Local and Non-Local Binding of Reflexives and Pronominals in Russian Object Control Infinitives

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Abstract: It has been suggested that reflexives and pronominals in Russian object control infinitives can refer either to the matrix subject (non-local binding) or to the infinitive subject (local binding), depending on the matrix verb. Specifically, it has been argued that the non-local binding of a reflexive and the local binding of a pronominal are most likely to occur when the matrix verb induces a strong cohesion between the matrix and the infinitive clause. The present study investigates Russian speakers' preferences in the interpretation of possessives in object control infinitives with the aim of testing the cohesion hypothesis by means of a referent selection task. The results show that the matrix verb does influence the interpretation of possessive reflexives and pronominals in object control infinitives, but not as predicted by the cohesion hypothesis. For a possessive reflexive, local binding is generally preferred, but non-local binding is also possible and most likely with a matrix verb that induces weak cohesion between the matrix and the infinitive clause. For a possessive pronominal, non-local binding is preferred both with a matrix verb that induces a strong cohesion and with a matrix verb that induces a weak cohesion, while local binding dominates with a matrix verb from the middle cohesion range. The study concludes that the cohesion between the matrix and the infinitive clause is not a relevant factor underlying the effect of the matrix verb in the interpretation of Russian possessives in object control infinitives. An alternative explanation in terms of implicit causality is proposed, which argues that the interpretation of reflexives is subject to a strong syntactic locality constraint, which can be weakened when pragmatic inferences from the basic cognitive representation of the event conditioned by a matrix verb make a non-local referent salient. The interpretation of pronominals is subject to a weak anti-locality constraint, which can be overridden when pragmatic inferences suggest a local referent as the more salient interpretation.

Keywords: pronominal, reflexive, possessive, reference, non-local binding, Russian, object control infinitive

1. Introduction

The binding domain of a reflexive pronoun, i.e., the domain in which the reflexive must find its antecedent, is usually the clause. However, reflexives can sometimes have an antecedent outside the clause in which they are contained,

resulting in non-local binding dependencies. In Russian, non-local binding is restricted to cases of medium-distance binding (Reuland and Koster 1991: 24) in infinitive complements introduced by an object control verb (Rappaport 1986), as illustrated by (1) and (2).

(1) Komendant$_1$ velel dvorniku$_2$ otnesti
commandant.NOM.SG.M order.PST.SG.M janitor.DAT.SG.M take.INF
veščі žilca k sebe$_{1,2}$.
thing.ACC.PL tenant.GEN.SG.M to REFL.DAT
'The commandant ordered the janitor to take the tenant's things to his place.' (Peškovskij 1956: 163)

(2) Professor$_1$ poprosil assistanta$_2$ pročitat'
professor.NOM.SG.M ask.PST.SG.M assistant.ACC.SG.M read.INF
svoj$_{1,2}$ referat.
POSS.REFL.ACC.SG.M talk.ACC.SG.M
'The professor asked the assistant to give his talk.' (Klenin 1974: 30)

The reference of the personal reflexive in (1) and the possessive reflexive in (2) has been considered ambiguous between the local antecedent, which is the subject of the infinitive, and the non-local antecedent, which is the subject of the matrix verb. In addition, it has been observed that pronominals used in an object control infinitive clause can also have both the local and the non-local antecedent (Bílý 1981; Kazenin 2000; Klenin 1974; Růžička 1973; Timberlake 1979; Yokoyama 1975).

Assuming this referential ambiguity, existing studies have focused either on describing the syntactic operations that enable the non-local binding of a reflexive (Dotlačil 2005; Kazenin 2000; Zubkov 2018) or on identifying the semantic-pragmatic factors that can influence the referent choice (Bílý 1981; Klenin 1974; Růžička 1973; Timberlake 1979, 2004: 249–52; Yokoyama 1975). Research from both perspectives suggests that the availability of the non-local binding for a reflexive and the local binding for a pronominal in object control infinitives varies according to the matrix verb and for individual speakers.

Two specific suggestions have been made. First, it has been argued that the likelihood of the non-local binding of a reflexive and the local binding of a pronominal in an infinitive clause is highest when the matrix verb induces a high degree of cohesion between the matrix clause and the infinitive clause (Timberlake 1979, 2004: 249–52). Second, it has been suggested that Russian speakers adhere to one of three "pronoun dialects" in the interpretation of pronominals and reflexives in object control infinitives: The first requires complementary distribution of reflexives and pronominals, the second allows free variation for both, and the third allows free variation only for reflexives

but not for pronominals (Klenin 1974: 40–41, 57). These claims have so far been based on the interpretation of a few examples by a few speakers and have not been subjected to systematic statistical analysis investigation.

The aim of this paper is to provide statistical generalizations about Russian speakers' preferences in the interpretation of a reflexive possessive (hereafter RP) and a non-reflexive possessive (hereafter NRP) in object control infinitives. Two main questions are addressed:

i. Is the interpretation of an RP and an NRP in object control infinitives constrained by the matrix verb in terms of cohesion between the matrix and the infinitive clause?
ii. Is there interspeaker variation in interpretation preferences as captured by the three pronoun dialects described by Klenin (1974)?

The study focused primarily on possessives but included a partial comparison between argumental and possessive pronouns as a secondary issue. In order to keep the number of test items manageable for the participants, the interpretation of argumental pronouns and reflexives was investigated in a smaller set of items without varying the matrix verb.

The study is based on data from a referent selection task conducted with 120 Russian speakers and subsequently analyzed using a generalized linear mixed-effects regression. As we will see, the results challenge Timberlake's hypothesis, showing that the matrix verb does influence the interpretation of an NRP and (to a lesser extent) an RP, but this influence is not conditioned by the cohesion between the matrix and the infinitive clause. Furthermore, it is shown that, contrary to Klenin's (1974) claim, there is no "pronoun dialect" in which the interpretation of a pronominal would be more restricted than the interpretation of a reflexive.

Before presenting the details of the study, I will give a brief overview of the Russian system of reflexives with a focus on non-local binding, then describe existing structural accounts of non-local binding in Russian and review semantic and pragmatic accounts centered on the role of the matrix verb. The theoretical section concludes with the formulation of hypotheses to be tested. In the next section, I will describe the methodology. The fourth section presents the data analysis, followed by a discussion of the results in section 5. The article concludes with an overall summary and directions for future work.

2. Theoretical Preliminaries

2.1. Basic Facts about Reflexives and Non-Local Binding in Russian

In Russian, there is an argumental reflexive *sebja* and a possessive reflexive *svoj*, as illustrated in (3).

(3) Oleg$_1$ vidit sebja$_1$ / svoë$_1$
Oleg.NOM.SG.M see.PRS.3SG REFL.ACC POSS.REFL.ACC.SG.N
otraženie v zerkale.
reflection.ACC.SG.N in mirror.LOC.SG.N
'Oleg sees himself / his reflection in the mirror.'

Both reflexives are morphologically simple and unspecified for person, number, and gender of their antecedent. The argumental reflexive has different case forms except for the nominative; the accusative *sebja* as in (3) is its citation form. The possessive reflexive *svoj* has an adjectival morphology, agreeing in case, number, and gender with the head of the NP it modifies.

The reference of both reflexives depends on another NP (their antecedent) in the sentence, which constitutes the case of binding. The binding behavior of Russian reflexives and pronominals is considered to be well captured by principles A and B of the Binding Theory as formulated by Chomsky (1981: 188). A reflexive takes its antecedent within a minimal clause, whereas a pronominal does not (Rappaport 1986; Kazenin 2000).

However, complications in the application of the canonical Binding Theory for Russian arise in infinitive complements introduced by an object control verb, as in (4) and (5).

(4) Olja$_1$ poprosila Tanju$_2$ nalit'
Olja.NOM.SG.F ask.PST.SG.F Tanja.ACC.SG.F pour.INF
sebe$_{1,2}$ / ej$_{1,2}$ kofe.
REFL.DAT / 3SG.F.DAT coffee
'Olja asked Tanja to pour herself / her coffee.'

(5) Olja$_1$ poprosila Tanju$_2$ nalit'
Olja.NOM.SG.F ask.PST.SG.F Tanja.ACC.SG.F pour.INF
svoej$_{1,2}$ / eë$_{1,2}$ gost'e kofe.
POSS.REFL.DAT.SG.F POSS.3SG.F guest.DAT.SG.F coffee
'Olja asked Tanja to pour her guest coffee.'

