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Basic argument structure in Russian Sign Language

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In this paper, basic verb classes and argument structure alternations in Russian Sign Language (RSL) are described, and the implications of these data for the theory of argument structure are discussed. The analysis is based on data elicited using a list of 80 verbal meanings from the Valency Classes in World's Languages project (Hartmann, Haspelmath & Taylor 2013) and on data collected from the corpus of RSL (Burkova 2015). The study shows that RSL has lexical verbs with different sets of arguments (from zero up to three arguments), and a number of argument structure alternations, such as causative-inchoative, impersonal, reflexive, and reciprocal. It is found that argument structure of lexical verbs and argument structure alternations that apply to them in RSL are typologically common. This implies that the semantic basis of argument structure is independent of modality. In addition, RSL uses classifier predicates whose argument structure is determined by the type of the classifier and by the context. Although such predicates in other sign languages have been used to argue for a syntactic approach to argument structure, RSL classifier predicates do not provide a strong support for this approach.

Keywords: argument structure; argument structure alternations; Russian Sign Language; classifier predicates

1 Introduction

In this study, I provide a first basic description of argument structure in Russian Sign Language (RSL). Argument structure is one of the most well researched topics in linguistics. It has been at the centre of descriptive and typological as well as theoretical research (Borer 2003; Levin & Rappaport Hovav 2005; Ramchand 2013; Malchukov & Comrie 2015). An important milestone in the research on argument structure is Levin's (1993) book where she provided a first systematic description of verb classes and argument structure alternations in English. Recently, in a typological project inspired by Levin's book, basic verb classes and alternations were described for 37 typologically and geographically distinct languages (Hartmann, Haspelmath & Taylor 2013; Malchukov & Comrie 2015). The current paper aims at describing arguments structure in RSL in a way to make direct comparison with spoken languages possible in order to test typological generalizations and theoretical approaches to argument structure.

In order to introduce the purpose of this study in more detail, I first provide an overview of previous research on argument structure in sign languages, and then discuss two general questions for which the data from sign languages (including RSL) can provide relevant evidence.

1.1 Argument structure in sign languages

Until now, argument structure in sign languages has not been studied in a systematic manner (see Geraci & Quer 2014 for a brief overview). Kegl (1990) is probably the only description of verb classes and alternations in American Sign Language (ASL); no compa-

rable research has been done for other sign languages. In Kimmelman (2016), I studied transitivity in RSL based on corpus data, but this study considers only a small number of verbs, and it only describes whether these verbs are used transitively or intransitively, but it neither analyses verb classes systematically nor discusses any alternations.

A number of studies on various sign languages were devoted to specific argument structure alternations. Passive or passive-like structures have been described (Janzen, O’Dea & Shaffer 2001; Rankin 2013); reflexive (Kimmelman 2009a) and reciprocal (Pfau & Steinbach 2003; Zeshan & Panda 2011) alternations, as well as causative constructions (Tang & Gu 2007) and the impersonal alternation (Barberà & Quer 2013) have also been studied to some extent.

An important topic that is discussed by various authors (even if not as the main research question of their studies) is the relation between argument structure and verb classes (Rathmann & Mathur 2011; Geraci & Quer 2014). Most sign languages have different morphological classes of verbs, namely agreeing and non-agreeing (plain verbs). It turns out that whether a verb will be agreeing depends on its argument structure: typically only transitive verbs expressing transfer can be agreeing; furthermore, it is often claimed that only verbs that take two animate arguments can be agreeing (Rathmann & Mathur 2011). However, it is also clear that the relation between agreement and argument structure is not bidirectional: many transitive verbs are not agreeing. In addition, another mechanism of Single Argument Agreement (discussed further in Section 2) has been identified (see e.g. Costello 2016) which occurs in both transitive and intransitive verbs, which complicates the picture even further.

Finally, quite a large number of studies are devoted to argument structure of classifier predicates (Zwitserlood 2003; Benedicto & Brentari 2004; Benedicto, Cvejanov & Quer 2007; Grose, Wilbur & Schalber 2007). Such predicates are very characteristic of sign languages and probably display some modality-specific properties (see Section 2.1 for information on such constructions). According to some researchers, such constructions provide evidence for syntactic/constructional approaches to argument structure, as these predicates are not lexicalized. However, an important question that cannot be answered by these studies is whether classifier predicates in fact differ in argument structure from other types of predicates in sign languages, and whether the syntactic/constructional approach should extend to all predicates.

Thus, one of the main purposes of this study is to provide a general description of argument structure in one sign language by analysing a variety of verbs with different argument structures, by investigating how argument structure correlates with morphological type of the verb, and by taking a closer look at classifier predicates. This description is the first step that allows addressing more theoretical issues introduced in the next two sections.

1.2 Typology of argument structure

Linguists have gathered a substantial body of knowledge on argument structure in various spoken languages. In particular, an important part of this knowledge has been collected as a part of the recent typological project under the name Valency Classes in World’s Languages (VALPAL) (Hartmann, Haspelmath & Taylor 2013; Malchukov & Comrie 2015).

In the VALPAL project, experts working on 37 typologically and geographically diverse languages described valency (argument structure) and argument structure alternations for 80 basic verbal meanings representative of various verb classes. The meanings were selected in a way to represent concepts which are often lexicalized as zero valency verbs (e.g. ‘rain’), as intransitive verbs (both unaccusatives ‘die’ and unergatives ‘jump’), as transitive verbs (‘break’), and as ditransitive verbs (‘give’). For each language, the project contributor was asked to describe the basic valency of the verb (namely, how many and which

arguments it demands and how are these arguments marked, e.g. by word order, case marking, or agreement) as well as valency alternations that the verb can participate in.

This typological project (as well as other typological studies before it) confirms the following core fact: argument structure is based on the verbs' semantics. For instance, events which naturally occur as situations without an external agent ('melt') are usually lexicalized as intransitive, while events which almost necessarily involve an agent ('shave') are lexicalized as transitive (see also Haspelmath 1993). Not all parts of verbal semantics are equally relevant, but most researchers agree that event structure is relevant for determining argument structure (Levin & Rappaport Hovav 2005). For instance, if a verb describes an event with a causative sub-event and a resulting state sub-event, the causer argument will be the subject and the argument of the resulting state will be the object more or less universally. This can be explained by the fact that the causative sub-event embeds the resulting sub-event (in semantics or syntax depending on the framework).

Since no systematic description of argument structure in a sign language has been done so far, we cannot really claim that the semantic basis of argument structure also holds for sign languages. In principle, the systems in sign languages and spoken languages can be completely different, identical, or have a degree of overlap. While I strongly expect that the first and also the second option are unlikely, it is still necessary to test this expectation. This is what I do in this study with the help of RSL data. I expect to find that the verbal meanings which are typologically commonly lexicalized as intransitive, transitive, ditransitive, etc., are also going to be lexicalized as such in RSL. If this turns out not to be the case a strong argument can be made in favour of a modality effect on argument structure.

In order to directly compare RSL to previous typological findings and to the specific results of the VALPAL project, I am using the verbal meanings from the VALPAL list.

1.3 Lexical vs. syntactic approaches to argument structure

An important theoretical debate concerning argument structure is the relation between argument structure and the lexicon. Traditional grammarians, as well as many contemporary linguists consider argument structure of a verb to be a part of its lexical description. In addition, argument structure alternations – e.g. deriving a causative or an anticausative form of a verb – also happen in the lexicon (Müller & Wechsler 2014). The opposite perspective that is more recent (Goldberg 1995; Marantz 1997; Hale & Keyser 2002; Borer 2003; Ramchand 2008) is that verbs do not inherently have argument structure in the lexicon but instead argument structure template is formed in the syntax where the phonological material is later inserted. There are very different implementations of this view on argument structure, but all of them attribute a lesser role to the lexicon in determining argument structure and deriving alternations.

There are various arguments in favour of both approaches and neither approach seems to have definitely won the upper hand so far (see for instance Müller & Wechsler 2014 and Williams 2015 for overviews). Arguments in favour of syntactic approaches include scope behaviour of quantifiers and adverbs, asymmetries between external and internal arguments with respect to idioms, lack of inheritance of argument structure in some derivations, and the existence of complex predicates which have argument structure identical to single lexical verbs (Williams 2015). However, all of these arguments are contested by lexicalist approaches (Müller & Wechsler 2014).

Some of the arguments are not directly related to argument structure but are rooted in more general architectural considerations. For instance, in the Distributed Morphology framework, there is no theoretical concept that would be parallel to the traditional notion of lexeme: abstract features are combined in syntax while phonological realizations of these features (both functional morphemes and roots) are inserted later in the derivation (Harley

& Noyer 1999). Within such an approach it is natural to build argument structure in syntax. In other frameworks argument structure can in principle be modelled within lexicon or syntax,¹ and for such theories sign languages can also provide valuable data points.

In particular, several researchers have argued that classifier predicates in sign languages provide evidence in favour of syntactic approaches to argument structure (Zwitsers 2003; Benedicto & Brentari 2004; Grose, Wilbur & Schalber 2007; Geraci & Quer 2014). The basic properties of such predicates are described in Section 2, but the gist of the argument can be formulated as follows. In these predicates, the classifier morpheme refers to some features of either the theme argument, or both the theme and the agent arguments. The same verbal root can combine with different classifier morphemes and the argument structure of the whole predicate thus depends on the type of the classifier morpheme, and not on the root. Furthermore, due to the nature of classifier predicates, it is not reasonable to assume that the classifiers together with the root are lexicalized as a single unit. This is taken to be an argument against associating argument structure with the verbal lexeme.

However, several researchers have recently questioned the observed dependency of argument structure on the type of the classifier morpheme (Tang & Gu 2007; Kimmelman, Pfau & Aboh 2017). Furthermore, such predicates appear to show varying degrees of lexicalization (Johnston & Schembri 1999; Schembri 2003). Therefore, it is important to look at such predicates in RSL and to discuss whether they provide evidence in favour of syntactic approaches to argument structure.

As further discussed in Section 3, the VALPAL list fortunately provides a large number of meanings that are expressed by classifier predicates in RSL. This makes it possible to discuss argument structure of such predicates and their significance for the syntax vs. lexicon debate.

1.4 Structure of the paper

The paper is structured as follows. In Section 2, the necessary background on some modality-specific properties of sign languages is provided. Section 3 describes the methodology of the study. In Section 4, RSL verb classes are described, and in Section 5, argument structure alternations are discussed. Section 6 is devoted to classifier predicates, because, as I show in the next section, they should be investigated separately from other verbs. Section 7 contains discussion of the general issues raised in Section 1, and Section 8 concludes the paper.

The paper is accompanied by an appendix (Appendix A) containing all 80 verbal meanings analysed in this study with basic information about the argument structure of the verbs expressing these meanings and examples (both elicited and from the corpus of RSL; Burkova 2015) illustrating their properties. For almost all verbs, some examples include direct links to the on-line version of the corpus, which ensures that the verbs described in this study can be identified, and facilitates replication or inspection of my results. For the verbs that were not found in the corpus, pictures are included to ensure identifiability.

2 Sign language basics

Sign languages are natural languages, and they share many fundamental properties with spoken languages on all levels of grammatical description, e.g. in phonetics and phonology, morphology, syntax, and semantics and pragmatics (see Sandler & Lillo-Martin 2006; Pfau, Steinbach & Woll 2012). However, they exist in the visual modality, and also have

¹ Some researchers even argue that the same argument structure alternation, for instance causativization, can be syntactic in one language and lexical in another (Reinhart & Siloni 2005; Horvath & Siloni 2011).

some unusual sociolinguistic characteristics. I first discuss the former factor, and then turn to the latter.

2.1 Modality effects

There are some clear domains in which the visual modality influences the grammar of sign languages (Meier 2012). Usually, three main domains in which modality effects are at play are distinguished: simultaneity (not relevant for this paper, so not discussed further), use of space, and iconicity.

A very important property of sign languages is that the space in front of the signer is used for linguistic purposes. In many sign languages (but not all, see de Vos & Pfau 2015), referents can be associated with arbitrary locations in the signing space, by using a pointing sign when the referent is first named, or by producing the sign itself in a particular location. This location can then be re-used to refer back to this referent, for instance by using a pointing sign (which serve as pronouns in sign languages), but also in verbal agreement.

Consider example (1).² In the first clause, the sign MOTHER is accompanied by a pointing sign IX-A, so the mother is now associated with this location in space. Several clauses later, another pointing sign to the same location is used in a pronominal function, that is, to refer back to the same referent.

