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ЭКСПЕРИМЕНТАЛЬНОЕ ИССЛЕДОВАНИЕ НЕОДНОЗНАЧНОСТИ ПРИ ГЛАГОЛАХ ТИПА *ОБЪЯСНИТЬ*: ЗАМЕТКИ ОБ АНАЛИЗЕ БОНДАРЕНКО*

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Аннотация: Как обсуждается в недавней литературе, сентенциальный актант при *объяснить* (и схожих глаголах) интерпретируется либо как факт/пропозиция, подлежащая объяснению («экспланандум»), либо как пропозиция, представляющая собой объяснение другого факта/пропозиции («эксплананс»). В отличие от эксплананса, экспланандум обычно реализуется как именной актант, включая номинализованную клаузу (конструкцию с *то, что*), однако клауза со *что* также допустима с этим значением. Эта неоднозначность рассматривается в работах Татьяны Бондаренко [2021, 2022], где показывается, главным образом на основе сильноостровных свойств, что клаузы со значением экспланандума имеют структуру именных групп (DP) и всегда номинализованы, с помощью выраженной (*то*) или нулевой вершины D^0 . Анализ служит аргументом в пользу дихотомии сентенциальных актантов, трактуемых либо как семантические аргументы (DP) либо как модификаторы (CP). В статье приводится исследование мини-корпуса неоднозначности при *объяснить*, а также эксперимент на оценку приемлемости, где сравнивался вопросительный вынос при *объяснить* и трех других глаголов в зависимости от значения эксплананса/экспланандума, с учетом оценки клауз со *что*, а также клауз с *то, что* (имеющих статус островов). Результаты подтверждают наличие у актанта-экспланандума островных свойств, несмотря на вариативность между глаголами. Отметим, что значение экспланандума в эксперименте задавалось инструментальным дополнением / наречием образа действия, которые, как показывает корпусное исследование, с ним сильно связаны. Корпусные

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данные также указывает на возможное третье значение при *объяснить*, охарактеризованное как «субъективная» (нефактивная) разновидность экспланандума.

Ключевые слова: сентенциальные актанты, глаголы типа *объяснить*, оболочка именной группы, вопросительный вынос, экспериментальный синтаксис, корпусное исследование, русский язык

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AN EXPERIMENTAL STUDY OF THE TWO READINGS OF THE COMPLEMENT OF *EXPLAIN* VERBS IN RUSSIAN: REMARKS ON BONDARENKO*

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Abstract: As commonly discussed in recent literature, the complement of *explain* (and similar verbs) is interpreted either as a fact/proposition to be explained (*explanandum*) or as a proposition provided as an explanation for some other fact/proposition (*explanans*). Unlike the *explanans*, the *explanandum* is usually associated with nominal constructions, e.g. *the fact that*, nominalized clauses, but is also attested with simple declarative clauses. Bondarenko [2021, 2022] examines this ambiguity on the basis of Russian, providing arguments, mainly from strong islandhood, that apparent *explanandum* CP complements are covertly nominalized with a null D^0 . This is used to support the claim about the fundamental dichotomy of clausal complements which can be semantically either arguments (DP) or modifiers (CP). The paper reports a mini corpus study of the ambiguity with *ob'jasnit'* 'explain' and an acceptability rating study (with *ob'jasnit'* 'explain' and three other verbs) which tested whether wh-argument extraction from *explanandum* *čto*-clauses is unacceptable (as opposed to *explanans* clauses), controlling for a possible dispreference for such clauses without extraction and also comparing them with overtly nominalized (*to*, *čto*) clauses, taken to

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be strong islands. The results provide general support for Bondarenko's analysis despite some variation between verbs. Importantly, the experiment used instrumental/manner phrases to control the explanandum reading, which the corpus study has shown to be very strongly related. The corpus study also raises the possibility of the existence of a third reading of the complement of *ob"jasnit'* 'explain', characterized as "subjective"/nonfactive explanandum.

Keywords: clausal complements, *explain* verbs, DP-shells, wh-extraction, experimental syntax, corpus study, Russian

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1. Introduction

The verb *explain* has two different subcategorization frames, which are associated with two different meanings [Pietroski 2000; Kastner 2015; Elliott 2017; Bondarenko 2021, 2022, a.o.]. On the one hand, it can take a nominal complement (e.g. *this fact, the fact that p, his resignation, his behavior, it, etc.*) interpreted as something (called the *explanandum*) that the agent/causer provides an explanation for. On the other hand, it can take a declarative clausal complement (CP) interpreted as something (called the *explanans*) that the agent offers by way of explanation for some other thing.¹ To appreciate the difference in meaning, consider the sentences in (1a)–(1b), from Elliott 2017. In (1a), the complex DP *the fact that Boris resigned* is understood as the thing explained, with the explanation (i.e. that Boris is ill) left implicit. By contrast, in (1b) the *that*-clause *that Boris resigned* corresponds to the explanation, with the thing explained (i.e. that Boris did not show up) left implicit. The context in (1a)–(1b) ensures that the two sentences indeed differ truth-conditionally, i.e. one can be true in a situation where the other one is false and vice versa.

- (1) a. Context: Everyone is wondering why Boris resigned, and Angela announces that Boris has long-term health issues. Since everyone knows that Boris has in fact resigned, Angela does not bother to mention this.
Angela explained [_{DP} *the fact that Boris resigned*]. (explanandum)

¹ *Explain* can also take an embedded question. Such uses are not discussed in this paper. See e.g. [Elliott 2017].

- b. Context: One day Boris does not come in to work, and everyone is wondering why. Angela announces that Boris resigned, but does not say why.
Angela explained [_{CP} *that Boris resigned*]. (explanans)
 (adapted from [Elliott 2017])

The alternation shown by *explain* (and other verbs of this class), as in (1), is noteworthy because for other attitude predicates that allow their complements to be realized either as a DP or a CP, e.g. *know*, *discover* etc., the thematic role of the complement intuitively does not vary (depending on its syntactic category) in a similar way but instead is uniformly interpreted as the thing known, discovered, etc. (see Djärv 2023 for further discussion).

While the semantic role of the complement of *explain* is commonly taken to be fully determined by whether it is a clause or a nominal expression (i.e. DP \Leftrightarrow explanandum; CP \Leftrightarrow explanans), several examples have been cited in the literature [Bondarenko 2021; Roelofson, Uegaki 2021] where the declarative complement is interpreted as the explanandum, as in (2a)–(2b).²

- (2) a. *Now I will explain that this algorithm works whenever $x < 5$, but not when $x \geq 5$.* [Roelofson, Uegaki 2021]
 b. *How do we explain that Cameroon have won twice as many UCL golds as Nigeria?* (Internet; cited in [Bondarenko 2021])

Taking examples like (2) seriously, [Bondarenko 2021, 2022] argues on the basis of Russian that *čto*-clause declarative complements of *ob”jasnit’* ‘explain’ and a few other verbs e.g. *prokomentirovat’* ‘comment (on)’, *argumentirovat’* ‘argue (for)’ are indeed systematically ambiguous between the two readings, as in (3), as compared to nominalized clauses (headed by the distal demonstrative *to*) in (4), where only the explanandum reading is possible. (Here and below I use the terms “explanans” and “explanandum” in a generalized sense to apply to a similar alternation with other verbs of the *explain*-class.) To anticipate, I agree with Bondarenko’s assessment that (3) is generally ambiguous. Yet, I find the judgments regarding the explanandum reading rather delicate and in the absence of corpus or experimental evidence, it is unclear to what extent this reading is available for Russian speakers.

² “Exceptions” in the other direction also exist and involve quantificational/anaphoric propositional expressions like *thing*, *something*, etc., which are optionally associated with the explanans reading (see [Elliott 2017]).

- (3) *Lena objasnila [čto xleba net].*
 Lena explained that bread.GEN is.no
 ‘Lena explained that there’s no bread.’
 i. ✓EXPLANANDUM: Lena explained the fact that there’s no bread.
 ii. ✓EXPLANANS: Lena said “there’s no bread” as an explanation for some fact.
 (adapted from [Bondarenko 2021])
- (4) *Lena objasnila [to čto xleba net].*
 Lena explained that.ACC that bread.GEN is.no
 ‘Lena explained that there’s no bread.’
 i. ✓EXPLANANDUM: Lena explained the fact that there’s no bread.
 ii. ✗EXPLANANS: Lena said “there’s no bread” as an explanation for some fact.

