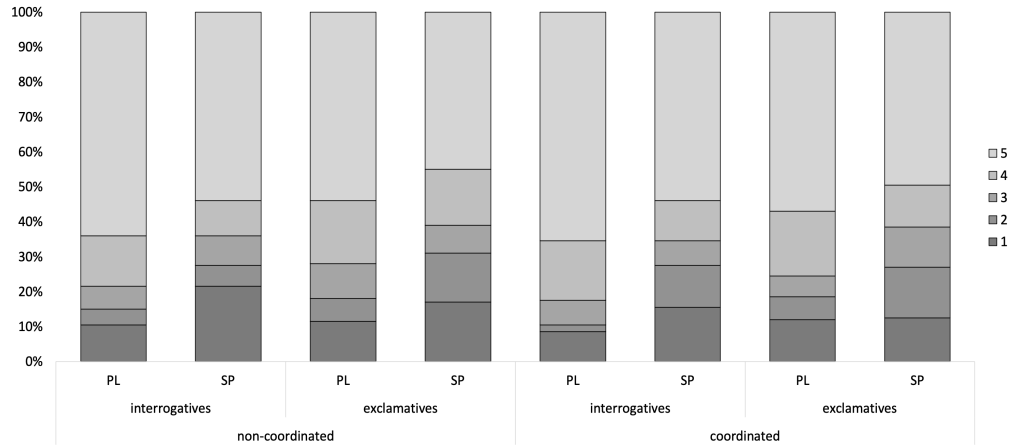


Figure 2: Distribution of ratings for SP and PL interpretations of (non-)coordinated interrogatives and exclamatives

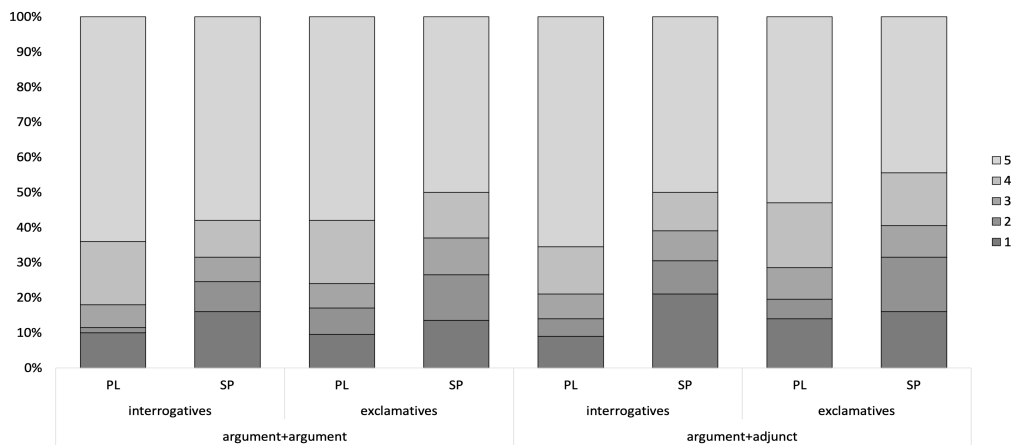


Figure 3: Distribution of ratings for SP and PL interpretations of interrogatives and exclamatives with two-argument and one-argument predicates

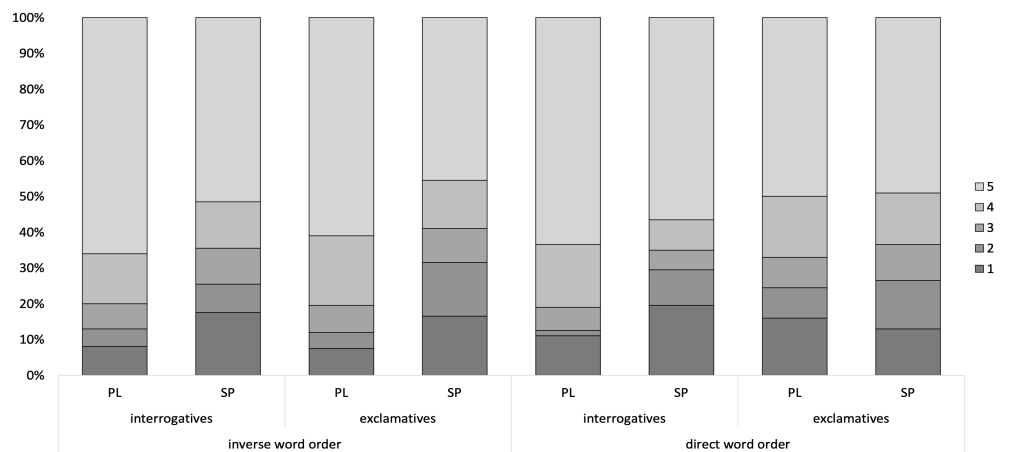


Figure 4: Distribution of ratings for SP and PL interpretations of interrogatives and exclamatives with the Superiority effect

We verified Hypothesis 4 for each interpretation. Tables 4a and 4b provide results of the ordinal regression for two-argument vs. one-argument predicates in exclamatives with SP vs. PL interpretations.

