Russian Aspectual Prefixes O, OB and OBO: A Case Study of Allomorphy

ANNA BAYDIMIROVA

Master's Degree Programme in Theoretical Linguistics (LIN-3990)
Department of Language and Linguistics
Faculty of Humanities, Social Sciences and Education
University of Tromsø
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The picture on the cover page is the reproduction of the painting “Russkaja Trojka” (2005) by Jurij Žabin. It is used here with permission of the artist. This picture illustrates the main idea of the thesis.

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Abstract

The thesis presents a study of the nontrivial interface of morphology, phonology and semantics found in the distribution of three Russian aspectual prefixes O, OB and OBO. These prefixes can be semantically identical when occur in the forms of the same paradigm (e.g. *obo-drat'*.INF. vs. *ob-deru*.1 PERSON.SG.FUT. 'flay'), but can also carry strikingly different meanings that even yield minimal pairs (e.g. *o-sudit'* 'condemn' vs. *ob-sudit'* 'discuss'). There are some phonological restrictions on their use but they tolerate a lot of variation in the choice of the prefix. Thus, the behavior of O, OB and OBO does not completely satisfy either of the two crucial criteria of regular allomorphy: first, their distribution is not precisely complementary; secondly, their semantics can be both identical and strikingly different.

In order to account for this phenomenon, I apply corpus, experimental and statistical methods and address two major questions: (1) whether these prefixes constitute two separate morphemes, as suggested by *the Split Hypothesis*, or one morpheme with three allomorphs; and (2) whether these prefixes in Natural Perfectives (Janda 2007b) are pure aspectual markers with no semantic content (Švedova et al. 1980: 583, Zaliznjak & Šmelev 2000: 82) or their semantic contribution is just not perceptible due to conceptual overlap with the meaning of the simplex base (*the Overlap Hypothesis* proposed in Vey 1952; Schooneveld 1958; Janda & Nesset forthcoming a).

First, I show that semantically "empty" and "non-empty" uses of the prefixes O, OB and OBO exhibit isomorphic relations, which support *the Overlap Hypothesis*. Second, I demonstrate that *the Split Hypothesis* (Alexeeva 1978; Andrews 1984; Krongauz 1998) fails to account for the large overlap and variation in the semantic and phonological domains that it proposes. I provide a semantic analysis that shows that the meanings which might seem so unrelated are actually parts of a single semantic network and that all submeanings of this polysemy can be expressed by each of the three prefixes. The impact and statistical significance of various factors in the choice of the prefix are tested against a) corpus data and b) mechanisms of word-production examined in a psycholinguistic experiment with nonce words. On the basis of my results, I argue for the alternative view that treats O, OB and OBO as one morpheme with a non-complementary but at the same time statistically significant distribution of allomorphs. This suggests that the traditional understanding of allomorphy is too narrow and should be revised according to the gradient and complex nature of this linguistic phenomenon.

Contents

Chapter 1

Introduction

This study is part of the *Exploring Emptiness* project[1] of the Slavic Cognitive Linguistics Research Group at the University of Tromsø. This project investigates the semantic content of Russian derivational affixes which were traditionally considered semantically empty and employed in Russian only for purely grammatical reasons, namely as aspectual markers that form perfective verbs from their imperfective counterparts (Švedova et al. 1980: 583, §1389, Zaliznjak & Šmelev 2000: 82).

The thesis presents both a corpus- and an experiment-based study of the semantic content and interrelations of the three Russian aspectual prefixes O, OB and OBO. The focus of this study is on the problem of allomorphy. The central question is whether these prefixes constitute one morpheme with three allomorphs or two distinct morphemes with a complex distribution of surface realizations. In this sense, the present study addresses a long-standing debate on how many aspectual prefixes Russian has in total: eighteen or nineteen, where their number directly depends on whether O, OB and OBO are treated as allomorphs of one morpheme or of two different morphemes (Krongauz 1998: 131). In this study I examine the nontrivial interface of morphology, phonology and semantics and apply corpus, experimental and statistical methods to account for a complex empirical case of linguistic allomorphy.

1.1. The Russian prefixes O, OB, OBO and their parallels in other Indo-European languages

This study investigates complex relations between the three aspectual verbal prefixes O, OB, and OBO in Contemporary Standard Russian. They are not only phonetically very similar to each other, but also historically related (Vasmer Vol.3: 96; Černyx 1993: 583). They all come from one adverbial source morpheme, which has a Proto-Indo-European origin. For this reason, these prefixes are not unique to Russian, but can also be found in all other Slavic languages. In addition, the three prefixes are attested in early Church Slavonic literary texts and are also diachronically related to some prepositions and preverbs in other Indo-European languages, for instance to Old Greek ἀμφί and Latin *ambi-*, Gothic *bi* 'round,

[1] http://www2.uit.no/ikbViewer/page/ansatte/organisasjon/artikkel?p_document_id=153227&p_dimension_id=88149&p_menu=28713&p_lang=2

at, by', the Modern English preposition *by* and prefix *be-*, the German preposition *bei* 'at, by, next to' and the prefix *be-* (Černyx 1993: 583; Vasmer: Vol.3 96; ESSJ 1999: 73), the German preposition *um* (Machek 1997: 404) and the Norwegian preposition *om* 'round, about, by' (Bjorvand, Lindeman 2000: 685; Falk, Torp 1960:791). Similarly to other Slavic and, broadly, Indo-European languages, Russian has not only the prefixes O, OB and OBO, but also corresponding prepositions O, OB and OBO (Timberlake 2004: 178 – 179). The correlation between them is historically motivated and systematic (Shull 2003: 180; Andrews 1984: 486). However attractive their relationship might be to investigate, the prepositions lie beyond the scope of my study. In this thesis I provide an account for the three prefixes in question and leave the prepositions for future research. With a long series of parallels in other languages, Russian aspectual prefixes O, OB and OBO are especially interesting from the perspective of their mutual relations. In this thesis I test how these prefixes can be described in terms of allomorphy.

1.2. On allomorphy: neat linguistic concept vs. messy language data

Allomorphy is traditionally defined as a structural relation among a number of morphological units in a language. The crucial defining properties of allomorphs are that they exhibit the same meaning, or function, and occur in complementary distribution, so that their phonological, lexical, or grammatical environments never overlap (Matthews 1974: 116; Haspelmath 2002: 27; Booij 2005: 172; Bauer 2001: 14). Phonologically motivated allomorphy can be illustrated with the English indefinite article, which has two different shapes: *a* and *an* (e.g. *a man* and *an apple*). Their distribution is phonetically conditioned, because *a* precedes words with initial consonants (*a man*), while *an* occurs if the following word starts with a vowel (*an apple*). The crucial thing here is that in some varieties of English this rule does not precisely mirror the real picture, since it is possible to say *an hotel* and *an historical novel* (Bauer 2001: 14). A simple search in Google yields 107,000 hits for *a elephant* as opposed to 3,120,000 hits for the regular *an elephant* which also proves that the distribution of these two articles is not precisely complementary[2]. For the sake of clear-cut linguistic definitions data like this usually gets swept under the carpet, because such examples might seem minor, marginal and irregular and therefore can easily be ignored. In this study, I address a large amount of linguistic evidence for a form-meaning relationship which is

[2] These facts suggest that in some varieties of English (at least in American English) the opposition of the two articles might be undergoing a historical change: the definite article *an* is dying out (from personal communication with Laura Janda).

complex and controversial, though it still directly refers to the linguistic concept of allomorphy. I will show that sticking to a narrow understanding of allomorphy inevitably leads to simplification of linguistic reality and inadequacy of interpretation, while irregular empirical data that goes beyond well-established textbook definitions of linguistic phenomena can strikingly enrich and sharpen the theory of language.

Let us now look at how the Russian prefixes O, OB and OBO are related to linguistic allomorphy. First of all, the prefixes O and OBO as well as OB and OBO can attach to the same verb and therefore occur in the same paradigm, giving the same meaning to all forms of the paradigm, as it is shown in examples (1) and (2):

(1) *obo-gnat'* – *ob-gonju* 'pass, leave behind, outstrip'
INF.PF. 1 PERSON.SG.FUT.PF.

(2) *obo-brat'* – *o-beru* 'pick, gather, rob'
INF.PF. 1 PERSON.SG.FUT.PF.

Examples (1) and (2) show that the choice of prefix is determined by the onset of the simplex stem. This suggests that O, OB and OBO are different phonological realizations of a single underlyingly morpheme, which makes them look like a perfect case of allomorphy.

However, looking at more data can bring us to a completely opposite view. First, although the distribution of these affixes does have some phonological grounds, it is far from being complementary. Compare examples in (3), which demonstrate that all three prefixes can easily attach to a stem with the same initial consonant cluster and place of stress:

(3) *obo-krAst'* 'rob-INF.PF.'[3]
ob-krAdyvat' 'rob-INF.IMP.'
o-krAsit' 'paint-INF.PF.'

Moreover, the prefixes O, OB and OBO can even change the meaning of the same simplex verb in strikingly different ways, creating so called minimal pairs as in (4) and (5):

(4) *o-sudit'* 'sentence, condemn-INF.PF.'
ob-sudit' 'discuss-INF.PF.'

(5) *o-delit'* 'present with, endow with-INF.PF.'
ob-delit' 'do someone out of his fair share-INF.PF.'

(6) *o-gret'* 'swipe, hit somebody hard (with a stick or other tool)-INF.PF.'
obo-gret' 'heat, warm-INF.PF.'

[3] Capital letters here indicate the stressed syllable.

This suggests that the prefixes O, OB and OBO must have different semantics and therefore cannot be allomorphs of the same morpheme. In other words, the behavior of the three prefixes O, OB and OBO does not completely satisfy either of the two crucial criteria of regular allomorphy: first, their distribution is not precisely complementary; secondly, their semantics can be both identical and strikingly different.

On the other hand, if one said that O, OB and OBO in Russian are not related to allomorphy at all, that would not be true either. In this sense, my thesis presents a case study of "irregular" allomorphy and contributes to the theoretical understanding of this phenomenon.

Russian is famous for its rich morphological system, which provides a broad selection of morphemes with high degree of variation. Regarding Russian data, significant work on allomorphy has been done in a number of studies of the Russian suffix *-nu-* and prefix *s-* (Dickey & Janda 2009; Makarova & Janda 2009; Makarova 2009). It has been shown that these affixes behave as suppletive allomorphs in the formation of semelfactive verbs like ***s**-glupit'* 'behave stupid once' or *čix-**nu**-t'* 'sneeze once'. However, suffix the *-nu-* and the prefix *s-* fail to perfectly satisfy either of the two crucial defining criteria of allomorphy: they are not precisely identical in their function and their distribution is not complementary, so that both affixes can even attach simultaneously to the same verb (e.g. ***s**-trux-**nu**-t'* 'behave cowardly once'). At the same time, suffix *-nu-* and prefix *s-* exhibit different distribution across different verbal classes, so that this difference has been proved to be statistically significant. Therefore *-nu-* and *s-* should be recognized as a nontrivial case of linguistic allomorphy.

In the present study I adopt a similar approach to the notion of allomorphy. I aim to demonstrate that the relations between the Russian aspectual prefixes O, OB and OBO do not fit precisely into a common traditional understanding of allomorphy. In this case, the empirical data turn out to be much more gradient and controversial than could be captured by a narrow clear-cut definition of this term. Instead, affix allomorphy is understood here as a structural relation of morphemes that can be observed in more or less consistent linguistic phenomena and should be recognized or rejected depending on the statistical significance of the distribution.

1.3. One or two morphemes?

The question of whether O, OB and OBO constitute one or two separate morphemes was addressed before in a number of insightful studies. I consider several previous accounts of this problem (Švedova et al. 1980; Roberts 1981) and focus on the approach proposed by Alexeeva (1978), Andrews (1984) and Krongauz (1998: 131 – 148) that I call here the Split Hypothesis.

In the literature one can find two major views on relations between the prefixes O, OB and OBO. Most grammars of Russian treat them as positional allomorphs of one morpheme (Zaliznjak & Šmelev 1997: 73; Zaliznjak & Šmelev 2000: 83; Wade 1992: 277; Timberlake 2004: 404; Townsend 1968: 127; Grammatika russkogo jazyka 1952: Vol. 1 589 – 592; Isačenko 1960: 148; Barykina, Dobrovolskaja, Merzon 1989; Hougaard 1973). This view is also supported by the Roberts' (1981) study.

The opposite view argues that O and OB constitute two different morphemes. Alexeeva (1978) provides historical evidence in favor of this position; Andrews (1984) builds her argument on the study of minimal pairs as in (4) and (5), while Krongauz draws more attention to the allomorphs and their phonological distribution.

The proponents of the Split Hypothesis claim that originally a single morpheme OB split in the history of Russian into two distinct morphemes, which still share in Contemporary Russian the same set of allomorphs. According to Alexeeva and Krongauz, the prefix OB has a spatial meaning (e.g. *exat'* 'go, drive' – *ob-''exat'* 'drive around'), while the prefix O means imposition or acquisition of a new characteristic (e.g. *o-žestočit'* 'make cruel, severe' from *žestokij* 'cruel, severe'; *o-kamenet'* 'become petrified, turn to stone' from *kamen'* 'stone').

The goal of my study is to test the Split Hypothesis against empirical data. I approach it from two different perspectives. First, I look at real Russian perfective verbs with prefixes O, OB and OBO and check whether the predictions of this hypothesis can account for the tendencies attested in the Modern Russian lexicon. For this purpose I not only extract the relevant data from dictionaries, as was done in previous studies, but I also make use of the Russian National Corpus (www.ruscorpora.ru), a modern digital resource. To account for the rich polysemy of these prefixes and their semantic nuances I adopt the framework of cognitive linguistics. This framework provides an effective methodology to describe prefixal semantics and model it as a radial category, or a network of interrelated meanings (Lewandowska-Tomaszczyk 2007; Taylor 1995). In order to compare three closely related

prefixes I apply the Radial Category Profiling methodology (Nesset & Janda & Baydimirova forthcoming) and measure the degree of their semantic overlap.

Secondly, I approach the same hypothesis from another perspective. In order to test whether it captures a productive modern linguistic mechanism present in the grammar of Russian speakers, I conduct a psycholinguistic experiment using nonce words. The main idea of the experiment is to look at the choice of a prefix under fixed semantic conditions.

In addition, I test various phonological factors that determine the distribution of prefixes according to predictions of the Split Hypothesis. Here, in order to achieve reliable and objective results, I make use of statistical operations and tests.

It must be mentioned here that in this study I adopt an agnostic view on the relations of O, OB, and OBO and therefore call them *prefixes* without making any assumption about what morphological status they have, whether they are allomorphs or separate morphemes. I will return to this issue in the Conclusion and will summarize my suggestions on the basis of the present study.

1.4. Prefixes in Natural perfectives: pure grammar or semantic overlap with the verbal stem?

Another question that I address in this study is whether the prefixes O, OB, and OBO exhibit the same semantic content in Natural Perfectives as opposed to Specialized Perfectives. These are two types of perfective verbs that differ in terms of the interaction between the prefix and the simplex verbal stem. According to Janda's (2007b) classification, Natural Perfectives do not differ semantically from their imperfective counterpart (e.g. *delat'* 'do-IMP.' – *s-delat'* 'do-PF.'), while Specialized Perfectives do (e.g. *delat'* 'do-IMP.' – *pere-delat'* 'redo-PF.'). This has been the main reason why aspectual prefixes in Natural Perfectives are traditionally considered to be pure aspectual markers, lacking any other semantic contribution apart from their grammatical perfectivizing function (Švedova et al. 1980: 583, §1389, Zaliznjak & Šmelev 2000).

However, from the perspective of cognitive linguistics, semantically "empty" affixes present a challenge and therefore attract special attention. They have been accounted for in the *Overlap hypothesis* (Vey 1952; Schooneveld 1958; Janda & Nesset forthcoming a), which suggests that semantic "emptiness" of aspectual prefixes in Natural Perfectives is an illusion due to conceptual overlap between the semantics of the prefix and the meaning of the verbal stem.

In the present study, I use the data on prefixes O, OB and OBO to test the Overlap hypothesis. For this purpose, I construct a radial category network for Natural and Specialized perfectives separately and then look at the degree of their overlap.

1.5. The structure of the thesis

The remainder of the thesis is organized as follows. Chapter 2 gives a summary of the previous research and outlines the major views on relations of the three prefixes in question. The main focus here is on the Split Hypothesis and its predictions, which I test in my study. Chapter 3 presents the database of perfective verbs prefixed with O, OB, and OBO. Here I discuss the advantages of the cognitive linguistic approach to the semantics of affixes and also provide a unified semantic model that accounts for the uses of all three prefixes O, OB and OBO. I adopt the methodology of Radial Category Profiling and show the distribution of prefixes among various subcategories of the network. In this chapter I also look at different types of perfectives and demonstrate that Natural and Specialized Perfectives prefixed with O, OB and OBO exhibit closely related meanings and share the same semantic network. Chapter 4 is devoted to the experiment and discusses in detail its design, methodology, piloting, administration, and the subjects who participated. In Chapter 5, I report on the experimental results. Chapter 6 compares the experimental results with the database of perfective verbs prefixed with O, OB and OBO. The contribution of the thesis is summarized in the Conclusion (Chapter 7).

The thesis also contains References, a List of abbreviations, ten Appendices and an Abstract. The Appendices present an excerpt from the corpus-based database of attested Russian perfectives prefixed with O, OB and OBO; lists of perfectives for each semantic subcategory described in Chapter 3; the characteristics of the subjects who participated in the experiment according to the relevant psycholinguistic criteria; lists of all nonce words used in the experiment (in Russian and English); samples of the questionnaires; an excerpt from the database of subjects' responses; the database of response form frequencies and the appendix on the statistical analysis.

Chapter 2

Previous research on the Russian verbal prefixes O, OB and OBO: Two major views

In this chapter I look at the previous accounts of the prefixes O, OB and OBO. I show that there are two major views on the nature of their relations. The more frequent approach is to treat them all as allomorphs of one morpheme, while the alternative view is to distinguish two separate morphemes. In this chapter I discuss the most detailed and prominent accounts of this issue. First, I present the analysis of Švedova et al. (1980) and show that their semantic arguments in favor of two distinct morphemes O and OB fail to account for a number of counterexamples. OBO is described by Švedova et al. (1980) as a positional allomorph of OB and here I will demonstrate that the distribution of OB and OBO is neither precisely phonologically motivated nor complementary as it is usually assumed. Next I turn to the discussion of a thorough account proposed by Roberts (1976, 1981), whose study yields the conclusion that none of the three prefixes O, OB and OBO has a monopoly on any block of semantic categories that he distinguishes. Therefore, Roberts suggests that O, OB and OBO do not constitute separate morphemes but rather they all are three allomorphs of the same morphological formant (Roberts 1976: 73, 75). Apart from a detailed semantic classification, Roberts also provides valuable statistical data on the distribution of O, OB and OBO across different simplex base onsets that is relevant for my research. Last but not least, I turn to the Split Hypothesis, which was proposed by Alexeeva (1978), Andrews (1984) and Krongauz (1998). The Split Hypothesis claims that what was historically a single morpheme has split into two separate morphemes O and OB which differ both in their semantics and in the hierarchy of allomorphs. I will especially focus on semantic and phonological predictions made by this hypothesis which will be tested in the present study.

In the literature on the Russian prefixes and word-formation one can find two major views on the relations of the prefixes O, OB and OBO. In most grammars of Russian they are listed as variants of one prefixal morpheme (Zaliznjak & Šmelev 1997: 73; Zaliznjak & Šmelev 2000: 83; Wade 1992: 277; Timberlake 2004: 404; Townsend 1968: 127; Grammatika russkogo jazyka 1952: Vol. 1 589 – 592; Isačenko 1960: 148; Barykina,

Dobrovolskaja, Merzon 1989; Hougaard 1973). An alternative approach distinguishes between two separate morphemes O and OB and treats OBO as a positional allomorph of OB (Švedova et al. 1980: §851; Alexeeva 1978; Andrews 1984; Krongauz 1998: 145 – 148). However, even those linguists who agree on distinguishing O and OB as separate morphemes often have different grounds and arguments for this differentiation. No doubt, this disagreement in the literature reflects the complexity of the problem.

The two major views observed in the literature also suggest that the relationship between these three prefixes is not the same. In particular, the prefixes OB and OBO seem to be closer to each other than OB and O. When it comes to the prefix OBO, there is no disagreement on its status in the literature: it is always described as an allomorph of OB. In other words, the question of relations between the three prefixes is reduced to a question of the relations between O and OB: do they constitute two distinct morphemes or just one?

There are not many studies that directly address this issue. Here I discuss several accounts that are relevant for the present study.

2.1. Švedova et al. (1980): two distinct morphemes merge into one

Švedova et al. (1980) provide a detailed account of the prefixes in question. In this subsection I discuss their approach from two perspectives: empirical and methodological. First, I show that in spite of many valuable insights, Švedova et al.'s (1980) model fails to account for some empirical data. Secondly, I suggest that methodologically this approach fails to capture crucial aspects of prefix polysemy. Finally, I come to the conclusion that this analysis is a valuable starting point for further investigation of this data.

Švedova et al. (1980) list and describe O and OB as two distinct verbal prefixes (Švedova et al. 1980: §850, §867, §868, §891[4]). OBO is presented as a phonologically motivated allomorph of OB, an thus the distribution of OB and OBO fits into a general productive pattern found in eleven other Russian prefixes: V / VO, VZ / VZO, VOZ / VOZO, IZ / IZO, NAD / NADO, NIZ / NIZO, OT / OTO, POD / PODO, PRED / PREDO, RAZ / RAZO and S / SO (Švedova et al. 1980: §851).

Švedova et al. (1980: §851) divide all Russian verbal prefixes into two groups: (1) vowel-final and (2) consonant-final. The prefix O appears in the first group together with VY, DO, ZA, PO, U, etc, while OB / OBO occur in the second group together with V / VO, OT /

[4] In referring to Švedova et al. (1980) I provide numbers of paragraphs instead of pages, because this makes it easier for the reader to find relevant sections in different editions with different pagination.

OTO, etc. It is claimed here that vowel-final prefixes have only one positional variant, or surface realization[5]: #V (e.g. ZA, U, O, etc.), as opposed to consonant-final prefixes that have two positional variants: #C and #CO (e.g. S and SO, OB and OBO, etc), where V stands for a vowel, C stands for a consonant, # shows that there can be some preceding sounds in the prefix, and O stands for the epenthetic vowel [ə] that orthographically is always O. Now I will briefly discuss the phonological distribution of #C and #CO and specifically OB vs. OBO and then return to the discussion of separate morphological status of O and OB, as it is proposed in Švedova et al. 1980.

According to Švedova et al. (1980: §852), the distribution of #C and #CO is phonologically motivated and can be described by two rules given in (7) and (9). The variant #CO is more marked and restricted to two types of positions. In both cases the epenthetic vowel O serves as a repair strategy to break up a consonant cluster. However, the consonant-final prefix without the epenthetic O can appear in front of a large number of clusters (e.g. *ob-stirat', ob-gryzt', ob-strojt'*, etc.), so that the cluster that triggers an epenthetic vowel to appear must be of a special kind. Indeed, as can be seen from Rule 1 in (7), the epenthetic vowel appears if a simplex stem starts with a consonant cluster CC which is not compatible with the final consonant of the prefix C_1, in other words, they form a complex cluster that is not allowed in Russian and must be repaired via epenthesis. I formalize this observation from Švedova et al. (1980: §852) below:

(7) Rule 1: /#C_1/ → [#C_1O] / _ CC+, if *C_1CC+

Here, # indexes the right edge of a prefix; C_1 stands for the prefix-final consonant; O stands for the epenthetic vowel [ə] that orthographically is always O; CC stands for the simplex-stem-initial consonant cluster; + shows that this cluster can include more than two consonants; * shows that this combination C_1CC+ is in conflict with Russian phonotactics and therefore not allowed in this language.

This rule applies to the morpheme OB in the following way:

(8) Rule 1-a: /OB/ → [obo] / _ CC, if *bCC

For example, in the verb *obo- žrat'-s'a* 'overeat' OBO appears, because the prefix-final consonant *b* adjacent to the simplex-initial consonant cluster *žr* forms an impossible cluster

[5] Švedova et al. (1980) use the term *morph* which is defined here as a linear segmental unit as opposed to a non-linear abstract *morpheme*. Phonologically similar *morphs* that carry the same meaning constitute one *morpheme*. The term *morph* covers positional variation. In order to address complementary distribution, the term *allomorph* is used. *Allomorphs* are understood as *morphs* that occur in complementary distribution (Švedova et al. 1980: §178 – 179).

bžr. The epenthetic vowel is needed here in order to break up this cluster and satisfy certain well-formedness constraints of the Russian language.

The other rule proposed by Švedova et al. (1980: §852) has to do with an alternation of so-called yer with a full vowel in the simplex verbal base. This rule can be formalized as in (9). Here, the simplex-initial cluster underlyingly contains a mobile vowel yer (ъ). If the yer surfaces as a full vowel, the consonant-final prefix realizes its default shape (9 i). If the yer does not surface, the cluster triggers an epenthetic vowel to appear (9 ii):

(9) Rule 2: i. /#C_1/ → [#C_1] / _ CъC, where ъ → V

ii. /#C_1/ → [#C_1O] / _ CъC, where ъ → ø

When applied to OB, this rule takes the following shape:

(10) Rule 2-a: i. /OB/ → [ob] / _ CъC, where ъ → V

ii. /OB/ → [obo] / _ CъC, where ъ → ø

A good illustration comes from the verb *ob-žeč'* (< *ob-žeg-ti) 'burn.INF.PF.', where the yer surfaces in the infinitive, but does not surface in the first person singular, which creates a consonant cluster and triggers the epenthetic vowel to appear: *obo-žgu* /ob-žъg-u/ 'burn.1PERSON.SG.FUT'.