While the data in (3) might suggest that the correlation between the thematic role and the complement type goes only in one direction (DP ⇒ explanandum), Bondarenko defends the standard bidirectional view by arguing that what looks like a declarative CP on the explanandum reading in (3) is in fact a nominalized clause embedded in a null DP shell, as illustrated in (5a) (for other analyses with DP-shells, including for Russian, see a.o. [Hartman 2012; Kastner 2015; Knyazev 2022a]); cf. this with the explanans reading in (5b). Preserving the two-way correlation is important for Bondarenko because her general view is that only nominals but not bare CPs are capable of being true thematic arguments, e.g. Themes, which is what the explanandum corresponds to (see Section 2 for discussion).

- (5) a. *Lena objasnila* [_{DP} ∅ / *to* [_{CP} *čto xleba net*]].
 Lena explained that.ACC that bread.GEN is.no
 ‘Lena explained the fact that there’s no bread.’ (explanandum)
- b. *Lena objasnila* [_{CP} *čto xleba net*].
 Lena explained that bread.GEN is.no
 ‘Lena explained (something by saying) that there’s no bread.’ (explanans)

Bondarenko’s main empirical argument for the analysis in (5) comes from extraction. Specifically, she argues that extraction from the embedded clause is only compatible with the explanans reading but not with the explanandum reading, as shown in (6a); cf. extraction from overtly nominalized clauses, which are strong islands (see [Knyazev 2023] for experimental evidence), as in (6b). This suggests that on the explanandum reading the clause is covertly nominalized.

Bondarenko suggests Anti-Locality as an explanation for the strong islandhood of DP-CP structures (see e.g. [Erlewine 2016]), but this is not crucial for the purposes of this paper.³

- (6) a. *Kogo Lena ob’jasnila [čto “Zenit” legko odoleet]?*
 who.ACC Lena explained that Zenit easily will defeat
 i. ✗EXPLANANDUM: ‘Who is x such that Lena explained the fact that Zenit will easily defeat x?’
 ii. ✓EXPLANANS: ‘Who is x such that Lena explained some fact by saying “Zenit will easily defeat x”?’
 Intended: ‘Who did Lena explain that Zenit will easily defeat?’ (adapted from [Bondarenko 2022: 323])
- b. **Kogo Lena ob’jasnila [to čto “Zenit” legko odoleet]?*
 who.ACC Lena explained that.ACC that Zenit easily will defeat
 Intended: ‘Who did Lena explain that Zenit will easily defeat?’ (adapted from [Bondarenko 2022: 326])

The main goal of this paper is to experimentally examine the contrasts like (6) (with *explain* and other verbs of this class) using a factorial design (see, e.g., [Sprouse et al. 2016]), in order to isolate the possible effect of the explanandum reading on acceptability (independently of the presence of extraction). Although there is little doubt that extracting from a clause with the explanandum reading is quite bad, it cannot be excluded that the unacceptability of (6ai) reflects a general dispreference for the explanandum reading with *čto*-clauses, as hinted above (see the discussion of (3)), combined with a general dispreference for extraction from declarative clauses in Russian, as amply documented in the literature (see a.o. [Khomisevitch 2007, Bailyn 2020]). The second, complementary, goal is to assess (on the basis of a mini corpus study) how frequently and in what specific configurations the explanandum reading of the complement of *ob’jasnit* ‘explain’ is observed.

To anticipate the main conclusion, the results provide general support for Bondarenko’s analysis, although they also highlight several aspects of the phenomenon that have to be taken into account in future work, including, but not limited to, variation between verbs of the *explain*-class, the effect of overtness/

³ Assimilating the strong islandhood of nominalized clauses in Russian to the complex NP island (cf. [Kastner 2015]) does not work as there is evidence against the presence of a null N in such clauses (see [Bondarenko 2022; Knyazev 2022]).

covertness of D^0 on the possibility of extraction, the role of contextual cues for the explanandum reading, as well as the potential non-uniformity of the explanandum reading.

The paper is structured as follows. Section 2 presents Bondarenko's formal analysis of the ambiguity with *explain*. Section 3 presents the results of the mini corpus study. Section 4 presents the experimental study. Section 5 discusses the results and concludes the paper.

2. Bondarenko's analysis of *ob''jasnit'* 'explain'

Following recent semantics literature on complementation [Moulton 2015, Elliott 2017, a.o.], Bondarenko [2021, 2022] assumes that declarative complement clauses (CPs) have the type $\langle e, t \rangle$ and denote predicates of individuals with content (including importantly situation arguments of attitude predicates), as in (7) (the content is recovered by the function CONT from individuals with content to propositions).

$$(7) \quad \llbracket \text{that there is no bread} \rrbracket = \lambda y. [\text{CONT}(y) = \lambda w. \llbracket \text{there is no bread in } w \rrbracket]$$

One of the main tenets of Bondarenko's system is that there are two paths of integration of a declarative CP into the matrix clause: a) as a *modifier* of the situation argument of the verb; b) as an *argument* of the verb via an argument-introducing head corresponding to a thematic role (Theme, Causer, etc.). The first path is employed by verbs of saying and thinking, which are assumed to lack an internal (Theme) argument, at least by default. Such verbs, analyzed as predicates of states/events (a species of individuals), directly compose with CP by Predicate Modification, as in (8a)–(8b), reflecting the intuition that the clause specifies the content of the thinking state, saying event, etc. (see also [Elliott 2017]).

$$(8) \quad \text{a. } \llbracket \text{think} \rrbracket = \lambda s. \llbracket \text{think}(s) \rrbracket$$

$$\text{b. } \llbracket \text{think that there is no bread} \rrbracket = \lambda s. \llbracket \text{think}(s) \wedge \text{CONT}(s) = \lambda w. \llbracket \text{there is no bread in } w \rrbracket \rrbracket$$

The second path is observed with verbs that have a true Theme argument, such as factive and more generally presuppositional verbs, including verbs that presuppose that the CP is given, i.e. claimed or entertained by someone in the

discourse context (but not necessarily true).⁴ Assuming that Themes are restricted to $\langle e \rangle$ -type expressions, the verb (after it combines with a Theme-introducing head Θ_{Theme}) cannot directly compose with CP. What happens, Bondarenko argues, is that the CP undergoes nominalization by way of combining with a (possibly null) D^0 head, which (normally) has a definite interpretation and analyzed as iota-operator (picking out a unique contextually salient individual with the relevant context), as shown in (9). This captures the factive/givenness presupposition associated with the CP of these verbs.

- (9) a. $\llbracket \text{remember } \Theta_{\text{Theme}} \rrbracket = \lambda x. \lambda s. [\text{remember}(s) \wedge \text{Theme}(s) = x]$
 b. $\llbracket \text{remember } \Theta_{\text{Theme}} \text{ that there is no bread} \rrbracket = \lambda s. [\text{remember}(s) \wedge \text{Theme}(s) = \iota y. [\text{CONT}(y) = \lambda w. [\text{there is no bread in } w]]]$

Now, an interesting property of *ob'jasnit'* 'explain' and other verbs of this class (including *prokomentirovat'* 'comment', *argumentirovat'* 'argue' and others) is that they allow both paths of integration, with the explanandum reading corresponding to the argument path and the explanans reading corresponding to the modifier path. Bondarenko handles this alternation in such a way that a single root $\sqrt{\text{EXPLAIN}}$ with a rather basic meaning, as in (10a), can occur in two different argument structures.

The explanandum reading corresponds to $\sqrt{\text{EXPLAIN}}$ combining with the Theme-introducing head and heading the result subevent (ResultP), which is the complement of the causative head (v_{caus}), as in (10b). This leads to the truth conditions in (10c) for the sentence in (3) (disregarding tense and simplifying for expository purposes), paraphrasable as 'there is a causing situation, whose Causer is Lena, and whose result state is the state of being clear that holds of the salient individual with the propositional content "There is no bread in the cupboard"' [Bondarenko 2022: 342]. In other words, some proposition/fact becomes clarified as a result of the actions, typically verbal, of the subject.

- (10) a. $\llbracket \sqrt{\text{EXPLAIN}} \rrbracket = \lambda s. \text{be-clear}(s)$
 b. $[v_{\text{caus}} [\text{ResultP} [\text{Result } \sqrt{\text{EXPLAIN}} \Theta_{\text{Theme}}]]_{\text{DP}} D^0 [\text{CP that there is no bread}]]]$
 c. $\text{Causer}(s') = \text{Lena} \wedge \text{CAUS}(s'')(s') \wedge \text{be-clear}(s'') \wedge \text{Theme}(s'') = \iota x. [\text{CONT}(x) = \lambda w. [\text{there is no bread in } w]]]$

⁴ This path is also available for verbs with Causer and *About*-arguments. See [Bondarenko 2022] for further details.