- (1) MOTHER IX-A COOK PREPARE. <...> IX-A AND PLUS IX-B DRESS WASH.³
 ‘Mother is cooking’. <http://rsl.nstu.ru/data/view/id/79/t/01001/d/03900>
 ‘And she is also washing clothes.’ <http://rsl.nstu.ru/data/view/id/79/t/10340/d/14000>

As mentioned above, verbal agreement can also use locations in space for reference tracking. Most sign languages have separate morphological classes of verbs, specifically plain (non-agreeing) and agreeing verbs (Padden 1988; Lillo-Martin & Meier 2011). Agreeing verbs typically modify movement and/or orientation so that the movement is from the subject to the object argument, and orientation of the palm or fingers is towards the object argument. For instance, in (2), the verb GIVE moves from the location of the addressee to the location of the signer to express the meaning ‘you give it to me’.

- (2) HANDKERCHIEF BLACK SQUARE 2-GIVE-1!
 ‘Give the black handkerchief to me!’ <http://rsl.nstu.ru/data/view/id/17/t/85020/d/88380>

Padden (1988) and many other researchers also differentiate between agreeing and spatial verbs: the former agree with arguments (e.g. GIVE agrees with the subject and an object), while the latter agree with locations (e.g. PUT agrees with the location that something is put at). However, the boundary between these classes is far from solid (Quadros & Quer 2008; Costello 2016). For instance, some verbs which could be classified as showing personal agreement can also agree with spatial arguments, and vice versa (e.g. BRING in ASL can agree with an Addressee direct object or with a Goal spatial argument).

In this study spatial arguments of verbs of movement or location (location, goal, and source) are considered arguments, and no further distinction between agreeing and spatial

² See Abbreviations (end of the paper) for glossing conventions. Each example from the RSL corpus is followed by a direct URL link to this example (note, however, that registration is required to access the corpus data), and each elicited example is followed by the code of the signer it was elicited from (S1 to S4).

³ The function of the second pointing sign IX-B in this example is determiner-like: it belongs to the NP IX-B DRESS ‘clothes’.

verbs is made. However, since I explicitly discuss which argument the verb agrees with, the traditional labels of agreeing vs. spatial verbs can be easily deduced.

There is an obvious relation between agreement and argument structure: only transitive or ditransitive verbs can be agreeing (but see a different kind of agreement discussed below). However, not all transitive verbs are agreeing, as I will also show for RSL in Section 4. Furthermore, in most signs languages, in ditransitive verbs like GIVE, TELL, etc. it is the recipient argument, and not the patient argument that is targeted by this kind of agreement, as is also the case in (2).

Another type of agreement-like mechanism that has been less well studied is Single Argument Agreement (Meir 1998; van Gijn & Zwitserlood 2006; Costello 2016). In this kind of agreement, the verb is performed in a location associated with a particular referent. For instance, in (3) the verb BUILD is signed in the same location as its object HOUSE. For other sign languages, it has been found that verbs can agree with the only argument of intransitive verbs (see example (12) below), and with internal arguments of transitive verbs (3).⁴

- (3) HOUSE-A BUILD-A.
'He builds a house.' <http://rsl.nstu.ru/data/view/id/214/t/20240/d/21570>

Another type of construction that uses space, and also illustrates the iconicity modality effect, is classifier predicates (Zwitserlood 2012). These predicates are verbs of motion and location. The handshape in these predicates is often iconic and refers to the object that moves (for instance, the 1-handshape for long thin objects, and the 5b-handshape for round objects). The movement and location of the predicate are also interpreted iconically: they have to represent the real-life movement of the object in some detail. For instance, in (4), the classifier predicate CL_{we}(2b2b)-BE.AROUND has the 2b-handshape for human referents, and the movement of the sign follows a circular trajectory to represent the fact that the referents sit around the table.

- (4) IX-A CHILDREN TWO SON AND DAUGHTER GROUP TABLE SIT CL_{we}(2b2b)-BE.AROUND.
'The family with the children (two sons and a daughter) sits around the table.'
<http://rsl.nstu.ru/data/view/id/79/t/23000/d/27920>

Note that the gloss BE.AROUND for the movement and location part is not entirely appropriate: there is no lexeme in RSL that can be translated as 'be around'; instead, the meaning arises because the movement is interpreted iconically.⁵ This movement may be modified in a potentially infinite number of ways to express potentially infinite details of various movements and locations in real life. This means that classifier constructions do

⁴ Not all sign language researchers would accept that Single Argument Agreement is also an agreement mechanism, similar to the subject-and-object agreement of agreeing verbs (see Costello 2016 for a detailed discussion and arguments in favour of a unified analysis). One clear difference between the two mechanisms is that the former only targets one argument, not two. Another difference is that the modification of a location of a sign does not only apply to verbs, but also to nouns (3). Finally, it can also be analyzed as spatial agreement: one can argue that the verb is performed in a locus that is associated not with the subject or object, but with the location in which the subject or object is.

In this paper, I do not intend to answer whether traditional agreement and Single Argument Agreement are fundamentally the same phenomenon; instead, I distinguish the non-agreeing, Single Argument Agreement, and agreeing verbs on morpho-phonological grounds, and investigate their argument structure. As I show in Section 6, Single Argument Agreement and agreeing verbs turn out to have different argument-structural properties, which might be used as an additional argument against a unified analysis.

⁵ Note, however, that for the sake of readability, in the glosses I will use descriptions such as BE.AROUND instead of glossing all classifier predicates as MOVE or BE.

not have a lexical meaning in the traditional sense (apart from very abstract meanings such as ‘move’ or ‘be somewhere’).

The existence of classifier predicates suggests that the lexicon of sign languages is not homogeneous (Johnston & Schembri 1999; Brentari & Padden 2000). For instance, Brentari and Padden (2000) argue that within the native lexicon of ASL⁶ two parts need to be distinguished: the core lexicon (signs with a fixed meaning and form) and classifier predicates. These two types of signs are not only different in the degree of productive iconicity, as illustrated above, but also phonologically and morphologically. Johnston and Schembri (1999) come to a similar conclusion based on a more practical question: which signs should be included in a dictionary of a sign language? They conclude that classifier predicates should not be included in a dictionary because their meaning is fully predictable based on the meaningful parts, and the number of meanings is potentially infinite. However, various researchers also describe the process of lexicalization of classifier predicates: some forms of such predicates can become fixed and acquire non-fully predictable meanings. Such predicates can be analyzed as crossing the boundary from classifier predicates to the core lexicon.

Since classifier predicates have are thus in many respects different from non-classifier predicates, I do not discuss them in Section 4 together with lexical verbs, but separately in Section 6.

2.2 Interaction with spoken languages

Another important property of sign languages is that most signers (at least in countries with a developed system of deaf education, and this is clearly also true for Russia) are bilingual: in addition to sign language, they also acquire and use at least the written form of the spoken language of their country (Emmorey et al. 2008). This creates a situation of language contact, so contact processes such as borrowing, code-switching, and code-blending⁷ can occur.

Moreover, in many countries an artificial manual communication system exists that mixes elements of the spoken and signed languages. Such systems use signs from the sign language, in addition to some artificially introduced new lexemes, but follow the grammar of the spoken language as closely as possible. For instance, the Signed Russian manual system uses mainly RSL signs to support spoken Russian, but it adheres to the Russian word order, and even sometimes morphological markers represented by fingerspelling (the manual alphabet); in contrast, modality-specific aspects, such as use of space and simultaneity, are not a part of Signed Russian. Such systems are often used in deaf education and also by sign language interpreters. Surprisingly, they often have a social status higher than the corresponding natural sign language, which is also the case in Russia.

The existence of such systems is a very interesting phenomenon, and it has some theoretical and practical consequences. First, borrowing and code-switching can thus not only occur across modalities, but also via the intermediary manual communication system. This leads to a significant amount of influence of the spoken language on the signed language. Second, due to the fact that both the manual communication system and the sign language use the same channel of communication, it is sometimes difficult to disentangle the two in practice, and not all signers have clear intuitions concerning what belongs to the sign language proper and what is an element of the spoken-language based system. As I discuss in the next section, this could have also somewhat influenced

⁶ The also discuss the non-native part of the lexicon consisting of signs based on fingerspelled letters of the English alphabet.

⁷ Code-blending is simultaneous use of elements from a spoken language (e.g. mouthings) and a sign language. This phenomenon is not addressed further in this paper.

the results of this study, as I found some minor discrepancies between elicited and corpus data.

In general, it is always important to consider whether a particular structure found in a signed language can be an example of borrowing from or even code-switching to a manual communication system. Some examples of such phenomena in the domain of argument structure are discussed in Sections 4 and 5.

3 Methodology

3.1 Verbal meanings investigated

As discussed in the Introduction, I used the list of 80 verbal meanings from the VALPAL database (Hartmann, Haspelmath & Taylor 2013) to study basic argument structure in RSL in order to make a direct comparison with spoken language possible and to place RSL in a typological context.

The meanings in the list had been originally selected by the creators of the project in order to be representative of the verbal lexicon and show distinctive syntactic properties. Therefore the list includes meanings which are likely to lexicalize as predicates with no arguments, as predicates with one argument, and so on. The list has been created based on many years of typological and descriptive research on spoken languages, and, as the results of the VALPAL project show, it is indeed a valid tool to study basic argument structure.

It would have been possible to investigate basic argument structure in RSL starting with language-internal considerations; for instance, by first dividing verbs into morphological classes (plain, agreeing, Single Argument Agreement verbs, and classifier predicates of various types) and then investigating their argument structure. While this is certainly a valid approach, I decided to start with the cross-linguistically validated VALPAL list in order to make it possible to compare RSL to other (spoken) languages. Further studies into separate groups of RSL verbs are clearly necessary; in Kimmelman et al. (2017) for instance we look in detail on argument structure of classifier predicates.

One might ask whether it is possible to directly use the VALPAL list to elicit sign language data or whether it needs to be modified. For instance, the famous Swadesh list has been shown to need modification to be usable in lexical comparison of sign languages (Woodward 2000; Parkhurst & Parkhurst 2003). However, the considerations that applied to the Swadesh list do not apply to the VALPAL list.

The difference is that the Swadesh list is used for lexical comparison (so the main purpose is to find out whether two words or signs in two languages have a common origin). Sign languages present additional complications for lexical comparison, such as the use of indexical signs (pointing) for pronouns and body parts, and the widespread use of iconic signs. Both iconic and indexical signs can look the same in two unrelated sign languages by chance which makes the lexical comparison procedure invalid; therefore, attempts have been made to adjust the list to avoid such signs.

The current research project is devoted to argument structure. The fact that some of the signs for the VALPAL meanings are iconic⁸ does not in any sense interfere with the research question. At the moment, I do not see any potential problems with the VALPAL list, as is also clear from the results reported in the rest of the paper. All meanings in the list can be expressed by a single sign in RSL.

One important consideration (see discussion in Section 2) is the structure of the lexicon in sign languages, and especially the fact that there is a difference between lexicalized verbs and productive classifier predicates, and between agreeing and plain verbs. It turns out that the verbal meanings present in the VALPAL list are representative of all these

⁸ None are indexical in the sense of being simply pointing signs.

groups of signs (see Sections 4 and especially 6), so the list does not appear to need modification in this respect either.⁹

3.2 Elicitation

The main data source was elicitation sessions conducted in 2016 in Moscow, Russia. I created a written questionnaire in Russian using the 80 verbal meanings from the VALPAL database. For each verbal meaning, a number of sentences in Russian were created in order to elicit possible argument structures, both basic and derived.

Four native signers of RSL (one male) participated in the elicitation sessions. The elicitation was conducted by me, with the help of the written questionnaire; further questions and discussion were conducted by me in RSL. Consider for instance the meaning ‘burn’. I asked the signers to translate a basic sentence with this meaning with one argument (‘the wood burns’) from Russian. After that I asked them to translate a sentence with two arguments (‘the man burns the wood’). I also checked whether the subject in the transitive use can be an instrument (‘a looking glass burned the paper’) or an inanimate cause (‘the sun burned the paper’). It turned out that only the intransitive use of the verb BURN was possible. I then discussed in RSL how the transitive meaning could be expressed, and thus elicited a poly-predicative resultative construction¹⁰ and also another lexical item, the verb LIGHT.UP ‘light something up’, which is not formally related to BURN. Furthermore, I asked whether it was possible to localize the verbal sign BURN (by producing a constructed example in RSL myself and asking whether it is acceptable), which turned out to be possible. This illustrates how I used written stimuli in combination with further questioning in RSL to elicit the data.