Švedova et al. (1980: §853) point out that exceptions to these rules do exist but they are stored in the lexicon. For example, the verbs *obo-znat'sja* 'take someone for someone else' and *obo-krast'* 'rob' suggest that the OBO occurs here, because the clusters **bzn* and **bkr* are not allowed in Russian. However, these clusters can be found in the verbs *ob-znakomit'sja* 'get acquainted with everybody' and *ob-krutit'* 'wind around'. This suggests that the Rule 1 is not strict and can even be questioned.

Švedova et al. (1980: §853) mention two exceptions to Rule 2, but they have a different prefix, SO: *so-brat'* 'bring together.PF.INF' and *so-zvat'* 'call together.PF.INF'. In finite forms the epenthetic vowel *o* is still there, even though the yer realizes as a full vowel:

(11) *so-beru'* 'bring together.PF. 1PERSON.SG.FUT';

so-zovu 'bring together.PF.1PERSON.SG.FUT'.

I suggest that Rule 2 is different in its nature from Rule 1. Although Rule 1 has some lexicalized exceptions, it is still phonological: the final vowel *o* in OBO appears as an epenthesis and is phonologically motivated. Rule 2 is grounded in the historical process of the fall of yers and synchronically does not make phonological sense. In particular, Rule 2 suggests prefix-final vowel insertion whether or not the following cluster forms an acceptable combination with the prefix-final *b*. This rule only cares about the alternation of a full vowel with its zero surface parallel ø.

Let us consider the verb *obo-gnat'* 'leave behind, outstrip'. Rule 1, which is purely phonological, does not apply here because the cluster *bgn* is possible[6] and can be found in the Standard Russian verb *ob-gnit'* 'decompose on the surface or on the edges' and also in the modern slangish verb *ob-gnobit'* 'insult, put down, put psychological pressure on someone, make someone feel bad'. However, Rule 2 applies to the verb *obo-gnat'* 'leave behind, outstrip.PF.INF.', because the simplex has an underlying yer, which is realized in forms like *ob-gonju* 'leave behind, outstrip.PF.1PERSON.SG.FUT''. From the surface shape of the simplex stem one cannot predict whether there is an underlying yer or not, so one cannot predict whether OB will turn into OBO or not. Additionally, Rule 2 is not purely phonological and yields different results for the various forms of the same paradigm. The fact that OB and OBO can alternate within a paradigm serves as good evidence that their meaning can also be identical.

The verbs *obo-gnat', ob-gnit'* and *ob-gnobit'* show that the distribution between OB and OBO is not complementary and their uses can overlap. This conclusion is crucial for the discussion of allomorphy. In a narrow understanding of this term, OB and OBO cannot be recognized as allomorphs, even though they exhibit the same meaning when they appear in the forms of the same paradigm. On the other hand, their distribution fits well (though not perfectly) into a general pattern of consonant-final prefixes (#C) and clearly refers to a strong trend in Russian.

I have gone into these details to show that although OB and OBO are usually treated as allomorphs (including Švedova et al. 1980), their distribution is not purely phonological and is not precisely complementary, as is usually assumed.

Švedova et al. (1980) only relate OBO to OB, assuming that OBO and O are not related at all. However, one can discover that sometimes O and OBO are competing candidates that can attach to the same verbal stem, giving it the same meaning: e.g. *o-zlit'(sja)* vs. *obo-zlit'(sja)* 'embitter, make angry'; *o-krast'* vs. *obo-krast'* 'rob'. These data are not addressed in Švedova et al. (1980) and suggest that status of OBO is not as straightforward as it seems.

Now I turn back to the relation between O and OB. Recall that Švedova et al. (1980) identify them as two distinct morphemes and places them into two different groups of prefixes: O is a vowel-final prefix, while OB is consonant-final. Here it is important that

[6] Krongauz (1998) discusses this particular example and suggests exactly the opposite, namely that the cluster **bgn* is not allowed and triggers the epenthesis according to the Rule 1. I argue that his observation is not true and that O occurs due to the Rule 2.

according to this approach all the output Os are surface representations of the prefix O and all the output OBs and OBOs are surface representations of the prefix OB[7]. At first glance it may seem that the only reason for distinguishing between O and OB / OBO for Švedova et al. (1980) is their phonological shape: O looks identical to vowel-final prefixes ZA, PO, U, etc, while OB behaves exactly like consonant-final prefixes like IZ, OT, etc.

However, one can notice that O, OB, OBO are actually marginal within this neat model, because they are the only instance of prefixes that are so phonologically similar to each other but still can be split into two groups. This is the reason why the phonological shape of O, OB and OBO does not provide a sufficient ground to argue that they clearly constitute separate morphemes.

An additional argument for distinguishing two morphemes in this account comes from semantics. Švedova et al. (1980) suggest that the distinction between the two morphemes O and OB / OBO is supported semantically. Švedova et al. (1980) claim that there are two semantic groups of verbs prefixed with OB that cannot be found among verbs prefixed with O. I present this analysis in Table 1, which shows all the semantic groups of prefixed verbs that are described in Švedova et al. (1980).

#	Verbs prefixed with O	Verbs prefixed with OB / OBO
1	**Move around, spread activity to all sides of the object:** *obežat'* 'run around', *obryzgat'* 'splash all over', *okleit'* 'stick all over', *oplavit'* 'melt', *oledenet'* 'freeze, become as cold as ice', etc.	**Move around, spread activity to all sides of the object:** *ob"exat'* 'drive around', *obžarit'* 'fry on both sides, all over', *obrasti'* 'grow all over, be covered with hair', *oblepit'* 'stick all over', *obsypat'* 'pour from all sides', etc.
2	**Move passing an object which is on the way:** *obežat'* 'running pass by', *oplyt'* 'swimming pass by', etc.	**Move passing an object which is on the way:** *ob"exat'* 'driving pass by', *obskakat'* 'gallop ahead, overtake', etc.
3	**Spread activity to a number of objects or to many places within one object:** *obEgat'* 'running visit many places', *oprosit'* 'interview many people', etc.	**Spread activity to a number of objects or to many places within one object:** *ob"exat'* 'driving visit many places', *obletat'* 'flying visit many places, etc.

[7] Krongauz (1998) argues for more complex distribution of allomorphs, where each of the two morphemes O and OB has the entire set of the three allomorphs O, OB and OBO. His account will be discussed in detail further in this chapter.

4	**Complete an activity, bring it to the end:** *obespokoit'* 'make worry', *očistit'* 'clean', *ozjabnut'* 'freeze', *osirotet'* 'become an orphan', etc.	**Complete an activity, bring it to the end:** *obmenjat'* 'exchange', *obvenčat'* 'marry', *obvetšat'* 'become dilapidated', etc.
5	no	**While doing activity X, outdo another person who is doing the same activity:** *obygrat'* 'beat in a game, win', *obstreljat'* 'win, outdo someone in shooting', etc.
6	no	**Cause damage by means of the activity described by the motivating base verb:** *obščitat'* 'cheat in calculation, short-change', *obokrast'* 'rob', *obžulit'* 'swindle', etc.

Table 1. Semantic groups of verbs prefixes with O and OB according to (Švedova et al. 1980: § 867, 868).

According to Švedova et al. (1980: § 862), there are two semantic groups that can be found only among the verbs prefixed with OB, namely Group 5 with the meaning 'While doing activity X outdo another person who is doing the same activity (*obygrat'* 'beat in a game, win') and Group 6 with the meaning 'Cause damage' (*obščitat'* 'cheat in calculation, short-change').

I argue that both of these meanings 5 and 6, as defined in Švedova et al. (1980: § 862), are attested for the verbs prefixed with O too and therefore cannot serve as arguments for distinguishing O and OB as separate morphemes.

The meaning 'Cause damage by means of the activity described by the motivating base verb' can be found in O-prefixed perfective verbs like *ogovorit'* 'slander', *okormit'* 'poison', *oslavit'* 'gossip, disgrace', where no negative meaning is present in the motivating bases *govorit'* 'speak', *kormit'* 'feed', *slavit'* 'honour'. Moreover, as Švedova et al. (1980: § 862) point out, this group includes verbs like *obokrast'* 'rob' and *obžulit'* 'swindle', where the simplex stems already have the meaning 'cause damage'. Such verbs can be found among O-verbs too, for instance *oklevetat'* 'slander, defame', *opaskudit* 'spoil, dirty, do something bad', *opoxabit'* 'make something sound bad, bawdy', etc. These examples suggest that the meaning 'Cause damage' can be found not only in verbs prefixed with OB / OBO but also in verbs prefixed with O.

The other meaning that is claimed to belong only to OB / OBO verbs is 'While doing activity X, outdo another person who is doing the same activity'. Although this meaning is probably not the most frequent for the verbs prefixed with O, one can find verbs like *osilit'* 'win in a fight, manage to do', *oborot'* 'overcome, fight down', which is now more common in its participial form *neoborimyj* 'invincible', and the de-etymologized verb *odolet'* 'overcome'. There is also one highly idiomatized verb *oderžat'* 'hold, overcome', which mostly occurs with nouns *pobeda* 'victory', *verx* 'top' and *uspex* 'success'. In the Russian National Corpus[8] this verb has 211 occurrences, where 206 occurrences have the three nouns listed above in their immediate context. Among factitives there is also the verb *operedit'* 'outstrip, leave behind', which semantically fits into this group too. These examples illustrate that verbs prefixed with O can also have this meaning, which is claimed to be possible only for the OB-verbs.

The counterexamples that I provide demonstrate that the semantic classification suggested by Švedova et al. (1980) cannot serve as an argument in favour of treating O and OB as two distinct morphemes. All the meanings they distinguish are attested in both O and OB verbs. Moreover, one can also notice some other disadvantages of this analysis.

First, it is important that Švedova et al. (1980) classify not the meanings of the prefixes but the verbs which have these prefixes. However, if one wants to account for the polysemy of a prefix, it is the semantic content of the prefix that should be studied. In order to achieve this in my analysis that I present in Chapter 3 I adopt a different methodology, namely I compare the meaning of a simplex base verb with the meaning of the prefixed verb and look at how the prefix modifies the former. Looking at the word-formation pattern and the motivating simplex base is crucial here because this approach reveals possible multiple motivations that Švedova et al. (1980) fail to account for.

Let us consider the verbs *obvetšat'* 'become dilapidated' and *osirotet'* 'become an orphan' that Švedova et al. (1980: § 868) put into Group 4 'Complete an activity, bring it to the end'. Indeed, these verbs have the verbal simplexes *vetšat'* 'become dilapidated' and *sirotet'* 'become an orphan' that are not semantically distinct from the prefixed perfectives. These pairs are usually called "purely aspectual" and the prefix here is assumed to be only an aspectual marker with no obvious semantic content. This is the reason why the Group 4 'Complete an activity, bring it to the end' receives such a vague semantic definition, which is basically equal to the general meaning of perfective aspect in Russian. According to Švedova

[8] The Russian National Corpus is available at www.ruscorpora.ru

et al. (1980), *vetšat'* 'become dilapidated' and *sirotet'* 'become an orphan' in their turn have adjectival and nominal bases *vetxij* 'old, in a bad condition, dilapidated' and *sirota* 'orphan'.

I argue that the latter is true not only for imperfective verbs *vetšat'* 'become dilapidated' and *sirotet'* but also for their perfective counterparts *obvetšat'* and *osirotet'* with the same meanings. I suggest that they simultaneously can be motivated by verbal imperfective bases as well as by non-verbal bases *vetxij* 'old' and *sirota* 'orphan' and therefore be interpreted as factitive verbs. In this case we are dealing not with a prefix but rather with circumfixes[9] *ob…at'* and *o…et'*, where both parts, the prefixes O, OB and the suffixes A, E, I can have the meaning 'make X' or 'become X'.

Švedova et al. (1980) try to avoid verbs with multiple motivation. They consider separately the verbs that have only a verbal base and the verbs that have only a non-verbal base like *ocepit'* 'surround with a chain' and *ozaglavit'* 'give a title' (Švedova et al. 1980: §891).

However, some examples they give are still ambiguous: the verbs *osteklit'* 'cover with glass' and *oblagorodit'* 'ennoble' can be motivated not only by the noun *steklo* 'glass' and the adjective *blagorodnyj* 'noble' but also by existing imperfective verbs *steklit'* 'cover with glass' and *blagorodit'* 'ennoble'. Ignoring multiple motivation in cases like these is a simplification of the complex web of various links that connect words.

Another peculiarity of the methodology adopted in Švedova et al. 1980 is that it simply lists attested semantic groups and does not aim to reveal a system behind this inventory of meanings. At the same time, some groups (e.g. Group 3 'Spread activity to a number of objects' (e.g. *ob''exat'* 'driving visit many places') and Group 6 'Cause damage' (e.g. *obščitat'* 'cheat in calculation, short-change')) might seem too different to be considered as belonging to the same morpheme. As a result, one could argue that these meanings belong to the two separate morphemes OB_1 and OB_2 which merely share the same phonological shape. This is why in order to describe a morpheme with rich polysemy it is probably not enough to list the attested submeanings. Instead, it is crucial to provide a systematic analysis of the entire network and explain how different meanings are related to each other. Cognitive linguistics provides a better methodology to describe affix semantics. In my analysis I adopt a cognitive linguistic approach and show that all the submeanings of prefixes O, OB and OBO form a radial category which is hierarchically organized around the prototype. All the

[9] Švedova et al. (1980) use another term for a circumfix – a "prefixal – suffixal formant" (prefiksal'no-suffiksal'nyj formant) (1980: §886, p.372).

semantic subcategories are shown to be related to the prototype either via modifications of its image schema or via cognitive mechanisms of metonymy and metaphor.

Last but not the least, Švedova et al.'s (1980) classification does not account for the polysemy of individual words. For example, the verb *obygrat'* is only taken in its meaning 'win, beat in a game', while the other meaning 'use in a creative process' of this verb illustrated in (12) is not taken into account:

(12) Kolonny možno očen' interesno **obygrat'** v inter'ere, dopolnit' freskoj i mozaikoj[10].
Columns can be used very creatively in the interior, supplemented with fresco and mosaic.

In this subsection I have shown that the analysis of O and OB suggested in Švedova et al. 1980 is rather problematic. The classification of semantic types of verbs prefixed with O and OB does not present their polysemy as a system of related submeanings. Most importantly, the arguments for the semantic distinction of O and OB as two separate morphemes face a number of counterexamples and fail. One can say that the two proposed prefixes O and OB ultimately merge into one. At the same time, this account serves as a good starting point for further investigation.

2.2. Roberts' study (1976, 1981): three prefixal allomorphs and their distribution

Roberts undertakes a survey of O, OB and OBO that is significant in many respects. His account of the polysemy of these prefixes is extensive and systematic. Moreover, in order to measure the independence of O, OB and OBO with respect to each other, Roberts applies quantitative methods and reports on nontrivial and statistically significant results. In this subsection I first discuss his collection of data, then I briefly describe his semantic account and its advantages. After that I specifically address his statistical results concerning the impact of phonological and semantic factors on the choice of the prefix.

In order to collect an extensive amount of data, Roberts extracts all the verbs prefixed with O, OB and OBO from two dictionaries (SSRLJ 1950; Kotelova, Sorokin 1971) and also adds sporadic forms he discovered himself in literary texts (Roberts 1976: 65). Roberts examines not only perfective verbs but also imperfective prefixed verbs. He also considers those perfectives that lack an imperfective simplex (e.g. *o-sest'* 'settle, subside' from *sest'*

[10] This example is taken from Google.

'sit.PF.') or are deetymologized (e.g. *ošibit'sja* 'mistake', *obut'* 'put shoes on'). Each verb is assigned a classification and is included in his statistical analysis (Roberts 1976: 65). Roberts admits that many verbs are assignable to more than one semantic category and are counted as separate entries in each of them (Roberts 1976: 68).

A crucial advantage of Roberts' analysis over Švedova et al.'s (1980) is that instead of giving a list of verbal groups he suggests a network of semantic categories that are strongly interconnected. The proposed network represents a detailed semantic classification of prefixed verbs. The verbs that share a certain "lexical value" are grouped together.

Before turning to Roberts' network of semantic categories I want to discuss a crucial methodological issue, namely what he classifies: meanings of the prefixed verbs or meanings of the prefixes? Roberts claims that the categories refer not only to the groups of prefixed verbs but also to lexical values of the prefixes themselves. However, some subgroups that he distinguishes describe the meaning of the prefixed verbs rather than the semantic contribution of a prefix (cf. B^{vt3}: 'Fear, caution' e.g. *opasat'sja* 'be afraid of', *osteregat'sja* 'take precaution against'; B^{s10}: 'Birth of animals' e.g. *oporosit'sja* 'give a birth (of a sow)') (Roberts 1976: 69). In addition, Roberts sometimes distinguishes between two closely related semantic categories though their difference is not due to the prefix but due to lexical difference in the simplex stems. For example, he takes apart the semantic categories 'Envelopment, close coverage' (e.g. *okutat' pleči šuboj* 'wrap the shoulders in a coat') and 'Removal of surface or edges from an object' (e.g. *otesat' brevno* 'roughly square off a log') (Roberts 1976: 65, 66). I argue that the difference in direction of the activity (bringing vs. removing) here comes from the lexical meanings of the simplex stems *kutat'* 'wrap' and *tesat'* 'cut off', while the semantic contribution of the prefix is the same in both cases: 'Apply the activity to the entire surface, to all the sides of an object'. In this light, Roberts' classification in some places is unnecessarily detailed and does not reflect his objectives, making it harder to carry out a statistical analysis.

Now I briefly present Roberts' semantic model. Most crucially, he distinguishes between **spatial values** and so-called **modal values**, which are often "figurative extensions" of the former. Spatial values include moving around and past an object, affecting a surface or edges, wrapping and affecting a number of objects of equal status. Modal values imply acquisition or imposition of a new feature as well as semantically "empty" resultative uses of the prefix as a perfectivizing aspectual marker (Roberts 1976:65, 66). Here Roberts addresses the problem of the so-called "empty" prefixes and argues that their "emptiness" is an illusion. He suggests that in "empty uses" the lexical value of a prefix gets absorbed in the lexical

value of the prefixed verb. Strict preferences for a particular prefix in constructions like *duša o-čerstvela* 'soul became stale' vs. *xleb za-čerstvel* 'bread became hard' serve as a strong argument for the presence of semantic content in a prefix (Roberts 1976: 66). Roberts undertakes a survey of such perfectives[11] which instead of O, OB or OBO can attach other prefixes like U or ZA (e.g. *ob-vešat'* vs. *za-vešat'*; *ob-meret'* vs. *za-meret'* vs. *u-meret'*), compares their semantics and suggests the following invariant meaning for "empty uses" of O, OB and OBO: 'action pursued until its simple achievement' (Roberts 1978: 68). One can notice that this meaning is not so different from the general meaning of perfective aspect. I suggest that this problem could be solved differently if Roberts admitted multiple motivation of verbs like *o-sedlat'* 'put a saddle on', *o-ženit'* 'marry' etc. I address this issue in my analysis in Chapter 3.

The terms **spatial** and **modal values** receive the following explanation: spatial values of the prefixes represent adverbs of space, while modal values correspond to adverbs of manner (Roberts 1976: 68). The term modal in this sense is not common in the linguistic tradition.

Apart from spatial and modal values, Roberts also distinguishes **affective values** that include the meanings 'harm' (e.g. *obdelit'* 'skip somebody while sharing something'), 'slander' (e.g. *ogovorit'*, *oklevetat'* 'slander',), 'deceit' (e.g. *obmerit'* 'cheat by giving short measure') and 'mistake' (e.g. *opisat'sja* 'make a writing mistake'). Roberts claims that affective values are idiomatic and refer to the meaning of the prefixed verb, rather than to the semantic content of the prefix. As opposed to Roberts, in my analysis I show that all of these meanings are well integrated into semantic radial category and demonstrate how they are related to the prototype.

Roberts uses his semantic classification in order to account for the distribution of O, OB and OBO across different meanings. He reports on the following crucial results:

- No block of semantic categories has a monopoly on either O or OB/OBO forms. Therefore, Roberts concludes that they are not separate prefixes but variants of a single morpheme;
- Important preferences are discovered. OB/OBO is more frequent in spatial categories (63% OB/OBO vs. 37% O), while O is the dominant prefix for modal values (78% O) (Roberts 1976: 73, 75);

[11] Following Janda's (2007b) cluster model I refer to such kind of verbs as Natural Perfectives.

- Colloquial and demotic lexemes show a stronger tendency to use OB/OBO than Standard Russian lexemes (cf. *ob-smotret'* (coll.) vs. *o-smotret'* (standard) 'look around');
- All affective categories show a stronger tendency for OB/OBO than neutral categories. Many affective verbs are simultaneously demotic.
- Neologisms show a slight tendency for the OB/OBO pattern.

Apart from the impact of semantic factors on the choice of the prefix, Roberts also addresses the effect of phonological environment. He calculated how many times each of the three prefixes occurred in his dataset with simplex stems that start with different onsets. A statistically significant correspondence to the choice of the prefix was discovered in roots that begin with labial stops *b* and *p,* sonorants *l, m, n, r, j,* labiodental *v* and vowels. In particular, *b* and *p*-initial stems prioritize OB/OBO, while *l, m, n, r, j, v, V*-initial stems prefer O. In addition, *šč* was found to strongly prioritize O over OB/OBO. Table 2 below represents the statistical results from (Roberts 1976: 72):

onset	number of lexemes	with O	with OB/OBO	% O
b	71	59	12	83
v	83	8	75	10
g	61	42	19	69
d	53	28	25	53
ž	26	10	16	38
z	33	20	13	61
k	123	77	46	63
l	67	2	65	3
m	80	15	65	19
n	28	3	25	11
p	119	115	4	97
r	55	8	47	15
s	189	117	72	62
t	65	37	28	57
f	3	3	0	100
x	43	23	20	53
c	9	6	3	67
č	20	12	8	60
š	36	20	16	56
šč	8	6	2	75
V	35	0	35	0
j	17	3	14	18
Total	1224	616	608	50

Table 2. Distribution of the prefixes O, OB, OBO across various onsets of the stem (according to Roberts 1976: 72)

Interestingly, similar results are reported by Alexeeva (1978) and Krongauz (1998), who come to the opposite conclusion. Unlike Roberts, they claim that O and OB/OBO constitute two separate morphemes. Now I turn to their arguments and the Split Hypothesis they propose.

2.3. The Split Hypothesis: arguments and predictions

This subsection is devoted to the Split Hypothesis, which I test in the present study. This hypothesis represents an approach to the prefixes O, OB and OBO that was proposed by Alexeeva (1978), Andrews (1984) and Krongauz (1998). All of these linguists express the idea that a semantically single morpheme with a phonologically motivated distribution of allomorphs in the history of Russian has split into two distinct morphemes.

Andrews (1984) provides a systematic account for both prefixes and prepositions and claims that O and OB have developed their semantic distinction already in the early part of the XIX century and that this distinction has expanded over the years (Andrews 1984: 48). Andrews bases her arguments on the study of minimal pairs of verbs prefixed with O and OB and defines a semantic invariant for each of these morphemes.

Alexeeva (1978) has shown that this semantic distinction correlates with word-formation patterns: spatial meanings are expressed by the prefix OB, while the factitive meaning ('imposition or acquisition of a new quality') is expressed by a circumfix O…IT' or O…ET'. She also shows that the semantic distinction between the prefixes O and OB was attested already in Old Russian and has developed into a strong opposition in Modern Russian.

The main contribution of Krongauz' study on O, OB and OBO is that he sharpens the phonological part of the hypothesis. I will now focus on his account, which systematizes all the ideas into one model.

Like Alexeeva (1978) and Andrews (1984), Krongauz claims that originally one morpheme with some allomorphic variation has split into two distinct morphemes O and OB, which differ from each other both in terms of their phonological shape and their semantics (Krongauz 1998: 138). Following the line of previous research, Krongauz associates O and OB with two different semantic domains: the morpheme OB has a spatial meaning that is most evident in motion verbs (e.g. *letet'* 'fly' – *ob-letet'* 'fly around'), while the morpheme O, found mostly in factitives, denotes the imposition or acquisition of a property (e.g. *mračnyj* 'dark, gloomy' – *o-mračit'* 'darken, cloud'). Krongauz claims that within these two semantic domains the distribution of allomorphs is phonologically motivated. The phonological shape

of the base stem, in particular its onset, further determines which allomorph appears. Krongauz' account can be visualized as in Figure 1 below:

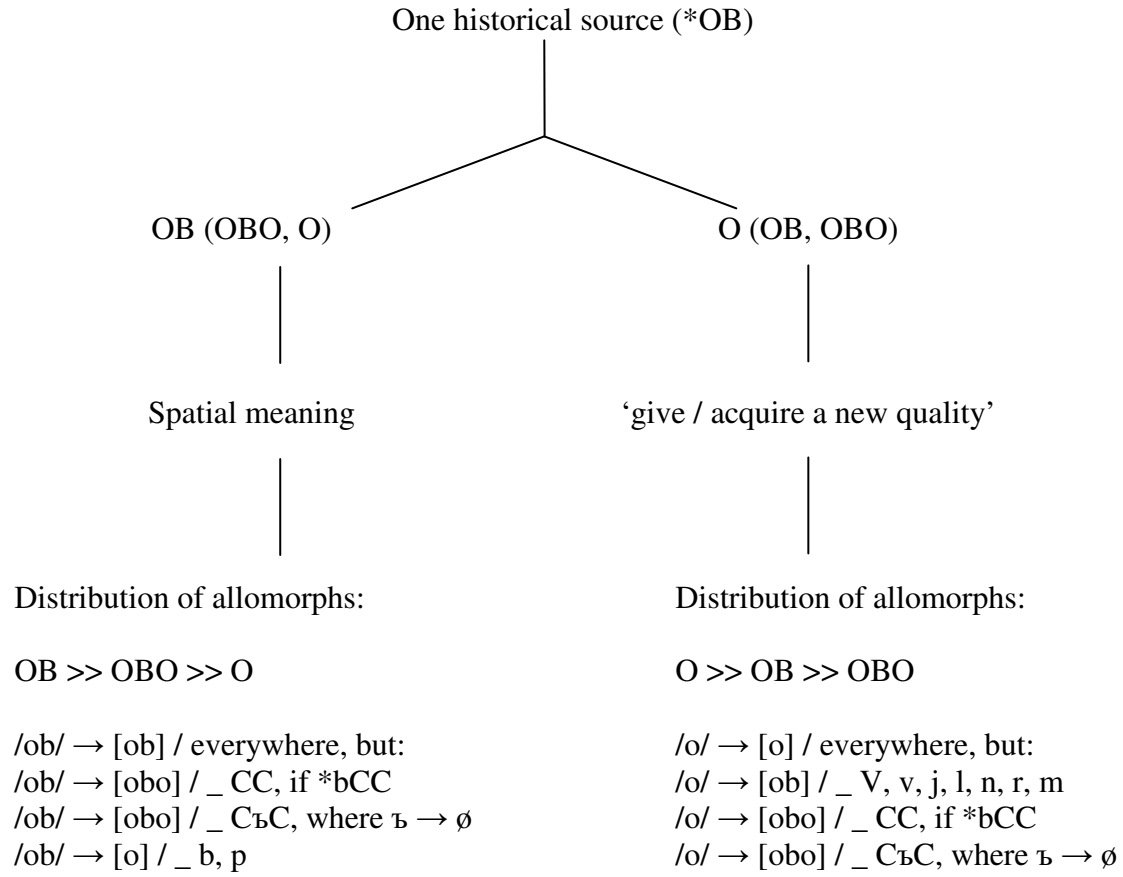


Figure 1. Visual representation of Krongauz' hypothesis: two distinct morphemes and their allomorphs

Figure 1 demonstrates that although O and OB constitute two separate morphemes, they still share the same set of three allomorphs: O, OB, and OBO. However, for each of the two morphemes the hierarchy of allomorphs is different.