The explanans reading corresponds to $\sqrt{\text{EXPLAIN}}$ combining with a silent verb $\emptyset_{\text{SAY_INTENT}}$ ‘say with intent to X’, which leads to the creation of the complex predicate [$\emptyset_{\text{SAY_INTENT}} \sqrt{\text{EXPLAIN}}$], denoting a predicate of saying situations such that in all situations s'' in which the Agent of saying succeeds in their intentions, the counterpart [κ] of the saying situation causes there to be a result state of something being clear [Bondarenko 2022: 351]. This complex predicate can then directly combine with the CP, as in (11a), giving truth conditions in (11b) for the sentence in (3), paraphrasable as ‘Lena said “There is no bread in the cupboard”, and by doing this she was trying to explain something’ [Bondarenko 2022: 351].

- (11) a. $[[V \emptyset_{\text{SAY_INTENT}} \sqrt{\text{EXPLAIN}}] [\text{CP that there is no bread}]]$
- b. $\exists s'. \text{say}(s') \wedge \text{Causer}(s') = \text{Lena} \wedge \text{CONT}(s') = \lambda w. [\text{there is no bread in } w]$
 $\wedge \forall s''. [\text{in } s'' \text{ Agent}(s') \text{ succeed in their intentions in } s' \Rightarrow \exists s'''. \text{be-clear}(s''') \wedge \text{CAUS}(s''')(\kappa(s'))]$

The analysis in (11) captures the fact that on the explanans reading *ob’jasnit’* ‘explain’ + CP is interpreted as ‘say CP’ with the root $\sqrt{\text{EXPLAIN}}$ modifying some modal component of its meaning but importantly without being directly linked with the meaning of the CP. This contrasts with the explanandum reading where the CP is effectively an argument of the root (via the Theme-introducing head).

Bondarenko supports this analysis by a number of observations/predictions, including: (i) the factivity/presuppositionality of the explanandum reading; (ii) an overt realization of the DP-layer in lexical nominalizations of *ob’jasnit’* ‘explain’ with the explanandum reading (though see [Knyazev 2022b] for potential counterexamples); (iii) the incompatibility of the explanans reading with overtly nominalized clauses (and other nominals such as nominal proforms); and (iv) the ban on extraction from explanandum complements.

Predictions (iii) and (iv) are the focus of the experimental study reported in Section 4. But I also examine more basic aspects of Bondarenko’s proposal such as: (v) that the explanandum reading is indeed attested with *čto*-clause complements (without *to*) of *ob’jasnit’* ‘explain’ (as was discussed in Section 1, (v) is a precondition for the argument from extraction in (iv)); and (vi) that the meanings of naturally-occurring sentences actually align with the two proposed paraphrases in (10)–(11). The observations in (v)–(vi) are the focus of the corpus study reported below.

3. Mini corpus study

The goal of the study was to test whether the explanandum reading of the complement of *ob''jasnit'/ob''jasnjat'* 'explain' is reliably attested in the corpus. The main focus was on *čto*-clauses, but the data on *to*, *čto*-clauses were also collected for comparison. Both the perfective (*ob''jasnit'*) and the imperfective (*ob''jasnjat'*) verbs were analyzed. As the material for the study, I used the main subcorpus of the Russian National Corpus (RNC, ruscorpora.ru), limiting myself to written texts after 1951.

The queries involved the verb (*ob''jasnit'/ob''jasnjat'*) followed by *to* or *to* + *čto* separated by the distance of 1 to 3 words. For *to*, *čto*-clauses, which are relatively rare (about 150/100 examples in the original query), the full sample of examples was manually checked and analyzed. For *čto*-clauses, for which the original query contained about 5000/2800 examples, a random sample was used. The sample was constructed by selecting the first 500 examples from the search results in a randomized order, which were then manually checked to filter out irrelevant examples.

I coded the examples as explanans or explanandum, using my own intuition. In addition, I classified the examples with the explanandum reading according to contextual cues that help identify this reading as such. In the overwhelming majority of cases, the minimal context (i.e. the sentence) was sufficient to identify the reading. In several unclear cases, I consulted a larger context, namely paragraph, which is also available in RNC.

The counts are given in Table 1.⁵ Let's start with *to*, *čto*-clauses. First, we can see that, as expected, there are no examples with the explanans reading, except for one example that contains an additive focus particle *i*, which is irrelevant because narrow focus independently requires nominalized clauses (see e.g. [Khomitsevich 2007]). Second, and more interestingly, there are disproportionately many examples with instrumental and manner phrases. For example, with the perfective version of the verb, 53 out of 56 examples contained one of such phrases, with *čem* 'what.INS', *kak* 'how' and *ètim* 'this.INS' accounting for more than half of the examples. Interestingly, the remaining 3

⁵ The corpus search results can be found at <https://osf.io/bdtha/>.

examples all contained *možet ob''jasnit'* 'can explain'.⁶ With the imperfective version, which was generally much rarer, there were 11 out of 15 examples with manner/instrumental phrases. Also note that 3 out of 4 remaining examples contain the non-agentive subject (*fakt* 'fact', *ideja* 'idea').

Table 1. Counts of examples with *ob''jasnit'*/*ob''jasnjat'* 'explain' with *čto* and *to*, *čto*-clauses

	<i>ob''jasnit'</i> 'explain (PFV)' + <i>to</i> , <i>čto</i>	<i>ob''jasnjat'</i> 'explain (IPFV)' + <i>to</i> , <i>čto</i>	<i>ob''jasnit'</i> 'explain (PFV)' + <i>čto</i>
explanans	0 (1 irrelevant)	0	405
explanandum, of which:	57	15	36
<i>čem</i> 'what.INS'	12	–	9
<i>kak</i> 'how'	10	–	20
<i>ètim</i> 'this.INS'	10	3	2
other INS proforms	2	–	–
full NP _{INS}	17	6	–
manner adverbs	2	2	3
other	3	4	2
total	57	15	441

Moving on to examples with *čto*-clauses (with the perfective verb; on the imperfective verb see below), we can see that the explanandum reading is relatively rare and occurred only in 36 (8%) out of 441 examples (from the random sample). We also see, as in the case of *to*, *čto*-clauses, the overwhelming majority (34 out of 36) of the explanandum examples contained instrumental and manner phrases (notably, one remaining example contained an agentive subject and the other a possibility modal). These figures show that the explanandum reading is rare and normally requires contextual support in the form of linguistic cues.

The classification of examples with *čto*-clauses revealed a further interesting pattern, not envisaged by Bondarenko. Specifically, there emerged two subclasses of the explanandum reading, which can be roughly characterized as *objective* and *subjective* (cf. [Anand & Hacquard 2009] for a somewhat similar contrast in

⁶ Cf. in this context the observation by [Kallulli 2006] that *believe* becomes factive when combined with *can* (*can believe*).

the domain of attitude verbs). In the objective class, the speaker/agent makes some fact *p* clear by providing a *causal explanation* of *p*, i.e. by answering the why-question with respect to *p*, as shown e.g. in (12), where the explanation is referred to in the preceding sentence (namely, ‘there are too many injured players on the team’).

- (12) *Nu čem ešče možno ob’’jasnit’, što pri 25 udarax po vorotam v Severnoj Irlandii my igraem 0 : 0?* (RNC)
 PRT what.INS else can explain.INF that with 25 kicks on
 goal in Northern Ireland we play 0 0
 ‘How else can one explain that with 25 shots on goal, the score is 0 : 0?’

In the subjective class (comprising about one third of the cases of *ob’’jasnit’ + što*), *p* is simply assumed to be unclear to *x* (realized as the addressee or implicit) for whatever reason, with no implication as to the existence or relevance of the causal explanation; furthermore, *p* does not have to be presupposed (factive). For example, in (13) the speaker is talking about explaining *p* (the content of the CP) to the dative argument (‘suckers’) but he is not referring to causes or reasons to believe *p*, rather *p* itself is unclear as his addressees are too young to understand Soviet realities.

- (13) *Kak ob’’jasniš’ ètim sosunkam, što v partiju vstupil potomu, što dolžnost’ svetila.* (RNC)
 how explain.2SG these suckers.DAT that in party entered because
 that position loomed
 ‘How to explain to these suckers that I entered the [Communist] Party because a promotion loomed ahead.’