Although it is well known in sign language linguistics that using written language in stimuli can influence the data (Herreweghe & Vermeerbergen 2012), the signers I worked with were aware of the difference between RSL and Signed Russian, they are all highly literate (with a university degree) and fluent in both (written and Signed) Russian and RSL, and they were quite comfortable in their production and judgments, separating RSL intuitions from their knowledge of Russian. This is evidenced by the fact that they often ruled out examples which would be grammatical in Russian, and produced examples which would be ungrammatical. For instance, Russian has a transitive predicate *sushit* ‘dry’ which takes an agent as subject and a patient as object. In RSL, the sign DRY can only take the patient argument, so the signers consistently ruled out examples with an agent and a patient (unless an additional predicate was added to form a resultative construction).

Of course, some influence of Russian cannot be ruled out, especially given that I am not a native signer, which might have influenced the participants’ judgments. In order to improve the validity of the findings, elicited data was checked against corpus data. Whenever discrepancies between corpus and elicited data were found, it is reported in Appendix A. Another argument for the reliability of this data is the high between-signers consistency: with a few exceptions, the patterns described in this paper were accepted by all four signers. This still does not exclude that some of the facts discussed in this paper are somewhat influenced by Russian. A much more detailed investigation focusing on certain verbs and using more advanced elicitation techniques would be necessary to completely exclude such influence.

⁹ Many sign languages, including RSL, also have the so-called backward agreement verbs where the movement of the sign is not from subject to object but in the opposite direction. The VALPAL list contains one meaning which seems to be universally expressed by a backward agreement verb, namely ‘take’, and one meaning which is likely to be expressed by such a verb, namely ‘steal’. However, if the researcher is specifically interested in argument structure of such verbs, the list should be extended.

¹⁰ Notice that such a construction would be ungrammatical in Russian, see also the next paragraph.

3.3 Corpus research

The corpus of RSL (Burkova 2015) contains annotated narratives and some dialogues (> 230 separate video files, 5 hours 30 minutes total) by 43 signers of RSL, mainly from Moscow and Novosibirsk. I searched the corpus for the verbal meanings from the VALPAL list, and annotated each verbal token¹¹ with respect to word order, argument structure, and possible alternations. These data were first used for quantitative corpus-based research reported in Kimmelman (2016). While 76 out of 80 verb types are attested in the corpus, it turned out that only 29 verb types (excluding classifier predicates, which, due to their nature are not easily identifiable as types) had more than 25 tokens in the corpus data (see Appendix B for the list of these 29 verb types and their frequencies), so a detailed analysis of argument structure of all types of verbs based on corpus data only was impossible. For the research reported in this paper, nevertheless, corpus data (even for verbs with a small amount of tokens in the corpus) is combined with elicited data to provide a general description of argument structure.

3.4 Analysis

The elicited sentences recorded on video, and the example found in the corpus were further annotated and analysed. For each verb, it was described how many arguments it has, what the thematic roles of these arguments are, and what alternations the verb participates in. In addition, the morphological type of the verb was also described (i.e. whether it is plain or agreeing, and whether the meaning can or should be expressed by a classifier predicate).

Several methodological decisions have been made that need explicit statement.

First, since the research is based on the VALPAL list of concepts, I am not making an a priori distinction between verbs, adjectives, and even nouns used as predicates. The list contains meanings which are often verbal (e.g. ‘go’), nominal (‘be a hunter’) and adjectival (‘dry’). I do not specifically look at the part of speech of the signs which are used to express these meanings in RSL. First, it is not clear whether adjectives form a separate part of speech in RSL – no research has been done on this issue so far. Second, although RSL does have a morpho-phonological noun-verb distinction (Kimmelman 2009b), it does not apply to all signs. More generally, what I am interested in in this paper is signs which can be used as main predicates in simple clauses and their argument structure. Related to this issue is the terminological decision to use the terms “verb” and “predicate” interchangeably in this paper. Following the convention, I use the phrase “classifier predicates” and not “classifier verbs”, but otherwise I make no distinction between the two terms.

Another issue that needs to be addressed is the difference between arguments and adjuncts. I adopted the following simple rule: noun phrases expressing thematic roles of the predicate and not introduced by any kind of additional predicate are considered arguments (see for instance (15)). This rule has at least two caveats. First, some verbs participate in the unspecified object alternation (see Section 5.2): they can have an overt object, but they can be used without an object to express a general activity. Second, RSL, similar to other sign languages, is a pro-drop language, so omitting a given subject or object is almost always possible. However, this does not mean that the null argument is not a part of the argument structure. Practically, in elicited sentences the arguments are always new information, so pro-drop does not play a role.

A related issue is the analysis of spatial arguments. In many languages verbs of location and movement can have direct objects referring to locations, or sources and goals of movement (e.g. *John left **the house***). Thus I considered spatial arguments (when expressed

¹¹ For some very frequent verbs, I only annotated up to 100 tokens. For verbs with fewer than 100 tokens per type, I annotated all tokens.

by NPs not introduced by a preposition or another predicate) to be arguments in RSL as well, but only for verbs of location or movement. For verbs whose semantics is not directly related to space (e.g. EAT) a location is not be considered an argument, even if it is present in the sentence without any special marking.

A final note concerns thematic roles. I am using the labels such as agent, patient, theme, experiencer, stimulus, cause, goal, addressee, instrument, beneficiary and source as a descriptive instrument to specify the semantic role of subjects and objects (see e.g. Givón 2001 for common definitions). Thematic roles are useful labels to make statements about verbal semantics. For instance, subjects of handling classifier predicates can be agents, but not instruments or causes in ASL, and also in RSL, which is an interesting phenomenon deserving some explanation.

As is evident from the title of the paper, this is only a basic description of argument structure of RSL verbs. The list of verbs is obviously not exhaustive. Moreover, many of the meanings can be expressed by several different verbs. Typically only one or two most common verbs are discussed. The list of argument structure alternations found in this study is also clearly not complete. Therefore, the purpose of this study is to serve as a starting point for future detailed investigation of various argument structure properties of RSL.

4 Verb classes

In this section, I describe the basic verb classes in RSL: from verbs with no arguments to verbs with up to three arguments. Note that classifier predicates are discussed separately in Section 6.

4.1 Verbs with no arguments

RSL does not have expletive subjects, so weather verbs, such as RAIN, SNOW, WIND typically occur with no arguments (5). Trivially, these verbs are plain verbs (as they have no arguments to agree with).

- (5) EVENING, RAIN STRONG RAIN.¹²
In the evening, it rains strongly. <http://rsl.nstu.ru/data/view/id/143/t/17270/d/20120>

Typologically, RSL follows a very common pattern. Out of the 37 languages in the VALPAL database (Hartmann, Haspelmath & Taylor 2013), 22 languages use verb only as the main coding frame¹³ for the meaning ‘rain’. Some of these languages, like English, have expletive subjects (*It rains*), but others, like Italian, express the meaning by a verb with no arguments (*Piove* [rains] ‘It rains’), as does RSL.

4.2 Intransitive verbs

Some verbs in RSL are intransitive. These verbs include predicates with adjectival meanings, such as DRY, HUNGRY, SAD, COLD (6); typical unaccusative predicates, such as BURN, DIE (7), HURT, LAUGH, COUGH, BLINK, SMELL, BOIL²; some activity verbs such as RUN and ROLL (8), and nominal predicates which can be any noun; no copula is used in such cases (9).

- (6) RAIN NEG, GRASS DRY, CAN BURN.
‘When it does not rain, the grass is dry and can burn.’
<http://rsl.nstu.ru/data/view/id/233/t/1357210/d/1361700>

¹² In this and some other examples, the verb occurs twice in the same clause. This phenomenon is known as verb doubling, and it usually expresses pragmatic emphasis or focus (Nunes & Quadros 2008).

¹³ A coding frame is the means that a language uses to encode arguments and their semantic roles, and it includes word order, agreement, case marking, and adpositions.

- (7) OLD TEACHER-PL WHOLE DIE-DISTR.
'All the old teachers died.' <http://rsl.nstu.ru/data/view/id/230/t/558469/d/559841>
- (8) IX-A RUN.
'He runs.' <http://rsl.nstu.ru/data/view/id/137/t/11060/d/12820>
- (9) MOTHER MY L-E-V.
'My mother is a Leo (astrological sign)' <http://rsl.nstu.ru/data/view/id/167/t/41170/d/43500>

Some verbs in RSL are labile, as discussed in Section 4.3, so they can appear in both intransitive and transitive sentences. In contrast, the verbs discussed in this section are truly intransitive: it is not possible to simply add another argument to derive a transitive meaning. For instance, in order to derive the transitive meaning 'dry something' RSL signers would use a bi-predicative resultative construction, as in (10). Adding the agent without a second predicate is ungrammatical (11).

- (10) MOTHER CLOTHES CL_{HL}(anan)-HANG DRY.
'The mother dried the clothes (by hanging them).' (S2)
- (11) * MOTHER CLOTHES DRY.
'The mother dried the clothes.'

As expected, none of the intransitive verb shows regular agreement, because regular agreement implies two arguments. Many of the intransitive verbs are body-anchored (HUNGRY, SAD, COLD, LAUGH, SMELL, RUN), so they cannot be spatially modified to show agreement. However, at least BURN shows Single Argument Agreement: in (12), the argument 'the clothes' is localized with the help of a classifier predicate CL_{HL}(anan)-HANG-A, and then the verb BURN is signed in the same location.

- (12) CLOTHES CL_{HL}(anan)-HANG-A BURN-A.
'The clothes hanging there are burning.' <http://rsl.nstu.ru/data/view/id/174/t/162090/d/163840>

Typologically, the verbs that are intransitive in RSL are also very commonly intransitive cross-linguistically. According to Haspelmath's (2015) analysis of the VALPAL database, seven of the verbal meanings that are intransitive in RSL, are never transitive in their basic use in any of the 37 languages, namely 'dry', 'burn', 'hungry', 'sad', 'die', 'cold', and 'cough'. 'Boil' is not mentioned in Haspelmath (2015), but, according to the VALPAL database (Hartmann, Haspelmath & Taylor 2013), it is also never transitive in its unmarked form. 'Laugh', 'blink', and 'hurt (feel pain)' are also rarely transitive. Only 'smell' is often transitive cross-linguistically, but note that RSL also has a transitive verb SMELL2 'smell food', and it is not clear which of the verbs should be considered basic.

4.3 Labile verbs

Some verbs in RSL can be used transitively or intransitively without any additional marking in either context. Here one needs to distinguish several cases. Firstly, there are transitive verbs that participate in the unspecified object alternation (see Sections 4.4 and 5.2). These would not normally be considered labile. In addition, there are some verbs that allow body-part possessor ascension (also known as external possessor, see also Section 5.5), such as HURT: in (13) the only argument is the body part that hurts, and in (14) the possessor is expressed as the subject argument (as is clear from the non-possessive form of the pronoun IX-1).

- (13) HAPPEN HURT BACK IX.
‘Sometimes my back hurts.’ <http://rsl.nstu.ru/data/view/id/17/t/13718/d/16922>
- (14) IX-1 BELLY HURT.
‘My belly hurts/I have pain in my belly.’ (S1)

Other labile verbs are those that participate in the unmarked causative-inchoative alternation (see also 5.1). These verbs are DAMAGE (‘break’), HIDE, and BOIL. Examples (15–20) below demonstrate the transitive and intransitive uses of these verbs. Note that the intransitive use of HIDE (18) can also be analysed as an unmarked reflexive alternation (that is, it can express the meaning ‘hide oneself’ without any special marking), but this does not apply to the other two verbs. Note also that BOIL2, mentioned in the previous section, is not labile, but purely intransitive.

- (15) IX-1 COMPUTER DAMAGE.
‘I broke the computer.’ (S2)
- (16) SWING TREE DAMAGE.
‘The swings on the tree broke.’ <http://rsl.nstu.ru/data/view/id/174/t/141000/d/142620>
- (17) [IX-A SON]_{SUBJECT} [IX-B SOMETHING]_{OBJECT} HIDE-A.
‘The son also hid something [under the Christmas tree].’ <http://rsl.nstu.ru/data/view/id/151/t/34530/d/40030>
- (18) IX-1 IX-TWO HIDE CALM.
‘We two hid calmly.’ <http://rsl.nstu.ru/data/view/id/208/t/72200/d/73490>
- (19) [FATHER]_{SUBJECT} [R-I-S]_{OBJECT} BOIL1 DONE.
‘The father boiled/cooked the rice.’ (S3)
- (20) WATER BOIL1.
‘The water boiled.’ (S1)

All labile verbs happen to participate in Single Argument Agreement. For instance, in (17) the verb HIDE-A shows agreement with the subject IX-A SON. DAMAGE and BOIL agree with the internal argument.