For the verbs with spatial meaning, the default allomorph is OB: it is the most expected and less restricted by phonological environment. OB can occur in position followed by a vowel (13), a single consonant (14) and a consonant cluster (15) if this cluster forms a possible combination with prefixal coda *b*:

(13)	/ob/ → [ob] / _V	*ob-yskat'*	'search all over'
(14)	/ob/ → [ob] / _CV	*ob-valjat'*	'roll all over'
(15)	/ob/ → [ob] / _CC, if bCC is possible	*ob-strič*	'cut off'

Krongauz describes OBO as an allomorph of OB. The distribution is captured by the two rules suggested in (Švedova et al 1980) and already discussed in Section 2.1.

The allomorph O is least expected for the morpheme OB and appears only if the stem starts with a bilabial obstruent *b* or *p* followed by a vowel as in (16):

(16) /ob/ → [o] / _ bV or pV *o-bežat'* 'run round'

However, this phonological rule is not strict and allows some degree of variation. Ožegov's dictionary in this case lists only forms with the allomorph O (e.g. *o-bežat'* 'run round', *o-plyt'* 'swim round', etc.), while Efremova's dictionary includes forms with both O and OB (e.g. *o-bežat'* and *ob-bežat'* 'run around'). Krongauz raises the question here of whether forms with the allomorph O represent orthographic haplology or a case of free variation with OB forms. He finally concludes that it is the latter, adding that in such cases O is preferred over OB (Krongauz 1998: 142).

Summing up, the hierarchy of allomorphs for the prefix OB looks like this: OB >> OBO >> O, with OB as the major and default allomorph, OBO is more marked and less frequent, while O is most marked and least expected.

A different hierarchy is proposed for the verbs that denote imposition or acquisition of a property: O >> OB >> OBO. Here the allomorph O is most preferred, followed by OB and OBO. The allomorph OB occurs in a restricted number of positions, while OBO is so rare that its presence on this list might be questioned (Krongauz 1998: 147).

First of all, OB is used as a repair strategy to avoid hiatus if the stem starts with a vowel:

(17) /o/ → [ob] / _ V *ostryj* 'sharp.ADJ.' – *ob-ostrit'* 'sharpen'

OB also appears if the stem initial sounds are sonorants *j, l, m, n, r* or the labiodental consonant *v* (18), which has a special status in the phonological system of Russian being intermediate between sonorants and obstruents (Jacobson 1978; Andersen 1969 b; Kiparsky 1985; Padgett 2002; Mołczanov 2007). Krongauz claims that this rule is not strict and in a few cases allows verbs prefixed with O:

(18) /o/ → [ob] / _ v, j, l, n, r, m BUT: *o-veščestvit'* 'materialize',
o-jagnit'sa 'give birth to a lamb',
o-licetvorit' 'animate',
o-nemet' 'become numb',
o-rosit' 'irrigate',
o-molodit' 'rejuvenate'

Krongauz provides some statistical data on the distribution of all the perfective verbs that occur in the Ožegov's dictionary (1972) prefixed with O and OB regardless of their meaning. These statistics are represented in Table 3 and visualized in Figure 2 below:

Stem-initial consonant	O	OB	% O
v	5	26	16,12%
m	11	38	22,44%
l	3	47	6%
r	4	30	11,76%
n	2	15	11,76%
j	2	14	12,5%

Table 3. Distribution of O and OB across perfectives with initial sonorants and labiodental *v* in Krongauz's sample extracted from Ožegov's dictionary.

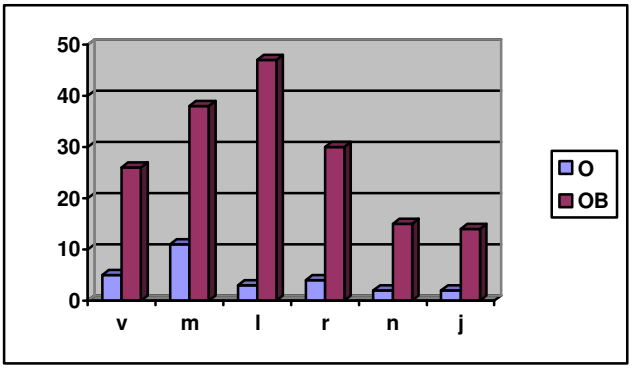


Figure 2. Distribution of O and OB across perfectives with initial sonorants and labiodental *v* in Krongauz's sample extracted from Ožegov's dictionary.

The data are not sufficient to establish a statistically significant well-formedness hierarchy for combinations of these types of onsets with prefixes O and OB. On the other hand, this distribution conforms to the statistics provided by Roberts (1981: 72).

As far as the allomorph OBO is concerned, Krongauz suggests that it appears when OB is ruled out in front of some consonant clusters. He admits that the status of OBO as one of the allomorphs for the morpheme O is problematic (Krongauz 1998: 147). However, he suggests the following argument. The morpheme O can be found in the following series of verbs meaning 'slander, defame': *o-klevetat', o-govorit', o-slavit', o-černit'*. Krongauz suggests that a verb *obo-lgat'* 'tell lies about someone' must be in the same group according to its semantics. Following this logic, OBO can be included in the set of allomorphs of the morpheme O (Krongauz 1998: 147). Otherwise, there is no obvious reason for this stipulation. Moreover, an argument against this suggestion comes from a minimal pair in (19):

(19) o-gret' 'swipe, hit somebody hard (with a stick or other tool). INF.PF'
obo-gret' 'heat, warm. INF.PF'

Since the two verbs in this pair exhibit different meanings, the prefixes O and OBO appear in contrast. This suggests that they belong to different morphemes.

If the main allomorph of the prefix O appears in front of a consonant cluster, then, unlike OB, it does not face a problem posed by a well-formedness constraint. The only possible way for the allomorph OBO to appear is before a stem-initial consonant cluster that starts with a sonorant and cannot cooccur with preceding *b*. The sonorant can then trigger the allomorph OB to appear instead of O. The candidate OB would be ruled out by the well-formedness constraint on possible consonant clusters that disallows the combination of *b* with the initial cluster of the stem. In this scenario, one could expect the allomorph OBO to occur. Krongauz' example *obo-lgat'* 'tell lies about someone' exactly matches these criteria but semantically is on the border between the spatial meaning and 'give / acquire a new quality'. The transition between the spatial and factitive meanings of O, OB, OBO is described in Chapter 3.

The other examples of such marked phonological environment I could find are the verbs in (20) and (21) that clearly denote acquisition and imposition of a quality. However, these verbs have the prefix O in spite of their stem-initial consonant clusters:

(20) *o-mračit* 'darken, cloud'

(9) *o-vdovet'* 'become a widow(er)'

This means that the question of OBO as the third possible of allomorph of the morpheme O is still open.

Summing up the discussion of the phonological distribution of prefixes O, OB and OBO, one can make the following conclusions. First, there are some phonological environments that are problematic for either prefix OB or prefix O, such as stem-initial *p* and *b*, stem-initial sonorants *l, m, n, r, j* and labiodental *v*, as well as some consonant clusters. According to Krongauz, these contexts can trigger some variation in the distribution of allomorphs. A stem-initial vowel is a problematic condition for O and always triggers OB with no possible variation. All other phonological contexts, namely all stem-initial obstruents (apart from the labiodental *v,* which behaves here as a sonorant) provide a neutral environment, where O and OB are equally available options. In neutral contexts the choice between O and OB depends only on the target semantics. For spatial semantics OB is preferred, while O is specialized for the meaning 'acquisition or imposition of a property'. Classification of possible phonological environments into the relevant types makes sense in the following way:

- stem-initial vowels allow only the prefix OB and therefore the choice between prefixes here is purely phonological;

- stem-initial obstruents allow both O and OB and the choice here depends completely on the target semantics;
- sonorants and *v* are in between the first two groups: they allow variation and the choice between O and OB here depends on the impact of competing semantic and phonological factors.

Although the hypothesis is elegant, there are some linguistic data that challenge this account. First of all, there are minimal pairs of perfective verbs that differ only in their prefix. O and OB often can be attached to the same simplex verbs but the difference in their impact can vary significantly. Thus, the verbs in (22) exhibit strikingly different meanings and this is expected according to the Split Hypothesis.

(22) *ob-govorit'* 'discuss' – *o-govorit* 'make a stipulation';
ob-žit' 'assimilate a new place as a home' – *o-žit'* 'become alive again';

The verbs prefixed with O and OB in (23), on the contrary, are close synonyms, which is not predicted by the split hypothesis:

(23) *ob-kleit – o-kleit'* 'cover, paste over'
ob-strič – o-strič 'cut off'
ob-strogat' – o-strogat' 'plane, remove thin layers from the surface of wood'

Krongauz suggests the following explanation. He claims that the split from one historical source into two distinct morphemes has happened and can be observed in the Russian language. At the same time he admits that there is a number of intermediate cases that are inevitable due to the fact that some verbs come from the time before the split (Krongauz 1998: 147). Krongauz also describes the split of one morpheme into two distinct morphemes as an on-going process that is not yet competed (Krongauz 1998: 139). Krongauz further emphasizes that the two distinct morphemes still preserve a strong connection. This stipulation allows Krongauz to explain both strikingly different and similar effects of O and OB on the same simplex verbs. Thus, the semantic difference in the set (22) is due to the different meanings of the two distinct morphemes, while close synonymy in the set (23) is due to the fact that the two morphemes are still closely connected and share part of their meanings (Krongauz 1998: 138). No doubt this stipulation weakens the hypothesis.

Krongauz shows that some close synonyms might still exhibit some slight difference that corresponds to the semantics of the two distinct morphemes. For example, this is the case of verbs *o-ledenet'* and *ob-ledenet'*. Krongauz suggests that the O-verb implies a change of

state and denotes 'become icy, like ice', while the OB-verb means 'be covered with ice'. In other words, the difference in meaning of these verbs corresponds perfectly to the semantic difference of the two proposed morphemes: O incorporates acquiring of a new quality, while OB focuses concrete spatial surrounding of an object (Krongauz 1998: 147).

However, distinguishing close synonyms according to this hypothesis is more complicated when it comes to such interchangeable verbs as in (23) above.

Another problem arises when one examines a larger quantity of data. Krongauz works with two datasets extracted from Ožegov's dictionary (1972). The first dataset includes 295 verbs prefixed with OB and OBO. The other set contains 442 verbs prefixed with O. Krongauz mentions that for the sake of statistical analysis he excludes imperfectives from his database in order not to count the same verb twice (Krongauz 1998: 140). This is the only constraint he applied to the dictionary data. Note that verbs with the reflexive postfix *-sja* and without it (e.g. *omračit'-sja –omračit'*) were counted as different lexemes (Krongauz 1998:143).

If one tests this hypothesis against the larger quantity of data available now in the Russian National Corpus, the number of problematic issues and lexemes expands as well. For example, Ožegov's dictionary does not include the verb *ob-gnit* 'rot', which is a counterexample to Krongauz' generalization about the cluster **bgn* and his claim that it is impossible in Russian (Krongauz 1998: 141).

Krongauz undertakes a study of the phonological distributions of O, OB and OBO. As for the semantic part of his account, instead of giving a detailed analysis of how the three prefixes are distributed among different semantic patterns and how regular this distribution is, Krongauz limits himself to semantic analysis of only a few verbal pairs. In order to test this hypothesis, a more detailed and systematic analysis of the data is required.

Krongauz outlines the semantics of the two prefixes in a very general way, so that each of them rather refers to large domain or an entire group of meanings. Under spatial semantics Krongauz' examples indicate that he understands a broad network of meanings, since they often seem to have almost nothing in common in terms of semantics like *ob-letet'* 'fly round' and *ob-delat'* 'finish, manage, successfully arrange one's business' with the morpheme OB. The other pole with the morpheme O is not free of contradictions and unclarity either, considering Krongauz' examples like o-*francuzit'sja* 'acquire some properties of French', and *o-polzti* 'slip, slide' (Krongauz 1998: 144). This suggests that both semantic domains should be thoroughly investigated for divergence of attested submeanings and regularity or variety of prefix patterns.

Last but not least, since the morpheme split is an on-going process (Krongauz 1998: 139), quantitative and statistical methods of evaluating data are crucial here in order to measure the extent of this incomplete process.

Summing up Krongauz' claims, I list the crucial predictions of the Split Hypothesis below (here I return to the agnostic terminology, calling O, OB and OBO prefixes regardless of their morphological status):

1. Prefixes O and OB are expected to show a significant difference in their distribution depending on the semantics of the target verb. In other words, semantics is expected to be a significant factor in the distribution of prefixes O and OB. In a neutral phonological environment there should be a clear contrast between the two prefixation patterns, which can be described in terms of complementary distribution;
2. Prefix O is expected to be the main, default, and most frequent of the three prefixes in verbs denoting an acquisition or imposition of a property;
3. For verbs denoting an acquisition or imposition of a property, prefix OB is expected only if the stem starts with a sonorant or *v*;
4. Prefix OB is expected to be the main, default, and most frequent of the three prefixes in verbs with a spatial meaning;
5. If a verb with a spatial meaning has a stem with initial *b* or *p*, there can be some variation between O and OB but O is expected to be preferred;
6. If a verb with a spatial meaning has a stem with an initial consonant cluster that is compatible with preceding *b*, OB is expected;
7. If a verb with a spatial meaning has a stem with initial consonant cluster that is not compatible with preceding *b*, OBO is expected;
8. For verbs denoting the acquisition or imposition of a property, the following hierarchy of allomorphs is expected: O >> OB >> OBO;
9. For verbs with a spatial meaning, the following hierarchy of allomorphs is expected: OB >> OBO >> O.

In the present study I test these predictions of the Split Hypothesis against corpus (Chapter 3) and experimental (Chapters 4, 5) data.

Chapter 3

Semantic Analysis of Russian perfectives prefixed with O, OB, OBO

In this chapter, I provide a cognitive linguistic account for the semantics of the three Russian prefixes O, OB and OBO. First, I discuss cognitive linguistics as a theoretical framework and its advantages in the study of affix semantics (Section 3.1.). Then I introduce a database of Russian perfective verbs prefixed with O, OB, and OBO. I explain how the database was constructed and what kind of data in contains (Section 3.2.). Here I distinguish among different types of perfective verbs, namely Natural Perfectives, Specialized Perfectives (according to Janda 2007b) and also Factitive Perfectives, which I introduce as an additional type that plays a crucial role in my account. In Section 3.3, I provide a radial category analysis of Specialized and Factitive Perfectives and introduce each semantic subcategory of the proposed network in detail. In Section 3.4, I address the Overlap Hypothesis and provide an account for the prefixes O, OB and OBO in Natural Perfectives. In Section 3.5, I use my data in order to test the Split Hypothesis. The contribution of this chapter is summarized in Section 3.6.

3.1. Cognitive linguistics' approach to the semantics of prefixes

In this subsection I explain why I adopt the framework of cognitive linguistics in this study. I will briefly discuss the major theoretical foundations and crucial advantages in research on affix semantics. Before I come to that discussion, let me first show what kind of challenges I face when it comes to data analysis.

In this study I look at the interface of three linguistic levels – morphology, phonology and semantics. According to the Split Hypothesis discussed in Chapter 2, semantics is the most crucial factor in the choice between O and OB, where O is associated with acquisition or imposition of a new property, while OB is claimed to cover spatial semantics.

However, these semantic definitions, even when accompanied by rules for phonological distribution of allomorphs, are able to capture only the clearest cases like *ob-''exat'* 'drive around' and *o-glupit'* 'make stupid'. It gets more challenging for the Split Hypothesis when it comes to less obvious examples like *o-kol'cevat'* 'ring' that can have two interpretations: 'surround with a ring' and 'give a ring around'.

One problem is that the verb *o-kol'cevat'* clearly denotes spatial surrounding which suggests that the prefix OB should appear in a neutral phonological environment. Here, the actual choice of prefix contradicts the spatial semantics of this verb. The question arises as to whether the Split Hypothesis still has the potential to account for problematic cases like this or it fails, conquered by series of counterexamples.

Another problem here is that the verb *o-kol'cevat'* 'ring' is a Natural Perfective[12] for the imperfective base verb *kol'cevat'*, which by definition has exactly the same lexical meaning 'ring'. This suggests that the prefix here is purely aspectual according to the traditional account (Švedova et al. 1980, Zaliznjak & Šmelev 2000: 82) and lacks any semantic content. The problem is then how can the Split Hypothesis account for the choice of a prefix, which in the traditional account of Russian aspect is claimed to be semantically "empty".

I suggest that both of these problems can be solved within the cognitive linguistics framework. First of all, cognitive linguistics provides a usage-based model which is flexible to account for gradient and controversial linguistic data. Instead of clear-cut idealistic definitions, cognitive linguistics suggests that linguistic data should be described in terms of radial categories that are hierarchically organized around a privileged central member called a prototype. All the remaining members of a category are related to the prototype via cognitive mechanisms like metaphor or metonymy (Lakoff 1987: 69-75; Janda 2006: 13; Janda 2007a; Lewandowska-Tomaszczyk 2007: 145; Evans 2007, Geeraerts 2006a).

This approach is driven by the idea that linguistic cognition is not a module separated from other cognitive human experience but rather constitutes a natural part of the latter. Cognitive linguistics was originally inspired by empirical and experimental research on human cognition started within cognitive psychology in the 1970s (Rosch 1978). So far, cognitive linguistics' theoretical foundations have been persuasively supported also with recent findings from language processing, language acquisition and impairment (Dabrowska 2004: 203-225). They all suggest that linguistic phenomena are organized the same way as other cognitive categories, namely as radial networks with central prototype and marginal periphery. This implies that linguistic categories are not all-or-nothing absolute categories established via clear-cut rigid boundaries. It also explains why strict definitions can often capture only a major tendency in a language and are bound to ignore a large amount of

[12] According to Janda's (2007b) classification, Natural Perfective is a perfective that refers to the natural culmination of activity described in the imperfective base verb. For example, the imperfective base verb *pet'* 'sing' has the Natural Perfective *s-pet'* 'sing'. According to the traditional "pair" model, these two verbs have the same lexical meaning and differ only in terms of imperfective/perfective aspect.

linguistic inconsistency and variation. Cognitive linguistics, on the contrary, is able to recognize the imprecision of such accounts and elaborate an empirically more adequate model of grammar using large corpus data and quantitative methods.

Turning back to the semantics of affixes, one cannot but notice a number of crucial advantages of this approach. First of all, cognitive linguistics has developed useful theoretical and methodological tools for modeling complex and diverse affix semantics. Instead of listing an affix's submeanings in a near-random order, a cognitive account represents the complex polysemy of an affix as a network of systematic relations among hierarchically organized subcategories. Each member of a radial category network is motivated via certain cognitive mechanisms and related to the core prototype. This methodology allows me to develop a more systematic and detailed analysis of prefix semantics than those available from previous research. Moreover, a thorough and cognitively motivated differentiation of the submeanings exhibited by the prefixes O, OB and OBO makes it possible to calculate their relative distribution across these submeanings and test the Split Hypothesis. The Radial Category Profiling methodology (Nesset, Janda, Baydimirova forthcoming) also makes it possible to compare semantically close linguistic items and measure the degree of their overlap and divergence. Thus, the problem of counterexamples like *o-kol'cevat'* that I addressed earlier in this subsection can be examined in a detailed semantic analysis possible within the framework of cognitive linguistics.

The idea of semantically "empty" verbal prefixes in Russian Natural Perfectives presents a challenge not only for the Split Hypothesis but also for cognitive linguistics as a theory in general. In particular, it contradicts the idea that meaning is a necessary part of each linguistic unit which is motivated by a basic bodily and spatial human experience (Janda 2006: 11). However, "empty" prefixes in Russian Natural Perfectives can be accounted for within the Overlap Hypothesis (Vey 1952; Schooneveld 1958; Janda, Nesset forthcoming a) that suggests that semantic "emptiness" here is an illusion due to conceptual overlap between the semantics of a prefix and the meaning of the verbal stem. In other words, in my example of the Natural Perfective verb *o-kol'cevat'* 'to ring', the verbal stem and the prefix O have very similar meanings, so that the meaning 'spatial surrounding with a ring' is already present in the simplex imperfective verb *kol'cevat'* 'ring'. Since the semantic content of a prefix is less obvious than the semantic content of a simplex stem, it is easy to deny the former and to interpret it as a purely aspectual marker. In this chapter, I will look at all Natural Perfectives prefixed with O, OB and OBO and compare their distribution across semantic subcategories

with the distribution of non-Natural Perfectives. In doing this, I will test the Overlap Hypothesis against my data.

In approaching prefix semantics from the perspective of cognitive linguistics I follow a series of insightful cognitive studies of Russian prefixes (Janda 1985, 1986, 1997; Janda, Nesset forthcoming; Shull 2003), aspect (Janda 2004a, 2007b), case (Janda 2004b), transitivity (Janda 2008a), verbs of motion (Janda 2008b; Nesset 2000, 2008a), phonology (Nesset 2008b), suffix shift (Nesset 2010; Janda, Nesset forthcoming b) and allomorphy in Russian semelfactives (Janda, Dickey 2009; Janda, Makarova 2009; Makarova 2009).

So far in this chapter I have discussed the main theoretical foundations of my study. Now I turn to the data collection in Section 3.2 and then to analysis of the data in Sections 3.3, 3.4. and 3.5.

3.2. The database on Russian perfective verbs prefixed with O, OB and OBO

In order to test the Split Hypothesis and the Overlap Hypothesis, a database was constructed. In this subsection I will describe the way it was created and the data it contains.

Construction of the database involved several steps. First, all perfective verbs prefixed with O, OB and OBO were automatically extracted from the Russian National Corpus (www.ruscorpora.ru). This set of data contained 924 perfective verbs. However, not all of them were relevant data, so the next step was to clean this dataset manually. One problem was that verbs prefixed with OT like *ot-rubit', ot-lit'* with the initial vowel *o* were automatically recognized by the program as examples of the prefix O and had to be removed. Another problem was that the verbal bases were assigned to the collected perfectives automatically and this resulted in double entries like *bogatit' – o-bogatit'* and *gatit' – obo-gatit'*, where the latter pair suggested a non-existing base *gatit'* and had to be excluded. Those perfective verbs that have a perfective simplex base (e.g. *liznut'* 'lick once' – *ob-liznut'* 'lick a surface (usually lips) once') were excluded from the database too.

After all necessary cleaning was completed, the database was checked against the list of all verbs with initial *o* from Grammatical Dictionary of the Russian Language (Zaliznjak 1980) and any perfective verbs that were missing were added. In order to achieve a full picture, all the *obez-* perfectives (e.g. *o-bez-oružit'* 'disarm') from the Russian National Corpus (www.ruscorpora.ru) and Grammatical Dictionary of the Russian Language (Zaliznjak 1980) were also added to the database.

Each perfective was assigned a label according to its type. In distinction of perfective types I follow Janda's (2007b) cluster model of Russian verbs. Instead of traditional privative binary pairs (perfective vs. imperfective) Janda (2007b) suggests aspectual clusters which can include up to four different types of perfective verbs: Natural Perfectives, Specialized Perfectives, Complex Act Perfectives and Single Act Perfectives. In my database only the two former types are attested. Now I will briefly introduce each of them.

Natural Perfectives have already been discussed in this chapter. They share the same lexical meaning with their imperfective bases. For example, a Natural Perfective *na-pisat'* and its imperfective base *pisat'* both denote 'write'. It is in this type of perfectives that verbal prefixes are traditionally claimed to be purely aspectual and have no semantic content (Švedova et al. 1980: §1389, Zaliznjak & Šmelev 2000: 82). Each of the three prefixes O, OB and OBO can be used to form a Natural Perfective (NP):

(24)	*kamenet'* (IMP)	–	*o-kamenet'* (NP)	'become petrified, turn to stone'
	strič (IMP)	–	*ob-strič* (NP)	'cut off'
	zlit' (IMP)	–	*obo-zlit'* (NP)	'embitter'

My database includes 182 Natural Perfectives prefixed with O, forty-one Natural Perfectives prefixed with OB and three Natural Perfectives prefixed with OBO[13]. In total this yields 223 Natural Perfectives. All of them received their perfective type specification according to the *Tromsø Exploring Emptiness database of Russian prefixal aspectual pairs*[14] developed by the Slavic Cognitive Linguistics Research Group at the University of Tromsø[15]. The *Tromsø Exploring Emptiness database* contains 1,981 Natural Perfectives formed via prefixation. It includes all the prefixal aspectual pairs attested in three sources (Evgen'eva 1999; Ožegov & Švedova 2001; Cubberly 1982) and acknowledged by a panel of four native speakers.