Note that both of the subclasses fit Bondarenko’s truth conditions for the explanandum reading in (10c) as they do not specify how exactly *p*’s clarity comes about. They are also similar in that they can occur with instrumental/manner phrases (cf. Table 1). However, the subjective explanandum reading turns out to be difficult to distinguish from the explanans reading in certain cases, which was especially true for the imperfective verb, where it often occurs without instrumental/manner phrases so that one must resort to a larger

context (or other contextual cues).⁷ The difficulty is presumably due to the fact that on this reading *q* (what the agent actually says) and *p* (what the agent really wants to “say”, or clarify) are themselves not so clearly distinguished. Therefore, counts for the imperfective are not reported (cf. Table 1).

To summarize, while the explanandum reading is reliably attested in the corpus, it is rather marked and may not be easily available for the speakers unless cued by manner or instrumental phrases. We also saw that at least in Russian the explanandum reading has a previously unrecognized “subjective” variety. This reading may be not so clearly distinguished from the explanans reading, especially with the imperfective aspect, which requires further study.

4. Experimental study

4.1. Hypotheses and design

The goal of the study was to test whether argument extraction from *čto*-clauses with the explanandum reading (in a general sense) is indeed prohibited, in contrast to explanans clauses with *ob’jasnit’* ‘explain’ and other similar verbs. Sentences without extraction were included in the design to ensure that explanandum *čto*-clauses as such are acceptable to speakers. In addition, sentences with nominalized (*to*, *čto*) clauses were also included to serve as baseline for ungrammatical extraction. All these factors were fully crossed, leading to a $2 \times 2 \times 2$ factorial design, as in (14).

⁷ For example, the CP in (i) is probably understood as something that the officer was actually saying to make something else clear (perhaps that our plan is not viable). Yet, it cannot be excluded that it is the CP itself that required clarification. In fact, in some cases the meaning of the sentence is so uncertain as to suggest that this is a case of vagueness rather than ambiguity.

- (i) *Sotrudniki kreditnogo otdela <...> bityj čas ob’jasnjali nam,*
 employers loan department.GEN beaten hour explained us.DAT
čto dlja zaloga kvartiry neobxodim vyezd èksperta na mesto... (RNC)
 that for pledge apartment.GEN necessary visit expert.GEN on site
 ‘Loan officers spent the whole hour explaining to us that in order to pledge the apartment we need an on-site visit of an expert’

Interesting in this connection are examples with deontic modals (especially under negation and question operators) such as ‘no need to explain CP’, ‘do I need to explain CP?’, which occurred multiple times in the sample. Such sentences can be read either as ‘I don’t need to say CP to explain some more general (implied) thing *p*’ or as ‘I don’t need to clarify CP with *q* further as it is self-evident’.

- (14) a. {*Direktora sprosili, počemu on vyzval odnu iz sotrudnic*
 director.ACC asked why he called one.ACC of employers
v kabinet.} *On ob''jasnil (to), što ee neobxodimo*
 to room he explained that.ACC that her necessary
uvolit'.
 fire.INF
 ‘{The director was asked why he called one of the employers to his
 room.} He explained that it was necessary to fire her.’
 [EXPLANANS | ± TO | NO EXTRACTION]

- b. {*Direktora sprosili, počemu on vyzval odnu iz sotrudnic*
 director.ACC asked why he called one.ACC of employers
v kabinet. On ob''jasnil, što ee neobxodimo uvolit'.}
 to room he explained that her necessary fire.INF
Kogo on ob''jasnil (to), što neobxodimo uvolit' __?
 who.ACC he explained that.ACC that necessary fire.INF
 ‘{The director was asked why he called one of the employers to his
 room. He explained that it was necessary to fire her.} Who did he ex-
 plain that it was necessary to fire __?’
 [EXPLANANS | ± TO | EXTRACTION]

- c. {*Direktor skazal, što odna iz sotrudnic zanimalas'*
 director said that one of employers was.engaged
korporativnym špionažem.} *Ètim on ob''jasnil, što ee*
 corporate espionage.INS this.INS he explained that her
neobxodimo uvolit'.
 necessary fire.INF
 ‘{The director said that one of the employers was engaged in corporate
 espionage.} By saying this, he explained that it was necessary to fire her.’
 [EXPLANANDUM | ± TO | NO EXTRACTION]

- d. {*Direktor skazal, što odna iz sotrudnic zanimalas'*
 director said that one of employers was.engaged
korporativnym špionažem. Ètim on ob''jasnil, što ee
 corporate espionage.INS this.INS he explained that her

neobxodimo uvolit'.} *Kogo on ètim ob''jasnil, èto*
 necessary fire.INF who.ACC he this.INS explained that

neobxodimo uvolit' _ ?
 necessary fire.INF

{The director said that one of the employers was engaged in corporate espionage. By saying this, he explained that it was necessary to fire her.} Who did he explain that it was necessary to fire _ by saying this?'

[EXPLANANDUM | ± TO | EXTRACTION]

An important feature of the design was the use of linguistic cues such as instrumental/manner phrases to force (or encourage) the explanandum reading (see (14) below). This move may be objectionable on the grounds that it departs from Bondarenko's own examples like (3) and thus constitutes a weaker test of her hypothesis. However, ensuring that the CP has an explanandum reading in the absence of such cues may be problematic, especially considering another feature of the design, namely that the content of the CP was kept constant across the two readings (i.e. the CP was in principle compatible with either reading). The results suggested that the contextual manipulation was indeed successful.

The target sentence in the no extraction condition was always preceded by a lead-in sentence (in curly brackets) to provide an antecedent for either what was said as an explanation, comment, etc. (in the explanandum reading) or what was to be explained/commented on, etc. (in the explanans reading). In the extraction conditions, the target sentence was preceded by the same lead-in sentence as in the corresponding no-extraction conditions and also by the target sentence from the no-extraction condition with a *èto*-clause. The latter was done to set up a context for extraction from a declarative clause, which may sound rather unnatural out of the blue. The strategy was to use the corresponding declarative sentence as a preamble so that the long distance extraction may sound like an echo question (of the "request for repetition" variety). While echo questions have their own special properties (see e.g. [Chernova 2015]), I consider this orthogonal to the issue at hand, as the examples had overt wh-movement and were expected not to differ from ordinary wh-movement and to show island effects (which they indeed did, as was shown by ungrammatical baselines).

4.2. Materials

Four verbs with the explanans/explanandum ambiguity shown in (15) were selected from [Bondarenko 2022] for the experiment, mainly based on what verbs she herself uses in her examples.⁸

(15) *ob”jasnit’* ‘explain’, *argumentirovat’* ‘argue’, *prokomentirovat’* ‘comment’,
obosnovat’ ‘justify’

With each verb in (15), two 8-condition item sets were constructed, as in (14).^{9,10} The explanandum reading was cued by the proform *ètim* ‘this.INS’ with *ob”jasnit’* ‘explain’ and *argumentirovat’* ‘argue’; by the manner proform *nikak* ‘nohow’ of the *ni*-series (with the sentential negation) with *prokomentirovat’* ‘comment’; and by the adverb *podrobno* ‘in detail’ with *obosnovat’* ‘justify’. In all items, the extracted element was an argument, *kogo* ‘whom.DAT’ in 5 items, *čemu* ‘what.DAT’ in 2 items (with *argumentirovat’* ‘argue’ and *obosnovat’* ‘justify’) and *na čto* ‘on what’ in 1 item (with *obosnovat’* ‘justify’). The non-uniformity of the cues and the extractees across verbs was partly motivated by the desire to make items more variable so as to avoid participant fatigue and strategic responses, as well as by practical considerations when constructing examples. It was also thought unproblematic given that the relevant features were kept constant within items (even so, it may make possible differences between verbs more difficult to interpret).

The 64 experimental sentences were distributed across 8 experimental lists in a Latin Square design, such that each participant saw one item from each 8-condition item set and one item in each of the 8 conditions. The experimental sentences were interspersed in a randomized (separately for each participant) order with 18 filler sentences, including 2 practice items in the beginning of the questionnaire, which were not marked as such.¹¹

Fillers included 6 sentences with argument extraction: a) 2 with extraction from *čto*-clauses of nonfactives *dumat’* ‘think’ and *predpolagat’* ‘suppose’, which

⁸ Other verbs from [Bondarenko 2022] are *odobrit’* ‘approve’, *ocenit’* ‘evaluate’, *prointerpretirovat’* ‘interpret’, *utočnit’* ‘clarify’, *zametit’* ‘note’.