Typologically, the basic coding frame for the verbs ‘hide’ and ‘break’ (DAMAGE in RSL) is transitive, while for ‘boil’ it is intransitive (Haspelmath 2015). In a typological study on the causative-inchoative alternation, Haspelmath (1993) found that ‘break’ and ‘boil’ are labile in some languages, although ‘break’ is more likely to be transitive, and ‘boil’ intransitive. According to Letuchiy (2013), it is a general property of the labile alternation that it applies to verbs with both prototypically transitive and prototypically intransitive semantics. It is also typologically common that labile verbs are a minority class (English being an exception) (Letuchiy 2013: 239), as is also the case in RSL, at least if the VALPAL list is a representative sample of the verbal meanings in this language.

4.4 Transitive verbs

A large number of verbs in RSL are transitive. They fall into different classes. A large group of transitive verbs denotes various activities: PLAY, SING, BLINK, SHAVE, EAT, HELP, HUG, SEARCH, SMELL2, BUILD, KILL, STEAL2, STEAL3, GRIND, COOK, WASH, FOLLOW, LIGHT.UP (the transitive ‘burn’). Typically, the two arguments are agent and patient. It is interesting to observe that some of the meanings can be expressed by verbs of different transitivity. For instance, as discussed in Section 4.1, SMELL is intransitive, but SMELL2 is transitive (21); BURN is intransitive, while LIGHT.UP is transitive (22); STEAL is ditransitive (see Section 4.5), while STEAL2 and STEAL3 are both transitive; however, with STEAL2

only the agent and the patient (who is being robbed) can be expressed (23), while with STEAL3 only the agent and theme (what is being stolen) can be expressed (24).

- (21) IX-1 FLOWER SMELL2.
'I smelt the flower.' (S3)
- (22) LIGHT.UP.
[I] lighted [the firecracker] up. <http://rsl.nstu.ru/data/view/id/60/t/22850/d/24580>
- (23) STEAL2-A [IX-A]_{OBJECT}.
'[The cat] robbed it [the monkey].' <http://rsl.nstu.ru/data/view/id/382/t/34760/d/35630>
- (24) BLANKET BED COVER SURFACE STEAL3.
'We were stealing blankets.' <http://rsl.nstu.ru/data/view/id/27/t/16260/d/18330>

Another class of transitive verbs are psych-verbs, including verbs of cognition and emotion: THINK, KNOW, LIKE, FEAR, FRIGHTEN, SEE, HEAR. In all such verbs apart from FRIGHTEN, the experiencer is the subject, and the stimulus is the object (25), and often a clausal complement (26), similar to the pattern found by Oomen (2017) for Sign Language of the Netherlands. However, RSL, like ASL and Israeli Sign Language (Kegl 1990; Meir et al. 2007), also has the verb FRIGHTEN which takes agent as the subject and experiencer as the object (27), as is clear from the agreement pattern, and for some signers the verb can also take inanimate cause as subject and experiencer as the object (28).

- (25) IX-1 DOG FEAR.
'I fear dogs.' (S1)
- (26) V-O-R-O-N-Y¹⁴ [SIT]_{CLAUSAL COMPLEMENT} FEAR.
'The crows are afraid to sit down.' <http://rsl.nstu.ru/data/view/id/47/t/29745/d/31700>
- (27) /DOG IX-A/A-FRIGHTEN-1.
'This dog scared me.' (S3)
- (28) /PICTURE IX-A/A-FRIGHTEN-1.
'This picture frightened me.' (signers S2, S3 consider it grammatical, while signers S1, S4 ungrammatical)

In addition, there are three transitive verbs that are stative. NAME has the referent who is named as subject, and the name itself as object (29);¹⁵ to express the causative meaning of 'name' another verb NAME2 is used, which is ditransitive and agreeing (30).

- (29) [IX-1]_{SUBJECT} NAME [V-A-D-I-M]_{OBJECT}.
'My name is Vadim.' (S2)
- (30) [IX-1]_{SUBJECT} NAME2-A [TOILET T-U-A-L-E-T]_{OBJECT} NAME2-A.
'I called it "The toilet".' <http://rsl.nstu.ru/data/view/id/237/t/9090/d/12090>

LIVE is also transitive (the person who lives is the subject, and the place is the object) (31). The predicate FULL is also transitive, the patient/location being the subject, and the things filling the location being the object (32). For the transitive meaning 'fill', FULL is combined with another predicate to form a resultative construction (33).

¹⁴ Fingrespelling of the Russian word *vorony* 'crows'.

¹⁵ Note that IX-1 is a subject pronoun, not a possessive, so NAME cannot be interpreted as being the subject of the clause (as in *my name is Vadim*).

- (31) MAN IX-A LIVE FIVE.STORY OLD FIVE.STORY.
‘The man lives in an old five-story building.’ <http://rsl.nstu.ru/data/view/id/224/t/37080/d/40300>
- (32) BUCKET POOP PILE FULL.
‘There is a bucket full of poop.’ <http://rsl.nstu.ru/data/view/id/303/t/69705/d/72433>
- (33) BOY BASKET APPLE CL_{HL} (5b5b)-THROW FULL.
‘The boy filled the basket with apples.’ (S1)

Finally, the locative verbs LEAVE and SIT, which can be analysed as lexicalized classifier predicates (see Appendix A and Section 6.5), are also transitive: they have an agent as subject (null subject in (34)) and a location as object (34–35).

- (34) PETERSBURG LEAVE.
‘(We) went to Saint-Petersburg.’ <http://rsl.nstu.ru/data/view/id/255/t/7097/d/8490>
- (35) IX-1 SIT CHAIR.
‘I sit in a chair.’ (S2)

Transitive verbs include both agreeing and non-agreeing verbs. Transitive plain verbs are SING, BLINK, EAT, HUG, KILL, STEAL₃, GRIND, COOK, THINK, KNOW, LIKE, FEAR, HEAR, NAME, LIVE, WASH. Agreeing verbs are HELP, SEARCH, STEAL₂, FRIGHTEN, SMELL₂, and SEE: they all agree with the subject and the direct object. For instance, (28) above illustrates the agreement for FRIGHTEN. LEAVE is also agreeing: the movement is from the location of the agent to the location associated with the goal. FOLLOW can be modified to reflect the movement of the two objects that follow each other.

PLAY, SHAVE, SEARCH, BUILD, LIGHT.UP, SIT and FULL all show Single Argument Agreement. With most of these verbs, it is the patient argument whose location is used for agreement, as (36) shows for BUILD. Interestingly, the verb SEARCH can have a patient (what you are searching for) or a location (where or whom you are searching) as the direct object, but not both, and only location triggers agreement (37). SIT also shows agreement with the location argument. The verb PLAY has agent as the subject, and a patient (the game being played) as an optional object, but agreement is with the agent (38).

- (36) HOUSE-A BUILD-A.
‘He builds a house.’ <http://rsl.nstu.ru/data/view/id/214/t/20240/d/21570>
- (37) MAN PERSON IX-A, GUARD SEARCH-A.
‘The guard searched the man.’ (S2)
- (38) SON PLAY-A.
‘The son is playing.’ <http://rsl.nstu.ru/data/view/id/190/t/48595/d/49463>

It should be clear that the presence/absence of agreement does not correlate well with the three groups of verbs that were identified among transitive verbs, although most psych verbs are plain. This latter fact is probably due to the underlying metaphoric iconicity of these signs which causes them to be body-anchored and thus plain (Oomen 2017).

Transitive verbs can undergo some unmarked alternations, a common one being the unspecified object alternation, illustrated by (38), and further discussed in Section 5.2. In addition, HUG can undergo an unmarked reciprocal alternation (39), see also Section 5.4.

- (39) FRIEND IX-2 HUG1.
‘The two friends hugged.’ (S2)

According to Haspelmath's (2015), most verbs that are transitive in RSL are also transitive in more than 70% of the languages in his sample. The verbal meanings 'steal', 'grind', 'cook', and 'hear' are not a part of the hierarchy in Haspelmath (2015), but, according to the database, they are transitive in the vast majority of languages (Hartmann, Haspelmath & Taylor 2013). 'Fear', 'leave', and 'sing' are also often transitive (in 38–53% of the languages). The verbs which are transitive in RSL but not typically so cross-linguistically are BLINK, PLAY, LIVE, SIT, and LIGHT.UP (for burn). Note however, that BLINK and PLAY are clearly more often used intransitively with an unspecified object. LIGHT.UP does not really mean 'cause to burn', but 'cause to start burning' which might be a different meaning than intended by the database creators. For the verbs LIVE and SIT, I have included spatial arguments in determining transitivity, which is quite common in the literature; note, however, that spoken languages often use prepositions to introduce spatial arguments, while sign languages, including RSL, generally do not, which means that these verbs are more likely to be transitive (according to my definition) in sign languages.

4.5 Ditransitive verbs

RSL also has a number of ditransitive verbs. Firstly, many verbs of speech are ditransitive, namely ASK.FOR, TELL, SAY, SCREAM, and TALK.¹⁶ In all these verbs, the agent is the subject, and the two objects are the addressee and the theme (what is being said/asked for, often in the form of a clausal complement) (40).

- (40) A-TELL-1 NEED BREATHE HOW.
 'He explained to me how to breathe.' <http://rsl.nstu.ru/data/view/id/278/t/190270/d/192790>

Verbs of transfer, which are most commonly ditransitive typologically, are also ditransitive in RSL, namely GIVE, SEND, THROW, and POUR. The meaning 'give' can be expressed by a classifier predicate, but the lexicalized form of GIVE also exists, and it is ditransitive (41); the same is true for POUR (42) and THROW. SEND is an interesting case, because, in addition to the more general SEND which takes agent as subject, and addressee and theme as objects (43), there are more specialized verbs like SEND.EMAIL, and SEND.TELEGRAM which are simply transitive, taking only an addressee as object (44).

- (41) IX-1 IX-TWO GIVE.NEG-A.
 'We two did not give him [water].' <http://rsl.nstu.ru/data/view/id/368/t/123130/d/124850>
- (42) SON SMALL ALSO POUR-A.
 'The small son also poured water into it.' <http://rsl.nstu.ru/data/view/id/91/t/55140/d/57350>
- (43) EXAM SEND-A.
 'I was sending the exams [there].' <http://rsl.nstu.ru/data/view/id/176/t/260700/d/261650>
- (44) IX-1 SEND.TELEGRAM-A.
 'I sent [him] a telegram'. (S3)

In addition, some verbs that can be characterized as metaphorically related to transfer, namely SHOW, TEACH (45), STEAL, and NAME2 (30) are also ditransitive.

¹⁶ There is variation with respect to whether TALK is ditransitive, see Appendix A.

- (45) DOG TEACH-A DOG FIGHT TEACH-A.
 ‘He teaches the dog to fight.’ <http://rsl.nstu.ru/data/view/id/224/t/138989/d/141140>

Most of the ditransitive verbs show agreement, namely ASK.FOR, TELL, SAY, SCREAM, GIVE, SEND, THROW, TEACH, STEAL, and NAME2; for most of them agreement is with the subject/agent and object/addressee argument. For instance, in (46) the verb GIVE moves from the subject location (2nd person) to the object location (1st person). With STEAL, the agreement is with the subject/agent and object/patient (the person from whom something is being stolen) (47). THROW agrees with the goal or addressee argument.

- (46) 2-GIVE-1.
 ‘Give me [your address].’ <http://rsl.nstu.ru/data/view/id/37/t/59200/d/60250>
- (47) THIEF IX-A STEAL1-1 BIKE IX-B G-A-R-A-ZH[garage] IX-B.
 ‘A thief stole a bike from me that was in the garage.’ (S1)

POUR is a Single Argument Agreement verb, because the movement is not modified, but the location is modified depending on the location of the addressee/goal argument (42).

Finally, TALK, and SHOW are plain verbs. Therefore, although there is a clear tendency for ditransitive verbs to be agreeing, this is not without exception. On the other hand, for TALK, some of the signers I consulted claimed that it is not ditransitive, but transitive, despite the fact that in the corpus some ditransitive uses can be found (see Appendix A). SHOW is often used in combination with a classifier predicate which might be responsible for the ditransitive syntactic frame. Further research is thus needed to find out whether ditransitive verbs are necessarily agreeing.