Peškovskij (1956) was the first to point out that reflexivization in Russian object control infinitives is not clause-bound and that the reference of a reflexive pronoun in the infinitive clause is ambiguous between the matrix and the infinitive subject. Subsequent studies have observed that the interpretation of a pronominal in such sentences is also ambiguous between the local and the non-local binding (Bílý 1981; Klenin 1974; Růžička 1973; Timberlake 1979; Yokoyama 1975). Although referential ambiguity has been described for possessives and argumental pronouns, some scholars mentioned that possessives are likely to allow more freedom in their interpretation than argumental pronouns (Padučeva 1983: 17; Timberlake 2004: 241; Kazenin 2000). For example, Kazenin (2000) assumes that only possessive pronominals can refer to both the matrix and the infinitive subject, thus excluding the infinitive subject as a possible referent for argumental pronominals. Differences in the availability of non-local interpretation between possessive and argumental reflexives have been documented for Scandinavian languages, where possessives have been shown to allow non-local binding more than argumental reflexives (Lundquist 2013, 2014). Whether possessives in Russian allow more flexibility in their interpretation than argumental pronouns remains to be shown, and the present study will be a step in this direction.

Recent research has made it increasingly clear that the long-distance interpretation of reflexives varies in subtle ways from dialect to dialect within a language, and from speaker to speaker within a single dialect (Charnavel et al. 2017: 8–9; Lundquist 2013). In Russian, too, the availability of non-local referents for reflexives and local referents for pronominals in object control infinitives has been considered subject to interspeaker variation (Bílý 1981; Klenin 1974; Růžička 1973). Klenin (1974: 40–41) described three "pronoun dialects", representing the preferred interpretive strategies of different speakers. In dialect 1, a reflexive refers only to the infinitive subject and cannot be replaced by a pronominal; a pronominal refers only to the matrix subject. In dialect 2, both a reflexive and a pronominal can refer to either the matrix subject or the infinitive subject. In dialect 3, a reflexive can refer to both the infinitive subject and the matrix subject, but a pronominal can only refer to the matrix subject. So far, claims about interspeaker variation in Russian have been based on the opinions of a few speakers about a few examples. Large-scale empirical studies are needed to determine whether the pronoun dialects described really exist and which of them is the most common. In this article, I hope to provide sufficient evidence to answer this question and thus contribute to understanding the extent of interspeaker variation in the non-local interpretation of reflexives, which has not been adequately recognized in the literature (Charnavel et al. 2017: 9).

2.2. Theoretical Accounts of Non-Local Binding in Russian

To accommodate the binding properties of Russian reflexives and pronominals in object control infinitives such as in (4) and (5), several adjustments to the canonical Binding Theory have been proposed by structural accounts.

Rappaport (1986) specified the binding domain for Russian reflexives as the minimal finite clause containing them. This definition, however, contradicts the possibility of the pronominal *ej* in example (4) co-referring with the matrix subject according to Principle B. To resolve this contradiction, Kazenin (2000) proposes different binding domains for Russian reflexives and pronominals, i.e., for reflexives the binding domain is the minimal finite clause, whereas for pronominals it is any minimal cause containing them. This definition implies that a pronominal used in an infinitive clause can be bound within the clause, i.e., it can have the infinitive subject as its antecedent. Kazenin (2000) points out that the problem with his account is that it cannot explain why the infinitive subject can bind a possessive but not an argumental pronominal, which he thinks can only refer to the matrix subject.

Two recent accounts, Dotlačil (2005) and Zubkov (2018), explain the availability of non-local binding for Russian reflexives by considering the structural properties of infinitive clauses. Dotlačil (2005) argues that non-local binding in Czech and Russian arises from a restructuring in the architecture of infinitive clauses. Specifically, in Czech and Russian infinitive clauses, PRO, the element that closes the binding category, can be omitted, leading to non-local binding. Once PRO is present in an infinitive clause, a reflexive must be locally bound (Dotlačil 2005). The problem with this account is that it does not go beyond a few examples to propose a unified procedure for determining when PRO is present and when it is not. Nor does it deal with the interpretation of pronominals.

The multiple Agree-based dependency account (Zubkov 2018; Reuland and Zubkov 2022) claims that non-local binding in Russian object control infinitives can be explained by multiple Agree-based dependencies, established separately for person and number features. Non-local binding arises due to the optional restructuring of infinitive clauses, which results in the absence of a high person probe (the feature instance that initiates the Agree operation) in the C-domain. The person probe in the matrix clause evaluated by the nominative can cross intervening probes, which explains the fact that reflexives in infinitive clauses can be bound by an animate subject of the matrix verb. This approach also addresses the non-complementarity between reflexives and pronouns in infinitive clauses. Since a pronoun has a fully specified φ-feature bundle, it can only be bound by an antecedent if the latter evaluates all probes that can attempt to evaluate the former. If any of the probes diverge, as is the case in infinitive clauses, the pronoun is not excluded and complementarity breaks down (Zubkov 2018: 120). Zubkov's account thus assumes that the

non-local interpretation of reflexives results from an optional restructuring of infinitives. Whether or not an infinitive clause undergoes restructuring is considered to depend on the control verbs, which may differ in the richness of the CP they choose, and on individual speakers, who may differ in whether or not they allow CPs without a high probe. The theory thus recognizes the role of the matrix verb in the non-local interpretation of the Russian reflexive but does not elaborate on it.

What structural accounts have in common is that they all explain why a non-local interpretation of a reflexive is possible in object control infinitives, but they do not predict when the long-distance interpretation actually occurs. The latter problem has been addressed by some non-structural accounts, which are discussed below.

2.3. The Role of the Verb in the Interpretation of Pronouns and Reflexives

Recent psycholinguistic findings challenge the view that the interpretation of reflexives involves only syntactic information, in contrast to pronominals, whose interpretation relies primarily on non-structural factors. Instead, it has been shown that the processing of both reflexives and pronominals is constrained by the interaction of syntactic and semantic-pragmatic factors, and that syntactic constraints dominate for reflexives, while semantic-pragmatic constraints dominate for pronominals (Brown-Schmidt, Byron, and Tanenhaus 2005; Kaiser 2003; Kaiser and Do 2012; Kaiser and Trueswell 2008; Kaiser et al. 2009). A similar idea underlies Huang's (2000, 2006) revised neo-Gricean pragmatic account of anaphora, which presumes that pragmatics provides a set of complementary regularities that constrain the interpretation and production of anaphora on top of structural regularities.

In most accounts of long-distance anaphora, semantic-pragmatic factors have been described in terms of logophoricity (Charnavel et al. 2017: 10–26), often operationalized with reference to the ability of the predicate to encode the discourse roles associated with point of view, such as *source*, *self*, and *pivot* in Sells (1987). Experiments on English have shown that the non-local interpretation of a reflexive is more likely with speech verbs (*say*, *claim*) that assign their subjects the role of the source of information than with perception predicates (*hear*, *see*) that assign their subjects the role of the perceiver of information (Kaiser and Do 2012; Kaiser et al. 2009; Sloggett 2017).

In Russian, it was also observed that the reference of possessives in object control infinitives could be influenced by the matrix verb (Bílý 1981: 134–37; Klenin 1974: 142; Růžička 1973: 465–71; Yokoyama 1975: 91). Růžička (1973: 738) described 19 matrix verbs that can introduce an object control infinitive containing a reflexive, pointing out that all matrix verbs used in this construction have the general semantic feature "behavioral control". Among them, there

are verbs that describe verbal communication (e.g., *prikazat'* 'order', *predložit'* 'offer', *prosit'* 'request'), and those that do not (e.g., *zastavit'* 'force', *prinudit'* 'compel', *pomoč'* 'help'). Růžička states that the two groups trigger different preferences in the interpretation of reflexives in their infinitive complements. With the verbs *zastavit'*, *dat'*, *prinudit'*, and *pomoč'*, the reflexive tends to, or even has to be, interpreted as referring to the matrix subject (Růžička 1973: 465–71).

Yokoyama (1975) similarly differentiates between two groups of matrix verbs, i.e., verbs introducing direct discourse including *skazat'* 'tell', *poprosit'* 'ask', *velet'* 'order', *prikazat'* 'order', *ugovorit'* 'talk into', *umolit'* 'plead into', *priglasit'* 'invite', and *razrešit'* 'permit', and verbs not introducing direct discourse such as *zastavit'* 'force', *dat'* 'let', *mešat'* 'hinder', and *pomoč'* 'help'. She hypothesizes that with verbs introducing direct discourse, a reflexive in the embedded clause is likely to take the local referent, and a pronominal tends to take the non-local referent (Yokoyama 1975: 91). The opposite is true for matrix verbs that do not introduce direct discourse. Thus, in (6), the RP *svoj* is most likely to refer to the infinitive subject *reportëra* 'reporter' and the NRP *ego* to the matrix subject *student* 'student'. In (8), on the other hand, the RP *svoj* refers to the subject *otec* 'father' and the NRP *ego* to the object *posetitelju* 'visitor' (Yokoyama 1975: 91). Yokoyama's argumentation is based on the analysis of the transformation of direct discourse such as (7) into indirect discourse with an object control infinitive, as in (6), inspired by Kuno (1972). She claims that with verbs introducing direct discourse, the reflexive of the direct speech, i.e., *svoj* in (7), remains as it is in the infinitive clause, while the first- and second-person pronominals of the direct discourse, i.e., *moj* and *Vaš* in (7), change into the third-person pronominal *ego* (Yokoyama 1975: 92).