answers				answers			
Predictors	Odds Ratios	CI	p	Predictors	Odds Ratios	CI	p
1 2	0.05	0.02 - 0.13	< 0.001	1 2	0.04	0.02 - 0.11	< 0.001
2 3	0.20	0.08 - 0.51	0.001	2 3	0.11	0.05 - 0.25	< 0.001
3 4	0.44	0.18 - 1.10	0.079	3 4	0.24	0.11 - 0.55	0.001
4 5	1.35	0.54 - 3.35	0.520	4 5	0.92	0.41 - 2.06	0.848
syntacticrole [args]	1.38	0.64 - 2.98	0.406	syntacticrole [args]	1.41	0.64 - 3.14	0.396
Random Effects				Random Effects			
σ^2	3.29			σ^2	3.29		
τ_{00} id	6.29			τ_{00} id	3.92		
τ_{00} sentence	0.42			τ_{00} sentence	0.47		
ICC	0.67			ICC	0.57		
N_{id}	50			N_{id}	50		
$N_{sentence}$	16			$N_{sentence}$	16		
Observations	400			Observations	400		
Marginal R ² /				Marginal R ² /			
Conditional R ²	0.003/0.672			Conditional R ²	0.004/0.573		

(a) SP interpretations

(b) PL interpretations

Table 4: Ordinal regression for Valency in exclamatives with SP and PL interpretations

As Tables 4 demonstrate, for exclamatives with both SP and PL interpretations, Valency does not play a key role ($p > 0.05$). Moreover, pairwise comparisons between the levels of Valency are non-significant. Therefore, Hypothesis 4 is not confirmed.

Hypothesis 5 was tested via ordinal regression, cf. Tables 5. Tables 5a–5b show that the Superiority effect does not influence interpretations of interrogatives ($p > 0.05$). Therefore, Hypothesis 5 is not supported. Moreover, the interaction between the Superiority effect and Valency in exclamatives (cf. Tables 6a–6b), as well as pairwise comparisons between the levels of Superiority effect in exclamatives, are non-significant ($p > 0.05$). Consequently, the Superiority effect does not affect interpretations either of exclamatives or of interrogatives.

answers				answers			
Predictors	Odds Ratios	CI	p	Predictors	Odds Ratios	CI	p
1 2	0.02	0.00 - 0.08	< 0.001	1 2	0.02	0.01 - 0.05	< 0.001
2 3	0.09	0.02 - 0.35	0.001	2 3	0.03	0.01 - 0.10	< 0.001
3 4	0.24	0.06 - 0.96	0.044	3 4	0.08	0.03 - 0.23	< 0.001
4 5	0.77	0.20 - 2.99	0.709	4 5	0.36	0.14 - 0.92	0.032
order [indirect]	0.90	0.36 - 2.23	0.817	order [indirect]	1.16	0.55 - 2.42	0.694
Random Effects				Random Effects			
σ^2	3.29			σ^2	3.29		
τ_{00} id	15.72			τ_{00} id	6.80		
τ_{00} sentence	0.60			τ_{00} sentence	0.31		
ICC	0.83			ICC	0.68		
N_{id}	50			N_{id}	50		
$N_{sentence}$	16			$N_{sentence}$	16		
Observations	400			Observations	400		
Marginal R ² /				Marginal R ² /			
Conditional R ²	0.000/0.832			Conditional R ²	0.001/0.684		

(a) SP interpretations

(b) PL interpretations

Table 5: Ordinal regression for the Superiority effect in interrogatives with SP and PL interpretations

4 CONCLUSION

The experimental study reported in this paper showed that both PL and SP interpretations are felicitous in Russian interrogatives and exclamatives. Moreover, contrary to what has been claimed in the literature, PL interpretations are preferred over SP interpretations in both coordinated and non-coordinated interrogatives. Furthermore, PL interpretations prevail in non-coordinated exclamatives, which is not predicted by any theory of exclamatives. Importantly, the ordering of wh-phrases in interrogatives does not have a bias towards an SP or PL interpretation, whereas neither

answers				answers			
Predictors	Odds Ratios	CI	p	Predictors	Odds Ratios	CI	p
1 2	0.04	0.01 - 0.12	<0.001	1 2	0.06	0.02 - 0.16	<0.001
2 3	0.17	0.06 - 0.49	0.001	2 3	0.15	0.06 - 0.37	<0.001
3 4	0.37	0.13 - 1.06	0.064	3 4	0.34	0.14 - 0.83	0.017
4 5	1.13	0.40 - 3.22	0.814	4 5	1.33	0.56 - 3.16	0.525
syntacticrole [args]	1.44	0.50 - 4.13	0.494	syntacticrole [args]	1.19	0.47 - 2.98	0.713
order [indirect]	0.70	0.25 - 2.01	0.513	order [indirect]	2.03	0.80 - 5.14	0.134
syntacticrole [args] *				syntacticrole [args] *			
order [indirect]	0.93	0.21 - 4.07	0.919	order [indirect]	1.43	0.38 - 5.36	0.591
Random Effects				Random Effects			
σ^2	3.29			σ^2	3.29		
τ_{00} id	6.28			τ_{00} id	3.92		
τ_{00} sentence	0.38			τ_{00} sentence	0.26		
ICC	0.67			ICC	0.56		
N_{id}	50			N_{id}	50		
$N_{sentence}$	16			$N_{sentence}$	16		
Observations	400			Observations	400		
Marginal R ² /				Marginal R ² /			
Conditional R ²	0.007/0.672			Conditional R ²	0.031/0.573		

(a) SP interpretations

(b) PL interpretations

Table 6: Interaction between Valency and the Superiority effect in exclamatives with SP and PL interpretations

the ordering nor valency (argument vs. adjunct status of wh-phrases) play a role in interpreting exclamatives.

ABBREVIATIONS

2	second person	LOC	locative
3	third person	NEG	negation
ACC	accusative	NOM	nominative
AUX	auxiliary verb	PL	pair list
DAT	dative	PL	plural
GEN	genitive	PRS	present
INF	infinitive	PST	past
INST	instrumental	SG	singular
INTERJ	interjection	SP	single pair

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APPENDIX

Critical and control items: <https://goo-gl.me/NpWbV>