⁹ The experimental sentences (with the mean ratings) are provided in Appendix A, which can be found at <https://osf.io/bdtha/>.

¹⁰ Two extraction sentences in the explanandum condition with item 5 (with *prokomentirovat’* ‘comment’) had a typo (*on* ‘he’ instead of *ne* ‘not’) and were excluded from the main analysis.

¹¹ The filler sentences (with the mean ratings) are provided in Appendix A, which can be found at <https://osf.io/bdtha/>.

served as baseline for acceptable long-distance extraction; b) 2 with extraction from *čto*-clauses of cognitives factives *ponjat* ‘understand’ and *osoznat* ‘realize’, which explored possible differences between the explanandum clauses with the *explain* class and “ordinary” factive complements; c) extraction from complex NPs, which served as baselines for unacceptable extraction. There were also 6 acceptable fillers. Four of them had *čto*-clause complements (with the explanans-type reading) of different nonfactive verbs that were not used in the experimental sentences and were meant to resemble the verbs in (15). The remaining two had *to*, *čto*-clause complements in the accusative complement position with verbs that require them (*otnesti* ‘attribute’, *privesti* ‘cite’). Finally, there were 4 unacceptable fillers. Two of them had *čto*-clauses with verbs that require *to*, *čto*-clauses (*menjat* ‘change’, *nazvat* ‘name’); the other two had *to*, *čto*-clauses with verbs that require *čto*-clauses in standard Russian (*dumat* ‘think’ and *predpolagat* ‘suppose’). All fillers were preceded by one or two (in the case of fillers with extraction) preamble sentences similar to the experimental items so that they could not be easily distinguished from the latter.

4.3. Procedure and participants

Participants were asked to read the fragments and rate on a 7-point scale the naturalness of the last (target) sentence. The preamble sentences were given in italics and graphically separated from the target sentences. Two fragments, one with an acceptable and the other with an unacceptable target sentence, were given as an illustration with suggested ratings.

The experiment was hosted on PCIBex Farm (<https://farm.pcibex.net/>) and was completed by 72 participants (mean age 26.9), recruited via social media, with a large share of linguistics/philology students.¹²

4.4. Analysis and predictions

The z-score transformed results were analyzed statistically using linear mixed-effects models as implemented by the *lmerTest* package for R (Kuznetsova et al. 2017). As fixed effects, the model included *reading* (explanans vs explanandum), *sentence type* (declarative vs extraction) and *complement type* (*čto*-clause vs *to*, *čto*-clause), treatment-coded with the first factor as baseline, and all their interactions. As random effects, the model included subject and item, as well as by-item slope for reading and by-subject slopes for sentence type and comple-

¹² The experiment itself can be found at: <https://farm.pcibex.net/p/TsRraX/>.

ment type (models including more random effects did not converge or lead to a singular fit).^{13,14} In Section 4.5.2 below, I report the coefficients of the model, understood as the effect of some predictor or a combination of several predictors relative to the baseline condition (i.e. declarative explanans *čto*-clauses).

Bondarenko's analysis in (5) predicts an interaction between reading and extraction, such that extraction should be worse for *čto*-clauses with the explanandum reading compared to the explanans reading. It also predicts the effect of complement type and an interaction between complement type and reading, such that explanans complements should be worse with *to*, *čto*-clauses compared to *čto*-clauses (in the declarative condition), whereas explanandum complements should show no similar effect.

In addition to the main tests of the hypothesis, pairwise comparisons involving simpler models were also performed to further probe into the source of the interactions.

4.5. Results

4.5.1. Fillers

The results for the filler sentences are given in Table 2.

Table 2. Mean raw and standardized (z-score) ratings by filler type

filler type	mean raw rating (SD)	mean z-score rating (SD)
acceptable: <i>čto</i>	5.65 (2.05)	0.71 (0.95)
acceptable: <i>to</i> , <i>čto</i>	6.04 (1.45)	0.89 (0.58)
unacceptable: <i>čto</i>	3.59 (1.73)	-0.21 (0.72)
unacceptable: <i>to</i> , <i>čto</i>	3.94 (1.81)	-0.05 (0.70)
extraction: nonfactive	4.39 (2.08)	0.13 (0.80)
extraction: factive	3.64 (2.02)	-0.19 (0.73)
extraction: complex NP	1.62 (1.17)	-1.13 (0.46)

¹³ In cases where the model converged with either of the slopes but not with both, I chose the slope that lead to a lower p-value in a likelihood-ratio test (implemented by the anova function) comparing a given model with the same model without the slope (see [Sonderegger 2023] for discussion).

¹⁴ The full model specification is: $rating.zscore \sim reading * sentence.type * complement.type + (1 + reading | item) + (1 + complement.type + sentence.type | subject)$.

As we can see, participants were able to distinguish acceptable from unacceptable fillers. At the same time, unacceptable fillers received only intermediate ratings, presumably owing to the fact that the relevant sentences are sometimes attested in nonstandard and colloquial registers. Because of the concerns with possible dialectal or register variation in the results, I report the analysis both for all the participants and for a subset of participants ($N = 47$) (see Section 4.5.4).

4.5.2. Experimental sentences: All participants

The condition means (with standard errors) for the experiment are given in Table 3 and on the interaction plot in Figure 1.

Table 3. Mean raw and standardized (z-score) ratings (with standard errors) by reading, sentence type and complement type

reading	sentence type	complement type	mean raw rating (SE)	mean z-score rating (SE)
explanans	declarative	čto	5.37 (0.07)	0.57 (0.08)
		to, čto	3.68 (0.08)	-0.17 (0.07)
	extraction	čto	2.99 (0.11)	-0.48 (0.07)
		to, čto	1.72 (0.08)	-1.07 (0.04)
explanandum	declarative	čto	5.60 (0.06)	0.68 (0.06)
		to, čto	5.34 (0.06)	0.56 (0.07)
	extraction	čto	2.24 (0.11)	-0.86 (0.06)
		to, čto	1.81 (0.09)	-1.07 (0.05)

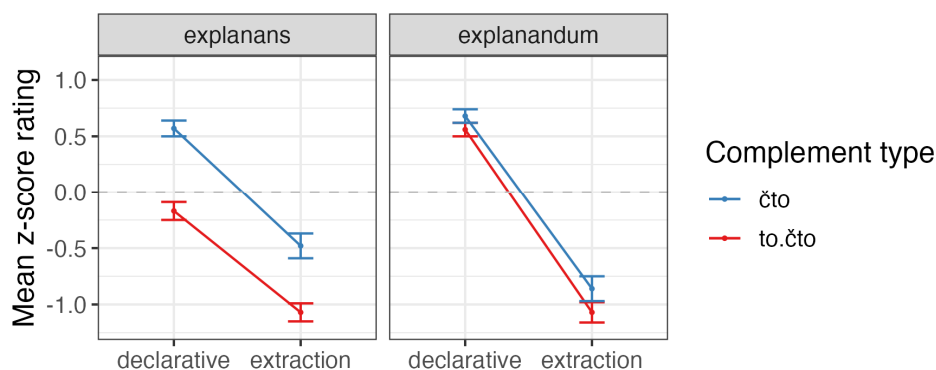


Figure 1. Mean z-score ratings (with standard errors) for the experimental conditions

The condition means and visual inspection of the plot suggest that extraction from *čto*-clauses was indeed worse for the explanandum (-0.86) compared to the explanans (-0.48) reading and was only slightly better than extraction from *to*, *čto*-clauses (-1.07), which did not differ across readings. This is in line with Bondarenko's analysis. We also see that with the explanans reading *to*, *čto*-clauses were rated lower compared to *čto*-clauses in the declarative condition, whereas there was no such contrast for the explanandum reading, again in line with the hypothesis. At the same time, *to*, *čto*-clauses did not lead to full unacceptability with explanans clauses but were rated in the middle of the scale, presumably due to the influence of nonstandard/colloquial registers.