(6) Student$_1$ poprosil reportëra$_2$ vzjat'
student.NOM.SG.M ask.PST.SG.M reporter.ACC.SG.M take.INF
svoj$_2$ / ego$_1$ stakan.
POSS.REFL.ACC.SG.M POSS.3SG.M glass.ACC.SG.M
'The student asked the reporter to take his glass.'
(Yokoyama 1975: 91)

(7) Student poprosil reportëra:
student.NOM.SG.M ask.PST.SG.M reporter.ACC.SG.M
"Voz'mite svoj / Vaš
take.IMP.PL POSS.REFL.ACC.SG.M POSS.2PL.M.ACC
/ moj stakan".
POSS.1SG.M.ACC glass.ACC.SG.M
'The student asked the reporter: "Take your / my glass."'
(Yokoyama 1975: 92)

(8) Moj otec$_1$ ne dal
POSS.1SG.NOM.SG.M father.NOM.SG.M NEG give.PST.SG.M
posetitelju$_2$ podnjat' svoj$_1$ / ego$_2$
visitor.DAT.SG.M raise.INF POSS.REFL.ACC.SG.M POSS.3SG.M
stul.
chair.ACC.SG.M
'My father did not let the visitor raise his chair.'
(Yokoyama 1975: 91)

Yokoyama's account has been criticized for its incorrect classification of matrix verbs (Bílý 1981: 136). For example, it is not clear why *razrešit'* 'permit' is considered a verb of direct discourse, while its synonym *pozvolit'* 'allow' is not. Nor is it clear why the verbs *offer, advise*, and *recommend* are classified as verbs that do not introduce direct discourse.

Timberlake (1979: 112; 2004: 249–52) proposed a different classification of matrix verbs. The early version of his hypothesis (Timberlake 1979: 112) states that matrix verbs in object control infinitives form a hierarchy along the parameter of increasing independence, or isolation, of the infinitive clause with respect to rules operating from the matrix into the infinitive clause, including reflexivization, genitive of negation, or restriction on aspect. The main distinction in this hierarchy is between two types of matrix verbs: the verbs *dat'* 'give, let', *pomoč'* 'help', and *zastavit'* 'make, force' on one hand and the verbs *pozvolit'* 'allow', *prikazat'* 'order', *predložit'* 'offer', *zapretit'* 'forbid', *poprosit'* 'ask, request', etc., on the other. Timberlake predicts that a matrix verb of the former type allows or requires reflexivization more than a verb of the latter type. This means that a reflexive in an infinitive clause is more likely to refer to the matrix subject with matrix verbs of the *force* or *let* type than with matrix verbs such as *offer* or *ask*. For instance, Timberlake (1979: 128) claims that in example (9) with a matrix verb of the *force* type, the RP refers to the matrix subject rather than to the infinitive subject.

(9) Roditeli$_1$ zastavljali Serëžu$_2$ ne slušat'
parent.NOM.PL force.PST.PL Serëža.ACC.SG.F NEG listen.INF
ego$_2$ / svoju$_{1,2}$ rakovinu
POSS.3SG.M POSS.REFL.ACC.SG.F shell.ACC.SG.F
vo vremja edy.
during meal.GEN.SG.F
'Parents make Serëža not listen to (= play with) his/their shell at mealtime.'

Table 1. Likelihood of pronoun antecedents in infinitive complements according to the matrix verb (based on Timberlake 2004: 252)

	Matrix predicate	Frequency of the construction in the RNC	Antecedent = matrix subject	Antecedent = infinitive subject
1	***zastavit'* 'force'**	1332	sebja | ?eë svoju | ?eë	sebja | *eë svoju | eë
	dat' 'give, let'	800		
	pomoč' 'help'	782		
2	***predložit'* 'propose'**	**590**	sebja | eë svoju | eë	sebja | *eë svoju | ?eë
	poručit' 'delegate'	235		
	prikazat' 'order'	292		
	pozvolit' 'allow'	453		
3	***poprosit'* 'request'**	**287**	?sebja | eë *svoju | eë	sebja | *eë svoju | ?eë
	umolit' 'beseech'	3		
	ugovorit' 'persuade'	59		
	ubedit' 'convince'	42		
	priglasit' 'invite'	44		

In the later version of the theory, Timberlake (2004: 249–50) classifies matrix verbs into three types and formulates the difference between them in terms of the cohesion between the matrix and infinitive clauses, as follows:

> The two clauses are very cohesive if the subject of the matrix predicate controls the outcome of the event, as with *dat'* 'give, let', *pomoč'* 'help', and *zastavit'* 'force'. The two predicates are not cohesive if the matrix subject transfers responsibility for the event to the matrix object (implicit subject), as with *umolit'* 'beseech', *ugovorit'* 'persuade', *ubedit'* 'convince', *priglasit'* 'invite', and *poprosit'* 'ask'. Intermediate are *prikazat'* 'order', *pozvolit'* 'allow', *predložit'* 'propose', and *poručit'* 'delegate'. (Timberlake 2004: 249–50)

As cohesion decreases, the possibility of using a reflexive to refer to the matrix subject decreases, and the pressure to use a reflexive to refer to the infinitive subject increases (Timberlake 2004: 252). This hypothesis has been formalized in Table 1 above, which was adapted from Timberlake (2004: 252)[1] and extended to include the frequency of the object control infinitives with

[1] The notations ? and * are from the original table in Timberlake (2004: 252).

each of the matrix verbs in the Russian National Corpus (RNC), which will be discussed in the methodological section. The table represents a hierarchy of matrix predicates according to the cohesion between the matrix and the infinitive clauses. The first group of verbs (the *force* type) represents the highest degree of cohesion and the third group (the *request* type) the lowest degree of cohesion. As seen from the last column, an RP can always refer to the infinitive subject. However, the likelihood of an RP referring to the matrix subject is highest with matrix verbs of the first group (the *force* type) and lowest with matrix verbs of the third group (the *request* type). Correspondingly, an NRP tends to refer to the matrix subject, but the likelihood that it refers to the infinitive subject is highest with verbs of the first group and lowest with verbs of the third group.

Although Timberlake (2004) did not justify why exactly each of these verbs was assigned to one of the three groups, his definition of cohesion is reminiscent of the event integration and clause integration introduced in the influential typological study of complementation by Givon (1980). The basic idea is that the semantics of the matrix predicate determines the degree of event integration, i.e., the integration of the event described by the matrix clause and the event described by a complement clause into a coherent overall event, which in its turn determines the degree of syntactic integration between the matrix and complement clauses. Matrix predicates are grouped into six semantic types and ordered along a scale based on the influence of the matrix agent over the embedded agent (Givon 1980: 369). The higher the predicate is on the scale, the greater the influence of the matrix agent over the embedded agent, and the less choice, control, and independence are ceded to the embedded agent. Givon (1980) describes two types of "other manipulation" predicates relevant to this study. The highest rank on the scale is taken by success (implicative) predicates, i.e., predicates that encode intended manipulations as necessarily successful (*make*, *cause*, *force*, *prevent*). Lower on the scale are strong attempt predicates, i.e., predicates that do not imply that the intended manipulation is necessarily successful (*order*, *allow*, *permit*, *ask*, *tell*, *let*). As the verbs *make* and *force* are higher on the scale, they are supposed to induce a stronger semantic and syntactic cohesion between the matrix and the complement clause than the verbs *ask* and *tell*, which is in line with Timberlake's (1979: 112) assumption. At the same time, Givon (1980) points out that the degree of semantic and syntactic integration may vary within predicates of the same type due to the semantic nuances of each verb and the pragmatic inferences associated with them.

To summarize this section, it has been observed that the interpretation of reflexives and pronominals in Russian object control infinitives depends on the matrix verb, but it is not clear what features of the matrix verb are responsible for this effect. One account suggests that the relevant distinction is between matrix verbs that introduce direct discourse and those that do not (Yokoyama

1975). Another account argues that the relevant feature is the degree of cohesion between the matrix and the infinitive clause, which is determined by the semantics of the matrix verb (Timberlake 1979, 2004). Both accounts predict the highest likelihood of the non-local interpretation of reflexives and the local interpretation of pronominals with matrix verbs of the *force* type. In addition, Timberlake (2004) proposes a higher probability of the non-local interpretation of reflexives and the local interpretation of pronominals with *propose*-type matrix verbs than with *request*-type matrix verbs. Neither of these proposals has been tested empirically. This study will address both, but will focus on testing Timberlake's hypothesis, which provides a more fine-grained classification of matrix verbs.