According to typological research (Malchukov, Haspelmath & Comrie 2010), ditransitive verbs cross-linguistically typically belong to certain lexical classes. In particular, the meanings ‘give’, ‘show’, ‘teach’, ‘tell’, ‘send’, and ‘ask’ are among the most frequent to be encoded ditransitively (Malchukov, Haspelmath & Comrie 2010: 50). It should be clear that RSL fits this pattern nicely.

4.6 Verbs with more than three arguments

I have found no lexical verbs with more than three arguments in RSL. Some classifier predicates can be analysed as having four arguments if spatial arguments are included. This is further discussed in Section 6, see example (73).

This fact is not surprising, because, typologically, for verbs to have more than three arguments is quite uncommon. In the VALPAL database, there are only 16 verbs (out of 1156) which have four arguments, and no examples with five arguments (Hartmann, Haspelmath & Taylor 2013). Almost all examples of the four-argument verbs are of the concept ‘tie’, and the arguments are agent, patient, instrument, and goal (location to which the patient is tied) (48).

- (48) *Bezhta* (Comrie & Khalilova 2013)
 öždi waya sabali-ya-d m-ico-yo xöx-i-ł.
 boy.ERG cow(III).ABS rope-OBL-INST III-tie-PST tree-OBL-INTER
 ‘The boy tied the cow to the tree with the rope.’

Note that the four-argument verbs in RSL, as described in Section 6, are quite different. They are all verbs of motion, and include two spatial arguments (source and goal). The reason that such verbs are probably more likely to have four arguments in sign

languages than in spoken languages is that the latter do not often use prepositions and instead resort to using space to describe spatial events.

5 Alternations

In this section, I briefly discuss the argument structure alternations that I discovered in this study (and only for the verbs that were considered in this study). I start with a general discussion of the causative-inchoative alternation, and then discuss valency-reducing alternations (Sections 5.2–5.4) and valency-increasing alternations (Section 5.5–5.8).

5.1 Causative-inchoative alternation

One of the typologically common alternations is the causative-inchoative alternation, whereby the verb can be used intransitively (to refer to a non-caused or internally caused process) or transitively (to refer to a caused process and specify the cause/agent) (Haspelmath 1993; Levin 1993). In RSL, some labile verbs (Section 4.3) can undergo this alternation in an unmarked form (15–20).

However, the majority of verbs are not labile. Some verbs are intransitive, and the causative counterpart is expressed either by a different verb (e.g. BURN vs. LIGHT.UP) or via a poly-predicative structure, such as a resultative construction ((62), see Section 5.8). Other verbs are transitive; they can be used intransitively via the unspecified object alternation, but they cannot be used inchoatively with the patient being the single argument (PLAY, SING, BLINK, SHAVE, etc.). It might be possible that some transitive verbs in RSL have marked passive forms, as has been argued for other sign languages (Janzen, O’Dea & Shaffer 2001), but this question awaits further investigation.

One important complication in establishing whether a verb can be used intransitively has to do with the fact that an unmarked impersonal alternation is very productive in RSL (see Section 5.3), so it is relatively easy to find examples of clearly transitive verbs without agents in corpus data.

5.2 Unspecified object alternation

Another typologically very common alternation is the unspecified object alternation, where the patient object of transitive verbs is omitted to express the meaning of a general activity, involving some generic/understood patient (Levin 1993). RSL also has this alternation for transitive verbs. For instance, in (49) the object of EAT is unspecified, and the sentence means that the signer has had a meal.¹⁷ It seems that the ditransitive verbs in my sample do not undergo this alternation.

- (49) EAT PRTCL.¹⁸
 ‘I ate.’ <http://rsl.nstu.ru/data/view/id/198/t/1140850/d/1141750>

5.3 Impersonals and middles

A very common alternation in RSL is the impersonal alternation where the agent/subject is interpreted as having impersonal reference. In Kimmelman (to appear) I describe this alternation in detail. The most common way of expressing the impersonal reference in RSL is to simply omit the agent/subject argument. For instance, in (50) no subject of the transitive verb SPEAK.MICROPHONE is present in the sentence, and the referent was also

¹⁷ Given that RSL is a null argument language, it is not always easy to distinguish unspecified object alternation and null objects. There is however a difference in interpretation: a null object is interpreted as definite (it refers to a previously mentioned referent), while a verb undergoing an unspecified object alternation denotes a general activity without any antecedent. Transitive verbs which do not undergo this alternation can only occur without an overt object if the reference of the object is definite and recoverable from the context.

¹⁸ PRTCL stands for particle/interjection.

not mentioned before; therefore, the sentence gets an impersonal interpretation. This is a very productive process that applies to both plain and agreeing verbs, and also can be used to express any of the meanings associated with impersonal reference (Gast & van der Auwera 2013).

- (50) BUS COME. SPEAK.MICROPHONE NUMBER.
 ‘The bus came. They pronounced its number.’ <http://rsl.nstu.ru/data/view/id/198/t/645310/d/647340>

Similarly, RSL seems to have an unmarked middle alternation, where the action is evaluated as having a particular characteristic, is not bound to a particular time, and has an agent that is removed (Levin 1993). For instance, in (51) the verb DAMAGE is used without an agent to refer to the fact that the action of ‘damaging this plastic’ is easy to perform. However, it is not clear whether the middle alternation should be analyzed as a separate alternation in RSL, because the same meaning and form can presumably be derived via the impersonal alternation: (51) can be interpreted as ‘one can easily damage this plastic’.

- (51) PLASTIC IX-A EASY DAMAGE.
 ‘This plastic is easy to damage.’ (S1)

Typologically, impersonal marking in RSL is quite ordinary. The unmarked impersonal strategy described in this section (omitting the agent argument) is attested in both spoken and signed languages. Moreover, the fact that the same strategy can be used in different impersonal contexts is also typologically common (Gast & van der Auwera 2013). I refer the readers to Kimmelman (to appear) for further details on impersonal constructions in RSL, and to Barberà & Cabredo Hofherr (to appear) for further discussion of impersonals in various sign languages.

5.4 Reciprocal and reflexive

Some languages use reflexive and reciprocal alternations: this means that instead of using a reflexive or a reciprocal pronoun, the object argument can be omitted, but the sentence still gets the reflexive/reciprocal interpretation (Levin 1993). RSL has reflexive and reciprocal pronouns, but still also displays both of these alternations.

The reflexive alternation seems to exist only in the marked form for agreeing verbs: specifically, the form with 1st-person object agreement is interpreted as reflexive (see also Kimmelman 2009a). For instance, in (52) the 1st-person form of SHAVE means ‘shave oneself’. For transitive plain verbs this reflexive agreement marking is not available, and it seems that none of such verbs discussed in this paper allow for a reflexive interpretation of the verb with an omitted object (except maybe for HIDE discussed in Section 4.3); a reflexive pronoun should be used instead.

- (52) FATHER POSS-1 IX-A SHAVE-1.
 ‘My father shaved.’ <http://rsl.nstu.ru/data/view/id/178/t/340100/d/342000>

Reciprocal alternation works in a slightly different way. Similar to other sign languages (Pfau & Steinbach 2003), agreeing verbs in RSL can take a reciprocal agreement form which is usually produced by using two hands (see Burkova & Filimonova 2014 for RSL). For instance, in (53) the agreeing verb SEE is produced with both hands, with opposite direction on the two hands, to express the reciprocal meaning (in non-reciprocal contexts this verb is one-handed and agreeing with the subject/agent and object/patient). The plain verb TALK has a form that is also used only reciprocally, namely TALK2 (54), but cannot be analysed as involving reciprocal agreement, because the verb is not agreeing in any

other form. Finally, plain verbs can also undergo the reciprocal alternation, but in such cases this alternation is unmarked (as in other sign languages; Pfau & Steinbach 2003). It seems to be possible only with verbs which are inherently reciprocal (also known as allelic verbs; Haspelmath 2007), such as MEET (if not analysed as a classifier predicate, see Section 6) and HUG. For instance, in (39) above the verb HUG is used reciprocally without any marking. Notice that in German Sign Language, in contrast, not only inherently reciprocal, but also other plain verbs undergo unmarked reciprocal alternation (Pfau & Steinbach 2016).

(53) SEE-REC.
'They look at each other.' <http://rsl.nstu.ru/data/view/id/239/t/26738/d/27404>

(54) TALK2.
'They talk to each other.' <http://rsl.nstu.ru/data/view/id/125/t/15625/d/17275>

5.5 Body-part possessor ascension

With the verb HURT, RSL allows for body-part possessor ascension (Levin 1993): the body-part possessor which is a part of the noun phrase (13) can become an argument, specifically the subject (14). This alternation also applies to body-part classifier predicates, briefly discussed in Section 6 and in Kimmelman et al. (2017).

Note that possessor ascension to the subject position seems to only apply to verbs which have body parts as arguments. For instance, it is ungrammatical to have a possessor as a subject of the verb DRY. In (55) the subject is the t-shirt, modified by a possessive pronoun POSS-1 'my', but as (56) shows, it is not possible to use a non-possessive pronoun IX-1 as the subject in the same sentence. If (55) were grammatical, it would qualify as possessor ascension, as the possessor of the theme of the verb would become the subject. Interestingly, the possessor in such cases can be expressed by the benefactive pronoun Y, as in (57), see Section 5.6 for further details.

(55) POSS-1 T.SHIRT DRY.
'My t-shirt is dry.'

(56) *IX-1 T.SHIRT DRY.
'My t-shirt is dry.'

(57) Y-1 T.SHIRT DRY.
'My t-shirt is dry.'

In general, external possessors are quite common typologically; moreover, body-part possessors are most often expressed externally (Payne & Barshi 1999). Therefore, RSL fits the most common typological pattern in this respect.

5.6 Benefactive

RSL has a way of introducing a beneficiary argument by using a special benefactive pronoun Y, which is a pointing sign with the Y-handshape. Consider (58): the verb BUILD is transitive, but an additional beneficiary argument is introduced by the Y-1 pronoun (the sign directed towards the signer). Interestingly, this pronoun can also be used when the beneficiary is a part of argument structure, as in (59), where the object Y-1 is the patient of the verb COURT; this argument can also be expressed by a pronoun or a noun phrase without using Y.¹⁹

¹⁹ Note that German Sign Language has an auxiliary glossed as PAM, which can also be used to extend argument structure or to mark an object already present in the argument structure of a verb (Steinbach 2011). However, unlike Y in RSL, PAM can mark agreement with objects with different thematic roles.

- (58) MOTHER FATHER BUILD DONE Y-1 HOUSE.
‘My parents built me a house.’ (S1)
- (59) IX-A COURT Y-1.
‘He courted me.’ <http://rsl.nstu.ru/data/view/id/178/t/180400/d/180990>

This pronominal sign in RSL is probably related to the preposition *u* ‘at’ in Russian, as evidenced by the fact that it has the handshape that is used to fingerspell this letter. However, at least synchronically, the sign is not a preposition, because it does not combine with personal pronouns. In addition, the Russian preposition cannot be used to introduce the beneficiary argument in contexts like (58–59). On the other hand, the sign can also be used to express a possessor, as in (57) above, similarly to the Russian preposition. Another alternative is that this sign in RSL has grammaticalized from the sign RESPECT which is similar in form.²⁰

A very similar way of introducing the beneficiary argument has been described for Georgian Sign Language (Makharoblidze 2016), alongside with other argument structure extending markers. Note that, as Makharoblidze discusses, Georgian Sign Language is related to or at least has been heavily influenced by RSL, so the similarity is probably not coincidental.

5.7 Adpositions

Lexical argument structure of a verb in RSL can be also extended by adpositions. These adpositions clearly originate as fingerspelling of Russian prepositions: *iz-za* ‘from’, *s* ‘with’, *o* ‘about’. Therefore, it is questionable whether these items belong to RSL proper or are instances of code-switching or Signed Russian.

However, at least for the adposition ABOUT (the fingerspelled letter “o”), there are good reasons to consider it a part of the linguistic system of RSL. Firstly, it is used by native signers, and it is perceived by native signers that I consulted as a part of RSL. Secondly, and more importantly, it can undergo Single Argument Agreement with its nominal complement, which has no parallels in Russian. For instance, in (60) the sign ABOUT is signed in the same location as the localized form of the sign PERSON before it. Finally, unlike *o* in Russian, which is purely a preposition, ABOUT in RSL can both precede (61) and follow (60) its nominal complement.