In order to give a flavor of what place the prefixes O, OB and OBO have in the overall picture of Natural Perfectives in Russian, I provide contrastive statistical data on their productivity. Figure 3[16] represents distribution of nineteen Russian aspectual prefixes across 1,981 aspectual pairs attested in the *Tromsø Exploring Emptiness database.* Each bar in Figure 3 corresponds to the number of Natural Perfectives formed by each of the nineteen

[13] These numbers are given according to the *Tromsø Exploring Emptiness database*. They corrsepond to 160; thirty-two; and two entries in my database respectively. In total, they yield 194 entries. In my database, the *-sja* and non-*sja* counteparts share the same entry. This strategy is explained later in this chapter.
[14] The database is available at http://69.64.76.7/~kuznetsova/ling/zapros.php
[15] http://www2.uit.no/ikbViewer/page/ansatte/organisasjon/artikkel?p_document_id=153227&p_dimension_id=88149&p_menu=28713&p_lang=2
[16] Figure 3 is borrowed from (Janda, Nesset forthcoming a) and is updated by me according to the last version of the *Tromsø Exploring Emptiness database.*

prefixes. One can see that the prefix O is the fourth most productive aspectual prefix coming after highly productive PO, S and ZA, while the prefix OB is relatively rare. The prefix OBO is the least productive prefix in this scale. Only the prefix V forms as few Natural Perfectives as OBO. Taken altogether, the 223 Natural Perfectives formed by O, OB and OBO yield 11.25% of all 1,981 Natural Perfectives in Russian.

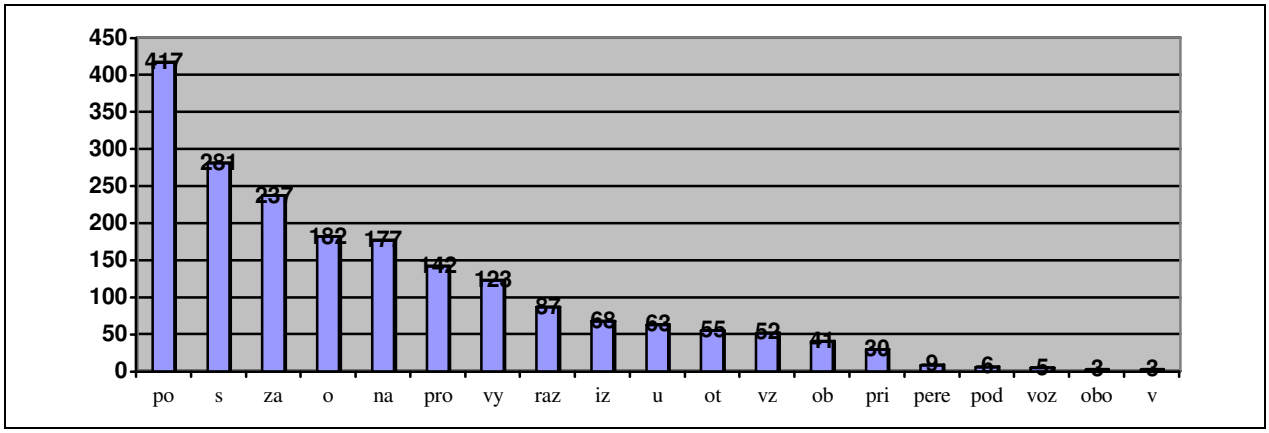


Figure 3. Distribution of aspectual prefixes across Natural Perfectives

Now I turn to another type of perfective attested in my database which Janda (2007b) calls **Specialized Perfectives**. As opposed to Natural Perfectives, Specialized Perfectives (SP) involve a significant shift in meaning due to a new piece of information brought in with the perfectivizing prefix:

(25) *pis-a-t'* (IMP) 'write' – *pere-pis-a-t'* (SP) 're-write'

As a rule, Specialized Perfectives can usually form a secondary imperfective:

(26) *pere-pis-a-t'* (SP) 're-write' – *pere-pis'-yva-t'* (IMP) 're-write'

Specialized Perfectives are represented in my database with 692 entries. They exhibit all three of the prefixes in question:

(27)

žit' (IMP)	'live'	–	*o-žit'* (SP)	'revive, come to life'
ryt' (IMP)	'dig'	–	*ob-ryt'* (SP)	'dig around'
gnat' (IMP)	'drive, urge (on)'	–	*obo-gnat'* (SP)	'leave behind, outstrip'

The distinction between Specialized Perfectives and Natural Perfectives is crucial for the Overlap Hypothesis that I will address further in this chapter.

The remaining two types of perfectives distinguished in (Janda 2007b), namely **Complex Act Perfectives** and **Single Act Perfectives**, are not attested in my database. The prefixes O, OB and OBO do not form them. Although there are verbs like *ob-ščitat'* 'cheat in calculation' and *ob-ščitat'-sja* 'miscalculate' that resemble Single Act Perfectives, they do not

imply a string of repeated events like the semelfactive verb *čixnut'* 'sneeze once' does. Another argument for calling them Specialized Perfectives is that they easily form secondary imperfectives: *ob-ščit-yva-t'* 'cheat in calculation many times', *ob-ščit-yva-t'-sja* 'miscalculate regularly'. For these reasons I consider verbs like *ob-ščitat'* and *ob-ščitat'-sja* Specialized Perfectives.

The four types of perfectives proposed in Janda (2007b) are usually distinguished in the following way: the meaning of a perfective prefixed verb is compared with its imperfective base. However, perfective verbs do not necessarily have a verbal base but can have a nominal or adjectival base instead:

(28) *krylo* 'wing' (NOUN) – *o-kryl-it'* 'give wings, encourage, inspire' (PF)
novyj 'new' (ADJ)' – *ob-nov-it'* 'renew' (PF)
mox 'moss' (NOUN) – *obo-mš-et'* 'get covered with moss' (PF)

These perfectives are well-attested in my database and yield 224 entries. This type of perfective is not included in Janda's (2007b) classification. However, I argue that they clearly constitute a separate type of perfectives that should be recognized along with the four types discussed above. I will refer to this type as **Factitive Perfectives** (FP).

In doing so, I adopt a broad understanding of the term *Factitive* and group together several structural patterns. In particular, I consider here not only verbs of the word-formation types "MAKE X" (*ob-nov-it'* 'renew, make new') and "MAKE WITHOUT X" (*o-bez-les-it'* 'deforest.TRANS' formed from the prepositional phrase *bez lesa* 'without a forest')[17], but also closely related patterns "BECOME X" (e.g. *o-grub-et'* and *o-grub-it'-sja* 'become coarse, rude' from the adjective *grubyj* 'coarse, rude.') "BECOME WITHOUT X" (e.g. *o-bez-les-et'* 'deforest.INTRANS'), "GIVE X" (e.g. *ob-vin-it'* 'accuse' from the noun *vina* 'guilt') and "GET X" (e.g. *o-žir-et'* 'become fat' from the noun *žir* 'fat').

It is worth mentioning here that Factitive Perfectives are different from other types of perfectives in that they are formed not via a prefix but via a circumfix[18]. The circumfix consists of either two parts (the prefix O, OB or OBO and the suffix *-i-, -e-* or *-a-*, as shown in (29)) or even three parts (the prefix O, OB or OBO, the suffix *-i-, -e-* or *-a-* and the postfix *-sja*, as shown in (30)). These word-formation patterns are described in (Švedova et al. 1980:

[17] Traditionally, only "MAKE X" and "MAKE WITHOUT X" verbs are called *factitives*. Other types in this list are usually recognized as closely related to them (Townsend 1968: 143, 144).
[18] Sometimes Specialized Perfectives can also be formed via a circumfix (e.g. *govorit'* 'speak' → *o-govorit'-sja* 'make a mistake in speaking') but it consists of a prefix O or OB and a postfix *-sja* (cf. Švedova et al. 1980: §944, 945). Note, that Factitive Perfectives exhibit different types of circumfixes.

§ 891 – 893, 906, 907, 955 – 957; Alexeeva 1978: 10). In (29) and (30) I provide examples that illustrate these patterns:

(29)	*legkij*	'lihgt, easy. ADJ.'	→	*ob-legč-i-t'*	'kighten, relieve, facilitate.FP'
	cep'	'chain. NOUN.'	→	*o-cep'-i-t'*	'surround, cordon off.FP.'
	pojas	'belt. NOUN.'	→	*o-pojas-a-t'*	'gird, put a belt on.FP.'
	mox	'moss.NOUN.'	→	*obo-mš-e-t'*	'become covered with moss.FP.'

(30) *smelyj* 'brave.ADJ' → *o-smel-i-t'-sja* 'dare, have a courage to do smth.FP.'

In case of the verb in (30) the postfix *sja* is a part of the circumfix *o…i…sja*, because a non-*sja* counterpart **o-smel-i-t'* does not exist in Russian. In this light, the verb *o-francuz-i-t'-sja* 'become Frenchlike' is different, because is formed from the non-*sja* verb *o-francuz-i-t'* 'frenchify, make Frenchlike' and therefore contains the circumfix *o…it'* and additionally the postfix *-sja*.

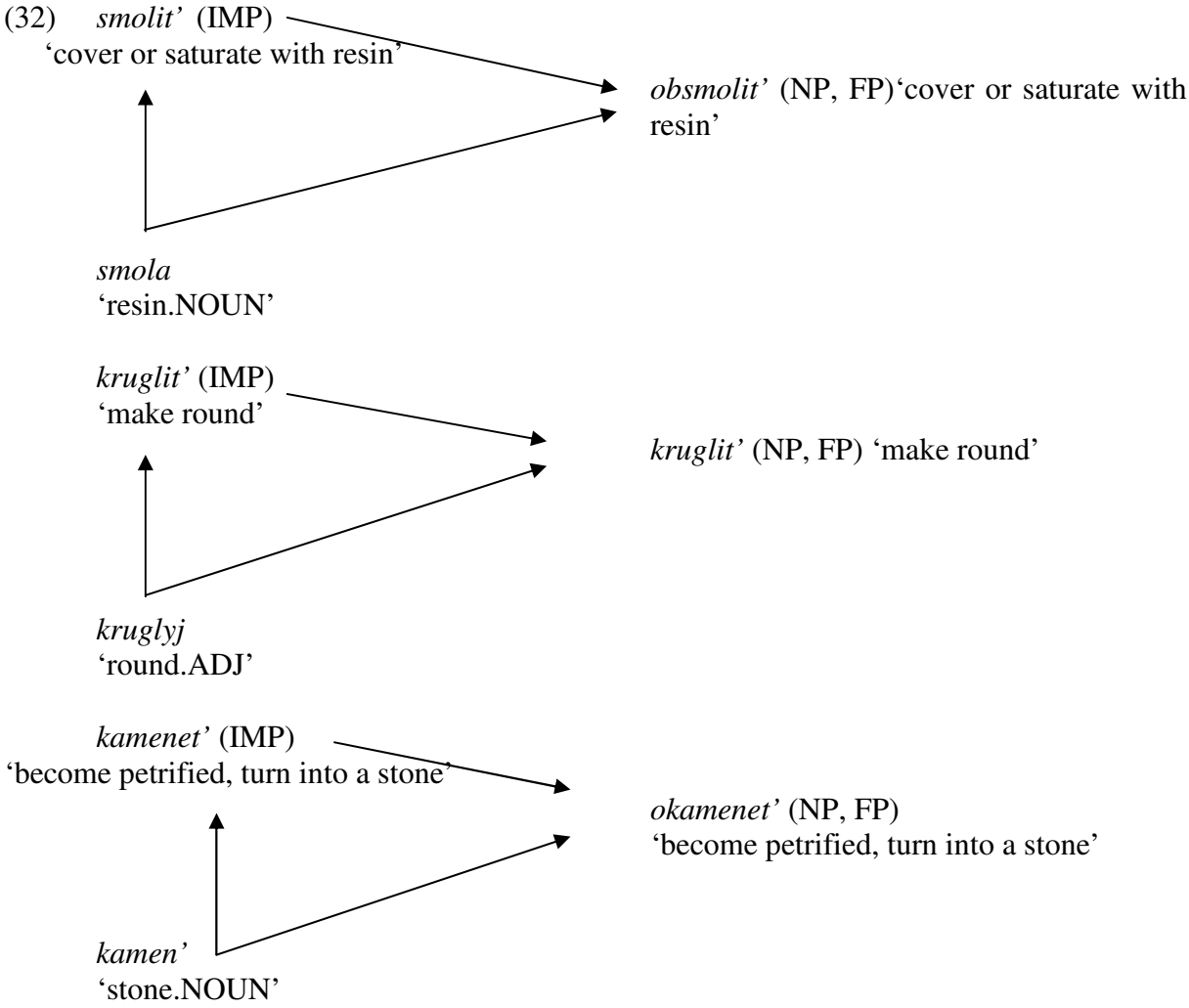
One could argue against including the examples in (29) and (30) in the present analysis of the prefixes O, OB and OBO, because as parts of a circumfix they represent a different morpheme. However, I suggest that ignoring these data would lead to a distortion of the grammar. I argue that clear examples of Factitive Perfectives given in (29) and (30) are necessary in order to understand a large number of transitional cases like the already mentioned perfective verb *ob-vinit'* 'accuse'. This verb can be simultaneously motivated by the nominal base *vina* 'guilt' and also by the verbal imperfective base *vinit'* 'blame, accuse', as shown in (31). In the former analysis the verb *ob-vinit'* 'accuse' is a Factitive Perfective, while the latter word-formation link suggests that it is a Specialized Perfective.

(31)	*vina*	'guilt'	→	*ob-vin-it'* 'accuse, assign a guilt to someone'	FP (GIVE X)
	vinit'	'blame'	→	*ob-vinit'* 'accuse'	SP

Here I come to the problem of multiple motivations. Perfectives that simultaneously have a verbal and a non-verbal base are very numerous and yield 333 entries in my database. Perfectives that have only a verbal base yield 450 entries (forty-four Natural Perfectives and 406 Specialized Perfectives). Factitive Perfectives in total occupy 557 entries including those 224 that have only a non-verbal base. The remaining thirty-two perfectives are deetymologized[19] (e.g. *obmanut'* 'deceive').

[19] Deetymologized verbs are those where it is problematic to suggest a clearly related in Modern Russian simplex base. Therefore, such verbs were not assigned the type of perfective and were not included in the statistical calculations either.

What is crucial in this distribution is that the vast majority (77.3%) of Natural Perfectives prefixed with O, OB and OBO have in addition a non-verbal base and therefore can be interpreted also as Factitive Perfectives, as illustrated in (32):



The examples in (32) demonstrate that a noun can simultaneously motivate both the simplex imperfective and the prefixed perfective verb. The perfective verbs in (32) are transitional between Natural Perfectives that have only a verbal imperfective base (e.g. *carapat'* (IMP) – *ocarapat'* (NP) 'scratch') and Factitive Perfectives that have only a non-verbal base (e.g. *nadež(d)a* 'hope.NOUN' – *obnadežit'* (FP) 'reassure, give hope'). Such transitional cases are marked in the database as both Natural Perfectives and Factitive Perfectives (NP, FP). All possible bases are listed and semantic groups are assigned according to each motivation.

In a similar manner, the transitional cases occur also between Factitive and Specialized Perfectives. In the database they are marked for both types (SP, FP). Recall that

multiple motivation is very common for Natural Perfectives: 77.3% of all Natural Perfectivives are simultaneously factitives. Interestingly, Specialized Perfectives exhibit multiple motivation less often, namely in 31% cases. Table 4 aggregates the absolute numbers of entries occupied by different types of perfectives in the database. Transitional types are marked as (NP, FP) and (SP, FP).

194 NP

589 SP

PF type	Number of entries
NP	44
NP, FP	150
SP	406
SP, FP	183
FP	224
deetymologized PF	32
Total:	1039

557 FP

Table 4. Distribution of perfective verbs prefixed with O, OB, OBO across types of perfectives

Table 4 demonstrates that among 194 entries for Natural Perfectives there are forty-four that have only a verbal base and 150 that additionally have a non-verbal base and therefore can be called both Natural and Factitive Perfectitives. 589 entries of the database represent Specialized Perfectives, where 406 have only verbal bases and 183 have both a verbal and a non-verbal base. The database also includes 224 pure Factitive Perfectives that are formed from a non-verbal base. Together with transitional cases, they yield 557 Factitive Perfectives. This number means that 557 perfective verbs in the database can be motivated with a non-verbal simplex stem. This is comparable with 783 verbs that can be motivated by an imperfective simplex. Thirty-two verbs are deetymologized and are not assigned to any of the perfective types. Thus, Table 4 shows that Factitive Perfectives considerably overlap with both Natural and Specialized Perfectives.

Note that 223 Natural Perfectives from the *Tromsø Exploring Emptiness database* correspond to 194 entries in my database. This is because verbs like *obstrič* 'cut off' and *obstričsja* 'cut off oneself' share the same entry in order not to duplicate information in the database. Here a few words should be said about this approach.

Recall from Chapter 2 that Krongauz (1998) counted all the reflexive verbs attested in the Ožegov's dictionary (1972) as separate entries regardless of whether they have a non-reflexive counterpart or not. As opposed to Krongauz, I suggest that the reflexive verbs, where the affix *-sja* has only an intransitivizing function and does not change the lexical meaning of the base verb, should not be treated in this survey as separate lexemes, because

this would inflate the number of verbs with duplicate information. For the purposes of my study, I list them together with their non-*sja* counterparts in one entry. For instance, verbs like *obespokoit'* 'bother' and *obespokoit'sja* 'get bothered' share one entry *obespokoit'(sja)*, because here the affix *-sja* has only an intransitivising function. On the other hand, the verbs like *ogovorit'* 'slander' and *ogovori'sja* 'make a mistake in speaking' are treated in my study as separate verbs, because their semantic difference goes beyond transitivity and *-sja* here is a part of the circumfix *o…sja*. I will discuss this type of verb in greater detail further in this chapter in Subsection 3.3. (Subcategory MISTAKE).

In order to avoid duplicate information, this approach to reflexive verbs was applied through the entire database. The *-sja* and non-*sja* verbs are placed in one entry only if both of them belong to the same type of perfective, in other words if both of them are Natural Perfectives (e.g. *oščetinit', oščetinit'sja*) or Specialized Perfectives (e.g. *obt'anut*', *obt'anut'sja*). Rarely, *-sja* and non-*sja* verbs represent different types of perfectives. For example, *obankrotit'* 'make somebody a bankrupt' is a Specialized Perfective, while *obankrotit'sja* 'become a bankrupt' is a Natural Perfective. Such verbs were preserved in the database as two separate entries in order to accurately test the Overlap Hypothesis, where the distinction between Natural and Specialized Perfectives is crucial. The number of such cases is small. All of them are listed in Table 5.

PF	Type Gloss	reflexive PF	Type Gloss
obankrotit'	SP 'make smb a bankrupt'	*obankrotit'sja*	NP 'become a bankrupt'
obvaljat'	NP 'roll (in) all over	*obvaljat'sja*	SP 'roll oneself (in) all over'
obžeč'	SP 'burn'	*obžeč'sja*	NP 'get burns'
ozabotit'	NP 'trouble, cause anxiety'	*ozabotit'sja*	SP 'get worried'
ozlobit'	SP 'embitter'	*ozlobit'sja*	NP 'become embittered'
okutat'	NP 'wrap up all over'	*okutat'sja*	SP 'get wrapped all over'
opublikovat'	NP 'publish'	*opublikovat'sja*	SP 'get published'
osvidetel'stvovat'	NP 'witness'	*osvidetel'stvovat'sja*	SP 'get examined'
osvjatit'	NP 'sanctify, bless'	*osvjatit'sja*	SP 'get sanctified'
oxarakterizovat'	NP 'describe, charachterize'	*oxarakterizovat'sja*	SP 'get characterized'
očistit'	NP 'clean'	*očistit'sja*	SP 'become clean, clear'

Table 5. Perfectives and their reflexive counterparts that belong to different types of perfectives.

In order to account for all the meanings of the perfective verbs in the database, I consulted five dictionaries of Contemporary Standard Russian (Ožegov & Švedova 2001; Efremova 2000; Ushakov 2008; Evgen'eva 1999; Kuznetsov 2000). If a verb is attested in different meanings which belong to different semantic categories that I distinguish, the verb receives several entries in the database. The number of entries the verb receives corresponds to the number of semantic subcategories it represents. In doing this I treat different entries as

separate verbs. If a verb has different meanings that all belong to the same semantic category, the verb occurs in the database only in one entry.

The database was designed in order to provide information on Russian perfective verbs prefixed with O, OB and OBO. Table 6 given in Appendix 1 is an excerpt from the database that illustrates some of the parameters it contains. As shown in Table 6, the database lists verbal and non-verbal bases with their English glosses and the perfectives themselves with their English glosses. It also specifies type of perfective, prefix, onset of the base and number of occurrences of verbal bases and corresponding perfectives in the Russian National Corpus. An additional column contains information on what semantic subcategory(s) the perfective belongs to.

In its final version the database includes 1,039 entries and is formatted as a MS Excel document. The duplicate information is avoided and coding is consistent throughout. The database takes advantage of modern technologies that were not available in previous research on the prefixes O, OB and OBO. It is based on the two large sources of empirical data: The Russian National Corpus and the Grammatical Dictionary of the Russian Language (Zaliznjak 1980). The database accounts for the verbal meanings attested in the five dictionaries of Contemporary Standard Russian (Ožegov & Švedova 2001; Efremova 2000; Ushakov 2008; Evgen'eva 1999; Kuznetsov 2000). It also specifies different types of perfective verbs according to Janda's (2007b) cluster model and the *Tromsø Exploring Emptiness database*. As a result, the database provides reliable information on Russian perfective verbs prefixed with O, OB and OBO and accounts for more data than were available for previous quantitative studies of these prefixes (Roberts 1981; Krongauz 1998).

Thus, in this subsection I have discussed how the data was collected and organized. Now I turn to my analysis of the data from the perspective of cognitive linguistics.

3.3. Radial category network for prefixes O, OB and OBO. Specialized and Factitive Perfectives

In this subsection I present the analysis of complex polysemy of the Russian aspectual prefixes O, OB and OBO. Addressing the meaning of these prefixes, I first focus on the verbs where the semantic contribution of the prefix is more evident and the prefix is clearly not "empty". In other words, I first approach Specialized Perfectives and those Factitive Perfectives that do not overlap with Natural Perfectives. I show that all the meanings of these prefixes are related to each other and are systematically connected within a model of their semantic network that I propose. Here I start from an agnostic approach to the morphological

status of O, OB and OBO. I then demonstrate that all of them share the same network of meanings but differ in terms of frequency of occurrences in different parts of this network.

The semantic network of the prefixes O, OB and OBO can be modeled as a radial category organized around a spatial prototype. All the remaining subcategories, or submeanings, are related to the prototype via partial modifications of its image schema or via basic cognitive mechanisms (metaphor or metonymy). The subcategories themselves are not discrete nodes, so that any given example does not have to necessarily fit into only one subcategory. This methodology of modeling polysemy is provided by the cognitive linguistic framework (Lakoff 1987; Lewandowska-Tomaszczyk 2007; Evans 2007, Geeraerts 2006a) and makes it possible to account for the gradient empirical data.

I suggest the semantic model that is depicted in Figure 4. It represents a radial network of meanings that captures the uses of all three prefixes O, OB and OBO. The network includes fifteen semantic subcategories. They are numbered and labeled with headings. Each semantic subcategory is illustrated with three examples that exhibit each of the three prefixes respectively. Most importantly, Figure 4 shows that all the meanings observed in the network can be expressed by each of the three prefixes, no matter what their morphological status is.

The model accounts not only for various spatial meanings of the prefixes, but also for the non-spatial meanings (‘impose/acquire a new feature’) recognized by Krongauz (1998) as constituting a separate morpheme. Moreover, the model includes the “affective values” (‘deceit’, ‘mistake’) described by Roberts (1981: 69) as outsiders of the system. Figure 4 demonstrates that both non-spatial meanings and “affective values” are motivated by different spatial meanings and appear as their metaphorical extensions. Summing up, the contribution of this model is twofold: first, it provides a unified account for uses of all three prefixes; secondly, it incorporates all the meanings into one semantic network.

Before I turn to a description of each subcategory in detail, let me make a few general remarks on the overall structure of this model.

The first subcategory, MOVE AROUND AN OBJECT, has special status in this model and serves as the prototype which brings all the remaining subcategories into one network. The lines between the subcategories indicate that they are closely related. There are two kinds of relations between the subcategories in this model: first, one subcategory can serve as a source and motivation for another subcategory; secondly, two subcategories can be related, because there are verbs that simultaneously belong to both of them.