2.4. Research Questions and Hypotheses

The main goal of this study is to find out which interpretation (local or non-local) is preferred by Russian speakers for the reflexive possessive (RP) and the non-reflexive possessive (NRP) in object control infinitives, and to what extent the interpretation of both possessives is constrained by the matrix verb. Specifically, the study aims to test Timberlake's (2004) cohesion hypothesis formulated as H1:

> H1: The interpretation of an RP and an NRP depends on the matrix verb such that the non-local interpretation of an RP and the local interpretation of an NRP is more likely with a matrix verb inducing a strong cohesion between the matrix and the infinitive clause (the *force*-type verb) than with a matrix verb inducing a weaker cohesion between the clauses (*propose*- and *request*-type verbs).

The second aim is to assess the degree of interspeaker variation in the interpretation preferences of reflexives and pronominals in Russian object control infinitives. If Klenin's (1974) suggestion is correct, Russian speakers should follow one of the three strategies (or pronoun dialects), formulated below as H2–H4:

> H2: There are speakers who adhere to strict complementarity between an RP and an NRP, allowing only the local interpretation for an RP, and only the non-local interpretation for an NRP (dialect 1).
>
> H3: There are speakers who assume free variation in the interpretation of an RP and an NRP, i.e., they accept both local and non-local interpretations of an RP and an NRP (dialect 2).

H4: There are speakers who accept free variation between the local and the non-local interpretation for an RP but accept only the non-local interpretation for an NRP (dialect 3).

Although the focus of the study is on possessives, the interpretation preferences of argumental pronouns are also tested, but on a smaller set of items and without manipulating the matrix verb. Thus, the study aims to provide a general idea of the interpretation preferences of argumental pronouns in addition to possessives, but it is not intended to be a detailed comparison between the two types of pronouns.

3. Methodology

The hypotheses were tested by means of a forced choice referent selection task, a format that has been used in previous studies for investigating pronoun reference in adult native speakers (Mertins 2021), second language learners (Pitz et al. 2017), and in children (Baauw et al. 2011). In this study, the task was designed in a written format and implemented over the Internet using the freely available software Google Forms. The task included biclausal sentences with an object control verb and an infinitive complement, which contained either an argumental pronoun in the direct object position or a possessive pronoun as a modifier of the direct object. Each sentence was followed by a question asking for the pronoun referent. Participants were required to answer the question by choosing one of the two suggested alternatives, the matrix subject (non-local interpretation) or the matrix object (local interpretation).

3.1. Test Items and Design

Three types of items were constructed: test items with possessive pronouns, test items with argumental pronouns, and filler items.

The test items with possessives were designed to measure the influence of two independent variables, the type of possessive and the type of matrix verb, on the dependent variable, i.e., the referent choice of the possessive. The possessive type had two levels, reflexive and non-reflexive, and the matrix verb type was coded as a three-level variable: a *force*-type verb, a *propose*-type verb, and a *request*-type verb. For each type, one verb was selected from the list of possible matrix verbs proposed by Timberlake (2004: 252) and reproduced in Table 1 on p. 270. The selection criterion was the frequency with which the verb was found as a matrix verb introducing an infinitive complement containing a possessive in the main subcorpus of the Russian National Corpus (RNC).[2]

[2] As there is no category of possessive pronouns in the lexico-grammatical search in the Russian National Corpus, a more general category of adjectival pronouns was

As seen from the third column of Table 1 on p. 270, this construction is most frequent with verbs of the *force* type and least frequent with verbs of the *request* type. Within the *force* type, the verb *zastavit'*, illustrated by (10), is more frequent in this construction than *dat'* or *pomoč'*. Within the *propose* type, infinitive complements with a possessive most frequently occur with the verb *predložit'*, illustrated by (11). Within the *request* type, this construction is most common with the verb *poprosit'*, as in (12). Correspondingly, we chose the verb *zastavit'* to represent the *force* type, the verb *predložit* to represent the *propose* type, and *poprosit'* to represent the *request* type.

(10) A kak že inače: tol'ko čto on, možno skazat', vernul k žizni devočku, vsego liš' **zastaviv eë vspomnit' svoë imja.**

[RNC 2014]

'How could it be otherwise: he had just, one might say, brought the girl back to life, just by **making her remember SELF's name**.'

(11) Počti s poroga xozjain **predložit vam otvedat' ego nastojki** na list'jax èdèl'vejsa.

[RNC 2008–2010]

'Almost from the threshold, the owner **will invite you to try his tinctures** on edelweiss leaves.'

(12) On provël interesnyj èksperiment, v kotorom **poprosil dvux komandirov ocenit' svoix soldat** s točki zrenija fizičeskix kačestv, intellekta, liderstva […].

[RNC 2017–2020]

'He conducted an interesting experiment in which he **asked two commanders to rate SELF's soldiers** in terms of physical attributes, intelligence, leadership […]'

The combination of three values of the verb type and two values of the pronoun type resulted in six test conditions, illustrated with examples in Table 2 on p. 276. Each test item consisted of a sentence describing the same basic situation: *Person 1 influenced Person 2 to act on his/her thing* followed by a question asking whether Person 1 or Person 2 was the most likely possessor of the thing. All test sentences were designed using the following structure: a common male name in the nominative + a matrix verb in the past tense perfective aspect + a second common male name in the dative or accusative case + an infinitive + an accusative noun modified by a possessive pronoun. The infinitive complements were designed such that both the subject and the object

used to search for the relevant constructions.

of the matrix verb could be considered plausible referents given encyclopedic world knowledge, as illustrated by the example in Table 2.

The questions following the test sentences were constructed in two synonymous ways. In half of the items, participants had to answer the question *Komu prinadležit X?* 'Whom does X belong to?', where X was the direct object of the infinitive. The answer options in this case were represented by the names of Person 1 and Person 2 in the dative case. In the other half of the items, the question was *O č'ej vešči idët reč'?* 'Whose thing is this about?'. For this question, answer options were given as names of Person 1 and Person 2 in the genitive case.

A total of 20 different biclausal sentences with possessive pronouns were constructed, each of which was used in the six test conditions described above. This resulted in a total of 120 test items with possessive pronouns, which were then divided into six lists of 20 test items each: 10 sentences with a matrix verb of one type, half with an RP and half with an NRP, and 10 sentences with a matrix verb of another type, again half with an RP and half with an NRP. Each list was presented to 20 participants.

In addition to the test items with possessives, there were 10 test items with argumental pronouns. They had the same syntactic structure as the items with possessives, but they used a different matrix verb to introduce the infinitive complement, namely *skazat'* 'tell'.

The verb *skazat'* was chosen to represent the most neutral verb used in the construction relevant to this study because it has the properties [+ behavioral control, + verbal communication] without any other semantic properties specified (Růžička 1973: 738).

In addition to the test items with possessive and argumental pronouns, 20 filler items with a similar syntactic structure but unrelated to the topic of the study were included in the task. Thus, each participant was presented with a total of 50 items (20 test items with possessives, 10 test items with personal pronouns, and 20 filler items).

3.2. Participants

A total of 120 Russian native speakers were recruited for the study through personal networks. The resulting sample of participants was not balanced. It was skewed toward women, with 87 female participants (73%) compared to 33 male participants (28%). In terms of education, there were 99 participants (83%) with higher education compared to 21 participants (17%) with vocational training. In terms of age, 47% of the participants were in the 25–39 age group, 24% were in the 40–60 age group, and 20% were in the 18–24 age group. There were only two participants in the 12–17 age group (2%) and eight participants over 60 (7%), so younger and older speakers were underrepresented in the sample.

Table 2. An example of a test item with possessives in six test conditions and of a test item with argumental pronouns in two conditions

	Matrix verb	**Pronoun**	
1	*force*	RP	Ivan **zastavil** Olega unesti **svoj** čemodan v druguju komnatu. Komu prinadležit čemodan? 1) Ivanu 2) Olegu 'Ivan **forced** Oleg to bring **SELF'S** suitcase to another room. Whom does the suitcase belong to?' 1) Ivan.DAT 2) Oleg.DAT'
2		NRP	Ivan **zastavil** Olega unesti **ego** čemodan v druguju komnatu. O č'ëm čemodane idet reč'? O čemodane 1) Olega 2) Ivana 'Ivan **forced** Oleg to bring **his** suitcase to another room. Whose suitcase is this about?' 1) Oleg.GEN 2) Ivan.GEN'
3	*propose*	RP	Ivan **predložil** Olegu unesti **svoj** čemodan v druguju komnatu. 'Ivan **proposed** to Oleg to bring **SELF'S** suitcase to another room.'
4		NRP	Ivan **predložil** Olegu unesti **ego** čemodan v druguju komnatu. 'Ivan **proposed** to Oleg to bring **his** suitcase to another room.'