These results were supported by linear-mixed effects models.¹⁵ The main model showed the effect of extraction ($\beta = -1.05$, $SE = 0.11$, $p < 0.001$), such that extraction (from explanans *čto*-clauses) was rated lower compared to the declarative condition. There was also the effect of *to*, *čto*-clauses ($\beta = -0.72$, $SE = 0.09$, $p < 0.001$), such that *to*, *čto*-clauses were rated lower compared to *čto*-clauses (in the declarative condition with explanans complements), in line with Bondarenko's analysis. This effect was qualified by the interaction between *to*, *čto*-clauses and the explanandum reading ($\beta = 0.62$, $SE = 0.10$, $p < 0.001$), showing that the negative effect of *to*, *čto*-clauses (observed with explanans complements) was largely cancelled with explanandum complements, again in line with the analysis. The effect was further confirmed by a simplified model for *to*, *čto*-clauses in the declarative condition, which showed that *to*, *čto*-clauses were rated higher on the explanandum compared to the explanans reading ($\beta = 0.76$, $SE = 0.17$, $p = 0.006$).

Most importantly, the main model showed an interaction between extraction and the explanandum reading ($\beta = -0.49$, $SE = 0.10$, $p < 0.001$), such that extraction was worse with the explanandum reading, in line with the analysis. A simplified model only for extraction from *čto*-clauses further showed that extraction from explanandum complements was rated lower compared to explanans complements ($\beta = -0.33$, $SE = 0.07$, $p < 0.001$).

The effect of the explanandum reading was not significant ($\beta = 0.11$, $SE = 0.10$, $p = 0.31$), showing that participants reliably rate *čto*-clauses on the explanandum reading in the declarative condition just as high as on the explanans reading, confirming Bondarenko's assessment. There was also a mar-

¹⁵ Full model output for the main model is provided in Appendix C, which can be found at: <https://osf.io/bdtha/>.

ginally significant interaction between extraction and *to*, *čto*-clauses ($\beta = 0.17$, $SE = 0.10$, $p = 0.09$), suggesting that extraction from explanans *to*, *čto*-clauses tended to be rated slightly higher than expected based on the independent dis-preference for *to*, *čto*-clauses and for extraction combined. This tendency presumably reflects the fact that the relevant condition was already rated at the very low end of the scale such that participants cannot perceive and register further degradation.

Finally, there was a marginal three-way interaction ($\beta = -0.25$, $SE = 0.15$, $p = 0.09$) due to a trend towards lower ratings for extraction with *to*, *čto*-clauses in the explanandum reading (which was in the opposite direction or absent with the explanans reading), possibly suggesting that overt D^0 may lead to a slightly stronger island effect than a null D^0 . Indeed, a simplified model for extraction from explanandum complements showed a lowering effect of *to*, *čto*-clauses on extraction ($\beta = -0.19$, $SE = 0.06$, $p = 0.002$).

To summarize, Bondarenko's analysis of explanandum complements as embedded in a null DP-shell and of explanans complements as bare CPs was generally confirmed, although intermediate ratings for *to*, *čto*-clauses with explanans complements require further investigation (see Section 4.5.4).

4.5.3. *By-verb analysis*

The analysis by individual verbs given in Figure 2 aligns with the general pattern observed in Figure 1.

The only clear outlier is the verb *obosnovat'* 'justify', where the two readings showed a rather similar pattern, which appears to be intermediate between the average pattern shown by the explanans and the explanandum complements, with a noticeable but rather small effect of *to*, *čto*-clause across the two sentence types. It is natural to assume that participants did not distinguish between the two discourse contexts, treating *both* contexts either as explanans or as explanandum. The latter possibility seems more likely. One reason is that the explanandum reading was cued by the adverb *podrobno* 'in detail', whereas the explanans reading was not specifically cued and was in principle pragmatically compatible with the explanandum reading. For example, while the CP in the target sentence in (16) is more naturally read as a justification of the governor's proposal, it can also be interpreted as some new proposition that the governor justifies using some further justification in order to justify said proposal.

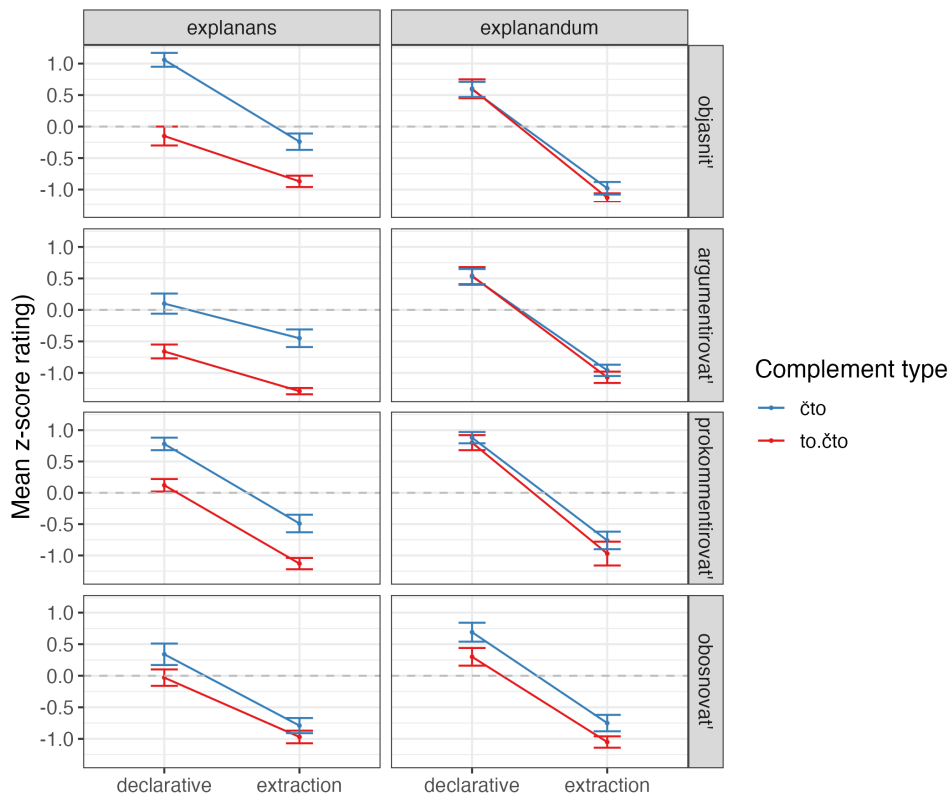


Figure 2. Mean z-score ratings (with standard errors) for the experimental conditions broken down by verb

(16) {*Nesmotrja na bol'šoj bjudžet meroprijatija, gubernator*
 despite on good budget event.GEN governor

predložil provesti soevnovanija v Permskom Krae.}
 proposed hold.INF competition.ACC in Perm Region

On obosnovat, čto oni budut sposobstvovat' sotrudničestvu
 he justified that they will promote.INF cooperation.DAT

meždu regionami.
 between regions

'{Despite the large budget of the event, the governor proposed to hold the competitions in Perm Region.} He reasoned that they would promote co-operation between the regions.'

The second reason is that in the corpus *obosnovat* 'justify' occurs predominantly if not exclusively with the explanandum reading (which is strikingly different from what we saw with *ob'jasnit* 'explain'; see Section 3). For example, in RNC texts written after 1951 in all of the 27 examples with *obosnovat* 'justify' followed by a *čto*-clause complement, the complement is an explanandum.

Jointly, this suggests that there is strong bias for the explanandum reading with this verb which apparently won over any bias suggested by the context, resulting in the lack of contrast between the two readings in the results for *obosnovat* ‘justify’.

Interestingly, *argumentirovat* ‘argue’ seems to share with *obosnovat* ‘justify’ a general dispreference for the explanans reading (cf. the rating for a *čto*-clause in the middle of the scale), it shows a different overall pattern, suggesting that speakers can still distinguish between the two readings. As for *ob”jasnit* ‘explain’ and *prokomentirovat* ‘comment’, their pattern resembles the average pattern in Figure 1 most, although we may also note that *ob”jasnit* ‘explain’ showed a slight preference for explanans (compared to explanandum) *čto*-clauses, which speakers found particularly natural. This is consistent with the corpus data discussed in Section 3.

4.5.4. Experimental sentences: participants with standard responses

To tap into the question of how possible inter-participant variation may have affected the results, I performed an additional analysis for 47 participants who distinguished between unacceptable and acceptable fillers, operationalized as those whose raw rating for each group of acceptable fillers was at least 1 point above the rating for each group of unacceptable fillers (see Section 4.4). This criterion should exclude speakers of nonstandard/colloquial registers for whom *to*, *čto*-clauses with nonfactive verbs are fully acceptable and at the same time ensure that the participant gave standard responses for the other filler conditions. The results for this group are summarized in Figure 3.