- (60) /GIRL PERSON-A ABOUT-A/BOY THINK.
‘The boy thinks about the girl.’ (S2)

Accepting that ABOUT is indeed an adposition in RSL, its function is similar to *o* in Russian or *about* in English: it is used to introduce the topic of thought (60) or communication (61) with verbs of cognition or communication.

- (61) IX-1 TELL ABOUT 965.
‘I’ll tell about 965.’ <http://rsl.nstu.ru/data/view/id/358/t/1420/d/3960>

The functions and status of other potential adpositions in RSL require further research.

5.8 Resultative construction and other poly-predicative strategies

A relatively productive way to extend argument structure of a verb is to use a resultative construction, as also described for other sign languages (Kentner 2014; Loos 2016; Pasalskaya 2017). In RSL, the resultative construction is typically formed by combining a transitive predicate expressing a process and an intransitive predicate expressing the result.

²⁰ Note that the sign RESPECT itself involves initialization: it has the Y-handshape which is used for the first letter of the Russian word *uvazhenije* ‘respect’.

For instance, in (33), repeated here as (62), a transitive classifier predicate CL_{HL} (5b5b)-THROW-alt referring to the process of putting apples into the basket is combined with an intransitive predicate FULL referring to the resulting final state.

- (62) BOY BASKET APPLE CL_{HL} (5b5b)-THROW-alt FULL.
 ‘The boy filled the basket with apples.’ (S1)

Pasalskaya (2017) has demonstrated that resultative constructions in RSL behave as mono-clausal structures according to a number of tests. Therefore, they should be considered a clause-level argument structure extension strategy.

In addition, RSL has a common strategy to combine multiple predicates to express events with complex argument structures. For instance, classifier predicates are sometimes combined with lexical verbs, as illustrated by example (63). It might be the case that such combinations are frequent because classifier predicates are on the one hand very rich in agreement and thus express argument structure clearly (see further Section 6), but, on the other hand, they are not lexically specific (they only have a very general meaning of motion) and thus often do not refer to specific events (so the lexical meaning is supplied by the lexical verb).

- (63) READY DOUGH CL_{HL} (bb)-GIVE SHOW POSS.REFL MOTHER CL_{HL} (bb)-GIVE.
 ‘He shows the prepared dough to his mother.’ <http://rsl.nstu.ru/data/view/id/202/t/47890/d/52340>

It might be possible to analyse such structures as serial verb constructions (Lau 2012; Bos 2016). However, their precise semantic and syntactic properties in RSL await further investigation.

Poly-predicative resultative constructions are quite common cross-linguistically (see e.g. Ramchand 2008) and even attested in English: “John hammered the metal flat”; and serial verb constructions are also extremely common typologically, and often are used to extend argument structure (Haspelmath 2016).

6 Classifier predicates

6.1 On the nature of classifier predicates

Classifier predicates (also known as depictive constructions) have been analysed in numerous studies for various sign languages (see Zwitserlood 2012 for an overview). In general, these predicates have the following important properties:

1. The movement and location of the sign depicts movement and location of some object;
2. The handshape of the sign depends on the type of the moving object.

These handshapes are often called classifiers to emphasize parallels with verbal classifiers in spoken languages (although not all researchers agree that this parallel is justified, see e.g. Schembri 2003). Irrespective of the exact analysis, it is clear that classifier predicates are less lexicalized than “regular” lexical signs: the handshape is a separate morpheme that depends on an argument of the predicate, and the location and movement are highly iconic, that is, they depict some real-life location or movement. It is thus not possible to assign classifier predicates a lexical meaning (Johnston & Schembri 1999). Let me illustrate this claim with the following constructed examples:

- (64) BOY CL_{WE} (2)-MOVE.RIGHT.
 ‘A boy moves to the right.’

- (65) CAR CL_{WE}(bi)-MOVE.RIGHT.
'A car moves to the right.'
- (66) BOY CL_{WE}(bi)-MOVE.UP.AND.DOWN.
'A boy moves up and down (=jumps).'
- (67) BOY CL_{WE}(2)-MOVE.DOWNWARD.
'A boy falls.'

In (64), the classifier predicate contains the 2-handshape which cross-references the boy, while in (65) a different *bi*-handshape is used in combination with the same movement pattern to cross-reference the car. If we only compare these two examples, we might conclude that the handshape is not a part of the lexical description of the predicate, but the movement is basically the lexical verb 'move right'. However, examples (66–67) show that the movement might be modified in various ways to express other meanings, such as 'jump' or 'fall', or 'move left' or any other directional meaning. Since the variation in movement patterns is in principle unlimited, it does not make sense to talk about lexicalized predicates MOVE.RIGHT, JUMP, and FALL.

One relatively common approach to classifier predicates is represented by Zwitserlood (2003) and Benedicto & Brentari (2004). Zwitserlood analyses the movement of the predicate as the verbal root (the root is either MOVE or BE.LOCATED), and the classifier handshape as an agreement marker. The movement and locations are interpreted iconically.

According to this approach, the argument structure of classifier predicates depends on the type of argument referred to by the handshape. Sometimes, the handshape refers to an object that moves (this is the so-called whole-entity classifier type): for instance, a car or a person. In this case, the predicate has a theme argument, and also up to two spatial arguments: source and goal if the sign describes movement, or location if the sign describes an object being located somewhere (see examples (68–69) below). In other cases, the handshape refers to a body-part (a hand, a leg, the head). Different sign languages have different argument structure options for such predicates (see Kimmelman et al. 2017): for instance, in ASL, such predicates only take the agent argument (the possessor of the body part), while RSL allows two arguments (the agent and the theme that is a body part), in addition to spatial arguments, see examples (78–82) below. Yet another class is handling classifiers: the handshape refers to a hand manipulating some object. These predicates take an agent argument and a theme argument, in addition to the spatial arguments (see examples (72–73) below). Finally, in some cases, the handshape refers to an instrument with which some action is performed. Again, there is some cross-linguistic variation with respect to the argument structure of some predicates, namely whether the instrument can be an explicit argument in the same clause or whether it is only encoded by the handshape within the verb (Meir 2001). The maximal possible argument structure of such predicates thus includes an agent, a patient, an instrument, and the spatial arguments; however, for instrumental classifier predicates it is questionable whether one should consider location/source/goal to be arguments since the predicates generally do not express a spatial meaning (e.g. a verb meaning 'cut with a knife' is not generally used to describe the exact movement pattern of the knife).

Within Benedicto & Brentari's approach, the verbal root (which only has a very abstract meaning of MOVE or BE.LOCATED) does not determine the argument structure of the whole predicate; instead, the argument structure is determined by the classifier. However, as I show in the next sections, the situation in RSL is slightly more complicated: while the general tendency is similar to ASL, there are a number of exceptions. Specifically, some whole-entity classifiers can be used in transitive predicates, for instrumental classifiers the type does not determine transitivity, and handling classifier predicates are used to express events which are more complex than just transfer.

6.2 Meanings expressed by classifier predicates

In RSL, many meanings that I investigated are expressed by classifier predicates. Some meanings can only be expressed by classifier predicates, namely ‘sink’, ‘jump’, ‘meet’, ‘hit/beat’, ‘cut’, ‘take’, ‘tear’, ‘peel’, ‘carry/bring’, ‘tie’, ‘put’, ‘cover’, ‘load’, ‘push’, ‘dig’, ‘touch’ and ‘wipe’. Other meanings can be expressed by lexical verbs or classifier predicates, namely ‘roll’, ‘leave’, ‘go’, ‘sit’, ‘run’, ‘climb’, ‘dress’, ‘wash’, ‘eat’, ‘break’, ‘kill’, ‘give’, ‘throw’, and ‘pour’. It is easy to see that most of these verbs involve movement of different types or manipulation of objects or instruments.

It is important to note that it is sometimes difficult to decide whether a particular sign is a classifier predicate or whether it is at least partially lexicalized. I discuss this issue further in Section 6.5.

6.3 Classifier type and argument structure

According to previous research (Zwitserslood 2003; Benedicto & Brentari 2004), whole-entity classifier predicates must have a theme argument and they can have the spatial arguments. In general, this is also true for RSL in the majority of cases. For instance, in (68) a whole-entity classifier for a person is used, and the interpretation is that a girl is drowning (literally: moving down) on her own (e.g. no agent is involved). Example (69) shows that a location argument TABLE can be expressed in the same clause with a classifier predicate.

- (68) IX-A GIRL CL_{WE}(2)-GO.DOWN.
 ‘The girl is drowning.’ <http://rsl.nstu.ru/data/view/id/147/t/2000/d/3980>
- (69) IX-A CHILDREN TWO SON AND DAUGHTER GROUP TABLE SIT CL_{WE}(2b2b)-BE.AROUND.
 ‘The family with the children, two sons and a daughter, sits around the table.’
<http://rsl.nstu.ru/data/view/id/79/t/23000/d/27920>

However, in some cases the whole-entity classifier predicate can be used transitively. For instance, in (70) a whole-entity classifier for the chair is used, but there is an overt agent in the clause, and the interpretation is clearly causative.

- (70) IX-1 CHAIR CL_{WE}(bi)-MOVE + WALL WALL CL_{WE}(bi)-MOVE + WALL.
 ‘I pushed the chair to the wall.’ (S3)

At the moment, it is not clear in which contexts a whole-entity classifier predicate can be used in a transitive frame. I have found that not all contexts allow it; for instance, (71) is ungrammatical, and a handling classifier predicate must be used instead (72), as is also the case in, for instance, ASL (Benedicto & Brentari 2004). This issue awaits further research.

- (71) *BOY POSS-A BOAT PLAY CL_{WE}(bb)-GO.DOWN.
 ‘The boy drowned his toy boat.’
- (72) BOY POSS-A BOAT PLAY CL_{HL}(h)-GO.DOWN.
 ‘The boy drowned his toy boat.’ (S2)

Similarly, as a rule, handling classifier predicates in RSL have an agent, a patient, and the spatial arguments. For instance, the predicate in (73) has the following (omitted) arguments: agent, patient, and goal, and (74) has four arguments: agent, patient, source, and goal. Instrument or non-animate cause cannot be the subjects of such predicates (75–76), as has also been described for other sign languages (Benedicto & Brentari 2004).

- (73) CL_{HL}(an)-PUT-A.
‘I put it in my mouth.’ <http://rsl.nstu.ru/data/view/id/366/t/264650/d/266200>
- (74) IX-1 BOOK LIBRARY CL_{HL}(h)-CARRY HOME.
‘I brought a book from the library to my home.’ (S1)
- (75) *WIND BOAT PLAY CL_{HL}(h)-GO.DOWN.
‘The wind drowned the boat.’
- (76) *HAMMER STICK CL_{HL}(ss)-BREAK.
‘The hammer broke the stick.’

Not all handling classifiers describing movement take the spatial arguments. For instance, when meanings like ‘break’ or ‘tie’ are expressed, the movement of the signer’s hand reflects the movement of the hands that perform the breaking or tying action, but the hands do not move from one location to another to express the movement of the patient/theme, and no goal or source arguments are specified. Instead, the whole sign is localized in a location associated with the patient, so it shows Single Argument Agreement (77). This has also been described for other sign languages (Meir 1998; Costello 2016).

- (77) LEG-A CL_{HL}(33)-TIE-A ZH-G-U-T[rope] CL_{HL}(ss)-TIE-A.
‘I tied a rope on my leg.’ <http://rsl.nstu.ru/data/view/id/262/t/135407/d/137867>

Finally, I have to note that, in Kimmelman et al. (2017), we argue that handling classifier predicates describing movement in RSL in fact have a more complex event and argument structures. Specifically, we claim that a handling classifier predicate expresses two simultaneous events: a holding/handling event and a moving event. The relation between the two events is the one of simultaneity, not of causation. In some contexts, the events are causally connected (as in (71)), but in other contexts they are clearly not. We also argue that some other (non-handling) classifier predicates in RSL have an equally complex event structure. A detailed discussion of our analysis goes beyond the scope of this paper.

Some of the meanings in my sample are expressed by body-part classifier predicates. Specifically, a body-part classifier for legs or paws is used to express the meaning ‘run’ (78–79). When this meaning is expressed, the predicate has the agent argument, and also the spatial arguments.²¹ A body-part classifier for hands can be used to express the meanings ‘wash’ (literally: to move the hands in front of one’s face) (80) and ‘beat/hit by hand’ (81) (see also Meir et al. 2007; Oomen 2017 for the discussion of the body being an argument in such verbs). A body-part classifier for hands or paws can be used to express the meaning ‘dig (with hands/paws)’ (82).