—continued on next page—

	—continued— Matrix verb	Pronoun	
5	*request*	RP	Ivan **poprosil** Olega unesti **svoj** čemodan v druguju komnatu. 'Ivan **asked** Oleg to bring **SELF's** suitcase to another room.'
6		NRP	Ivan **poprosil** Olega unesti **ego** čemodan v druguju komnatu. 'Ivan **asked** Oleg to bring **his** suitcase to another room.'
1	*tell*	R	Katja skazala Ksjuše kupit' **sebe** bilet. 'Katja told Ksjuša to buy **SELF** a ticket.'
2		NR	Katja skazala Ksjuše kupit' **ej** bilet. 'Katja told Ksjuša to buy **her** a ticket.'

3.3. Procedure and Data Analysis

The experiment was conducted over the Internet. Each participant received a link to the questionnaire. Each session started with written instructions and a collection of relevant participant data. Then, 50 items followed in a single block in an individually randomized order. Each item, including the object infinitive sentence and the question together with the two answer alternatives, was presented on a single screen. The alternatives were displayed below each other, with one of them at the bottom in one half of the items and the other alternative at the bottom in the other half. After marking their choice by clicking on one of the radio buttons, participants pressed a button to move to the next screen. Participants could not go back to already provided answers to correct them. There was no time limit for providing an answer.

Participants' choices were coded as reference to the matrix subject (non-local interpretation) or to the matrix object (local interpretation). The data were first submitted to graphical examination in the form of mosaic plots including a chi-squared test. Subsequently, the data were analyzed using a generalized linear mixed-effects regression in *R* by means of functions *lrm()* and *glrm()*. The modeling aimed to predict the choice of the referent of a possessive pronoun (matrix subject or matrix object) from two linguistic fixed effects, the

type of possessive (reflexive or non-reflexive) and the type of the matrix verb (the *force*, *propose*, or *request* type), and from two random effects, the effect of participant and test item. Additionally, the fixed effect of the following socio-demographic variables was added to the model: participants' age, gender, and education. The reference values for the variables were set as subject for the dependent variable, the reflexive for the type, and the *force* type as the matrix verb type.

4. Results

All participants who received the link to the study completed the task, so 120 questionnaires have been evaluated in total. Each participant indicated their interpretation preferences for 20 test items with possessives and 10 test items with argumental pronouns. This resulted in a total of 2,400 data points for possessives, with 400 items in each of the six conditions, and 1,200 data points for argumental pronouns, with 600 items in each of the two conditions.

4.1. The Influence of the Matrix Verb (H1)

To recall, the dependent variable in the task was the referent choice for a possessive pronoun, which could be either the matrix subject or the matrix object. Table 3 on the following page gives an overview of how often each of these two referents was chosen in the six conditions. The table reveals a preference for the object interpretation of an RP, i.e., for all three matrix verbs, participants interpreted an RP as indicating that the possessor is the matrix object in more than 66% of test items. However, the object interpretation was more frequent with a matrix verb of the *propose* type (78%) and *force* type (75%) than with a matrix verb of the *request* type (66%). For an NRP, the numbers in Table 3 suggest a strong preference for the subject interpretation with a matrix verb of the *request* type (79% of test items), a weaker preference for the subject interpretation with a matrix verb of the *force* type (63%), and a preference for the object interpretation with a *propose*-type verb (65%).

The bottom part of Table 3 shows the interpretation preferences for argumental pronouns with the matrix verb *skazat'* 'tell'. The argumental reflexive was interpreted as referring to the matrix object and the argumental pronominal as referring to the matrix subject in 92% of occurrences, which suggests their complimentary distribution.

The proportions of the subject and object referents for possessive pronouns in each of the six conditions are visualized in the form of a mosaic plot in Figure 1 on the following page. The bottom part of the figure represents the referent choices for an RP. The blue part in all three bars shows that the object referent was chosen for an RP with all three matrix verbs more often

Table 3. The number of subjects and object referents chosen for a reflexive possessive (RP), a non-reflexive possessive (NRP), argumental reflexive (R), and argumental pronominal (NR)

Condition	Verb	Pronoun	Referent = subject	Referent = object	Total items
1	**force**	RP	100 (25%)	300 (75%)	400
2		NRP	251 (63%)	149 (37%)	400
3	**propose**	RP	90 (22%)	310 (78%)	400
4		NRP	140 (35%)	260 (65%)	400
5	**request**	RP	137 (34%)	263 (66%)	400
6		NRP	317 (79%)	83 (21%)	400
Total			*1035 (43%)*	*1365 (57%)*	*2400*
1	**tell**	R	47 (8%)	553 (92%)	600
2		NR	555 (93%)	45 (7%)	600

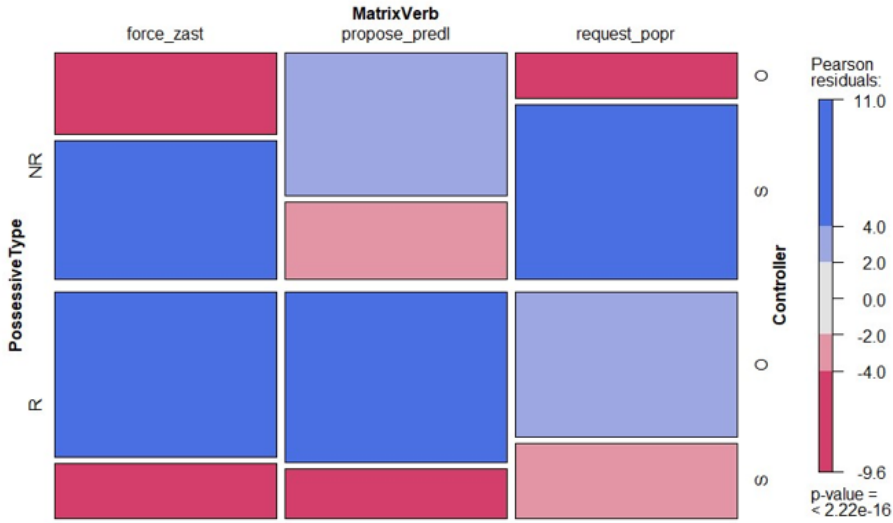

Figure 1. Referent choice for possessives according to matrix verb type; R = reflexive, NR = non-reflexive, S = matrix subject, O = matrix object

than would be expected under the null hypothesis, which predicts equal chances of the subject and the object referents for both an RP and an NRP independent of the matrix verb.

The red color means that the matrix subject was chosen as a referent of an RP less often than would have been expected under the null hypothesis. Additionally, the color intensity signals the strength of this effect. A high intensity of the blue and red colors in the case of *force*- and *propose*-type verbs represents Pearson residuals greater than four, indicating that the departure from the null hypothesis is highly significant. For the verbs of the *request* type, the light blue and red colors indicate smaller residuals (between two and four), which nevertheless point to a significant effect.

Let us now focus on the distribution of subject and object referents of an RP with the three matrix verbs. The chi-squared test indicates that there is no difference in the distribution of RP referents between matrix verbs of the *force* and *propose* types, but there is a significant difference between matrix verbs of the *force* and *request* types. Subject interpretation is more frequent, and object interpretation is less frequent, with a verb of the *request* type compared to *force*- and *propose*-type verbs (χ^2 (799) = 8.21, p = .004).

Turning to the interpretation of an NRP visualized in the upper half of the mosaic plot, we see that subject referents dominate over object referents with matrix verbs of the *force* and *request* types, whereas the object interpretation overrides the subject interpretation with verbs of the *propose* type. The color-coding indicates that the distribution of the subject and object referents with all three matrix verbs significantly differs from that predicted by the null hypothesis. The blue color reveals that the subject referents of an NRP with a matrix verb of the *force* or *request* type were significantly more frequent than expected under the null hypothesis. With a *propose*-type verb, on the other hand, the light blue color indicates that the object interpretation was significantly more frequent than expected if the test condition had no influence. The red color indicates that object referents were chosen less frequently than expected with the matrix verbs of the *force* and *request* types, whereas with the *propose*-type verb, the subject interpretation of an NRP was less frequent than predicted by the null hypothesis. The chi-squared test reveals that with matrix verbs of the *force* type, subject referents of an NRP were chosen more often than with matrix verbs of the *propose* type (χ^2 (799) = 65.04, p < 00001), and less often than with matrix verbs of the *request* type (χ^2 (799) = 26.44, p < 00001).

To summarize, the mosaic plot indicates that the type of matrix verb and the type of possessive significantly influence the choice of a possessive referent. For an RP, the object interpretation dominates, but the subject interpretation is more likely with a *request*-type verb and less likely with the *force*- and *propose*-type verbs. For an NRP, the object referent is most likely with a matrix

verb of the *propose* type, less likely with a verb of the *force* type, and least likely with a verb of the *request* type.