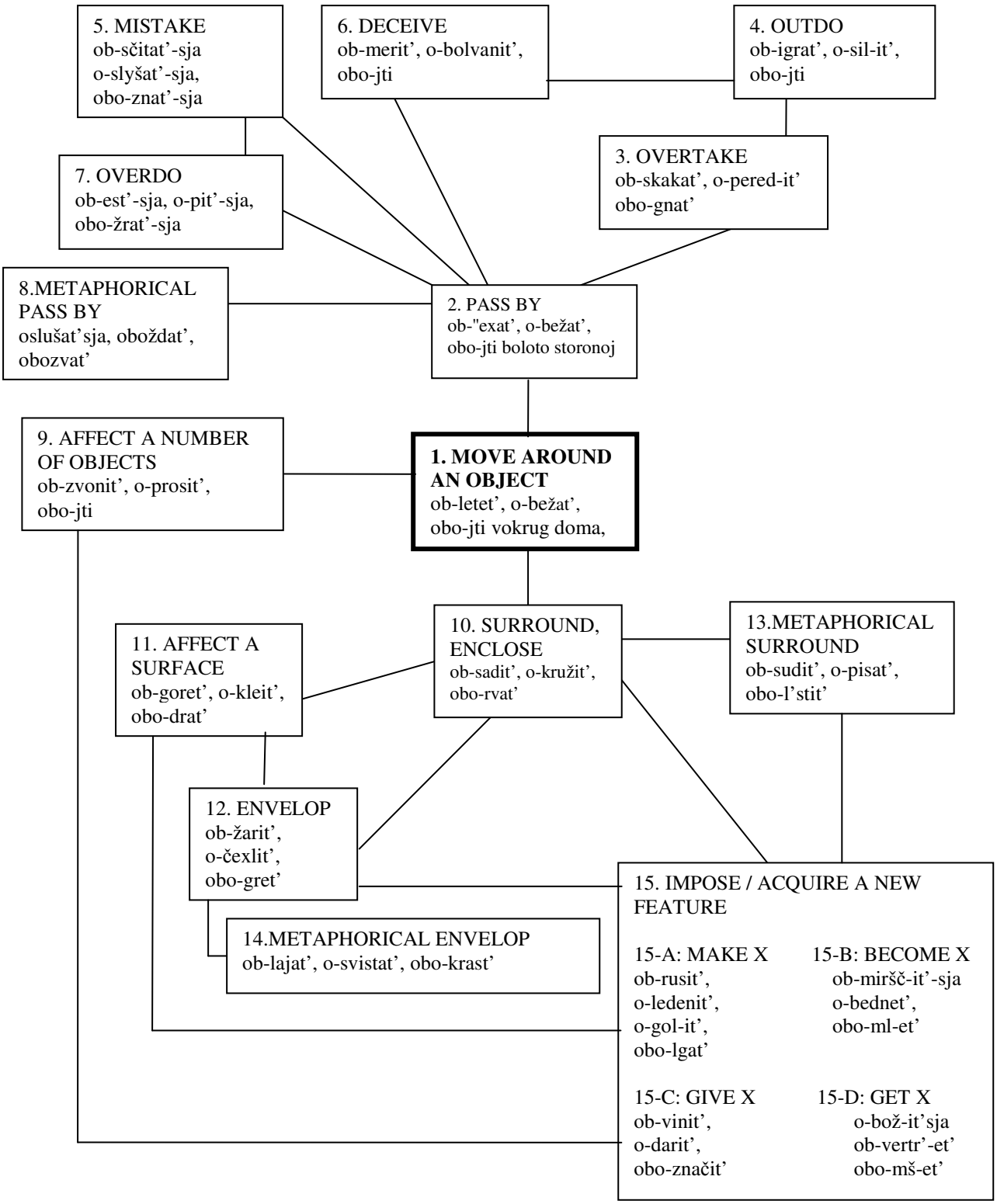


Figure 4. The semantic network of O, OB and OBO

The model represents a network of meanings of the prefixes rather than a semantic classification of the verbs. Therefore, each subcategory corresponds to a different semantic contribution of a prefix to a simplex stem. Each subcategory is recognized here due to the significant deviation (extension) from its source subcategory. In distinction of different

subcategories I follow the principles elaborated in the framework of cognitive linguistics (Taylor 1995: 65 – 141). The extensions of the prototype come in two types according to two basic cognitive mechanisms: metonymy and metaphor. Metonymical extensions occur when an image schema is reduced to its part or is re-interpreted with a different focus. Metaphorical extensions are those that apply the same image schema to a different domain. Particularly, they account for the shift from a spatial domain to the non-spatial domains of human relations, emotions, personal features, etc.

It is crucial that the radial category in Figure 4 is divided into two large parts, the top part and the bottom part, that are connected with each other via the prototypical meaning MOVE AROUND AN OBJECT. The two parts of the radial category are driven by the two different interpretations of the prototype: proximity and keeping a distance from the Landmark versus contacting and affecting the Landmark.

On the one hand, the Trajector that moves around the Landmark can keep certain distance from its boundaries. This distance is fully realized in Subcategory 2 PASS BY, which reduces the full encirclement to the partial one. Here, the Landmark is an obstacle on the Trajector's route and the Trajector has to bypass it. Thus, the Landmark remains outside the Trajector's path (e.g. *obojti boloto storonoj* 'bypass the swamp'). Subcategory 2 PASS BY serves as a motivating base for two semantic branches. The first one focuses the distance of the Trajector from the Landmark (Subcategories 3 OVERTAKE and 4 OUTDO), while the other focuses the bypassing itself which is metaphorically extended to avoiding / missing some crucial point of a situation (Subcategories 5 MISTAKE, 6 DECEIVE, 7 OVERDO and 8 METAPHORICAL PASS BY). This is how the proximity motivates the top part of the radial category.

The bottom part of the model realizes another interpretation of the prototype: when moving around the Landmark, the Trajector can enclose it completely as well as contact and affect its boundaries (Subcategory 10 SURROUND), surface (Subcategory 11 AFFECT A SURFACE) or all the sides (Subcategory 12 ENVELOP). Affecting and changing the Landmark can also shift from the spatial domain (e.g. *obledenit'* 'cover with ice') into the domain of abstract features and characteristics (e.g. *obednit'* 'impoverish'; *obozlit'* 'embitter'). Here the verbs often have multiple motivations and are simultaneously Specialized and Factitive Perfectives. This exaplains how spatial contact is related to imposition or acquisition of a new feature, which can be both spatial and non-spatial.

This overview gives a flavor of how the radial category is structured around the prototype. Now I turn to describe each subcategory in detail.

Subcategory 1: MOVE AROUND AN OBJECT

First, I introduce the core semantic subcategory which is the prototype that serves to motivate all the semantic extentions in this network. Cognitive linguistic studies show that usually a prototype belongs to the concrete physical domain and is related to the basic embodied human experience such as spatial organization and motor movements (Lakoff 1987; Lakoff & Johnson 2003).

I suggest that the prototypical semantic category of the prefixes O, OB and OBO is MOVE AROUND AN OBJECT (e.g. *ob-letet' vokrug gnezda* 'fly around a nest'; *obo-jti vokrug doma* 'walk around a house'; *o-bežat' vokrug lesa* 'run around a forest', etc.). This meaning can be visualized in the form of a simple spatial image schema as shown in Figure 5:

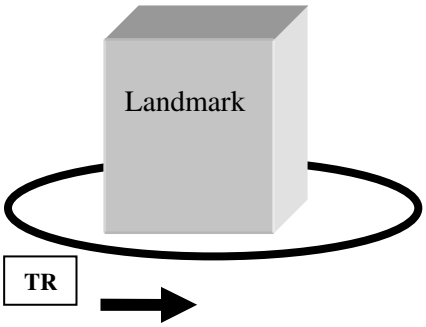


Figure 5. Image schema for Subcategory 1 MOVE AROUND AN OBJECT

The image schema depicts a dynamic figure, a Trajector (TR), which is moving around a stable object, a Landmark. It is crucial that the Trajector's route (trajectory) takes a shape of the full circle which goes around the Landmark. This corresponds to the relevant observation of Shull that the prefixes O, OB and OBO are "Path" prefixes as opposed to the "Goal" prefixes VY, V, OT, ZA, etc. (Shull 2003: 2, 109).

All verbs from the database that exhibit the meaning MOVE AROUND AN OBJECT are listed in Table 1 of Appendix 2. These verbs denote different kinds of motion. This serves as a strong argument for prototypicality of this subcategory. Janda (2008 b) argues that the motion verbs themselves are the most prototypical in the Russian aspectual system. They all belong to the concrete spatial domain and consequently are compatible with other spatial prototypes.

Interestingly, most of verbs in this subcategory are uni-directional motion verbs and denote a movement in one particular direction. That is why the prefixes O, OB and OBO when attached to these verbs specify the shape of the route. Non-directional[20] motion verbs

[20] In using the term *non-directional motion verbs* I follow Nesset (2000: 107).

with these prefixes usually have a different meaning and belong to Subcategory 9 AFFECT A NUMBER OF OBJECTS.

It is worth mentioning that the verbs in Subcategory 1 can imply both contact with the Landmarks' boundaries as illustrated in (33) and proximity to them with no contact as shown in (34). Examples (33) and (34) demonstrate that both uses are possible for the motion verb *idti* 'walk, go'. This makes it possible for the prototype to motivate both parts of the radial category network.

(33) Esli ty dovedješ' menja do pljaža, – perebil ego Džim, – ja smogu **obojti** po perimetru ves' ostrov i najti svoix. (Ostrov sokrovišč, ili "Poslednij geroj" 2004)[21].

'If you take me to the beach, - Jim interrupted him, - I will be able to **walk around** the island along the coastline and find my friends'.

(34) Posle služby on tščetno vyiskival ee v tolpe, daže **obežal** vokrug xrama – ee nigde ne bylo. (Ekaterina Markova. Kapriz favorita 1990-2000) (RNC)

'After the service he was unsuccessfully trying to find her in the crowd, even **ran around** the cathedral, but she was not there'.

Crucially for this subcategory, even moving along the boundaries of the Landmark in (33) does not imply any effect on the Landmark. This is true for all the verbs that belong to this Subcategory: they do not imply any impact on the Landmark. In this way, the prototype is distinguishable from Subcategory 10 SURROUND / ENCLOSE, where the effect on the Landmark becomes a crucial feature.

Interestingly, the circle-shaped path can be external to the Landmark's boundary as it was already shown in Figure 5 or be internal to the boundary as in Figure 6.

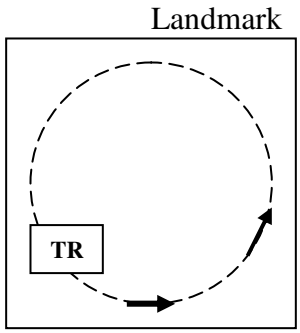


Figure 6. MOVE AROUND AN OBJECT Landmark-internally

Having both possibilities in this case is not unique for Russian and is also attested for the English spatial preposition *around* and the German preposition *um* 'around' (Taylor 1995:

[21]Examples marked with (RNC) are extracted from the Russian National Corpus available at www.ruscorpora.ru. For the convenience of the reader, I boldface the relevant verb.

275). However, such use of the prefixes O, OB and OBO with some motion verbs in Russian seems to be more restricted than that of the English preposition *around*; e.g. English *The boy sailed around the lake* (Taylor 1995: 275) cannot be translated as **Mal'čik o(b)plyl ozero*, since it is ungrammatical in Russian.

The situation presented in Figure 6 can be illustrated with example (35):

(35) **Obežal** ves' kabinet, zagljanul vo vse ugly i govorit: "Da u tebja ničego ne izmenilos'" (Averbux, S. Renat 2002. In Večerniaja Moskva. 2002). (RNC)

'He **ran around** the entire office, looked into all the corners and said: "Nothing changed here".

I suggest that both Figures 5 and 6 represent the same semantic subcategory. The difference between them is not distinctive here. This difference results from the nature of the landmark. It is not determined by the prefixes O, OB and OBO.

The image schema that I suggest represents the prototypical meaning and the prototypical circle, which often is modified towards a circle-like route. The circle-shaped trajectory is a flexible parameter and can be easily reduced to a semi-circle. Now I will look at this case in detail and therefore turn to Subcategory 2 PASS BY.

Subcategory 2: PASS BY

Subcategory 2 PASS BY is different from the prototypical Subcategory 1 in terms of Trajector's path. Here the trajectory is reduced from a full circle to a semi-circle, so that the landmark stays to one side of the trajectory. This can be illustrated with example (36):

(36) Nesmotrja na uverenija byvalogo pčelovoda, ja vse že rešaju **obojti** nebezopasnoe mesto storonoj (Kozulina, E. D'ad'a Vova, byvalyj pčelovod 2003, In *Vostočno-Sibirskaja Pravda*, Irkutsk. 2003) (RNC)

'In spite of the experienced beekeeper's assurances, I decide to **bypass** the unsafe place'.

The image schema for Subcategory 2 is represented in Figure 7. It shows that the Trajector deviates from its original route and follows a trajectory shaped in a semi-circle. In doing so, the trajector bypasses the Landmark, which is left outside the path.

Subcategory 2 is represented in the database with ten Specialized Perfectives. All of them are listed in Table 2 in Appendix 2. Most verbs in Subcategory 2 are the same as those that belong to Subcategory 1. They denote various kinds of motion. One could say that they might be contextual variations of the prototypical MOVE AROUND AN OBJECT meaning.

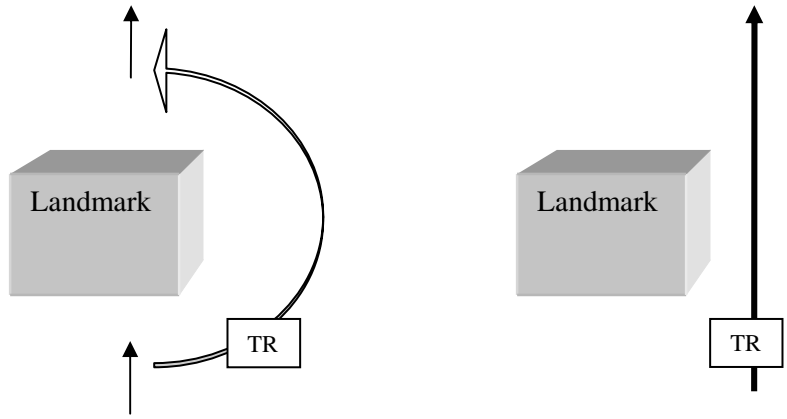


Figure 7. Image schema for Subcategory 2: PASS BY / BYPASS

However, I suggest that the prefixes in these verbs exhibit a significant variation on the prototype that plays an important role in further recognition of other semantic groups. In particular, Subcategory 2 serves to motivate a number of semantic subcategories. First, it connects to spatial OVERTAKE (Subcategory 3), with its metaphorical extension to OUTDO at some activity (Subcategory 4). At the same time, it serves as a source domain for metaphorical extensions of the same image schema to Subcategory 5 MISTAKE, Subcategory 6 DECEIVE, Subcategory 7 OVERDO and Subcategory 8 METAPHORICAL PASS BY. Now I consider each of them in turn.

Subcategory 3: OVERTAKE

Like Subcategories 1 and 2, Subcategory 3 OVERTAKE is spatial. It can be visualized as the same image schema that was suggested for Subcategory 2 PASS BY (Figure 7). However, Subcategory 3 OVERTAKE is different in that it implies that both Landmark and Trajector are moving objects (recall that in the previous Subcategory 2 only the Trajector is moving, while the Landmark is stable). Apart from this major difference, in Subcategory 3 the OVERTAKE part of the schema is in focus, as shown in Figure 8:

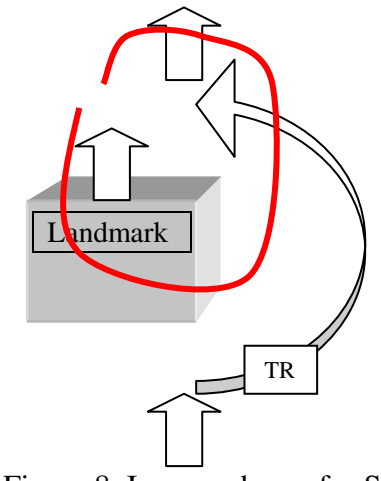


Figure 8. Image schema for Subcategory 3: OVERTAKE

The meaning OVERTAKE can be illustrated with examples (37) and (38):

(37) Možet li velosipedist **obognat'** svoju ten'? (Lukašik, V, Ivanova, E. Sbornik zadač po fizike 2003). (RNC)
'Can a cyclist **overtake** his own shadow?'

(38) Pomni, čto on rožden ot kosti toj <…> znamenitoj Isek-Kyrgan, kotoruju ne mogla **obojti** na skačkax ni odna lošad' v stepi (Mamin-Sibir'ak, D.N. Ak-Bozat 1985). (RNC)
'Recall that he is born from the bone of that famous Isek-Kurgan [name of a horse], which **has not been overtaken** in a horse-race by any horse on the steppe'.

Subcategory 3 includes perfective verbs where the prefix means OVERTAKE in a movement. This subcategory groups together three Specialized Perfectives *obo-gnat'*, *obo-jti* and *ob-skakat'* which have an imperfective verbal base and one Factitive Perfective *o-peredit'* that lacks a verbal base and has a nominal base instead, as shown in Table 3 in Appendix 2.

Spatial Subcategory 3 OVERTAKE serves as a source domain for its metaphorical extension Subcategory 4 OUTDO. I now turn to take a closer look at their relations.

Subcategory 4: OUTDO

Subcategory 3 OVERTAKE and Subcategory 4 OUTDO are very similar to each other. They share the same image schema configuration and differ only in terms of their domains. Subcategory 3 OVERTAKE is spatial and includes verbs which refer to a situation where a Trajector outstrips its competitor while the latter is moving too. As opposed to the spatial domain of Subcategory 3 OVERTAKE, Subcategory 4 OUTDO has a larger domain of human relations with various kinds of competitions. Very different types of competitions such as board games or presidential elections are conceptualized in terms of spatial overtaking and outstripping. This is illustrated with examples (39) and (40):

(39) V resultate pravjaščij blok značitel'no **obošel** po čislu golosov vsex oppozicionerov i oderžal pobedu (Jakovlev, A. Omut pam'ati. 2001) (RNC).

'As a result, the ruling block considerably **"overtook"** all the oppositionists in the number of votes and won a victory'.

(40) Vozmožnosti logičeskogo sverxbystrogo perebora šaxmatnyx kombinacij pozvolili kompjuteru "Deep Blue" **obygrat'** odnogo iz čempionov mira po šaxmatam G. Kasparova. (Gorbačev, V. Koncepcii sovremennogo estestvoznanija. 2003) (RNC).

'The capacity for logical superfast enumeration of chess combimations made it possible for the "Deep Blue" computer to **beat** world chess champion G. Kasparov'.

The verbs that belong to Subcategory OUTDO are listed in Table 4 (Appendix 2). The table includes the verb *o-borot'* which is archaic but still used in Modern Russian, particularly in its participial form: e.g. *neoborimoe želanie* 'invincible, unsuperable desire'. This verb also appears in the Russian National Corpus, as illustrated with examples (41) and (42):

(41) Vot i pogreb nado by počistit', podkrepit' na zimu, da vse kak-to ne mog **oborot'** sebja. (Nosov, E. Usvjatskije šlemonoscy. 1977) (RNC)

'Here, cellar should be cleaned, fortified for winter but I just could not **force** myself to do this yet'.

(42) No s xoteniem čto delat' — s navaždeniem ètim, ne dajuščim pokoja i neotvjaznym? **Oborot'**? No ono **neoborimo** ni stolpom, ni postom (Eppel, A. Droblenyj satana. In Znamja 2001) (RNC)

But what should I do with this desire, this obsession that is so persistent and restless. **Fight**? But one cannot **overcome** it with either prayer or fasting.

Now I turn to another group of Subcategories that are motivated by the source Subcategory 2 PASS BY. They share the same image schema. As opposed to Subcategories 3 OVERTAKE and 4 OUTDO, Subcategories 5, 6, 7, and 8 focus not the "overtaking" part of the image schema but rather the "missing" part, where the Trajector deviates from the original route and takes a semi-circle-shaped path, as in Figure 9.

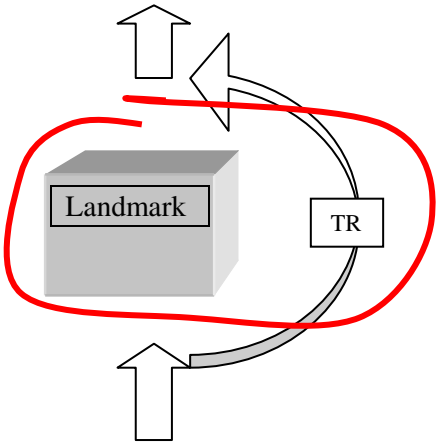


Figure 9. Image schema for the Subcategories 5, 6, 7, and 8.

Figure 9 clearly shows that the focused part of the image schema emphasizes non-contact relations between the Trajector and the Landmark, which is realized as intentional avoidance or unintentional missing of some crucial point in a situation. Subcategories 5, 6, 7 and 8 are metaphorical extensions of the spatial Subcategory 2 PASS BY.

First of all, this configuration can be found in the group of mistakes which can be further subdivided into two subcategories: Subcategory 5 MISTAKE that includes careless accidental blunders like *ob-sčitat'-sja* 'make a mistake in calculation' and Subcategory 6

DECEIVE which introduces another type of mistake made for personal gain like *ob-sčitat'* 'cheat in calculation'. Subcategory 7 OVERDO (e.g. *ob-jest'-sja* 'overeat') is related to the group of mistakes, because it implies missing the limit in some activity. Subcategory 8 METAPHORICAL PASS BY (e.g. *o-slušat'-sja* 'disobey') is small and heterogeneous. First, I turn to the group of mistakes.

Subcategory 5: MISTAKE

The verbs that belong to Subcategory 5 MISTAKE share the same word-formation pattern: they are formed via a circumfix that consists of the prefix O, OB or OBO and the postfix *-sja*. The list of verbs that belong to this Subcategory includes seven Specialized Perfectives, two Factitive Perfectives and two deetymologized verbs. They are listed in Table 5 (Appendix 2).

Subcategory 6: DECEIVE

Subcategory 6 DECEIVE includes the verbs that denote a mistake that is made on purpose, for personal gain. The verbs are presented in Table 6 in Appendix 2. Verbs #1-4 have simplex bases that denote the type of activity to which the cheating applies. Although these verbs are few, they clearly show that the meaning DECEIVE comes with the prefix. This explains why the prefix OB attaches so frequently to the simplex bases that denote cheating themselves (# 5-8) like *xitrit', žulit'* 'swindle', etc. The verbs *o-bolvan-it'* and *ob-dur-it'* 'make a fool out of someone' (# 9, 10) are Factitive Perfectives and simultaneously belong to Subcategory 15 IMPOSE / ACQUIRE A NEW FEATURE. The verbs (# 11-14) are metaphorical extensions of spatial meanings. Finally, the last two verbs *obmanut'* and *obmišulit'* 'deceive' are deetymologized.

Subcategory 7: OVERDO

Subcategory 7 OVERDO includes verbs that denote various kinds of activities. Remarkably, most of the activities on this list are basic for human beings (eating, drinking, etc). In each of these verbs the prefix means missing the limit, which is categorized as a kind of mistake. This makes Subcategory 7 OVERDO similar to Subcategory 5 MISTAKE. The two subcategories also share the same word-formation pattern: most of the verbs in Subcategory 7 OVERDO are formed via circumfix. This pattern is highly productive, so the list of verbs in Table 7 (Appendix 2) is merely a sample.

Subcategory 8: METAPHORICAL PASS BY

Subcategory 8 includes verbs that are metaphorical extensions of the spatial Subcategory 2 PASS BY but do not fit into the three Subcategories of mistakes (5, 6, 7) that I have discussed so far. The verbs that belong to this Subcategory are presented in Table 8 (Appendix 2). Most of them denote 'slander'. All the verbs except *obo-ždat'* 'wait for a while' denote harm and in this sense are related to the verbs from Subcategory 6 DECEIVE.

At this point I have completed the survey of submeanings in the top part of Figure 4 that are motivated by the meaning PASS BY. Now I will present the remaining submeanings which by contrast involve contact that affects the Landmark. These submeanings are located in the bottom part of Figure 4.

Subcategory 9: AFFECT A NUMBER OF OBJECTS

Subcategory 9 is motivated directly by the prototype. Instead of one Landmark, the Trajector affects a number of Landmarks that have the same status. The image schema of this Subcategory is presented in Figure 10.

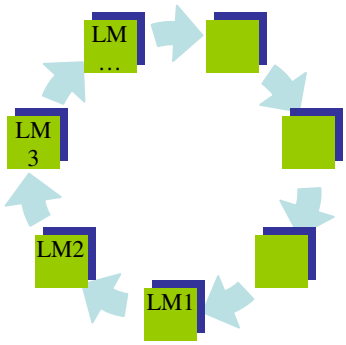


Figure 10. Image schema for Subcategory 9 AFFECT A NUMBER OF OBJECTS

The verbs that belong to Subcategory 9 are listed in Table 9 (Appendix 2). In this list there are unidirectional motion verbs (# 1-6), non-directional motion verbs (# 7-16), some verbs that denore movement but do not belong to the core set of motion verbs (#17-21), and the non-motion verbs (# 22-37).

All verbs in this subcategory are Specialized Perfectives. Two verbs are simultaneously Specialized and Factitive Perfectives (# 34, 35), because apart from the verbal bases listed in Table 9 they also have nominal bases *met(k)a* 'tag' and *dar* 'gift'. For this reason, they also belong to Subcategory 15 IMPOSE / ACQUIRE A NEW FEATURE, type GIVE X.

Subcategory 10: SURROUND, ENCLOSE

Subcategory 10 SURROUND / ENCLOSE has the same image schema as the prototype. However, the crucial difference of Subcategory 10 is that it necessarily involves contact relations between the Trajector and the Landmark and implies a significant change of the Landmark. The Trajector surrounds the Landmark and affects its edges. The direction of its impact can be different: something can get attached to the Landmark' edges (*ob-sadit'* 'plant around') or detached and removed from the edges (*ob-glodat'* 'gnaw around'). I suggest that this difference depends on the lexical meaning of the base stem but not on the prefix itself. That is why I group the verbs like *ob-sadit'* 'plant around' and *ob-glodat'* 'gnaw around' together. Interestingly, some verbs can imply both directions (e.g. *ogresti* 'rake around, away from the object or towards it'). The verbs of this Subcategory are presented in Table 10 in Appendix 2.

Apart from Specialized Perfectives that have only a verbal base (e.g. *ob-sadit'* 'plant around'), Subcategory SURROUND / ENCLOSE also includes a lot of transitional verbs that have both a verbal and a nominal base and therefore simultaneously belong to Subcategory 15: IMPOSE / ACQUIRE A NEW FEATURE, type GIVE X. For example, the verbs *ograničit'* 'limit, restrict' and *okružit'* 'encircle' can be motivated by the imperfective bases *graničit'* 'border' and *kružit'* 'circle' on the one hand and by the nouns *granica* 'border' and *krug* 'circle' on the other hand.