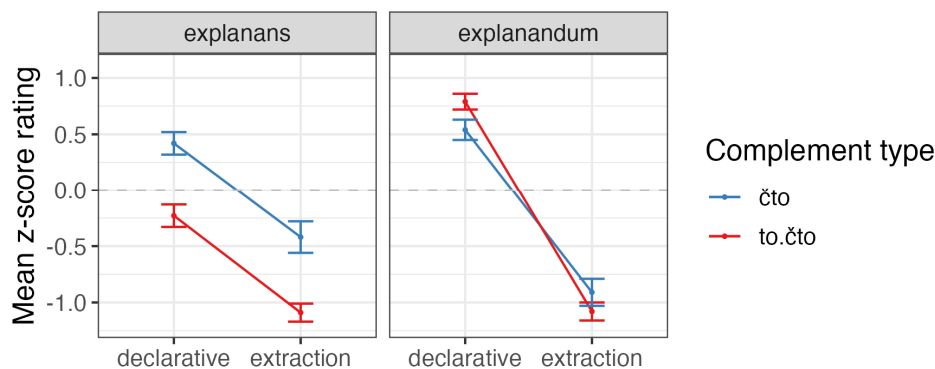


Figure 3. Mean z-score ratings (with standard errors) for the experimental conditions

A linear mixed-effect model showed largely similar results to the analysis for all participants, except that there was a reliable three-way interaction ($\beta = -0.47$, $SE = 0.17$, $p = 0.007$), suggesting that *to*, *čto*-clauses were associated with a stronger lowering effect of extraction with explanandum complements (as can

be seen by the steeper slope of the red line on the right panel of Figure 3) compared to explanans complements; also, the two-way interaction between *to*, *čto*-clauses and extraction (for explanans complements) was not significant ($p = 0.42$).¹⁶ A separate model for explanandum complements further confirmed the presence of an interaction ($\beta = -0.41$, $SE = 0.09$, $p < 0.001$). Pairwise comparisons revealed that the interaction arises because *to*, *čto*-clauses decrease the acceptability of extraction compared to *čto*-clauses ($\beta = -0.16$, $SE = 0.05$, $p = 0.001$) and at the same time increase the acceptability of declarative sentences ($\beta = 0.24$, $SE = 0.11$, $p = 0.03$). The interaction may partly stem from the fact that *overt* D^0 leads to a stronger island effect compared to a *null* D^0 , although this interaction must be interpreted with caution given that it is mostly due to the verb *ob’jasnit’* ‘explain’ (see by-verb results in Figure in the Appendix B at <https://osf.io/bdtha/>). The fact that the three-way interaction did not reach significance in the all-participants analysis is likely due to the fact that the exclusion of participants with nonstandard responses (which includes participants who were not sufficiently attentive to the task) reduced the amount of noise in the results, leading to more power to detect the effect.

Interestingly, despite the exclusion procedure *to*, *čto*-clauses with declarative explanans complements were still rated in the middle of the scale, suggesting that participants are fundamentally uncertain as to the status of such structures, which may reflect an ongoing grammatical change.¹⁷

5. Discussion and conclusion

The results showed that extraction from explanandum *čto*-clauses (with the mean rating of -0.86) was indeed unacceptable in contrast to extraction from explanans *čto*-clauses (with the mean rating of -0.48), which was only mildly unacceptable. This supports Bondarenko’s analysis in (5), according to which explanandum complements are encased in a null DP layer (reflecting their status as semantic arguments) in contrast to explanans complements, which are bare CPs (reflecting their status as modifiers/predicates).

The mildly unacceptable ratings for explanans *čto*-clauses can be traced to a general dispreference for extraction from *čto*-clauses (see e.g. [Khomitsevitch 2007; Bailyn 2020; Lyutikova, Gerasimova 2021; Knyazev 2023]). Indeed, extraction from *čto*-clause complements of nonfactive verbs *dumat’* ‘think’ and

¹⁶ The full model output is provided in Appendix C, which can be found at: <https://osf.io/bdtha/>.

¹⁷ This is confirmed by the inspection of individual ratings for this condition, which shows a unimodal distribution with a peak around -0.5 and rather thick tails.

predpolagat' 'suppose' in the fillers, which served as a baseline for acceptable extraction from *čto*-clause, were rated only slightly above the middle of the scale (0.13). This still raises the question why extraction from explanans complements of the *explain*-class was less acceptable compared to *dumat'* 'think' / *predpolagat'* 'suppose', given the hypothesized similarity of structure. One possibility is that the latter verbs are more frequent, which should lead to speakers having more experience with the relevant structure in the input (especially the structure without an overt C⁰) and thus giving higher naturalness ratings; cf. [Liu et al. 2022] for an explanation using this logic. The other, related, possibility is that the latter verbs have a simpler meaning, which leads to easier processing.

The other prediction of Bondarenko's analysis, namely, that explanans complements should be incompatible with overtly nominalized clauses (by hypothesis, DPs) was only partly confirmed: such structures were more degraded compared to bare *čto*-clauses but still were rated only slightly below the midpoint (-0.17). However, as I mentioned above, there are nonstandard/colloquial dialects where *to*, *čto*-clauses basically have the distribution of *čto*-clauses, which lead some authors to analyze *to*, *čto* as a reanalyzed C⁰ (see e.g. [Korotaev 2016], and also [Knyazev, Ustinova 2023] for further discussion). To the extent that *to*, *čto*-clauses commonly occur with nonfactive speech/belief verbs in the input (at least of a younger generation), speakers, including those who recognize them as nonstandard, may be uncertain as to their acceptability status.

The results of the experiment also confirmed the basic premise of Bondarenko's analysis, which was also supported by the corpus study, namely that *čto*-clauses are in principle compatible with the explanandum reading. At the same time, the results also showed that at least for *ob''jasnit'* 'explain' there is a slight preference for *to*, *čto*-clauses (relative to *čto*-clauses) with explanandum complements, as well as a preference for the explanans reading with *čto*-clauses compared to the explanandum reading. Again this was reflected in the results of the corpus study, which showed that the explanandum reading is much less frequent and is rather marked, at least without contextual cues. Relatedly, an important limitation of the present study is that I only tested explanandum complements *with* contextual cues in the form of manner/instrumental phrases. Therefore, it remains to be experimentally confirmed that without such cues speakers can still obtain the explanandum reading with *čto*-clauses (at least with verbs where it is potentially problematic, such as *ob''jasnit'* 'explain').

Further aspects of the results were not predicted by Bondarenko's analysis, without, however, contradicting it. First, there was some evidence that extraction from overtly nominalized explanandum complements may be more de-

graded compared to complements without an overt nominalizer, at least for the verb *ob”jasnit’* ‘explain’. The effect is consistent with other experimental work showing the lowering effect of *to*, *čto*-clauses on extraction from complements of emotive factive predicates (see [Knyazev 2023]). Second, the status of the verb *obosnovat’* ‘justify’ as compatible with the explanans reading requires more study.

Turning to a more general assessment of Bondarenko’s theory (see Section 2) in light of the experimental results, one potentially problematic point concerns the status of (argument) extraction from cognitive factive predicates. As the results for the fillers show, such extraction (with predicates *ponjat’* ‘understand’/*osoznat’* ‘realize’) was rated only slightly below the midpoint (–0.17), in fact higher than extraction from explanans complements of the *explain* class (–0.48) and not much lower than extraction from nonfactive complements with *dumat’* ‘think’/*predpolagat’* ‘suppose’ (0.13). This would suggest that such complements are bare CPs and hence semantically modifiers, the possibility that Bondarenko herself entertains for other emotive factive verbs such as *gordit’sja* ‘be proud’, the idea being that the CP with such predicates may be interpreted as the content of what the subject thought while feeling proud, etc. [Bondarenko 2022: 338]. It is doubtful, however, that this analysis is easily applicable to cognitive factives like ‘realize’, whose complements resemble explanandum complements and are expected to combine via an argument path (hence should be DPs). Unfortunately, Bondarenko does not discuss extraction from *čto*-clauses of (ordinary) cognitive factives, so it is unclear what her response would be.¹⁸

One possible solution to explore is to assume that CPs (which are of the type $\langle e, t \rangle$) can (or perhaps must) compose with attitude verbs by the operation Restrict (see e.g. [Chung, Ladusaw 2004; Srinivas, Legendre 2024]) by way of

¹⁸ As [Bondarenko 2022:329–330] herself notes, a similar problem arises with extraction from subjunctive complements of cognitive factive verbs including *pomnit’* ‘remember’ under negation, as in (i), which is allowed despite the presence of a null DP layer. Bondarenko proposes a solution along the lines of [Erlewine 2016], having to do with the bundling of the D^0 and C^0 heads (and thereby avoiding Anti-Locality), at the same time leaving as a problem why this solution does not work with declarative complements. A technical solution along the same lines perhaps can be explored for complements of *ponjat’* ‘understand’/*osoznat’* ‘realize’, but it is not very explanatory.