For a more detailed analysis, the data were processed using a generalized linear mixed-effects regression. A binominal mixed model was fit, with the referent of the possessive as a dependent variable, the matrix verb, possessive type as well as participants' age, gender, and education as fixed effects, and participants and items as random effects. Additionally, interaction between matrix verb and possessive type was included in the model because the mosaic plot suggests the interaction might be important. The reference values were set to object for the referent, *force* type for the matrix verb, and NRP for the possessive type. This means that the model predicts the likelihood of the subject interpretation of an RP with matrix verbs of the *propose* and *request* types. The output of the model is given in Table 4, shown on the following page.

The last column of Table 4, indicating *p*-values, reveals that the main effects of linguistic variables and of one interaction are significant. There is a highly significant negative effect of the possessive type, meaning that the chances of a subject referent decrease when the possessive is reflexive compared to when it is non-reflexive.

The effect of the matrix verb is also significant. When the matrix verb is of the *request* type, the likelihood of the subject interpretation increases both for an RP and for an NRP. When the matrix verb is of the *propose* type, the likelihood of subject interpretation decreases. However, a significant interaction between the matrix verb and the possessive type, marked with * in Table 4, indicates that this influence does not affect an RP and an NRP to the same extent. Based on the graphical representation of the data in Figure 1 on p. 279, we can interpret this effect such that an NRP but not an RP is more likely to get a subject interpretation with a matrix verb of the *propose* type than with a matrix verb of the *force* type.

Among the sociodemographic factors, only participants' gender was marginally significant. Female participants were slightly more likely to prefer subject referents than male participants were.

Turning to the random effects summarized in the lower part of Table 4, we see a sizable variation in referent choice between test items and between participants. The referent choices in particular items vary from the average choices with an SD of more than 0.5 points, meaning that individual test items made a large difference in the referent choices. There is also a sizable random effect of participants because the choices of individual participants vary from the overall choices with an SD of 0.4 points, indicating that individual participants differ in their interpretation preferences.

The total explanatory power of our model is substantial (conditional $R^2 = 0.33$), and the part related to the fixed effects alone (marginal R^2) is of 0.23. This means that fixed factors and random effects together explain 33% of the variance in the referent choices, whereas the factors matrix verb, possessive

Table 4. Output of the model predicting the likelihood of the matrix subject referent of an RP from the matrix verb and possessive type

Fixed Effects	**Estimate**	**Std. Error**	**z value**	***p***
Intercept	0.57	0.17	3.18	0.0014
Matrix verb (*propose*)	-1.26	0.16	-7.75	< 0.0001
Matrix verb (*request*)	0.91	0.18	5.18	< 0.0001
Possessive (REFL)	-1.83	0.17	-10.97	< 0.0001
Matrix verb (*propose*) *possessive	1.16	0.23	4.91	< 0.0001
Matrix verb (*request*) *possessive	-0.40	0.24	-1.69	0.089
Gender (feminine)	0.31	0.14	2.23	0.027

Random effects	**Variance**	**Std. Deviation**
Item	0.35	0.59
Participant	0.24	0.39

type, and participants' gender alone explain 23% of the variance in the data. The low percentage of variance explained by the model suggests that matrix verb and possessive type are not sufficient to account for the referent choices of possessive pronouns and that there are other explanatory factors that have to be included in the model.

4.2. Interspeaker Variation (H2–H4)

In order to account for interspeaker variation in interpretation preferences, I will quantify which of the pronoun dialects proposed by Klenin (1974) occur in the data and how often. As a reminder, speakers of dialect 1 strictly follow the complementarity principle. In dialect 2, there is free variation for both reflexives and pronominals. Dialect 3 allows free variation only for reflexives and restricts pronominals to the non-local interpretation. Apart from these dialects, there was another common interpretation strategy in our data, namely the one where the reflexive mostly refers to the matrix object, while the pronominal can refer to either the subject or the object. I will call this interpretation, which assumes free variation between the local and the non-local interpretation for a pronominal, while restricting a reflexive to the object interpretation, dialect 4.

A participant was considered as adhering to dialect 1 in the interpretation of pronouns if they chose a subject referent for a reflexive and an object referent for a pronominal one time at most in the 20 test items. A participant was classified in dialect 2 if they chose a subject referent for a reflexive and an object referent for a pronominal at least two times in the 20 test items. Participants who chose the subject referent for a reflexive in at least two test items, and those who did not choose the object referent for a pronominal in more than one item, were classified in dialect 3. Finally, participants who chose the subject referent of a reflexive in one item at most and the object referent for a pronominal in at least two items were considered speakers of dialect 4.

Table 5 on the following page gives the number of participants in the sample who adhered to one of the four pronoun dialects according to their preferred strategy in the interpretation of possessive and argumental pronouns. As is evident from the table, most participants (67%) interpreted possessives according to the principle of free variation, allowing both an RP and an NRP to refer either to the matrix subject or to the matrix object. The other three pronoun dialects that impose more restrictions on the distribution of possessive referents were less frequent in the data. Thus, 20% of participants tended to prefer the object referent for an RP, while allowing both subject and object referents of an NRP (dialect 4). Another 14% followed the complimentary principle, restricting the referent of an RP to the object and the referent of an NRP to the subject (dialect 2). Only three participants allowed flexibility in

Table 5. Number of speakers adhering to a particular pronoun dialect

	Dialect 1	Dialect 2	Dialect 3	Dialect 4
Possessive	14 (12%)	**80 (67%)**	3 (2%)	23 (19%)
Argumental	**83 (69%)**	5 (4%)	11 (9%)	21 (18%)

Table 6. Number of participants adhering to a particular combination of dialects in the interpretation of possessive and argumental pronouns

	Possessive Dialect 1	Possessive Dialect 2	Possessive Dialect 3	Possessive Dialect 4
Argumental Dialect 1	14 (12%)	46 (38%)	3 (2%)	20 (17%)
Argumental Dialect 2	-	2 (1%)	-	-
Argumental Dialect 3	-	11 (9%)	-	-
Argumental Dialect 4	-	15 (13%)	-	6 (5%)

the interpretation of an RP, while restricting the interpretation of an NRP to subjects (dialect 3).

For the interpretation of argumental pronouns, the frequency distribution of the four dialects in our data was different from the one of possessive pronouns. Most speakers (69%) observed the complimentarity principle, restricting the reflexive to the object referent and the pronominal to the subject referent. The second most common strategy observed in 18% of participants was dialect 4, which restricts a reflexive to the object interpretation, while allowing both interpretations for a pronominal. Few participants (9%) allowed both referents for the reflexive, while restricting a pronominal to the subject interpretation (dialect 3). The least frequent dialect (4% of participants) was the one that allows free variation in the interpretation of the reflexive and pronominals.

Let us now consider what combinations of the interpretation strategies of the possessive and argumental pronouns exist in our data. Table 6 is a matrix

representing the number of speakers who followed a particular combination of strategies in the interpretation of possessives on one hand and argumental pronouns on the other. The most frequent combination observed in 46 participants (38%) is dialect 2 for possessive pronouns and dialect 1 for argumental pronouns. These speakers allowed free variation in the interpretation of possessives but restricted the interpretation of argumental pronouns to the complementarity principle. The second most frequent combination (in 17% of participants) was dialect 4 for possessives and dialect 1 for argumental pronouns. Like the previous group, these speakers restricted the interpretation of argumental pronouns to the complementarity principle, and additionally, they restricted the interpretation of a possessive reflexive to object referents. The combination of dialect 2 for possessives with dialect 4 for personal pronouns was observed in 13% of participants, closely followed by the combination of dialect 1 both for possessives and argumental pronouns (12%). What is common to all observed combinations is the fact that the interpretation of argumental pronouns, and especially of argumental reflexives, is more restricted than the interpretation of possessives. The empty cells in the matrix show that there was no combination in our data where the interpretation of possessives would be more restricted than the interpretation of argumental pronouns.

To summarize, the analysis of interspeaker variation presented in this section confirms H2 and H3 but rejects H4. It also reveals another common strategy, namely free variation in the interpretation of a pronominal but only local interpretation of a reflexive. Furthermore, it shows that the most frequent strategy in the interpretation of possessives is free variation between local and non-local reference for both an RP and an NRP. By contrast, in the interpretation of argumental pronouns, most speakers followed the complementarity principle, restricting a reflexive to the local referent and a pronominal to the non-local referent. The second most common strategy for both possessives and argumental pronouns is to allow free variation for a pronominal while restricting a reflexive to the local interpretation.

5. Discussion

This study investigated preferences of Russian native speakers in the interpretation of possessive and argumental pronouns in object control infinitives. The first question addressed is to what extent the matrix verb constrains the interpretation of possessive pronouns. Specifically, is there a higher probability for the non-local interpretation of a possessive reflexive and for the local interpretation of a possessive pronominal with a matrix verb that implies a stronger cohesion between the matrix and the infinitive clause compared to a matrix verb that implies a weaker cohesion between the two clauses?