Subcategory SURROUND / ENCLOSE also includes a number of Factitive Perfectives that have only a non-verbal base (e.g. *o-pojas-at'* 'gird, put a belt around' from noun pojas 'belt'). Semantically, they also belong to Subcategory 15: IMPOSE / ACQUIRE A NEW FEATURE, type GIVE X. Thus, such verbs represent another transitional type closely related to the one described above.

Such transitional verbs like *ograničit'* 'limit, restrict', *okružit'* 'encircle' (SP, FP) and *opojasat'* 'gird' (FP) that simultaneously imply encirclement which affects an object and the change of an object are especially important in the model of polysemy given in Figure 4. These verbs provide a visible connection between affecting an object in the spatial domain via close encirclement and attachment or removal of some substance on its edges and affecting an object in the non-spatial domain of human emotions and relations (e.g. *obradovat'* 'make happy'). This connection makes it possible to explain later in this chapter how the Natural and Factitive Perfectives are integrated in the same semantic model.

Now I turn to the verbs that denote activities which affect a Landmark not on the edges but on the entire surface (Subcategory 11: AFFECT A SURFACE) or all over, on all its sides (Subcategory 12: ENVELOP). These two subcategories are so closely related to each other, that many verbs simultaneously belong to both of them. For example, the verb *o-bryzgat'* 'splash, besprinkle' can imply that only one side of an object is affected or that it is splashed with some substance all over. So, these two subcategories form a continuum, rather than two separate groups.

Subcategory 11: AFFECT A SURFACE

For this Subcategory it is crucial that the Landmark is a surface, to which some substance (Trajector) gets attached or removed from. Simularly to the previos related Subcategory SURROUND / ENCLOSE, the verbs that denote affecting a surface can imply attachment of some substance to the surface (e.g. *ob-pačkat'* 'dirty the entire surface'), removal (e.g. *ob-tesat'* 'hewall the surface', *obo-drat'* 'strip, peel') and even both. For example, the verb *obbit'* in different contexts means 'cover with' (e.g. *obbit' steny derevom* 'cover walls with wood') and 'remove by beating' (e.g. *obbit' štukaturku* 'remove plaster'). I suggest that the direction of the activity here is not the contribution of the prefix but rather a part of the lexical meaning of the simplex base.

This Subcategory is very productive and includes 145 perfective verbs. Most of them are given in Table 11 (Appendix 2). The vast majority are Specialized Perfectives but many verbs have an additional non-verbal base and can be interpreted as Factitive Perfectives (# 62 – 89). There are also eleven Factitive Perfectives that lack any verbal base (#90-101). Thus, a lot of verbs in this group simultaneously belong to Subcategory 15: IMPOSE / ACQUIRE A NEW FEATURE, types MAKE X (e.g. *o-grjaznit'* 'make dirty' from adjective *grjaznyj* 'dirty') and GIVE X (e.g. *o-mylit'* 'cover with soap' from noun *mylo* 'soap'). These transitional verbs provide a conceptual link between spatial and non-spatial meanings of the network and suggest that the two semantic domains proposed by the Split Hypothesis are systematically related.

Subcategory 12: ENVELOP

Subcategory ENVELOP differs from the previous Subcategory AFFECT A SURFACE only in that the Landmark here is a three dimensional object and it gets affected from all the sides and all the surfaces (e.g. *ob-žarit'* 'fry all over, on both sides'). The verbs that belong to this subcategory are numerous. Most of them are listed in Table 12 in Appendix 2.

Subcategory 13: METAPHORICAL SURROUND

This Subcategory is a metaphorical extension of Subcategory 10 SURROUND. It includes verbs that attach a prefix to a stem with a non-spatial meaning like *dumat'* 'think', *risovat'* 'draw, paint', *l'stit'* 'flatter, etc. The verbs are presented in Table 13 in Appendix 2.

Subcategory 14: METAPHORICAL ENVELOP

This subcategory is metaphorically related to the spatial ENVELOP and includes the verbs like *ob-lajat'* 'bark at someone a lot', *ob-lelejat'* 'cherish, treat gently all the time and please someone in all possible ways', *ob-vorovat'* 'steal everything', etc. listed in Table 14 (Appendix 2). These verbs show that many non-spatial activities can be conceptualized in Russian similar to spatial ENVELOP: an object gets "attacked" from all sides, as if the activity can wrap it all over. Since the metaphorical coverage, or wrapping, of the object is complete, it realizes here as especial intensity of activity. For example, the verb *ob-lajat'* does not mean just 'bark at someone' but rather 'bark at someone a lot'. Similarly, the verb *ob-vorovat'* implies that all the valuable belongings were stolen, not just one or two.

Example (43) illustrates how spatial ENVELOP serves as a source domain for this metaphorical extension:

(43) Slovom, v detstve ja byl i **oblelejan**, i **oblizan**. (V. Astafjev. Zrjačij posox (1978-1982) (RNC).
When I was a kid, I was **cherished** and **treated with care** (literally lick-all-over-PAST.PASSIVE.).

Subcategory 15: IMPOSE / ACQUIRE A NEW FEATURE

This meaning is very frequent and can be expressed both by the verbs that denote a spatial change (e.g. *ob-maslit'* 'cover with oil') and by the verbs that denote a non-spatial change (e.g. *o-bodrit'* 'cheer up'). Subcategory IMPOSE / ACQUIRE A NEW FEATURE is mostly represented by Factitive Perfectives (*o-bedn-it'* 'impoverish' from bednyj 'poor' (adj.)) and transitional verbs that can be interpreted both as Factitive and Specialized Perfectives (e.g. *o-bogatit'* 'enrich' motivated with *bogatit'* 'enrich' (verb) or *bogatyj* 'rich' (adj.)). However, a non-verbal base is not necessary for a verb to express this meaning and Specialized Perfectives can belong to this subcategory even though they lack it (e.g. *ob-vjalit'* 'jerk all over').

Within this subcategory I distinguish among four subtypes according to semantic relation between the perfective verb and its simplex base:

15-A: MAKE X: *o-bolvan-it'* 'make a fool of someone' from *bolvan* 'fool' (noun)
o-glup-it' 'make stupid' from *glupyj* 'stupid' (adj.)
15-B: BECOME X: *ob-večer-et'* 'become dark' from *večer* 'evening' (noun)
o-glupet' 'become stupid' from *glupyj* 'stupid' (adj.)
15-C: GIVE X: *ob-vin-it'* 'accuse' from *vina* 'guilt' (noun)
15-D GET X: *obo-mš-et'* 'be covered with moss' from *mox* 'moss' (noun)

The subtypes MAKE X – BECOME X and GIVE X – GET X are symmetric and systematically related to each other. The subtypes MAKE X and BECOME X also include groups of verbs that I call MAKE WITHOUT X (*o-bez-denež-it'* 'deprive of money') and BECOME WITHOUT X (*o-bez-denež-et'* 'run out pf money'). Although the two formants *o* and *bez* are often treated in such verbs as one prefix OBEZ (Švedova et. al. 1980: §893), I consider them as separate prefixes due to the verbs like *obezumet'* 'lose one's head, senses' which can be motivated not only with the prepositional phrase *bez uma* 'without mind' but also with the imperfective verb *bezumet'* 'lose one's head'.

The verbs that belong to different subtypes of Subcategory IMPOSE / ACQUIRE A NEW FEATURE are presented in Tables 15-20[22] in Appendix 2.

Summing up this discussion, I have shown that both spatial and non-spatial meanings that might seem so different and distant from each other are incorporated into one semantic network and can be accounted for within the model of meaning that I propose. Crucially, Figure 4 and Tables of verbs for each subcategory demonstrate that all the submeanings are attested for each of the three prefixes in question. This fact serves as a good evidence for close connection between O, OB and OBO.

At the same time, the three prefixes can differ in terms of productivity across attested submeanings. In other words, a prefix can be closer associated with one part of the network and be less likely to occur in another part of the same network. This property of a prefix can be measured by calculating a relative frequency of the prefix in each subcategory as suggested by the methodology of Radial Category Profiling (Nesset & Janda & Baydimirova forthcoming).

In order to apply this methodology to corpus data, all verbs that exhibit semantic contribution of the prefix should be taken into account. So far, I have only addressed Specialized and Factitive Perfectives that do not overlap with Natural Perfectives. Now I

[22] This Subcategory is the largest of all fifteen subcategories in the network. Within this thesis it was not possible to list all the verbs of this subcategory in the tables. However, all verbs were accounted for in Table 7 and the overall statistical analysis presented in Subsection 3.5.

address the issue of semantic "emptiness" of O, OB and OBO in Natural Perfectives and show that these data should be used in Radial Category Profiling too.

3.4. The Overlap Hypothesis: behaviour of Natural Perfectives

In this subsection I test the Overlap Hypothesis (Vey 1952; Schooneveld 1958; Janda & Nesset forthcoming a), which argues that aspectual prefixes in Russian are never semantically empty and that the "emptiness" of a prefix in Natural Perfectives is an illusion due to conceptual overlap between the semantics of the prefix and the lexical meaning of the verbal stem.

I compared the meanings attested for O, OB and OBO in Specialized and Factitive Perfectives ('non-empty' uses) with the meanings of Natural Perfectives where the prefixes O, OB and OBO are traditionally assumed to be semantically "empty" (Švedova et al. 1980: 583, §1389, Zaliznjak & Šmelev 2000: 82). My analysis shows that all the subcategories found among Natural Perfectives are those that were attested for 'non-empty' uses of these prefixes in Specialized and Factitive Perfectives. In other words, Natural Perfectives share the same semantic network that was presented in Figure 4. Interestingly, Natural Perfectives cover most of the submeanings attested for Specialised and Factitive Perfectives: only four Subcategories PASS BY, OVERTAKE, OUTDO and METAPHORICAL PASS BY are not covered. Figure 10 demonstrates the result of the analysis. The shaded boxes contain the meanings that were found among Natural Perfectives. Each meaning is accompanied with one example. Full lists of verbs for each subcategory are given in tables in Appendix 2.

One verb deserves a special discussion. It might be not obvious why the Natural Perfective *ob-men'at'(sja)* 'exchange' appears in the prototypical Subcategory MOVE AROUND AN OBJECT. I suggest that the meaning of this verb can be described in terms of a circle and visualized as in Figure 11:

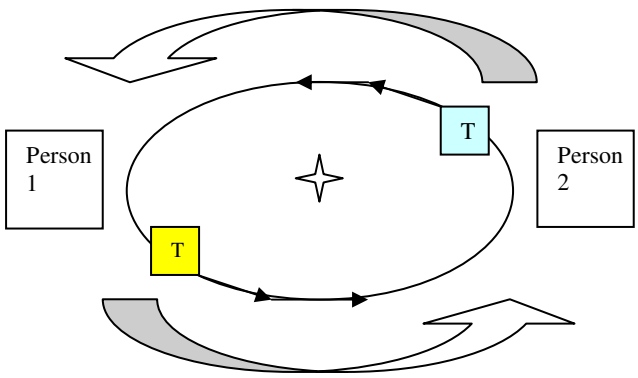


Figure 11. Image schema for the Natural Perfective verb *ob-men'at'(sja)* 'exchange'.

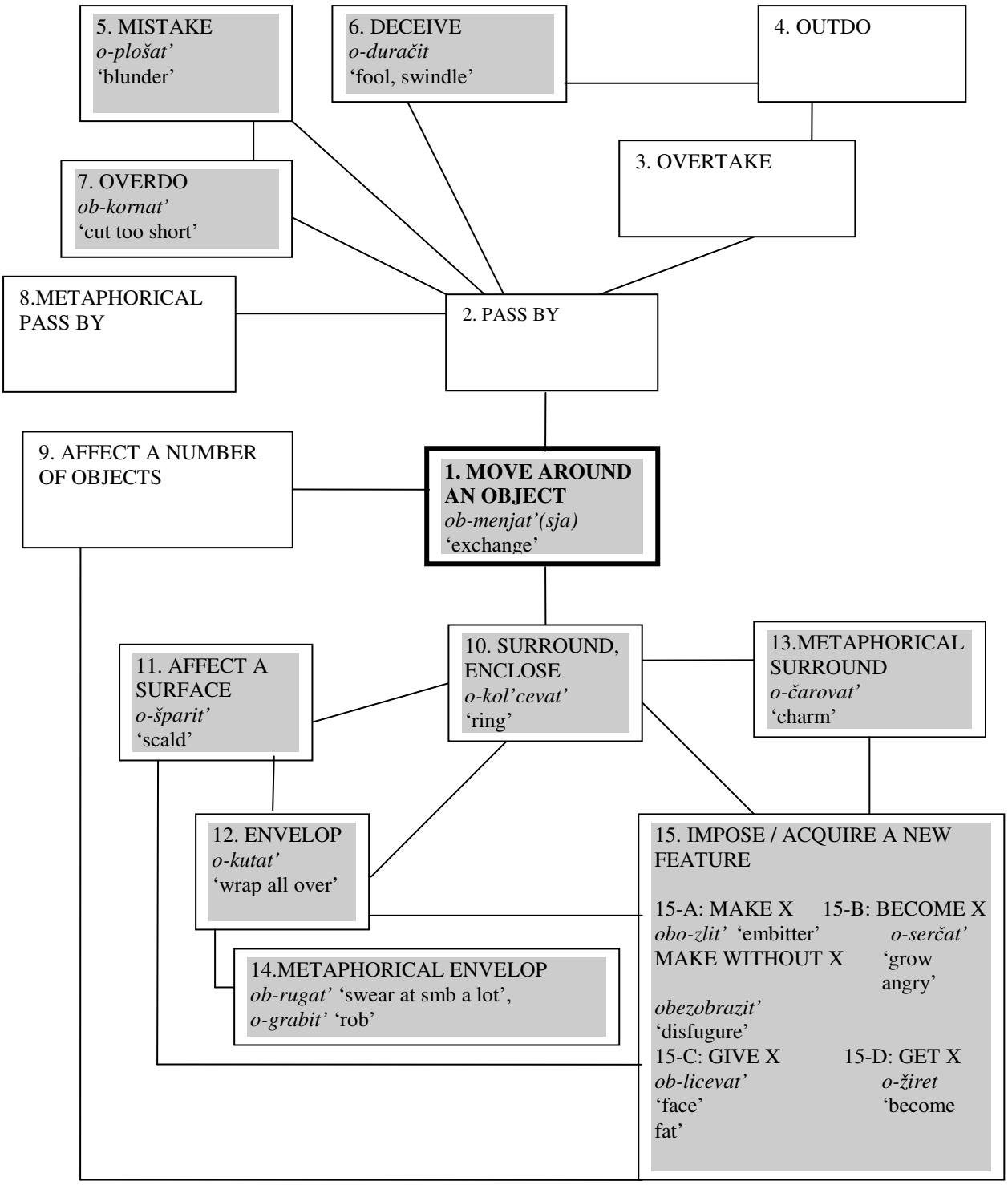


Figure 10. Radial category network for Natural Perfectives prefixed with O, OB and OBO.

The verb *ob-men'at'(sja)* 'exchange' describes a situation where two people exchange two objects (Trajectors). The objects here are the Trajectors that move from one owner to the other. The trajectory of each object is a semicircle made with respect to the center of the circle (the Landmark). The trajectories of the two objects create a circle of exchange. Thus, the notion of exchange is conceptualized in Russian in terms of a movement along a circle-shaped trajectory. In this sense, the verb *ob-men'at'(sja)* 'exchange' fits into the prototypical

subcategory MOVE AROUND AN OBJECT though it does not belong to its most prototypical members.

Another crucial thing about Natural Perfectives that should be discussed here is their relations with Factitive Perfectives. Recall that many Specialized Perfectives described in Subsection 3.3. had multiple motivations and could be simultaneously interpreted as Factitive Perfectives due to additional non-verbal base. The same transitional type of verbs is attested for Natural Perfectives but here it is even more frequent than it was for Specialized Perfectives:

{NP, FP} >> {NP} vs. {SP, FP} << {SP}

150 >> 44 vs. 183 << 406

77.3% of all Natural Perfectives can be multiply motivated and interpreted as Factitive Perfectives as opposed to 31% of such transitional verbs among Specialized Perfectives.

This explains why the vast majority of Natural Perfectives (86.6%) belong to semantic Subcategory IMPOSE / ACQUIRE A NEW FEATURE. Most of Natural Perfectives that belong to this subcategory denote a non-spatial change of an object (e.g. *osvežit'* 'refresh', *okrepnut'* 'become stronger'). By denoting a non-spatial change, these verbs at the same time are closely related to spatial subcategories of the network: a non-spatial change here is a metaphorical extension of the spatial Subcategories ENCIRCLE/ENCLOSE, AFFECT A SURFACE or ENVELOP which imply a change of an object via spatial enclosure or affecting its surface(s) (e.g. *okol'cevat'* 'ring', *ocarapat'* 'scratch', *oblupit'* 'chip off the outer cover'). Thus, even those Natural Perfectives that do not refer to any spatial modification of the Landmark are incorporated in the same semantic network as other perfective verbs prefixed with O, OB and OBO. In case of metaphorical extensions the semantic contribution of the prefix becomes relatively abstract and therefore less perceptible when compared to the simplex verbal base. Moreover, the simplex verbal bases of Natural Perfectives already have the meaning IMPOSE / ACQUIRE A NEW FEATURE (*pečalit'* 'sadden' – *o-pečalit'* 'sadden') and this creates the illusion of a zero semantic contribution of the prefix. However, what actually takes place here is the overlap of the prefixal and simplex base's semantics which makes it possible for the verb to attach this particular prefix.

To sum up, in this section I have shown that semantically "empty" uses of the prefixes O, OB and OBO in Natural Perfectives exhibit isomorphic relations with "non-empty" uses of these prefixes. This result suggests that the choice of the prefix in Natural Perfectives is not arbitrary and is due to the semantic content of the prefix which overlaps with the lexical meaning of the simplex verbal base. This result clearly supports the Overlap Hypothesis.

Since Natural Perfectives share the same radial category of meanings as that of Specialized and Factitive Perfectives, all three types of perfective verbs are relevant for the Radial Category Profiling and can serve as the data to test the Split Hypothesis.

3.5. The Split Hypothesis: Radial Category Profiling and statistical analysis

In this subsection I address the Split Hypothesis. First, I present the results of the Radial Category Profiling and then I turn to the results of the statistical analysis.

Table 7 presents the distribution of the prefixes across different subcategories. Each verb is counted as many times as many subcategories it represents. Relative frequencies of the prefixes show that OB is clearly most preferable in Subcategories MOVE AROUND AN OBJECT, DECEIVE, OVERDO, AFFECT A NUMBER OF OBJECTS, ENVELOP and METAPHORICAL ENVELOP. The prefix O is the most frequent in Subcategory IMPOSE / ACQUIRE A NEW FEATURE. For Subcategories SURROUND / ENCLOSE, AFFECT A SURFACE and METAPHORICAL SURROUND both O and OB are very frequent.

#	Subcategory		O	OB	OBO	SP	NP	FP	Total number of entries without deetymol. verbs
1	MOVE AROUND AN OBJECT		4	13	1	17	1	0	18
2	PASS BY		2	6	2	10	0	0	10
3	OVERTAKE		1	1	2	3	0	1	4
4	OUTDO		3	4	1	8	0	1	8
5	MISTAKE		8	1	1	6	1	3	10
6	DECEIVE		4	12	1	13	3	4	17
7	OVERDO		5	23	2	28	2	7	30
8	METAPHORICAL PASS BY		4	1	3	8	0	1	8
9	AFFECT A NUMBER OF OBJECTS		6	30	1	37	0	2	37
10	SURROUND/ENCLOSE		26	34	2	50	4	18	62
11	AFFECT A SURFACE		91	81	4	127	31	73	176
12	ENVELOP		10	63	2	86	12	20	75
13	METAPHORICAL SURROUND		14	16	2	30	2	7	32
14	METAPHORICAL ENVELOP		4	30	3	34	4	1	37
15	IMPOSE / ACQUIRE A NEW FEATURE	MAKE X	188	39	1	76	37	180	228
		BECOME X	153	28	2	53	74	162	183
		GIVE X	112	41	1	64	25	154	154
		GET X	25	4	1	7	11	30	30

Table 7. Distribution of the prefixes O, OB, OBO across semantic subcategories.

Generally, this conforms to the main prediction of the Split Hypothesis that O and OB refer to different semantic domains: factitive and spatial meanings respectively. On the other hand, these data show a large overlap in the use of these prefixes both in spatial and factitive meanings and this fact presents a challenge for the Split Hypothesis.

Apart from the distribution of the prefixes across semantic subcategories, the corpus data were tested according to possible factors that could determine the choice of the prefix. In order to explore how the various factors predicted the choice among the prefixes O, OB and OBO, an ordinal linear regression model was designed[23]. The dataset for this model included 854 perfective verbs from the corpus O,OB,OBO-database described in Subsection 3.2. Each verb in this dataset had either verbal or adjectival or nominal base or any combination of these three. Each verb was specified according to the prefix it attached.

In order to carry out an ordinal regression model analysis, the options must be ordered from least to most (Bayen 2008: 208). The prefixes were ordered as follows: O < OB < OBO, because O is the shortest (and the least problematic), OB is longer and OBO is the longest.

All possible factors were taken into account:

Base: verb, adjective, noun, ambiguous (for multiple motivation)
Corpus frequency: number of entries attested in the Russian National Corpus
Onset type: cluster onset vs. single consonant onset
Onset Place of articulation: labials, dentals, alveopalatals, velars[24]
Onset Manner of articulation: sonorants, stops, fricatives, affricates
Stress of Target verb: stem, theme-vowel, other (e.g. *idtI*)

The statistics software package R was used. The analysis was carried out several times until the statistically significant factors were found. The base and onset manner of articulation were found to be highly significant factors in the prefixes' distribution (C =.842; R2 =.451). Other factors were not significant. The results for **base** were Chi-Square = 170.04, degrees of freedom = 3, p-value < .0001; for **onset manner of articulation**: Chi-Square = 153.77, degrees of freedom = 3, p-value < .0001. More details on the statistical analysis are given in Appendix 10. Crucially, both the verbal base and the onset sonorant manner of articulation were strong determiners of prefix in corpus data. These results conform to the predictions of the Split Hypothesis.

When the statistical analysis captures and evaluates the major tendency observed in the lexicon, there still can be found specific counterexamples that contradict the predictions of the Split Hypothesis. For example, the verbs *okol'cevat'* 'encircle', *okružit'* 'surround', *ogorodit'* 'fence around' clearly belong to the spatial semantic domain. According to the Split Hypothesis, their simplex bases provide non-problematic phonological environments, where the prefix OB is expected to attach. However, the prefix O is preferred here.

[23] The statistical analysis of the corpus data was conducted by Laura A. Janda. My contribution here consists in providing the data and reporting on the results of the analysis. All the shortcomings are my alone.
[24] In classification of Russian consonants across these values I followed Timberlake 2004. The same is true for the values of the factor Onset Manner of articulation.

3.6. Summary

In Chapter 3 I have tested The Split Hypothesis and the Overlap Hypothesis against the lexical data.

First, I have shown that the two semantic domains that were presented in the Split Hypothesis as distant and unrelated to each other can be analysed as parts of a single semantic network. I have demonstrated that spatial and non-spatial meanings of the prefixes O, OB and OBO can be naturally incorporated into one model. The link between the spatial and factitive meanings is provided here by the metaphorical extension: spatial change of an object via surrounding, coverage or envelopment serve as a source domain for the non-spatial change in target domains of human emotions and behavior. The link between the spatial and factitive subcategories is provided by a large number of transitional verbs with multiple motivations. Crucially, each of the three prefixes is attested for all fifteen submeanings of the network. At the same time, O, OB and OBO are represented in this radial category not equally and exhibit different Radial Category Profiles. Statistical analysis has shown that the simplex base type and the onset manner of articulation are two statistically significant factors that determine the choice of the prefix in corpus data. Although this result conforms to the major prediction of the Split Hypothesis, there are specific counterexamples that challenge its predictions.

In this chapter I examined three types of perfective vebs. Natural Perfectives were found to share the same network as Specialized and Factitive Perfectives. This result clearly supports the Overlap Hypothesis and suggests that the choice of the prefix in Natural Perfectives is not arbitrary but due to its semantic content.

Chapter 4

Experiment design

In the previous chapter I showed how the Split Hypothesis was tested against Modern Russian lexical data collected from the Russian National Corpus and Grammatical Dictionary of the Russian Language (Zaliznjak 2009). I have demonstrated that the semantic distribution of the prefixes O, OB and OBO can be accounted for within a unified model of their polysemy. At the same time, I have shown that the Split Hypothesis' predictions do capture strong tendencies observed in the lexicon, but fail to account for a number of counterexamples (e.g. *okol'cevat'* 'encircle', *okružit'* 'surround', *ogorodit'* 'fence around' etc.). The Split Hypothesis relates this inconsistency of the data to the possibility that some prefixed verbs might be generated before the morphological split (Krongauz 1998: 147). Then a question arises, whether the Split Hypothesis can account better for the active mechanisms in the Russian speakers' grammar. Are the contemporary active patterns of word production more consistent and regular than those that are preserved in the lexicon? Does the generation of novel words by modern speakers of Russian provide any evidence in favor of the morphological split or against it? In order to test the Split Hypothesis from this perspective, a psycholinguistic experiment was run. First, I carried out a pilot study in order to test my experimental items and method of administration. The pilot study revealed some possible problems which were corrected before the experiment was run. It was carried out on sixty subjects in March and April, 2010. This chapter describes the design of the experiment, while Chapter 5 reports on its results.