- (78) CL_{BP}(11)-RUN SWIMMING.POOL IX-A.
‘They ran to the swimming pool.’ <http://rsl.nstu.ru/data/view/id/174/t/195490/d/197590>
- (79) DOG CL_{BP}(anan)-RUN.
‘A dog runs.’ (S2)
- (80) BOY CL_{BP}(bb)-WASH-1.
‘The boy washed his face.’ (S4)

²¹ In Kimmelman et al. (2017), we show that this body-part classifier can also co-occur with an overt body-part argument.

- (81) CHILDREN IX-1 CL_{BP}(s)-HIT NOT.
'I do not hit children.' (S2)
- (82) EARTH^PLACE, DOG CL_{BP}(cc)-DIG.
'A dog digs the earth.' (S2)

Several meanings can also be expressed by instrumental classifier predicates,²² namely 'eat (with a spoon/fork)', 'wash', 'wipe', 'peel', 'cut', 'hit', and 'dig'. These classifiers have an agent and a patient argument. For some of these predicates (the first four in the list above), the instrument is not usually explicitly mentioned. For instance, in (83) the meaning 'with a fork' is expressed only by the handshape within the predicate. Some researchers would analyze such cases not as classifier predicates but as nominal incorporation (Meir 2001; Zwitserlood 2012), but this is a controversial issue.

- (83) FOOD CL_{IN}(2)-EAT.
'We ate the food [with forks].' <http://rsl.nstu.ru/data/view/id/372/t/242010/d/243320>

For other predicates, the instrument can clearly be overtly expressed in the sentence. For instance, in (84) the instrument KNIFE is expressed as a noun and also referred to by the classifier handshape. Example (85) shows the same for a predicate with the meaning 'hit'.

- (84) MOTHER BREAD KNIFE CL_{IN}(b)-CUT.
'The mother cuts the bread with a knife.' (S2)
- (85) GRANDMOTHER UMBRELLA CL_{IN}(s)-HIT.
'The granny hits [the cat] with an umbrella.' <http://rsl.nstu.ru/data/view/id/328/t/79510/d/81100>

Similar to handling classifier predicates like BREAK and TIE, instrumental classifier predicates do not normally take spatial arguments, but they can show Single Argument Agreement with the patient (86).

- (86) WINDOW-PL-A CL_{IN}(s)-WASH-A.
'She washed the windows.' <http://rsl.nstu.ru/data/view/id/79/t/14240/d/16800>

Instrumental classifier handshapes are sometimes divided into two groups: whole-entity-like and handling-like (Benedicto & Brentari 2004). The former are handshapes that refer to the instrument itself, for instance, the b-handshape in (84) referring to the flat surface of a knife, and the latter are handshapes that refer to a hand holding an instrument, as the s-handshape in (85) referring to the hand holding an umbrella. According to Benedicto & Brentari, these two types of instrumental classifiers in ASL have different argument structures. However, as examples (84) and (85) show, this is not the case for RSL. In fact, no clear relation between argument structure and the type of instrumental classifier can be observed, at least for the small number of verbs containing instrument classifiers in this study.

All classifier predicates can be characterized as agreeing verbs, in two separate ways. First, the handshape can be analysed as an agreement marker, expressing agreement with the theme argument (see Glück & Pfau 1998; Benedicto & Brentari 2004; Zwitserlood 2003 for general arguments in favour of such an analysis, and Kimmelman 2018 for an

²² Note that not all researchers agree that instrumental classifiers are a separate type. As discussed below, Benedicto & Brentari (2004) would argue that some of these classifiers are in fact whole-entity classifiers, and others handling classifiers.

argument against such an analysis for RSL specifically). Second, the predicate's movement and location is modified to agree with the spatial arguments (but not with the subject or object). If the predicate describes movement, it agrees with the goal and source arguments; if it describes location, it agrees with the location argument; some predicates like *BREAK* and *TIE*, and also instrumental classifiers, agree with the patient argument by Single Argument Agreement.

6.4 The throw-type

Some meanings, specifically 'throw' and 'take', are sometimes expressed by predicates that would not be traditionally analysed as classifier predicates, because they involve two different handshapes (an open and a closed hand). However, the closed handshape at least depends on the type of the object that is being thrown or taken, as (87–88) illustrate. One can also argue that only one handshape is phonologically specified, and the other is defined by the hand-internal movement.²³ They usually have agent as subject, and theme and goal (for 'throw') or source (for 'take') as objects. Note that *TAKE* is a backward agreement verb, that is, the movement is from the object/source to the subject/agent.

(87) BOY WINDOW BALL CL_{HL}(5b5b->55)-THROW ROOM GO.
'The boy threw the ball into the room.' (S4)

(88) CL_{HL}(an->5)-THROW.
'He threw [a firecracker].' <http://rsl.nstu.ru/data/view/id/60/t/24565/d/25265>

6.5 Lexicalization

In many cases, it is not clear whether a certain predicate is a classifier predicate compositionally expressing a particular meaning or whether at least a part of the construction has lexicalized and is lexically associated with a certain meaning (see also Johnston & Schembri 1999 for an extended discussion of lexicalization of classifier predicates). All such cases of potential lexicalization in my data set are mentioned in Appendix A, but here I summarize the types of evidence for lexicalization that can be found in the data.

First, sometimes the classifier handshape of a potential classifier predicate does not match the referent that it is supposed to refer to. For instance, in (89) the 2-handshape does not match the drowning object (the brick), so it is reasonable to suggest that this particular form (CL_{WE}(2)-GO.DOWN) has been lexicalized, and can be glossed as *DROWN*. Similar processes of lexicalization of classifier predicates have been described for other sign languages (Zwitserlood 2012).

(89) WATER IX-A, BRICK CL_{WE}(2)-GO.DOWN(=DROWN) IMPOSSIBLE.
'This brick does not drown in water.' (S2)

Another sign of lexicalization is when a classifier predicate can combine with an abstract object so that the shape of the object, as well as its movement or location simply cannot be expressed. This is illustrated by example (90).

(90) 2-GIVE-1.
'Give me [your address].' <http://rsl.nstu.ru/data/view/id/37/t/59200/d/60250>

²³ I thank an anonymous reviewer for this point.

Lexicalization does not only concern handshape. In the predicate used to describe sitting, the movement and orientation often do not match the real-life position of the legs referred to by the classifier, as (91) illustrates. Again, it is thus reasonable to analyse this predicate as a lexical verb SIT.

- (91) MAN CL_{BP}(11)-SIT.
 ‘A man is sitting.’ <http://rsl.nstu.ru/data/view/id/77/t/3500/d/5210>

Second, some classifier predicates expressing certain meanings have formal sub-parts that are associated with this meaning (see also Schembri 2003 for a discussion of such examples). For instance, in the classifier predicate used to describe jumping, the hand moves upwards and downwards to describe the movement of the referent (as expected), but, if the 2b-handshape for humans is used, the fingers of the hand also flex and stretch. This hand-internal movement is thus associated with the meaning ‘jump’, and thus probably at least this component is lexicalized.²⁴ The same applies to the description of climbing events (see Appendix A). Similarly, for the ‘throw’ cases described in the previous section, it might be possible to argue that the hand-internal movement resulting in handshape change is a lexical component.

Another interesting phenomenon is that sometimes, in a potential classifier predicate, the weak hand is used without any referent associated with it, or not representing the properties of the referent it would be associated with. For instance, in (92) the passive hand (potentially referring to the person being hit) has the b-handshape, which is not used as a classifier for people. In general, two-handed classifier constructions where the hands refer to two different objects are better analysed as coordination of two separate classifier predicates (Zwitserslood 2017), but if the passive hand cannot be analysed as a classifier predicate, the whole sign is probably undergoing lexicalization as well.

- (92) AND FAT ANGRY/BEGIN HIT.
 ‘And the fat one got angry and started hitting him.’ <http://rsl.nstu.ru/data/view/id/85/t/23550/d/28530>

It is an interesting question whether lexicalization directly affects argument structure of classifier predicates. This has been argued in the past (Zwitserslood 2012), but, as I have shown, argument structure of non-lexicalized classifier predicates in RSL is not straightforward and depends on the meaning that the predicate is used to express in a particular context, so it is not easy to answer this question for RSL. At the moment, it seems that lexicalized forms of classifier predicates have the same argument structure as their non-lexicalized counterparts, but this issue awaits further research.

7 Discussion

In the beginning of this paper, I implied that argument structure in RSL is relevant for three general issues, namely for the issue of the semantic basis of argument structure, for the relation between argument structure and verbal classes in sign languages, and for the lexicon vs. syntax debate. Here I summarize the findings in relation to these general issues.

7.1 RSL and typology of argument structure

The main generalization that can be formulated based on Sections 4 and 5 is that verbs in RSL behave in a typologically common way with respect to the relation between argument structure and meaning. In other words, the concepts which are commonly lexicalized as

²⁴ Kimmelman et al. (2017) suggest a different analysis for similar cases, defining the “moving legs” classifier as a separate class of classifier predicates in RSL.

zero valency, intransitive, transitive, and ditransitive in spoken languages (Haspelmath 1993; Malchukov, Haspelmath & Comrie 2010; Haspelmath 2015; Malchukov & Comrie 2015) are also lexicalized as such in RSL.

This finding is illustrated by Table 1. From the table it is clear that the valency of the verbs is to a large extent dependent on the meaning (but also that it is not possible to fully predict the valency based on the meaning alone). This confirms the generally accepted generalization that argument structure is based on verbal semantics.

Classifier predicates are not fully represented in this table as it is not possible to assign them a particular lexical meaning. However, it is clear that argument structure of such predicates is dependent on their semantics. If a non-caused movement of an object is described, the predicate takes the theme argument and the spatial arguments; if a caused movement of an object is described, the predicate also takes an agent.

In addition, RSL obeys the robust generalization that agents are encoded as subjects (external arguments) in the argument structure (Levin & Rappaport Hovav 2005). In RSL, all verbs that have an agent as one of the arguments encode it as the subject. This is also true for classifier predicates.

To sum up, argument structure in RSL behaves in a typologically common way. RSL does not provide evidence that the semantic basis of argument structure is influenced by the visual modality. Note however, that modality effects do not have to manifest themselves equally in all sign languages (e.g. the use of manual simultaneity is much more restricted in some sign languages than in others; Nyst 2007), so further research on other typologically diverse sign languages is clearly necessary to ensure the lack of such effects altogether.

7.2 Sign language morphology and argument structure

RSL presents evidence that verbal morphology in sign languages and argument structure are not in a one-to-one mapping although some relation between morphological and valency classes exists.

To recapitulate, RSL, similar to many other sign languages, has at least the following morphological classes of verbs: (1) plain (non-agreeing); (2) Single Argument Agreement (SAA) verbs; (3) agreeing verbs (including verbs agreeing with spatial arguments); (4) classifier predicates. The relation between morphological class and argument structure can be discussed in two directions: whether it is possible to predict the morphological class

Table 1: Valency-based verb classes in RSL.

Class	Verbal meanings
<i>no arguments</i>	Weather verbs: RAIN, SNOW, WIND
<i>intransitive</i>	States: DRY, HUNGRY, SAD, COLD Non-caused events: DIE, BURN, LAUGH, COUGH, BLINK, SMELL, BOIL Activities: RUN, ROLL
<i>labile</i>	Caused/non-caused events: DAMAGE, HIDE, BOIL
<i>transitive</i>	Activities: PLAY, SING, BLINK, SHAVE, EAT, HELP, HUG, SEARCH, SMELL2, BUILD, KILL, STEAL2, STEAL3, GRIND, COOK, WASH, FOLLOW, LIGHT.UP Verbs of cognition/emotion: THINK, KNOW, LIKE, FEAR, FRIGHTEN, SEE, HEAR Others: NAME, LIVE, FULL, LEAVE, SIT
<i>ditransitive</i>	Spatial transfer: GIVE, SEND, THROW, POUR Communication: ASK.FOR, TELL, SAY, SCREAM, TALK
<i>>2 arguments</i>	Some classifier predicates: e.g. CL _h (s)-MOVE 'someone moves something from one location to another location'

based on valency and whether it is possible to predict valency based on morphological class. The answer to both questions is “no” for most morphological and valency classes, but certain tendencies and rules are still visible.

First, there are three trivial findings (they are trivial as they basically arise from definitional properties of verb classes):

1. Zero valency verbs are plain (because there is no argument to agree with)
2. Agreeing verbs are at least transitive (because two arguments have to be agreed with)
3. Classifier predicates are at least intransitive (because an argument has to be represented by the handshape)

Second, we can look in more detail at the distribution of verbs across morphological classes and valency classes. I summarize this in Table 2. Classifier predicates are discussed separately below.