The results suggest that the referent choice of a possessive pronominal and, to a lesser extent, of a possessive reflexive is influenced by the matrix

verb. For a possessive reflexive, there is a preference for the local interpretation with all three matrix verb types, i.e., the object referent was preferred in at least 65% of the uses. However, the strength of this preference was influenced by the matrix verb, although not in the direction predicted by Timberlake's hypothesis. Contrary to the expectation that the non-local binding of a possessive reflexive should be most likely with the verb of the *force* type, participants in the study were less likely to choose the non-local referent with the verb *zastavit'* 'force' than with the verb *poprosit'* 'ask, request'. This effect was significant, though small. On the other hand, there was no clear anti-locality bias in the interpretation of a possessive pronominal, i.e., the choice between the local and non-local interpretation depended on the matrix verb. The non-local interpretation was preferred with matrix verbs of the *force* and *request* types (the matrix subject was chosen as a referent in more than 60% of cases), but the local interpretation was preferred with matrix verbs of the *propose* type (the infinitive subject was chosen in 65% of cases). This pattern clearly contradicts the cohesion hypothesis, which predicts that the local interpretation of a pronominal is most likely with the *force*-type verb.

This suggests that the criterion of cohesion as operationalized by Timberlake is not a likely factor underlying the influence of the matrix verb on the interpretation of possessives in object control infinitives. Yokoyama's (1975) account cannot explain binding preferences in our study either. Two of the matrix verbs used in this study, *poprosit'* 'request' and *predložit'* 'propose', belong to the group of verbs that introduce direct discourse, and the verb *zastavit'* 'force' is a verb that does not introduce direct discourse in Yokoyama's (1975: 90) classification. If this distinction was the factor underlying the effect of the matrix verb, the binding preferences with *poprosit'* and *predložit'* should be similar to each other (a local interpretation should be preferred for the reflexive and a non-local interpretation for the pronominal), but different from those with the verb *zastavit'*, which should prompt the non-local interpretation of the reflexive and the local interpretation of the pronominal. However, the results of this study show that for a possessive pronominal, the non-local interpretation is strongly preferred with the verb *poprosit'* and the local interpretation with the verb *predložit'*. A similar effect is observed for a possessive reflexive. That is, although the local binding was preferred with both verbs, the non-local interpretation was more likely with *poprosit'* than with *predložit'*. Therefore, it can be concluded that the explanation proposed by Yokoyama (1975) does not hold.

Since neither Timberlake's nor Yokoyama's classification of matrix verbs can account for our data, I will look for an explanation in the rich literature describing the effects of the verb on the interpretation of pronouns. It has long been known that semantic information encoded in the verb in terms of implicit causality influences the interpretation of pronouns with interclausal

antecedents (e.g., Arnold 2010; Garvey and Caramazza 1974; McDonald and MacWhinney 1995; Stewart, Pickering, and Sanford 2000).

The term implicit causality refers to a type of systematic inference that people make from verbs, e.g., when asked to continue a sentence like *John questioned Mary because…*, people are likely to mention a cause associated with John, whereas in a sentence like *John praised Mary because…* they tend to produce a cause associated with Mary (Pickering and Majid 2007: 1). Verbs like *to question* are classified as NP1-biased verbs (i.e., biased towards the first noun phrase or subject) and verbs like *to praise* are classified as NP2-biased verbs (i.e., biased towards the second noun phrase or object). There is a consensus that the explanation of implicit causality effect lies in the interaction between semantic and pragmatic factors. Pickering and Majid (2007: 6) argue that implicit causality "provides an abstraction of the type of reason that is most likely to be provided for the event and indicates which entity the reason tends to be about. Hence, it is an inference from a description of an event". In the same vein, Bott and Solstad (2014, 2021) believe that the implicit causality bias is an epiphenomenon of the verb's use in a particular discourse context, rather than a feature inherent in the verb's lexical semantics. They argue that verbs showing the implicit causality effect are lexically determined to elicit expectations for particular types of explanation because they have semantically and pragmatically determined slots associated with the biased argument. When these slots are not filled with causally relevant information, the expectation of a particular explanation arises, which then determines the preference for which of the two arguments an anaphor refers to. A similar idea underlies the account of van den Hoven and Ferstl (2018), who suggest that verbs trigger certain schemas that contain basic cognitive representations of the event that are shared across participants (the Idealized Cognitive Models). Speakers rely on an idealized cognitive model to make inferences, unless there is evidence that it does not hold in a given discourse context (van den Hoven and Ferstl 2018). In experimental studies such as the present one, where the influence of discourse context is minimized, participants are likely to resolve the pronominal reference by relying on the basic cognitive representations of the events.

To uncover what the basic cognitive representations might be for the events described by the three matrix verbs in this study, we start with the dictionary explications. The new explanatory dictionary of synonyms (Apresjan 2004: 371) states that *zastavit'* is "a typical verb for the canonical act of coercion, intentional influence on the patient that overcomes his possible resistance and is the immediate reason for the patient performing the action desired by the agent". The dictionary adds that due to its broad meaning, the verb *zastavit'* has many peripheral and semantically weakened uses, where the components of its canonical meaning are bleached. For example, there are contexts where the agent wants to urge the patient to do something that, according to the

opinion of the agent, might be pleasant or useful for the patient. In these uses of *zastavit'*, the meaning component "violence against the will of the patient" gets lost.

In our study, *zastavit'* was used in the structure *Person 1 forced Person 2 to act upon* SELF*'s/his thing*, illustrated by example (13).[3]

(13) Ivan$_1$ zastavil Olega$_2$ unesti
Ivan.NOM.SG.M force.PST.SG.M Oleg.ACC.SG.M carry.INF
svoj$_{1?,2}$ / ego$_{1,2}$ čemodan v
POSS.REFL.ACC.SG.M POSS.3SG.M suitcase.ACC.SG.M to
druguju komnatu.
another.ACC.SG.F room.ACC.SG.F
'Ivan forced Oleg to carry his suitcase to another room.'

(14) Gena$_1$ zastavil Slavu$_2$ povtorit'
Gena.NOM.SG.F force.PST.SG.M Slava.ACC.SG.F repeat.INF
svoj$_{1?,2}$ / ego$_{1?,2}$ rasskaz s
POSS.REFL.ACC.SG.M POSS.3SG.M story.ACC.SG.M from
načala.
beginning.GEN.SG.N
'Gena forced Slava to repeat his story from the beginning.'

(15) Andrej$_1$ zastavil Vadima$_2$ soxranit'
Andrej.NOM.SG.M force.PST.SG.M Vadim.ACC.SG.M save.INF
svoj$_{1?,2}$ / ego$_{1,2?}$ fajl na diske.
POSS.REFL.ACC.SG.M POSS.3SG.M file.ACC.SG.M on CD.LOC.SG.M
'Andrej forced Vadim to store his file on the CD.'

Given the semantic meaning of *zastavit'*, we can infer that both Person 1 and Person 2 could be logically plausible possessors of the thing. It is possible that Person 1 forces Person 2 to act upon the thing belonging to Person 1. Alternatively, Person 2 can be forced to perform an action upon the thing that he himself owns. Correspondingly, example (13) can be interpreted as Ivan forcing Oleg to carry the suitcase that belongs either to Ivan or to Oleg. In line with these possibilities, we found no clear interpretation bias for a possessive pronominal in sentences with *zastavit'*. Instead, there was a significant variation between individual test items. There were items like (13), where the

[3] Here and in examples to follow, the indexing indicates interpretation preferences based on the analysis of individual test items of the study. The question mark indicates the option that was chosen less frequently.

participants chose the subject referent as often as the object referent. On the other hand, there were items like (14), where the object referent was preferred, or items like (15), where the subject referent dominated.

For a possessive reflexive in sentences with *zastavit'*, however, there was a strong interpretation bias towards the object (75%). I suggest this is because in the case of semantic-pragmatic indeterminacy described above, the influence of the default syntactic rule for the reflexive is strongest. That is, the syntactically closest referent is preferred if there are no important semantic or pragmatic reasons that would make the matrix subject a more likely referent.

Let us now examine the dictionary entry for the verb *poprosit'* 'ask, request'. In Apresjan (2004: 882), the following explication is given: "Person X wants an action P to be done: X thinks that person Y can do P without thinking that Y must do P; X tells Y that he wants Y to do P; X says it in such a way that Y understands that X does not think that Y has to do P". Importantly, the dictionary remarks that the action performed is typically in the interest of the speaker and the act of asking is often humiliating for him (Apresjan 2004: 882–83). In our study, the verb *poprosit'* was used in the structure *Person 1 asked Person 2 to act upon* SELF*'s/his thing*, exemplified by example (16).