The present chapter is organized as follows. Since the Split Hypothesis and its predictions have already been presented in Chapter 2 (Subsection 2.3.), here I specifically focus on how they were addressed and tested in my experiment. First, I discuss the experimental goals and how they are reflected in the experimental materials (Subsection 4.1.). Here I describe the three factors that can influence the choice of the prefix, explain how the experimental tasks were constructed, and discuss the three types of questionnaires and nonce word methodology used in the experiment. Next, I address the structure of the questionnaires (Subsection 4.2.), the role of real words (Subsection 4.3.) and report on the crucial changes of the experiment design made on the basis of the pilot study (Subsection 4.4.). The following Subsection 4.5. discusses the ordering of the experimental items. Then, Subsection 4.6.

introduces the subjects that participated in the survey. Here I demonstrate that the group of subjects was well-balanced in terms of major psycholinguistic criteria, namely gender, age and educational background. I also show how any possible effect of these factors was minimized by equal distribution of the three questionnaire types among the groups of subjects. Finally, Section 4.7. provides a summary of this chapter.

4.1. Experimental goals and experimental materials

The goal of the experiment was to test the predictions of the Split Hypothesis against the actual word production of the Russian native speakers. The main idea of the experiment was to look at the choice of the prefix under fixed conditions set according to the three possible factors: semantics (spatial vs. factitive meaning), phonology (the initial phoneme of the simplex stem) and prosody (place of stress in the simplex base). In this subsection I explain how these three conditions were isolated and addressed separately in the experiment. They became the three major variables that determined the design of the experimental materials. First, I discuss the semantic factor and then turn to the phonological factor. Finally, I approach a possible stress effect that was discovered in the study of the database but was never mentioned neither within the Split Hypothesis, nor in other literature on the prefixes in question.

4.1.1. Factor 1: Semantics

Recall from the previous discussion that the Split Hypothesis predicts a significant difference in the distribution of the prefixes O, OB and OBO depending on the semantics of the target verb. The prefix OB is expected to be the default prefix for verbs with the spatial meaning, while the prefix O has this status in verbs denoting the acquisition or imposition of a new quality. Crucially, the Split Hypothesis claims that it is semantics that determines the main distinction. Further distribution of the allomorphs is phonologically motivated within these two semantic domains.

In order to test whether semantics is truly a significant factor in the distribution of the prefixes, several important measures were taken. First of all, the two semantic domains proposed by the Split Hypothesis were narrowed down to more specified meanings. The reason for this measure is that the two semantic domains suggested by the Split Hypothesis are too broad and heterogeneous. The semantic analysis presented in the previous Chapter 3 has shown that each of them refers to the entire group of meanings. In particular, spatial meanings include Subcategories MOVE AROUND AN OBJECT, PASS BY, AFFECT A

NUMBER OF OBJECTS, SURROUND, AFFECT A SURFACE and ENVELOP. Some of these Subcategories also serve as source domains for various metaphorical extensions which belong to the spatial semantics but are marginal and less obvious (OUTDO, OVERDO, MISTAKE, DECEIVE, METAPHORICAL PASS BY, METAPHORICAL SURROUND, METAPHORICAL ENVELOP). The other semantic domain generally identified by the Split Hypothesis is the acquisition or imposition of a new quality, which is not homogeneous either. Apart from Factitive Perfectives that alone include several groups (MAKE X, BECOME X, GIVE X, GET X), there are also many non-Factitive Perfectives that belong to this large domain (e.g. *o-žit'* 'revive, be resurrected', *o-plyt'* 'become swollen', *o-kočenet'* 'become numb'). Moreover, my semantic analysis in Chapter 3 has shown that the meaning 'acquisition or imposition of a new quality' is related to the spatial meaning and overlaps with it considerably. A large number of verbs simultaneously belong both to one of the spatial Subcategories SURROUND, AFFECT A SURFACE, ENVELOP and one of the factitive Subcategories MAKE X, BECOME X, GIVE X and GET X (e.g. *okol'cevat'* 'encircle, place a ring on', *okružit'* 'surround' (SURROUND & GIVE X); *oblyset'* 'become bald', *obrumjanit'* 'make rosy, ruddy' (AFFECT A SURFACE, MAKE X). The transitional status of such verbs is supported with multiple motivations which relate them to both Natural and Factitive perfectives (*okol'cevat', oblyset'*) or to both Specialized and Factitive Perfectives (*okružit'*, *obrumjanit'*).

For the purposes of the experiment, the number of variables had to be limited. As a result, the two broad semantic domains proposed by the Split Hypothesis were narrowed down to the two subcategories that are central for each semantic domain. The subcategory MOVE AROUND AN OBJECT was taken as the most prototypical of all spatial meanings. The other domain was represented by Subcategory MAKE X[25].

In order to achieve a clear contrast between these two Subcategories, all the transitional type of verbs that simultaneously denote covering/wrapping and change of the object were avoided. Subcategory MAKE X was taken in its metaphorical domain of feelings and emotions, personal features of character and food preferences. Accordingly, the two Subcategories were contrasted in terms of word-formation patterns. Subcategory MOVE AROUND AN OBJECT is clearly represented in motion verbs that have simplex verbal bases

[25] Recall that many verbs that belong to Subcategory GIVE X according to their semantic relations with the simplex base at the same time semantically belong to Subcategory MAKE X (e.g. *odarit'* 'give a present', *obvinit'* 'accuse, assign guilt'). The other two Subcategories BECOME X and GET X mirror the Subcategories MAKE X and GIVE X respectively. The subgroup MAKE WITHOUT X which belongs to MAKE X was not included in the experiment.

(*ob-''exat'* 'drive around' < *exat'* 'drive-VERB'), while Subcategory MAKE X is most clearly exhibited in factitive verbs that have only adjectival simplex bases (*ob-legč-it'* 'lighten, facilitate' < *legkij* 'light, easy-ADJ.')[26].

In order to address this semantic and word-formation distinction, two types of questionnaires were designed[27]. Each questionnaire contained sixty-two stimuli presented in the form of short narratives. Each narrative was preceded by a real or nonce word with its short definition. The subjects were asked to generate a perfective verb prefixed with O, OB, or OBO on the basis of the given simplex stem. The subjects had to read both the definition and the narrative out loud, generate the prefixed verb and fill in the blank. The two types of questionnaires differ in terms of the simplex base they suggested. In the first type (Questionnaires A/B), the simplex base was a motion verb and the task was to generate a prefixed motion verb with the meaning MOVE AROUND AN OBJECT. The meaning was specified via the immediate context in each narrative. In the other type (Questionnaire C), the simplex base was an adjective and therefore the task was to generate a prefixed factitive verb with the meaning MAKE X. This meaning was suggested by the immediate context within the narrative. Each type of questionnaire contained either only verbal bases or only adjectival bases. Each base served as a stimulus only in one experimental task. The experimental items from the two questionnaire types are illustrated in (44) and (45):

(44) Questionnaire type A/B:

Lusit' – tixon'ko peremeščat'sja v svoje udovol'stvije.
Čto možet byt' lučše, čem poutru vylit' sebe na golovu v vannoj vedro ledjanoj vody, …… razok-drugoj vokrug stadiona, pozavtrakat' ovsjanoj kašej, a zatem spešit' na rabotu, ulybajas' jarkomu solnečnomu dnju, kotoryj tak prijatno načalsja.

Lusit' (VERB) – move along at a comfortable pace.
What can be better than to pour a bucket of ice water over your head in the morning, …….. around the stadium one or two times, eat oat meal for breakfast, and then hurry off to work smiling at the sunny day which has started so well.

(45) Questionnaire type C:

Lusyj – ne sposobnyj est' rybu.
V detstve Viku tak mnogo kormili ryboj, čto v rezul'tate …… ee, tak čto teper' na rybu ona smotret' ne možet.

[26] This generalization on Subcategory MAKE X corresponds to how factitive verbs are usually defined (Townsend 2008: 143).
[27] In total, I used three types of questionnaires. I refer to them as Questionnaires A, B and C. Here I discuss the major semantic distinction (Questionnaires A/B vs. Questionnaire C). I introduce an additional distinction (Questionnaires A vs. B) in discussion of a possible stress effect in Subsection 4.1.3.

Lusyj (ADJ.) – not able to eat fish.
When Vika was a kid, they fed her so much fish that they …….. her, and now she cannot even look at fish.

Thus, the meaning of the target prefixed verb in each questionnaire type was specified by both the word-formation pattern (verbal or adjectival simplex base) and the lexical context of the item. The target meaning was also supported by the definition that accompanied each nonce word. Moreover, the target meaning was suggested in the preliminary examples that preceded the experimental trial, and by a number of control items included in the experiment.

According to the predictions of the Split Hypothesis, the motion verbal bases were expected to trigger the morpheme[28] OB, while the adjectival qualitative bases were expected to trigger the morpheme O. The pattern of allomorphic deviation from the default variant of each morpheme was tested by varying phonological shape of the simplex bases. Now I turn to the factor which, according to the Split Hypothesis, determines the choice of the allomorph within the two separate morphemes.

4.1.2. Factor 2: Phonology

In order to test the major semantic factor properly, one should be aware that the expected contrast between O and OB does not occur in all possible phonological environments. In this subsection I address the allomorphic variation as it is proposed in the Split Hypothesis and explain how I test it in my experiment.

As shown in Chapter 2, both O and OB have problematic contexts where they are less likely to appear or cannot appear at all. O cannot attach to a vowel-initial simplex stem and is very unlikely to occur in front of sonorants and the labiodental *v*. For OB, the problematic simplex stems are those that start with an obstruent labial (*b* or *p*) or with a consonant cluster which is not compatible with the preceding *b* or contains an underlying yer. Recall that according to this distribution the Split Hypothesis suggests a hierarchy of positional allomorphs for each of the two morphemes.

For the morpheme OB, the hierarchy is OB >> OBO >> O, where OB is the default and most frequent allomorph, followed by OBO which is restricted to particular types of consonant clusters and last O, which can only occur in front of labials *b* and *p*. In the latter case, OB can occur too, but O is preferable.

[28] Here I use the term *morpheme* according to the major claim of the Split Hypothesis. The term *morpheme* here does not imply that the default variant will surface (OB with all motion verbal bases and O with all adjectival bases). The surface realization of the morpheme is influenced by the phonological environment and allomorphic variation.

According to the Split Hypothesis, the morpheme O has the same set of allomorphs, but they have different status in the hierarchy: O >> OB >> OBO. Here, O is most expected in front of any consonant-initial stem, accept those that start with a sonorant or *v*, where O is most often replaced by OB. O does not occur in front of a vowel-initial stem. OBO is a highly restricted allomorph here. It can appear only in front of a stem-initial consonant cluster that starts with a sonorant or *v* and is nor compatible with preceding *b*.

In order to test the distribution of O, OB and OBO according to these patterns within each semantic domain, forty-six nonce roots were generated. The set of the nonce roots was the same for each questionnaire type. The only difference was that in Questionnaires A/B they were morphologically shaped as verbs, while in Questionnaire C they were shaped as adjectives (e.g. *lus-it'* (VERB) vs. *lus-yj* (ADJ.)). In order to limit the number of variables, all the nonce roots were monosyllabic (e.g. *lus-*, *znup-*, *bost-*). Most importantly, they differ from each other in terms of the type of onset. Thirty-eight nonce roots have simple onsets, and eight nonce roots have complex bi-consonantal onsets.

Vowel-initial words were not included in the experimental materials, because they do not trigger any distribution or variation between O, OB and OBO that would depend on the semantic domain: only OB occurs in this environment (e.g. *ob-yskat'* 'search everywhere' (SP, ENVELOP); *ob-utret'* 'turn into morning' (FP, BECOME X)).

The initial phonemes of the nonce roots represent the entire inventory of Russian consonant phonemes except 1) the phoneme *f*, which is never preceded by *b* (Roberts 1981: 72; Andrews 1984: 478), and 2) the soft paired consonants (e.g. *b', t', m'*, etc.). The latter were excluded, because this would nearly double the number of experimental items, which must be limited in such a survey. The soft pairless consonants that do not have a hard phonemic counterpart (*j, č, šč*) were included in the experiential materials. Since most initial consonants of the nonce roots are hard, the vowels that follow them are non-front *a*, *o* and *u*. Each simple onset was represented with two nonce roots. Only the consonants *c* and *šč* are represented with one nonce root. Cluster-initial nonce roots are represented with one example each, eight roots in total.

All the nonce words used in the experiment are listed in alphabetical order in Table 1. Simplex and complex onsets are listed separately; the latter are placed at the bottom of the table. The second column of Table 8 shows the onset of the simplex base. The third and the fifth columns list all the nonce adjectival and verbal stimuli respectively, while the fourth and the sixth columns list the expected responses.

The shaded fields in Table 8 indicate the problematic onsets that trigger an allomorphic variation, where a non-default allomorph is expected. The allomorph that is possible but less expected is put in parenthesis (e.g. *o-bostit' (ob-bostit'*)). The stem-initial sonorants and *v* are problematic for O, while stem-initial *b* and *p* are problematic for OB.

The non-shaded fields in Table 8 indicate the nonce words with simple onsets where a clear contrast between the morphemes O and OB (and their allomorphs O and OB) is expected. In a neutral phonological environment, the allomorphs O and OB are expected to exhibit complementary distribution.

#	C	adj-base	expected perfective verb	verb-base	expected perfective verb
1	b	bostyj	o-bostit'	bostit'	o-bostit' (ob-bostit')
2	b	buklyj	o-buklit'	buklit'	o-buklit' (ob-buklit')
3	v	vurlyj	ob-vurlit' (o-vurlit')	vurlit'	ob-vurlit'
4	v	važdyj	ob-važdit' (o-važdit')	važdit'	ob-važdit'
5	g	guzvyj	o-guzvit'	guzvit'	ob-guzvit'
6	g	gabyj	o-gabit'	gabit'	ob-gabit'
7	d	duktyj	o-duktit'	duktit'	ob-duktit'
8	d	damlyj	o-damlit'	damlit'	ob-damlit'
9	ž	žaxlyj	o-žaxlit'	žaxlit'	ob-žaxlit'
10	ž	žusklyj	o-žusklit'	žusklit'	ob-žusklit'
11	z	zopryj	o-zoprit'	zoprit'	ob-zoprit'
12	z	zupyj	o-zupit'	zupit'	ob-zupit'
13	j	jupyj	ob-jupit' (o-jupit')	jupit'	ob-jupit'
14	j	jalyj	ob-jalit' (o-jalit')	jalit'	ob-jalit'
15	k	kočlyj	o-kočlit'	kočlit'	ob-kočlit'
16	k	kampyj	o-kampit'	kampit'	ob-kampit'
17	l	lusyj	ob-lusit' (o-lusit')	lusit'	ob-lusit'
18	l	lopryj	ob-loprit' (o-loprit')	loprit'	ob-loprit'
19	m	murlyj	ob-murlit' (o-murlit')	murlit'	ob-murlit'
20	m	momlyj	ob-momlit' (o-momlit')	momlit'	ob-momlit'
21	n	nadyj	ob-nadit' (o-nadit')	nadit'	ob-nadit'
22	n	nokryj	ob-nokrit' (o-nokrit')	nokrit'	ob-nokrit'
23	p	puryj	o-purit'	purit'	o-purit' (ob-purit')
24	p	patlyj	o-patlit'	patlit'	o-patlit' (ob-patlit')
25	r	roglyj	ob-roglit' (o-roglit')	roglit'	ob-roglit'
26	r	ražnyj	ob-ražnit' (o-ražnit')	ražnit'	ob-ražnit'
27	s	saglyj	o-saglit'	saglit'	ob-saglit'
28	s	suryj	o-surit'	surit'	ob-surit'
29	t	tulyj	o-tulit'	tulit'	ob-tulit'
30	t	tovyj	o-tovit'	tovit'	ob-tovit'
31	x	xopyj	o-xopit'	xopit'	ob-xopit'
32	x	xušnyj	o-xušnit'	xušnit'	ob-xušnit'
33	c	cavyj	o-cavit'	cavit'	ob-cavit'
34	č	čupyj	o-čupit'	čupit'	ob-čupit'
35	č	čavyj	o-čavit'	čavit'	ob-čavit'
36	š	šadryj	o-šadrit'	šadrit'	ob-šadrit'
37	š	šaklyj	o-šaklit'	šaklit'	ob-šaklit'
38	šč	ščulyj	o-ščulit'	ščulit'	ob-ščulit'

39	gn	gnoryj	o-gnorit'	gnorit'	ob-gnorit' (obo-gnorit')
40	žr	žrapyj	o-žrapit'	žrapit'	obo-žrapit'
41	zn	znupyj	o-znupit'	znupit'	ob-znupit' (obo-znupit')
42	čt	čtusyj	o-čtusit'	čtusit'	obo-čtusit'
43	žg	žgavyj	o-žgavit'	žgavit'	obo-žgavit'
44	sp	spulyj	o-spulit'	spulit'	ob-spulit'
45	sk	skolyj	o-skolit'	skolit'	ob-skolit'
46	tk	tkabyj	o-tkabit'	tkabit'	obo-tkabit'

Table 8. Nonce simplex bases and expected response perfective verbs.

For the complex onsets, the contrast between O and OB is expected everywhere. The shaded complex onsets are those that are incompatible with the preceding *b* and trigger the allomorph OBO to appear (in the morpheme OB). These are *žg, čt, žr* and *tk*. The non-shaded clusters are compatible with the default OB and do not trigger OBO:

sp: *ob-sprašivat'* 'ask a lot of questions or a lot of people-IMP.'

sk: *ob-skakat'* 'gallop around-PF.'

zn[29]: *ob-znakomit'sja* 'get acquainted with many people-PF' (Efremova 2000)

gn[30]: *ob-gnit'* 'decompose-PF.', *ob-gnobit'* 'insult-PF.'

All eight clusters on their own, without the preceding *b*, are possible in Russian (McGranahan 1975: 14-15). Including the nonce words with these initial clusters in the experimental materials, I test rule (1) (cf. Subsection 2.1.). Rule 2, which refers to the lexicalized underlying yer, cannot be tested by the nonce words methodology.

As shown in Table 8, all the target verbs belong to the *-i-* morphological class. The reason for this is that the *-i-* class is dominant for the factitive verbs with the meaning MAKE X (e.g. *ogorčit'* 'embitter, *obednit'* 'impoverish', etc.) (Townsend 2008: 143). In order not to include the additional variable of verbal class in the experiment, all target verbs have to belong to the same verbal class, that is the *-i-* class. In order to achieve this, all motion verbal stimuli were designed to have the thematic vowel *-i-* and belong to the *-i-* class too: *bost-i-t'*, *čup-i-t'*, etc.

All the meanings that were assigned to the constructed nonce words are presented in Appendix 4 (Russian original) and Appendix 5 (English translation).

The nonce words methodology is widely used in modern psycholinguistic experiments as a valuable tool to test the productivity and distribution of various linguistic phenomena

[29] This means that the prefix OBO in the verbs *obo-znat'-sja* 'take someone for someone else' cannot be due to incompatibility of the cluster *zn* with the preceding *b*.

[30] This cluster was already discussed in Subsection 2.1. I suggest that the prefix OBO in the verb *obo-gnat'* 'overtake' is due to the underlying yer (cf. Rule 2 in Subsection 2.1.), which surfaces in some other forms of the same paradigm (e.g. *ob-gonju*). This means that Krongauz's generalization about the impossibility of the cluster *bgn* is incorrect.

(Makarova 2009; Rodina 2007; Gor & Chernigovskaya 2003; Harasowska 1999). Here one of the main requirements for nonce words is that they should look and sound very similar to native words and satisfy the phonotactic well-formedness constraints of the language. Nonce words with these properties represent a valuable tool for collecting reliable linguistic data. The nonce words for the present survey were generated according to a common principle, namely by means of modification of up to three phonemes in the shape of a real Russian word (Makarova 2009: 32). For example, the nonce adjective *lusyj* was made from the real adjective *lysyj* 'bald-ADJ.', the nonce verb *purit'* was made from the real verbs *burit'* 'drill' and *durit'* 'play tricks, fool'. However, this was a difficult task, because each nonce root once constructed by the slight modification of a real verb also had to resemble a real adjective, and vice versa. For this purpose, in order to make sure that the codas of the nonce roots adjacent to their morphological markers sound Russian-like and fit into its phonotactic patterns, the Reverse Dictionary of the Russian Language (Greve & Kreše 1958) was consulted.

The pilot study showed that the nonce words were recognized by most subjects as unfamiliar dialectal or archaic Russian words, which means that they meet the crucial requirement of being native-like in their phonological shape. However, some of the nonce words have been changed due to unwanted associations with real Russian words. For example, the nonce verb *dustit'*, despite the suggested definition 'move with difficulty and uncertainty on high heels' was strongly associated with the noun *dust*, which is the name of a popular household insecticide. Thus, in the pilot study the verb *dustit'* was perceived by a number of subjects in a different meaning: 'cover a surface with *dust*', which belongs not to Subcategory MOVE AROUND AN OBJECT, but rather to Subcategory AFFECT A SURFACE. For this reason, the nonce verb *dustit'* was replaced with the verb *duktit'*, which did not trigger such associations. Other results of the pilot study are discussed further in Subsection 4.4.

In this subsection I introduced the second important factor that can influence the choice of the prefix, namely the onset type of the simplex stem. I have also presented the nonce words methodology employed in the experiment. Now I turn to a third factor which was not discussed within the Split Hypothesis, but may play a role in the distribution of O, OB and OBO.

4.1.3. Factor 3: Prosody

Stress has not been addressed before, neither within the Split Hypothesis nor in other literature on the prefixes O, OB and OBO. However, in this subsection I discuss stress as a possible factor that might play a role in the distribution of these prefixes.

First, the impact of the stress pattern on the choice of the prefix was pointed out by a participant in the pilot study. Then, the stress effect was tested against a set of perfectives from the database described in Chapter 3.

To explore the distribution of stress, not all 1,041 entries of the database were used, but only the 809 entries that contain a perfective verb which preserves stress on the same syllable as it is in its simplex base (e.g. *Ezdit'* [31]'drive' – *ob-''Ezdit'* 'drive around'). This dataset contains perfective verbs with any kind of simplex base as long as they have stress on the same syllable. If a perfective verb has several simplex bases and at least one of them exhibits the same stress pattern, the verb was included in the dataset. The factitive verbs that have only a non-verbal base and differ from it in place of stress (e.g. *nOvyj* 'new-ADJ.' – *ob-nov-It'* 'renew') were rejected. Deetymologized verbs were not counted in this study either.

Additionally, in order to avoid duplicate phonological information, two types of entries were not counted. First, additional entries that differ in terms of meaning and semantic subcategory but present the same phonological word were not included in the dataset. For example, although the verb *obygrat'* has two entries in the database, it was counted only once. Secondly, pairs of perfectives that differ only in terms of transitivity (e.g. *oledenit'* 'freeze-TRANS.' – *oledenet'* 'freeze, become as cold as ice-INTRANS.' were counted as one verb.

Finally, the dataset of 809 prefixed perfective verbs was constructed. The dataset also contained all the corresponding simplex stems (bases). Each of the bases was labeled according to the number of the stressed syllable counting from the left edge of the word. For example, the base *dUmat'* 'think' was labeled "1", the base *bednEt'* 'become poor' – was labeled "2", the base *kolotIt'* 'beat' – "3", and so on. Then, I calculated the number of bases that represent each stress pattern (the pattern with the first stressed syllable, with the second stressed syllable, the third and so on).

According to my results, 237 simplex bases that form a perfective verb with one of the prefixes in question have the stress on the first syllable (e.g. *zlIt'* 'irritate'). The bases with stress on the second syllable are the most frequent of all and yield 426 items (e.g. *zabOtit'* 'trouble'). There are also 121 bases that stress the third syllable (e.g. *zolotIt'* 'gild'), nineteen bases that stress the fourth syllable (e.g. *derevenEt'* 'grow stiff, numb'), one base with stress on the fifth syllable (*kristallizovAt'* 'crystallize') and one base with stress on the sixth syllable (*xarakterizovAt'* 'characterize'). All numbers are presented in Table 9:

[31] The capital letter here indicates the vowel that carries the stress.

	1st syllable	2nd syllable	3rd syllable	4th syllable	5th syllable	6th syllable
O	98 (41.3%)	251 (58.9%)	88 (72.7%)	18	1	1
OB	118 (49.7%)	174 (40.8%)	33 (27.2%)	1	0	0
OBO	21 (8.8%)	1 (0.2%)	0 (0%)	0	0	0
total:	237 (100%)	426 (100%)	121 (100%)	19	1	1

Table 9. Distribution of the prefixes O, OB and OBO across different stress patterns.

Most importantly, Table 9 shows how many perfectives with each of the three prefixes are formed from the simplex bases of different stress patterns. In other words, it shows a correlation between the prefix and the place of the stress in the simplex base. The data is visualized in Figure 12:

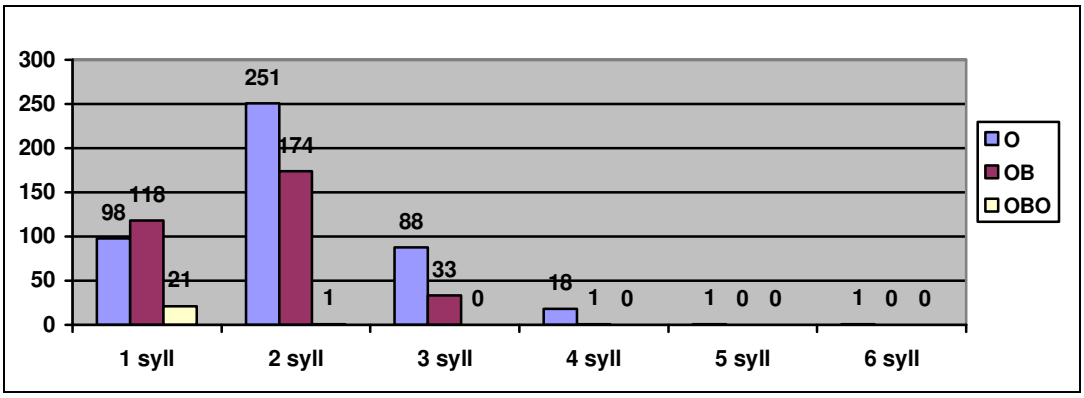


Figure 12. Distribution of the prefixes O, OB and OBO across different stress patterns.