(i) *Kogo Katja ne pomnit, [D⁰ čtoby Ira priglašala _]?*
 who.ACC Katya not remembers that.SUBJ Ira invited
 ‘Who does Katya not remember Ira inviting?’ [Bondarenko 2022:329]

predicating the denotation of the CP of the (existentially quantified) internal argument, as suggested by [Stephen 2022].¹⁹ This would allow to avoid postulating an obligatory DP-layer for cognitive factives like *ponjat* ‘understand’/ *osoznat* ‘realize’, which does not seem to be consistent with their extraction profile, at the same time circumventing the otherwise necessary conclusion that the latter verbs are associated with two different argument structures on a par with *explain* verbs, which is intuitively implausible. However, a potential problem is how to capture factivity/presuppositionality of verbs like *ponjat* ‘understand’ / *osoznat* ‘realize’ *without* the presence of a DP-layer (encoding definiteness/familiarity).

Finally, the results of the corpus study showed that the difference between the explanans and the explanandum readings may not be as transparent as it might seem, especially with the imperfective version of ‘explain’. It remains to be seen whether what was called “subjective” explanandum readings, which do not require a factive implication, can be accommodated as a subtype of the explanandum reading or should be analyzed as a separate reading.

Abbreviations

2 — 2nd person; ACC — accusative; DAT — dative; GEN — genitive; INF — infinitive; INS — instrumental; PRT — particle; SG — singular; SUBJ — subjunctive mood.

References

- Anand, Hacquard 2009 — Anand P., Hacquard V. Epistemics with attitude. *Proceedings of SALT 18*. Friedman T., Ito S. (eds.). Ithaca, NY: Cornell University Press, 2009. Pp. 37–54.
- Bailyn 2020 — Bailyn J. The scrambling paradox. *Linguistic Inquiry*. 2020. Vol. 51. No. 4. Pp. 635–669.
- Bondarenko 2021 — Bondarenko T. How do we explain that CPs have two readings with some verbs of speech? Harley, Heidi B; Romero Diaz, Damian Yukio; Whitney, Rebecca M; Ni, Tianyi; Yu, Jianrong; Hall Hartley, Lucy Jane; et al. (2021). 39th West Coast Conference on Formal Linguistics. University of Arizona Research Data Repository. Collection. <https://doi.org/10.25422/azu.data.c.5325401.v2>
- Bondarenko 2022 — Bondarenko T. *Anatomy of an attitude*. PhD dis. MIT, 2022.
- Chernova 2015 — Chernova E. *The syntax of wh-movement in multiple (true and echo) questions: A Q-particle approach*. PhD dis. Universitat de Girona, 2015.

¹⁹ Bondarenko mentions this possibility but rejects it on the grounds that it predicts verbs to be allowed to combine first with the CP (by Restrict) and then with the DP (by ordinary Function Application), which does not seem to be attested [Bondarenko 2022: 231]. However, it may also be explained as a result of a grammaticalized processing tendency (cf. [Hawkins 2014]).

- Chung, Ladusaw 2004 — Chung S., Ladusaw W.A. *Restriction and saturation*. Cambridge, MA: MIT Press, 2004.
- Djävrv 2023 — Djävrv K. 2023. Knowing and Believing Things: What DP-Complementation Can Tell us about the Meaning and Composition of (Factive) Attitudes. *Journal of Semantics*. Vol. 40. Pp. 179–233.
- Elliott 2017 — Elliott P.D. *Elements of clausal embedding*. PhD dis. UCL (University College London), 2017.
- Erlewine 2016 — Erlewine M.Y. Anti-locality and optimality in Kaqchikel Agent Focus. *Natural Language & Linguistic Theory*. 2016. Vol. 34. Pp. 429–479.
- Hartman 2012 — Hartman J. *Varieties of clausal complementation*. PhD diss. MIT, 2012.
- Hawkins 2014 — Hawkins J.A. 2014. *Cross-linguistic variation and efficiency*. Oxford: Oxford University Press.
- Kallulli 2006 — Kallulli D. Triggering factivity: Prosodic evidence for syntactic structure. *Proceedings of the 25th West Coast Conference on Formal Linguistics*. Baumer D., Montero D., Scanlon M. Somerville, MA: Cascadilla Proceedings Project, 2006. Pp. 211–219.
- Kastner 2015 — Kastner I. Factivity mirrors interpretation: The selectional requirements of presuppositional verbs. *Lingua*. Vol. 164. Pp. 156–188.
- Khomitsevich 2007 — Khomitsevich O. *Dependencies across Phases: From sequence of tense to restrictions on movement*. PhD dis. Utrecht University, 2007.
- Knyazev 2022a — Knyazev M. Spanning complement-taking verbs and spanning complementizers: On the realization of presuppositional clauses. *Journal of Linguistics*. 2022. Vol. 58. No. 4. Pp. 887–899.
- Knyazev 2022b — Knyazev M. Factivity and information status as determinants of the distribution of nominalized clauses. *Typology of Morphosyntactic Parameters*. 2022. Vol. 5, iss. 1. Pp. 35–55.
- Knyazev 2023 — Knyazev M. An experimental study of argument extraction from presuppositional clauses in Russian. *Computational Linguistics and Intellectual Technologies. Papers from the Annual International Conference “Dialogue” (2023)*. Vol. 22. Pp. 242–252.
- Knyazev, Ustinova 2023 — Knyazev M., Ustinova I. The role of case and presuppositionality in the distribution of *to čto*-clauses in colloquial Russian: an experimental study. *Russian Linguistics*. 2023. Vol. 47, No. 1. Pp. 87–121.
- Korotaev 2016 — Korotaev N.A. The conjunction *to čto* in spoken Russian. *Acta Linguistica Petropolitana*. Vol. 13. No. 1. Pp. 101–106.
- Kuznetsova et al. 2017 — Kuznetsova A., Brockhoff P. B., Christensen, R.H.B. lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software*. 2017. Vol. 82. No.13. Pp. 1–26.
- Liu et al. 2022 — Y. Liu, R. Ryskin, R. Futrell, E. Gibson. A verb-frame frequency account of constraints on long-distance dependencies in English. *Cognition*. 2022. No. 222. Pp. 1–17.
- Lyutikova, Gerasimova 2021 — Lyutikova E.A., Gerasimova A.A. (eds.). *Russkiye ostrova v svete eksperimentalnykh dannykh. Kollektivnaya monografiya* [Russian islands in the light of experimental data. Joint monograph]. Moscow: Buki-Vedi, 2021.
- Moulton 2015 — Moulton K. CPs: Copies and compositionality. *Linguistic Inquiry*. 2015. Vol. 46. No. 2. Pp. 305–342.
- Pietroski 2000 — Pietroski P. On explaining that. *The Journal of philosophy*. 2000. Vol. 97. No. 12. Pp. 655–662.
- Roelofson, Uegaki 2021 — Roelofsen F., Uegaki W. Searching for a universal constraint on the denotation of clause-embedding predicates. Joseph Rhyne, Kaelyn Lamp, Nicole Dreier, and Chloe Kwon (2021.), *Proceedings of Semantics and Linguistic Theory (SALT) 30*. Pp. 542–561. <https://doi.org/10.3765/salt.v30i0.4834>

- Sonderegger 2023 — Sonderegger M. *Regression modeling for linguistic data*. Cambridge, MA: MIT Press, 2023.
- Sprouse et al. 2016 — Sprouse J., Caponigro I., Greco C., Cecchetto C. Experimental syntax and the variation of island effects in English and Italian. *Natural Language & Linguistic Theory*. 2016. Vol. 34. No. 1. Pp. 307–344.
- Srinivas, Legendre 2024 — Srinivas S., Legendre G. Does D select the CP in light verb constructions? A reply to Hankamer & Mikkelsen (2021). *Linguistic Inquiry*. 2024. Vol. 55. No. 3. Pp. 595–621.
- Stephen 2022 — Stephen T. *The semantics of nominal and clausal embedding*. PhD dis. University of Edinburgh, 2022.

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