Although the numbers are small, some tendencies are clearly visible. Specifically, one can see that transitive verbs are the most diverse group which are most commonly plain, but can also be SAA and agreeing, and ditransitive verbs are more likely to be agreeing than any other group. An important issue that has to be further investigated is whether SAA and agreement with two arguments are fundamentally similar and what conditions the choice between the two processes. For now it seems that agreement with two arguments is conditioned by (albeit not determined by) argument structure, but SAA is not clearly related to it.

As shown in Section 6, classifier predicates can have different argument structures partially determined by the type of the classifier. This is further discussed in the next subsection.

To sum up, there exists a relation between argument structure and morphological class of the predicates in RSL, but this relation is far from simple. This generally aligns with observations for other sign languages (Geraci & Quer 2014).

7.3 *Lexicon vs. syntax and classifier predicates*

Several researchers (Zwitserslood 2003; Benedicto & Brentari 2004; Benedicto, Cvejanov & Quer 2007; Grose, Wilbur & Schalber 2007; Geraci & Quer 2014) have argued that classifier predicates provide evidence in favour of syntactic approaches to argument structure. Specifically, they observed that, in some sign languages, including ASL and Sign Language of the Netherlands, the same movement can combine with different classifier types and the argument structure of the resulting classifier predicate is thus determined by the classifier but not the verbal root. Therefore argument structure is not associated with the verb itself but with another morpheme; the morpheme is then analyzed as a functional head hosting an argument and assigning it a thematic role (see Benedicto & Brentari 2004 for the details).

Note that even if classifier type in ASL and some other sign languages indeed unambiguously determines argument structure of the predicate, it is still possible to question the validity of these facts for the lexicon vs. syntax debate. Specifically, it is possible to

Table 2: Valency and morphology of verbs in RSL.

	plain	SAA	agreeing	total
<i>no arguments</i>	3 (100%)	–	–	3
<i>intransitive</i>	13 (93%)	1 (7%)	–	14
<i>labile</i>	–	4 (100%)	–	4
<i>transitive</i>	16 (52%)	7 (23%)	8 (25%)	31
<i>ditransitive</i>	2 (15%)	1 (8%)	10 (77%)	13

assume an active lexicon which allows combining verbal roots and classifier morphemes within the lexicon itself; the argument structure of the resulting predicate will be a part of the lexicon as well (see Müller & Wechsler 2014 for details of this approach to spoken languages).²⁵ Additionally, even if the argument is considered valid, sign languages do not provide a unique piece of evidence. In fact, morphological or even syntactic encoding of argument structure (e.g. verb-particle combinations in English or complex predicates in Hindi) are also widely attested in spoken languages, and can be used as evidence in a similar fashion (Ramchand 2008).

Let us accept the claim that classifier predicates in ASL provide at least a weak argument in favour of syntactic approaches because their argument structure comes not from the verbal root but from the classifier type. However, classifier predicates in RSL cannot be used even for such an argument.

Turning to the RSL data, the most important conclusion is that it seems that the relation between argument structure and classifier type is less straightforward than expected based on previous research. This relation is summarized in Table 3. In this table I specify which meanings (and argument structures) can be associated with classifier predicates of different types.

From this table it should be clear that, at least in RSL, argument structure is not determined by the classifier. There is still a tendency to express unaccusative meanings with a whole-entity classifier predicates and transitive (causative) meanings with handling classifier predicates, but this tendency is not categorical. I would argue that, in the case of classifier predicates, it is more reasonable to simply predict argument structure based on the meaning of the predicate in a particular context, maybe with some restrictions provided by classifier type.

Specifically, whole-entity classifiers refer to the theme argument of a movement event; therefore, the predicate describes movement which can be caused or non-caused. Body-part classifiers refer to the theme of a movement event which happens to be a body part and again the event can be caused or non-caused. Instrumental classifiers refer to an instrument, so the resulting predicate has to have an agent (De Lint to appear) and typically a patient, but whether the instrument can be overtly expressed or not depends on the particular meaning; it is also possible to say that some of these predicates are lexicalized while others are not. Finally, handling predicates are complex depictive constructions

Table 3: Argument structure of classifier predicates in RSL.

Classifier type	Argument structure
<i>whole-entity</i>	1. Unaccusative + spatial arguments (e.g. CL _{WE} (2)-GO.DOWN 'drown') 2. Unergative + spatial arguments (e.g. CL _{WE} (2)-JUMP 'jump') 3. Transitive + spatial argument (e.g. CL _{WE} (bi)-MOVE 'move a chair')
<i>body-part</i>	1. Unaccusative + spatial arguments (e.g. CL _{BP} (1)-SHAKE 'a leg shakes') 2. Unergative + spatial arguments (e.g. CL _{WE} (11)-RUN 'run') 3. Transitive + spatial argument (e.g. CL _{WE} (1)-MOVE 'move a leg')
<i>instrumental whole-entity-like</i>	1. Transitive with no instrument argument (e.g. CL _{IN} (2)-EAT 'eat with a fork') 2. Transitive with an instrument as object (e.g. CL _{IN} (b)-CUT 'cut with a knife')
<i>instrumental handling-like</i>	1. Transitive with no instrument argument (e.g. CL _{IN} (s)-EAT 'eat with a spoon') 2. Transitive with an instrument as object (e.g. CL _{IN} (s)-DIG 'dig with a shovel')
<i>handling</i>	Complex events involving holding and moving an object

²⁵ Benedicto & Brentari (2004: 765, fn. 29) in fact acknowledge this possible analysis for ASL.

which are not fundamentally similar to other classifier predicates (see Kimmelman et al. 2017 for further arguments).

It would go far beyond the scope of this paper to provide a full formal analysis of classifier predicates in RSL (see Kimmelman et al. 2017 for an attempt). However, I can conclude that such an analysis can clearly be formulated in either lexical or syntactic terms.

Within a lexical approach it is possible to suggest that RSL has different verbal roots (e.g. MOVE, CAUSE.TO.MOVE, USE.INSTRUMENT) which are stored as lexical items with lexically specified argument structures and that classifiers are morphemes which further restrict the reference of a particular argument (namely the theme or the instrument argument) of these predicates but do not determine argument structure (see Kimmelman 2018 for more detail). The classifiers can combine with verbal roots in syntax or in the lexicon (or in morphology if such a module is assumed to exist).

On the other hand, it is possible to develop a fully syntactic account where the verbal roots do not have an argument structure but are inserted into syntactic templates (Borer 2005) given that some linking mechanism is assumed to avoid free insertion of all roots in all contexts. The role of the classifier morphemes would still be the same: they restrict the reference of some arguments, but they are not argument-introducing or argument-hosting functional heads, as there is no direct relation between classifier types and argument structure.

Finally, for the lexicalized classifier predicates and for lexical verbs in general it is reasonable to assume that the whole predicate is a single morpheme (the verbal root); its argument structure can similarly be modelled lexically or syntactically. I conclude that RSL classifier predicates do not represent a good testing ground for the lexicon vs. syntax debate.

8 Conclusions

This research has both descriptive results and theoretical implications.

Descriptively, I have shown that Russian Sign Language has various verb classes and various argument structure alternations. With respect to verb classes, verbs with no arguments, intransitive verbs, transitive verbs, labile verbs, and ditransitive verbs are used. RSL uses a number of alternations: an unmarked causative-inchoative alternation that applies to a small number of labile verbs, an unmarked impersonal alternation used to express an impersonal agent, unspecified object alternation, reflexive and reciprocal alternations. In addition to the unmarked alternations, RSL can use special pronouns, prepositions, and poly-predicative constructions to extend argument structure.

Classifier predicates in RSL constitute a separate class of predicates because, as in other sign languages, these constructions do not have a particular lexicalized meaning in many of the uses. It seems that there is a relation between the type of the classifier that occurs in such a predicate, as has also been described in previous research for RSL and other sign languages, but this relation is not absolute. Furthermore, the argument structure of such predicates depends to a large extent on the meaning that is expressed in a particular context, and it can range from consisting of one to four arguments.

Turning to theoretical implications, a major conclusion of this study is that verbs in RSL behave in a typologically common way with respect to argument structure. This has an important theoretical consequence: similar to spoken languages, in the visual modality verbal semantics determines argument structure to a large extent (Levin & Rappaport Hovav 2005). This is not entirely surprising given the fact that sign languages have been shown to share the fundamental linguistic properties with spoken languages (Sandler & Lillo-Martin 2006). However, since some interesting differences between the two modalities can also be found (Meier 2012), it is still important to study various properties of signed languages and compare them to spoken languages.

A second general conclusion is that although there is some relation between argument structure and verbal morphology in RSL, this relation is far from being straightforward. In particular, transitive and especially ditransitive verbs in RSL can be agreeing, but they can also be plain; Single Argument Agreement applies to almost all classes of verbs. This means that argument structure cannot be the only (or even the main) answer to the question that many sign linguists are interested in, namely why certain verbs are assigned to certain morphological classes (Rathmann & Mathur 2011).

Finally, I showed that classifier predicates in RSL do not provide direct evidence in favour of a syntactic approach to argument structure (Borer 2003; Ramchand 2008; Marantz 2013) contrary to what has been claimed for such predicates in other sign languages. Although there exists a relation between classifier type and argument structure, this relation is not straightforward. It is possible to develop a syntactic or a lexical account of these facts.

This study is a first systematic investigation of verbal lexicon and argument structure in RSL, so it raises a lot of questions that should be studied further. First, more verbs and more argument structure alternations should be studied. Second, the verb classes and alternations that have been described here need to be studied in more detail.

Similarly, the relation between argument structure and classifier predicates clearly needs further research. It is clear that the type of classifier contributes to argument structure, and also that context is important, but it is not clear how these two factors interact. The question whether classifier predicates change their argument structure when they undergo lexicalization also deserves further research.

Finally, I hope that comparable studies of basic properties of argument structure will be conducted for other sign languages making it possible to describe typological variation in both the signed and spoken modality.

Abbreviations

Glossing conventions for sign language examples: Signs are glossed with an approximate translation in SMALL CAPS. Since the words in the examples do not reflect the shape of the signs, but their meanings, they are comparable to interlinear glosses and not to transcriptions used for spoken languages. If more than one word is necessary to gloss a meaning, a point is used (GO.DOWN); ^ is used for compounds; fingerspelled sequences are separated by dashes: A-N-N-A ‘Anna’. IX stands for *index*, that is, a pointing sign, and is followed by a number for 1st and 2nd person (pointing to the signer: IX-1 or the addressee: IX-2), or by a letter: IX-A to keep track of arbitrary locations. Agreeing verbs are also accompanied by letters to represent locations that they agree with. PL stands for plural marking, and DISTR is distributive marking; they are expressed by different types of reduplication. Classifier predicates are glossed as follows: CL for classifier, followed by the abbreviation for the type of classifier in subscript (we – whole-entity, hl – handling, bp – body part, in – instrumental, see Section 6 for an explanation), followed by the handshape between brackets, and a description of the meaning of the movement or location predicate.

Handshapes are represented by letters and numbers, and should be interpreted using the following guide:

- 1: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_001.png
- 2: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_015.png
- 2b: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_017.png
- 5: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_077.png
- 5b: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_081.png

b: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_091.png
 c: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_110.png
 s: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_256.png
 h: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_126.png
 an: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_134.png
 bi: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_161.png
 y: https://commons.wikimedia.org/wiki/File:ISWA_Hand_BaseSymbol_155.png

Traditionally, a line above the glosses is used to represent (the scope of) non-manuals, but since non-manuals are not crucial for this study, a less space-demanding convention is adopted; that is, the / sign on both sides is used for the non-manual marking topicalization. Each example from the RSL corpus is followed by a direct URL link to this example (note, however, that registration is required to access the corpus data), and each elicited example is followed by the code of the signer it was elicited from (S1 to S4).

Abbreviations for sign languages: ASL – American Sign Language; RSL – Russian Sign Language.

Abbreviations in spoken language examples: ABS – absolutive; ERG – ergative; INST – instrumental; INTER – inter-essive; OBL – oblique; PST – past tense.

Additional Files

The additional files for this article can be found as follows:

- **Appendix A.** 80 verbal meanings in RSL. DOI: <https://doi.org/10.5334/gjgl.494.s1>
- **Appendix B.** Frequent verbs in the RSL corpus. DOI: <https://doi.org/10.5334/gjgl.494.s2>

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Competing Interests

The author has no competing interests to declare.

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
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