(16) Ivan$_1$ poprosil Olega$_2$ unesti
Ivan.NOM.SG.M ask.PST.SG.M Oleg.ACC.SG.M carry.INF
svoj$_{1,2}$ / ego$_{1,2?}$ čemodan v
POSS.REFL.ACC.SG.M POSS.3SG.M suitcase.ACC.SG.M to
druguju komnatu.
another.ACC.SG.F room.ACC.SG.F
'Ivan asked Oleg to carry his suitcase to another room.'

Given the core meaning of the verb *poprosit'*, the most likely interpretation of this situation is the one where Person 1 asks Person 2 to act upon the thing belonging to Person 1. Correspondingly, the most frequent interpretation of (13) should be Ivan asking Oleg to carry the suitcase belonging to Ivan. In accordance with this expectation, there was a higher chance of subject referents in such items for both possessives. For a pronominal, the subject referent was strongly preferred over object referent (79% vs. 21%), whereas for a reflexive, the object referent still dominated but was less frequent than with two other matrix verbs (66% vs. 75% / 78%).

Finally, the verb *predložit'* 'suggest, propose' is described in a dictionary as a synonym of *rekomendovat'* 'recommend' and *sovetovat'* 'advise'. The general meaning of these verbs according to Apresjan (2004: 1075) is as follows: "Believing that Y is interested in the opinion of X of what Y should do in this situation, X says that it would be better for Y to do P". The dictionary remarks that this meaning presupposes that the speaker believes that the action performed

is beneficial for the addressee. Given the pragmatic inferences from the semantic meaning of *predložit'* in the situation *Person 1 proposes Person 2 to act upon SELF's/his thing*, the most logical interpretation is the one where the possessor of the thing is Person 2. Therefore, the preferred interpretation of items like (17) should be the one where Ivan proposes that Oleg carry the suitcase belonging to Oleg.

(17)	Ivan$_1$	predložil	Olegu$_2$	unesti	
	Ivan.NOM.SG.M	propose.PST.SG.M	Oleg.DAT.SG.M	carry.INF	
	svoj$_{1?,2}$	/ ego$_{1?,2}$	čemodan	v	
	POSS.REFL.ACC.SG.M	POSS.3SG.M	suitcase.ACC.SG.M	to	
	druguju	komnatu.			
	another.ACC.SG.F	room.ACC.SG.F			

'Ivan asked Oleg to carry his suitcase to another room.'

In line with this, we found that object referents were preferred for both possessives. For the reflexive, this preference results in the highest percentage of object referents among the three matrix verbs (78%). For the pronominal, this interpretation even overrides the preference for the subject referent dictated by the structural constraint.

An interesting result of this study is the fact that the general direction of the effect of the matrix verb was similar for reflexives and pronominals. That is, compared to the matrix verb *zastavit'*, the verb *poprosit'* increased the chances for a matrix subject referent, and the verb *predložit'* increased the chances for an object referent, for reflexives and pronominals alike. This finding supports the claim of shared biases advanced by Kaiser and Do (2012). It assumes that although pronouns and reflexives are guided by opposite syntactic biases, they share a bias towards an antecedent that is highly activated / accessible / salient in participants' mental models of discourse. In this study, it could be that in the idealized cognitive model of the verb *poprosit'* described above, the matrix subject is profiled as a more salient referent than the infinitive subject is, whereas for the verb *predložit'* it is the other way round, i.e., the infinitive subject is profiled as a more salient referent.

The key difference between reflexives and pronominals is the strength of this pragmatic constraint compared to the syntactically conditioned interpretation preferences, as suggested by the form-specific multiple constraint models (Kaiser 2003; Kaiser and Do 2012; Kaiser and Trueswell 2008; Kaiser et al. 2009). This study shows that the infinitive subject (local interpretation) is generally a preferred referent for a possessive reflexive, but this preference is weakened when the semantic meaning of the matrix verb and the corresponding pragmatic inferences suggest that the matrix subject is a likely referent. The interpretation of a possessive pronominal, on the other hand, is subject to

a weak structural constraint of anti-locality, which can be overridden by the salience of the referent derived from the pragmatic inferences.

A strong influence of the structural factor on the interpretation of Russian reflexives could be explained by their lack of φ-features and their corresponding participation in the syntactic operations of Move and Agree, as suggested by most current syntactic accounts (Reuland 2018). A preference for the local interpretation of reflexives is also expected from Huang's (2000) pragmatic model, which predicts a local coreferential interpretation for the anaphoric expressions, unless the interpretation violates the disjoint reference presumption, information salience, and the general consistency constraints on conversational implicatures. For reflexives, this means that a local subject is preferred to a local object, a non-split antecedent to a split antecedent, and a c-commanding antecedent to a non-commanding one. However, Huang (2000: 237) points out that if all these NPs contradict the background assumptions about how the world stereotypically works, the next more distant clause is consulted in the same order. For the present study, it means that the non-local subject referent must have been chosen when the local subject referent was an insufficiently salient possessor given the world knowledge. Our analysis above suggests that when contextual information is minimal, as in this study, speakers seem to determine the salience of the referent based on the pragmatic inferences from the basic cognitive representations of the event. In case of a complex event described by a biclausal sentence with an object control infinitive, the basic cognitive representation likely involves an interaction between the semantics of the matrix verb, the semantics of the infinitive verb, and the semantics of a possessive relation. I believe that this complex structure of pragmatic inferences could be an explanation for a considerable item-related variation in interpretation preferences observed in this study. Moreover, it might partially explain why neither Timberlake's (2004) nor Yokoyama's (1975) classification of matrix verbs based on a very general criterion could explain the speakers' interpretation preferences.

Turning to our second question, is there interspeaker variation among Russian speakers such that there are three different strategies for interpreting pronominals and reflexives, namely the complementarity principle, free variation for reflexives and pronominals, and free variation only for reflexives?

The results suggest that different speakers may choose different strategies, but that some strategies are preferred over others. Most speakers in our study seem to follow the strategy of free variation in the interpretation of possessives in object control infinitives, allowing both possessives to refer to either the matrix subject or the matrix object. The second most common strategy is to restrict the interpretation of a possessive reflexive to the local referent, while allowing both local and non-local interpretations for a possessive pronominal. This strategy, which allows free variation only for a possessive pronominal, has not been mentioned in the literature on Russian but was

documented in an experiment on the interpretation of possessives in Czech (Mertins 2021). At the same time, our study suggests that dialect 3, described by Klenin (1974) as allowing free variation for a reflexive and only the non-local interpretation for a pronominal, is virtually nonexistent. We therefore conclude that most Russian speakers allow both local and non-local binding for possessive pronominals and reflexives in object control infinitives, but those who don't restrict the interpretation of a reflexive to the local referent while allowing both referents for a pronominal.

The present study also shows that the interpretation of possessive pronouns in Russian is less constrained than the interpretation of argumental pronouns. Most Russian speakers interpret argumental pronouns according to the principle of complementarity, reserving the local interpretation for a reflexive and the non-local interpretation for a pronominal. The second most common strategy for interpreting argumentative pronouns is the same as for possessives, i.e., a reflexive is restricted to the local referent, while a pronominal can take either the local or the non-local referent. The most common combination of strategies for interpreting possessives and argumentative pronouns is to allow free variation in the interpretation of possessives, but to restrict the interpretation of argumentative pronouns to the complementary distribution.

The difference in the interpretation strategies of argumental and possessive pronouns is in line with previous observations in Russian (Kazenin 2000; Padučeva 1983; Timberlake 2004: 251) and in Scandinavian languages (Linquist 2014). Thus, our results emphasize that the ambiguity between local and non-local interpretations assumed for reflexives and pronominals in Russian object control infinitives exists primarily in cases when the anaphor and its antecedent are not the co-arguments of the same predicate. Argumentative pronouns, on the other hand, are interpreted according to the structural constraints described for finite clauses.

6. Conclusion, Limitations, Future Directions

This study was the first to systematically test the referential ambiguity of possessive pronouns in Russian object control infinitives. The results showed that for the possessive reflexive, local binding is generally preferred, as predicted by structural constraints. However, when pragmatic inferences derived from the interaction between the implicit causality patterns of the matrix verb and the infinitive verb make a non-local referent salient, the syntactic preference is weakened. For the possessive pronominal, pragmatic inferences can completely override the structural constraint of non-locality and lead to a strong preference for either the local or the non-local interpretation.

The proposed explanation in terms of pragmatic inferences from implicit causality needs further verification. First, other matrix verbs occurring in ob-

ject control infinitives should be investigated in order to get a more detailed picture of the semantic and pragmatic mechanisms behind their influence on pronoun interpretation in object control infinitives. Second, it might be useful to obtain explicit opinions from speakers about how they arrived at a particular interpretation. Third, other methodological approaches are welcome that would overcome the limitations of the forced-choice task and that would capture referent choice not as a binary procedure but as a complex process in which multiple factors are weighed against each other to arrive at a final interpretation.

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