Figure 12 demonstrates that the prefix O is more frequent compared to OB if the stem has stress on the second or the third syllable from the left. Another important fact is that the prefix OBO is attested only with stems that have stress on the first syllable. There is only one simplex base with stress on the second syllable that forms a perfective verb with this prefix: *idti* 'go, walk' – *obo-jti* 'walk around'. However, in this perfective verb the vowel *i* turns into the consonant *j*, and thus a bi-syllabic stem turns into a monosyllabic one. This follows the same tendency: only initial-syllable-stressed stems attach the prefix OBO.

Thus, the pilot study of the dataset has shown that there are certain preferences in the choice of the prefix that correlate with the place of the stress. On the basis of the pilot study I hypothesized that the place of stress might affect the choice of the prefix. This hypothesis makes three predictions:

1. The prefix OBO can attach only to the stems with the stressed initial syllable;

2. If a stem has stress on the second syllable, it is more likely to attach the prefix O than OB[32].
3. The prefix O attaches more frequently to stems with stress on the second syllable (58.9 %), than to stems with stress on the first syllable (41.3 %)[33].

Since the place of stress might be an additional factor that influences the choice of the prefix, it should be captured in the experimental design. In order to account for stress as an additional variable, all the nonce words in the experiment received a stress specification.

All nonce stimuli are bi-syllabic, so theoretically there are two options for the stress: to be on the first or on the second syllable of the stem. However, the full variety of options (the choice between the three prefixes, but not two) is available only for the former type with the stressed initial syllable (e.g. *lUsyj*, but not *lusOj*; *lUsit'* but not *lusIt'*).

For this reason, all nonce adjectives were uniformly shaped to have the first stress pattern with the initial stressed syllable. This stress pattern is suggested by their ending *-yj*, which never carries stress in Russian. This solution is the most optimal, because this pattern almost equally suggests both O and OB (cf. Figure 1). Secondly, this pattern allows the prefix OBO, so that this prefix will not be ruled out from the group of possible responses and will have all the possible chances it can have to compete with O and OBO.

In order to test the three predictions on the stress effect, the questionnaire type with verbal stimuli was split into two subtypes: Questionnaire A with stem-stressed verbal stimuli (the initial stressed syllable) and Questionnaire B with theme-vowel-stressed verbal stimuli (the second stressed syllable). Thus, the only difference between the Questionnaire types A and B is the place of stress on the nonce verbal stimuli. In Questionnaire A stress is word-initial and falls on a root (*lUs-i-t'*), while in Questionnaire B stress is word-final and falls on the thematic vowel *-i-* (*lus-I-t'*). Both stress patterns are possible in Russian for this morphological class (e.g. *krAsit'* 'paint' vs. *katIt'* 'roll').

This solution has several advantages. First, this design captures the most flexible stress pattern with the initial stressed syllable that is compatible with each of the three prefixes in question. Secondly, this design makes it possible to test each of the three predictions. Regarding the experimental design, the predictions can be reformulated as follows:

[32] This distribution cannot be attributed to the dominant majority of factitive verbs in the dataset. Among the 425 verbs that exhibit this stress pattern, there are 58 Factitive Perfectives. All the remaining perfectives have a verbal base and may also have a non-verbal base due to multiple motivation.
[33] According to the study of the dataset, the prefix OB has the opposite tendency, but the percentage difference is much smaller than for O.

(1) In Questionnaire B with theme-vowel-stressed verbal stimuli, OBO is not expected in subjects' responses;
(2) In Questionnaire B with theme-vowel-stressed verbal stimuli, O is expected to be more frequent than OB (though this prediction contradicts the semantic prediction, which should be stronger);
(3) The prefix O is expected to be more frequent in responses on Questionnaire B than in responses on the Questionnaire A.

I am aware that these predictions might not be confirmed in the experiment results, because the stress factor is the weakest in comparison to the other two factors (semantics and phonology). However, it is important to account for the place of stress in the nonce stimuli and isolate it as an additional variable.

Summing up, in this section I discussed the three factors that can influence the choice between O, OB and OBO and how I address these factors in the experiment. These three factors are the target semantics, the onset type of the simplex base and the stress pattern of the simplex base. In order to test the impact and significance of these factors, three types of questionnaires were designed: Questionnaire A with stem-stressed verbal stimuli, Questionnaire B with theme-vowel-stressed verbal stimuli, and Questionnaire C with stem-stressed adjectival stimuli. Now I turn to the structure and the content of the questionnaires.

4.2. Questionnaire design: major parts and their content

In the previous section I focused on the differences between the three questionnaire types A, B and C used in the experiment. In this section I describe what they have in common – the structure and layout.

Each questionnaire contained two examples and sixty-two tasks, which included sixteen control items with real words and forty-six experimental items with nonce words.

Original samples of the questionnaire types A and C in Russian are given in Appendices 6 and 7. Questionnaire B differs from A only in place of stress on the nonce stimuli. The translation of the front page of Questionnaire A is follows after Appendix 6.

All three types of questionnaire were designed so that they would satisfy the major requirements expected from such surveys (Dörnyei 2003; Rasinger 2008). Each questionnaire shoud consist of three parts. The first part of each questionnaire has an explanatory function. The aim is to prepare the subjects for the experimental trial, to provide them with explicit and clear instructions on the experimental task and to illustrate it with a few relevant examples.

The first part should occupy the front page of each questionnaire. It is followed by the second part, which introduces the experimental items. The third and concluding part of the questionnaire expresses gratitude for participation and provides contact information on where the final results of the survey can be obtained. Each subject should receive the experimental items in a different random order. There should be as many experimental tasks as required but the optimal lenghth of a questionnaire is the one that does not exceed the thirty-minute completion limit (Dörnyei 2003: 18). In other words, it should be possible to administer each questionnaire in not more than a half an hour. In this way, the length, structure and format of the questionnaires are made optimal for the goals of the experiment.

Here is how my questionnaire conformed with these requirements. Each questionnaire started with an introductory sentence, which provided subjects with some general information on the survey.

The next section required from the subjects some relevant personal information, namely their initials, gender, age, level of education (secondary; incomplete higher; complete higher) and profession. This section also included an explicit guarantee that all the data would be treated with complete confidentiality. Indeed, subsequently a code was assigned to each of the questionnaires in order to protect the anonymity of the subjects.

The next section provided instructions for the experimental task (see Appendix 6). The instruction section was followed by an illustration of how the task should be completed. In each questionnaire, two examples were given to show that different prefixes can be used. In both examples real Russian base words were employed. Both of them clearly allow only one of the three prefixes to be attached. In questionnaires A and B, the illustrating verbs were highly frequent verbs of motion: *idti* 'go' and *vesti* 'lead'. In questionnaire C, the base adjectives were *složnyj* 'difficult' and *ostryj* 'sharp, tense'. The verb *idti* 'go' takes only prefix OBO (*obojti*), while the verb *vesti* 'lead' can only attach the prefix OB (*obvesti*). The adjective *složnyj* attaches only O (*osložnit'* 'complicate')[34], while *ostryj* – only OB (*obostrit'* 'sharpen, strain').

At the bottom of the front page, one can find a notification that the experiment starts on the next page and that it is a good time to ask questions if there are any. The front introductory page was followed by sixty-two tasks. Each subject received the experimental items in a different random order. At the end of each questionnaire one could find the final "thank you" and an e-mail address to obtain the feedback.

[34] Here I simplify the word-formation analysis of this adjective by referring to the prefix instead of a circumfix *o…it'*.

Administrering a questionnaire took from twenty to thirty minutes. Other important aspects of questionnaire administration are addressed in Section 4.4.2.

In this section I discussed the main parts of the questionnaires and their content. Now I turn to the real (non-nonce) words that were employed in the experiment.

4.3. Real words and their role in the experiment

As mentioned above, each questionnaire contained eighteen real words: two of them were used as examples and the remaining sixteen were used as stimuli. In this section I explain why the real words were included in the experimental materials and which real words were chosen.

In each type of questionnaire, real words belong to the same part of speech as the nonce words: they are verbs in Questionnaires A and B and adjectives in Questionnaire C.

Real verbal and adjectival stimuli had two important roles: they served both as controls and distractors. As controls, they made it possible to check if the subjects understood the task properly. Subjects' responses on the real stimuli indicated the reliability of the entire questionnaire. As distractors, the real words distracted the subjects from the nonce words, though the latter were the majority of the items.

In addition, the real words had to provide a full variety of prefixation patterns, in order to prevent the subjects from overgenerating one particular prefix and applying it to all stimuli. For this reason, the real words had to present the subject with an equal possibility for attaching the different prefixes. This was difficult to achieve, especially regarding the prefix OBO, which is much rarer than OB and O.

All the real verbs used in the experiment are listed in Tables 10 and 11. The words in shaded fields are those that were used as examples in the instructions. One can notice that some stimuli suggest some variation in the choice of the prefix. This was unwanted and avoided in the preliminary illustrative examples, which had to be simple and clear. On the other hand, variation in the choice of prefixes was used in the stimuli. In the experiment, these items suggested that some degree of variation is possible and made the subjects take it into account. In Tables 10 and 11, the words marked with * are those that are possible but less expected in the subjects' responses.

Not all of the real verbs used in the experiment belong to the closed and relatively small class of motion verbs. The reason is that motion verbs do not provide enought variety of prefixes (most of them attach OB) that could prevent the subjects from overgeneralizing one

particular prefixation pattern. Another reason is that very few uni-directional[35] motion verbs belong to the verbal class *-i-* which is required in the experiment. Therefore, in order to provide sufficient number of real verbal stimuli, apart from motion verbs I used verbs that denote other dynamic activities like *rvat'* 'tear', *kopat'* 'dig', *vit'* 'weave', etc. These activities are compatible with encirclement meaning expressed by the prefix and in this light are similar to motion verbs. I refer to the real verbal stimuli used in the experiment as *movement verbs* implying that this group is not limited to the motion verbs only.

#	movement verb	gloss	O	OB	OBO
1	bežat'	run	o-bežat'	ob-bežat'*	
2	valit'	throw		ob-valit'	
3	**vesti**	lead		ob-vesti	
4	vejat'	flutter, blow	o-vejat'	ob-vejat'*	
5	vit'	weave			obo-v'ju[36]
6	gnat'	drive fast			obo-gnat'[37]
7	gnut'	bend			obo-gnut'
8	exat'	drive		ob-"exat'	
9	**idti**	go			obo-jti
10	katit'	roll		ob-katit'[38]	
11	kopat'	dig	o-kopat'		
12	kružit'	whirl	o-kružit'		
13	nesti	carry		ob-nesti	
14	plesti	plait, weave	o-plesti		
15	plyt'	swim	o-plyt'	ob-plyt'*	
16	polzti	crawl		ob-polzti	
17	rvat'	tear			obo-rvat'
18	čertit'	draw	o-čertit' (krug)		
	total number:		7	6	5

Table 10. Real motion verbs used in Questionnaires A and B.

In Table 10, not all the real verbal stimuli are movement verbs with the meaning MOVE AROUND AN OBJECT. The target prefixed verbs *obvit'* 'weave around', *očertit'* 'draw a line around', *oborvat'* 'tear around', *okružit'* 'surround', *okopat'* 'dig around' and

[35] Recall from Chapter 3 that uni-directional motion verbs prefixed with O, OB or OBO represent Subcategory MOVE AROUND AN OBJECT, while non-directional motion verbs with these prefixes belong to Subcategory AFFECT A NUMBER OF OBJECTS.

[36] This verb was used in the experiment in its finite form 1PERSON.SG.FUT., because this form has the prefix OBO.

[37] Most frequently, the verb obognat' denotes 'leave behind, pass, outstrip' (Subcategory OVERTAKE). However, this verb was used in the experiment in the meaning 'drive a car at high speed around something'. This meaning is very colloquial and marginal for this verb. It is attested in Google. This verb was used in the experiment in order to increase the number of OBO verbs. This marginal meaning was chosen in order to make the verb fit into the semantic pattern MOVE AROUND AN OBJECT. Subjects differed in the way they treated this verb. Some of them easily accepted it in this meaning, for others it was unusual.

[38] This verb is used in its meaning 'drive around', not 'soak'.

obvalit' 'heap around' belong to Subcategory SURROUND, which is very close to MOVE AROUND AN OBJECT, as shown in Chapter 3.

#	adjective	gloss	O	OB	OBO
1	amerikanskij	American		obamerikanit'	
2	všivyj	lousy	ovšivit'*		obovšivit'
3	gluxoj	deaf	oglušit'		
4	golyj	naked, bare	ogolit'		
5	grubyj	rough	ogrubit'		
6	živoj	alive	oživit'		
7	zloj	angry	ozlit'*		obozlit'
8	kruglyj	round	okruglit'		
9	legkij	easy		oblegčit'	
10	melkij	small		obmel'čit'	
11	mračnyj	dark,gloomy	omračit'		
12	nagoj	naked		obnažit'	
13	nemeckij	German	onemečit'		
14	obščij	general		obobščit'	
15	**ostryj**	sharp		obostrit'	
16	russkij	Russian		obrusit'	
17	svetlyj	light (colour)		osvetlit'	
18	**složnyj**	complex	osložnit'		
	total number:		8+2	8	2

Table 11. Real adjectives used in questionnaire C.

It was mentioned in Subsection 4.1.1. that all nonce target verbs are expected to belong to the verbal *-i-* class, because both nonce verbal stimuli shaped the same way and nonce adjectives suggest this class for the target prefixed perfective. The same principle is maintained for the real adjectival stimuli. They all suggest the same word-formation pattern that is typical for factitives. However, it was difficult to satisfy this requirement for the real verbs. Only some of them belong to the *-i-* class (*katit', kružit', valit', čertit'*). Although the other do not belong to this class, most of them resemble the *-i-* class by their phonological shape (e.g. *idti, polzti, vesti, vit'*).

In this section I presented the real words used in the experiment. Now I turn to the pilot trials and describe the crucial changes they led to.

4.4. Piloting

After the questionnaires were designed, they were tested in a preliminary pilot study. Eleven people participated in piloting, both linguists and non-linguists. Thanks to their valuable feedback and insightful comments, pilot trials played a crucial role in this survey. Piloting helped to detect flaws and identify some problematic issues that were fixed or avoided in the final version. As a result, a number of changes were made regarding both the

questionnaires' content and their administration. In this subsection I discuss these changes in turn.

4.4.1. Questionnaire content

First of all, the results of the pilot study suggested that the nonce words need to be presented in a more careful way. The main problem here was to prevent the analogical effect of real words on the choice of the prefix for nonce words. Another problem that was faced was the lack of distractors.

In order to avoid any analogical influence of real words, definitions of nonce words underwent some crucial changes. In the first draft of Questionnaires A and B, definitions of nonce verbs contained real motion verbs, as in (46) and (47):

(46) *Šaklit' – exat' verxom na verbljude.*
nonce_verb-INF. drive-INF.IMP. on-ADV. on-PREP. camel-LOC.
Šalkit' – ride a camel.

(47) *Loprit' – idti, gromko topaja nogami.*
nonce_verb-INF. go, walk-INF.INP. loudly stamp-GER. foot-PL.INSTR.
Loprit' – walk while loudly stamping one's feet.

In the pilot study I discovered an analogical effect of the real motion verbs used in definitions. When generating a target prefixed verb, some subjects reported on that they tried to compare it with the prefixation pattern of the real motion verb used in the definition: e.g. *exat' – ob-''exat' → ob-šaklit'*. In order to prevent the subjects from developing such a strategy, all real motion verbs used in the definitions were replaced with two neutral umbrella terms for motion: *peredvigat'sja* 'move' and *peremeščat'sja* 'move (usually by a vehicle)'. These two verbs have no related verbal counterparts prefixed with O, OB and OBO and consequently do not suggest any prefix pattern that could influence subjects' behavior. As a result, the definitions were re-worded as follows:

(48) *Šaklit' – **peremeščat'sja** verxom na verbljude.*
nonce_verb-INF. move-INF.IMP. on-ADV. on-PREP. camel-LOC.
Šalkit' – move / travel sitting on a camel's back.

(49) *Loprit' – **peredvigat'sja**, gromko topaja nogami.*
nonce_verb-INF. move-INF.INP. loudly stamp-GER. foot-PL.INSTR.
Loprit' – move while loudly stamping one's feet.

The two verbs *val'sirovat'* 'waltz' and *prixramyvat'* 'limp slightly' were preserved in the definitions, because they do not form O, OB, or OBO verbs either and therefore could not affect the choice of the prefix in the experimental task.

A similar strategy was adopted for nonce adjectives. All real Russian adjectives that form a factitive verb via prefixation of O, OB or OBO, as in (50), were avoided in the definitions.

(50) *Čupyj – sil'no pjanyj.*
nonce_ADJ. very drunk.
Čupyj – very drunk.

Thus definitions such as (50) had to be modified, since the adjective *pjanyj* 'drunk, tipsy' forms a Factitive Perfective *o-pjan-it'* 'make drunk, intoxicate'. Instead, I made use of various synonymous participles (51, 52), prepositional phrases (53) and some adjectives that do not form factitives (54, 55). Here are examples of definitions that were reworded to avoid analogical effects:

(51) *Čupyj – nemnogo vypivšij.*
Čupyj – slightly-ADV. drink-PF.PART.PAST.
Čupyj – a little drunk.

(52) *Zopryj – imejuščij vydajuščiesja muzykal'nyje sposobnosti.*
Zopryj – have-IMP.PART.PRES. outstanding musical-.ACC.PL. ability-ACC.PL.
Zopryj – with outstanding musical abilities.

(53) *Čavyj – s xorošimi manerami povedenija.*
Čavyj – with good-INSTR. manner-PL.INSTR. behavior-SG.GEN.
Čavyj – with good manners.

(54) *Patlyj – zabyvčivyj.*
Patlyj – forgetful.

(55) *Roglyj – fašistskij.*
Roglyj – Fascist.

These definitions for nonce adjectives do not suggest any prefixation pattern. This strategy was adopted throughout the entire questionnaire both in nonce and control items.

In order to achieve a clear contrast between spatial and factitive meanings, all the definitions of nonce adjectives that could suggest both covering/wrapping and change of the object were rejected. For example, the definitions that suggest a change of skin because of some illness were replaced with definitions of feelings and emotions, personal features of character or food preferences.

Another problem that was faced at the pilot stage was the lack of distractor items, which would perfectly fit into the chosen semantic slot and at the same time exhibit various patterns of prefixation. For example, when working on the Questionnaires A and B, I first used only motion verbs that have the meaning MOVE AROUND AN OBJECT like *ob-"exat'*

'drive around', *obo-jti* 'walk around', *ob-vezti* 'convey, cart around', even though they belong to different verbal classes. These verbs serve as perfect controls, because they clearly allow only one prefix out of the three in question. However, motion verbs mostly attach the prefix OB. In other words, they cannot provide a variety of prefixation patterns needed to prevent the subjects from overgeneralizing this pattern. On the contrary, my goal was to allow subjects to use any of the three prefixes to obtain the target meaning. In order to achieve this goal, I finally enlarged the group of distractors to include motion verbs that allow some variation in the choice of a prefix like *o-bežat'* and *ob-bežat'* 'run around', *o-plyt'* and *ob-plyt'* 'swim around'. Additionally, I have expanded the group of distractors to non-motion verbs, which are related to the meaning MOVE AROUND AN OBJECT, but belong to Subcategories SURROUND and COVER. In particular, I used the verbs *obo-rvat'* 'tear around', *o(b)-čertit'* 'draw a line around', *o-kopat'* 'dig around', *o(b)-vejat'* 'blow around', *o(b)-vit'* 'weave, wind around', *o(b)-plesti* 'wind, plait around', and *obo-gnut'* 'bend around'.

On the basis of the pilot study, the contexts for the movement verbs were made uniform, in order to avoid additional variables in the experiment. For motion verbs, there are two possible patterns of argument structure: they can have a direct complement (*obojti dom* 'go around-INF.PF. house-ACC.SG.) or a prepositional phrase (*obojti vokrug doma* 'go around-INF.PF. around-PREP. house-GEN.SG.'). The former pattern allows two interpretations: full and partial encirclement, while the latter can only denote full encirclement. For this reason, the argument structure with the prepositional phrase was chosen and implemented in all narratives. In order to support the meaning of full encirclement, other lexical sources were also used in the immediate context (e.g. *po perimetru* 'along the perimeter', *neskol'ko raz* 'several times').

All the improvements introduced to the questionnaire content since the pilot study reduced unwanted effects and enhanced the reliability of the data.

4.4.2. Questionnaire administration

In the pilot study, a number of ways to administer the experiment were tried out. Some questionnaires were distributed among the informants and then collected, so that there was no personal contact between the participant and the researcher. Another method was one-to-one administration, when a questionnaire was handed to a subject and s/he filled it in, while the researcher was present and provided assistance in case of any questions. This was a much more personal form of administration. However, neither of these two approaches was entirely

satisfactory. It was not possible to be sure that stress was taken into consideration and that all the nonce words were perceived in the way they were supposed to sound.

In the third scenario, a subject was asked to read all the texts out loud to the researcher and write down the target verbs in the gaps. This approach was an improvement, but not free of problems either. When informants were asked to write down the answers themselves, they often simply forgot to mark stressed syllables and sometimes changed the shape of nonce words.

These failures inspired a different way of administering the questionnaires. The idea of a self-administered questionnaire was rejected. Instead, the procedure took the form of a short interview, where a subject was asked to read all items out loud to the researcher, while the latter recorded the responses. This procedure definitely has a number of advantages over the previous ones. First of all, this was the perfect way to account for stress, not only to make sure that an informant read a nonce word correctly, but also to write down exactly the word s/he generated. Secondly, this kind of assistance made the interview go faster and the entire trial became shorter, which is crucial for such kind of survey (Dörnyei 2003: 18), especially for the rather long questionnaire that I used. In its final version, the questionnaire took only about twenty minutes to go through. Last but not least, this method of administration often revealed hesitations and variations in the choice of a prefix that could be otherwise hidden behind the response written in a self-administered questionnaire.

4.4.3. Open multiple choice tasks

In this subsection I address a crucial change in the presentation of the experimental task. First, for the ease of administration and processing of the data, each experimental task contained the simplex base, its definition, a short narrative with a blank to fill in and three variants of response, as shown in (56):

(56) Lusyj – ne sposobnyj est' rybu.
V detstve Viku tak mnogo kormili ryboj, čto v rezul'tate …… ee, tak čto teper' na rybu ona smotret' ne možet.
a) olusili b) oblusili c) obolusili

However, the exposure of the subjects to the ready variants of responses could affect their choice. Moreover, the order of the suggested options could have some unwanted influence too. It would require randomizing the order of possible answers for each stimulus, which could only confuse the subjects. Instead, another strategy was adopted. No ready answers were suggested to the subjects. They were exposed to the nonce simplex base, its definition,

and a narrative with a blank to fill in. The three options were given in the form of bare prefixes O, OB and OBO put at the top of each page of a questionnaire, as illustrated in (57). Thus, they were always visible.

O	**OB**	**OBO**

(57) Lusyj – ne sposobnyj est' rybu.
V detstve Viku tak mnogo kormili ryboj, čto v rezul'tate …… ee, tak čto teper' na rybu ona smotret' ne možet.

To sum up, the pilot study helped to work out the final version of the experiment design, which has become a well-functioning instrument to collect reliable and valid data.

4.5. Order of the experimental items

Item sequence is generally assumed to be an important factor in psycholinguistic experiments. The content of each particular experimental task can have considerable impact on subjects' responses (Dörnyei 2003: 60). In order to minimize the item ordering effect, a random order strategy was adopted. Each participant received the same experimental items, but for each participant these items were presented in a different random order. In order to create each copy of a questionnaire, all the experimental items were assigned random numbers and then sequenced. Random numbers were generated in software R. Items containing nonce words and real words were randomized separately. In randomizing items with real words, care was taken so that words that suggested the same prefixation pattern were not adjacent. Items were not split between pages. Finally, thirty individual variants for the questionnaire types A and B (fifteen for each) and thirty individual variants for the type C were created. In total, 60 differently-ordered questionnaires were produced, so that each of them was used in the experiment only once.

4.6. Subjects

After the pilot versions of the questionnaires were tried out with eleven participants and all necessary changes were implemented, the experiment was run in its final version with sixty volunteer speakers of Russian. This yielded three groups of data, according to the three types of questionnaires: A, with stem-stressed verbal stimuli, B with theme-vowel-stressed verbal stimuli, and C with stem-stressed adjectival stimuli. Each participant in each group received the test stimuli in a different randomized order.

All the subjects are native speakers of Russian who grew up and got their primary, secondary and higher education in Russia. They are from different cities of Russia including St. Petersburg, Moscow, Dubna, Izhevsk, Uljanovsk, Murmansk, and Archangelsk. As shown in Appendix 1, all the personal data was coded in order to protect the anonymity of the subjects. Codes were assigned regarding the type of questionnaire that was filled in. Thus the subjects who responded to the A questionnaire are coded as A1, A2, A3, etc. and the same strategy is used for the B and C questionnaires.

Each participant was exposed to only one type of questionnaire: A, B, or C. In this respect, the sixty participants can be divided into two equal groups: thirty of them received a questionnaire with verbal stimuli (Group 1), while the other thirty subjects received a questionnaire with adjectival stimuli (Group 2). Here, the target verbs for the first group were verbs describing motion, while the task of second group was to generate factitive verbs. The subjects of Group 1 were further subdivided into two smaller groups of 15 participants each. Their questionnaires (A and B types) differ only in terms of place of stress on stimuli verbs: e.g. gUzvit^{j} vs. guzvIt^{j}. In this way, the sixty subjects were distributed among the three types of questionnaire such that both the number of participants who responded to verbal versus adjectival stimuli and the number of participants who responded to stem-stressed versus theme-vowel-stressed verbal stimuli were balanced, as shown below in Table 12:

Subjects	Target verbs	Stimuli	Q type	Example of stimulus	Number of subjects
Group 1	Verbs of motion	verbal	A	gUzvit^{j}	15
			B	guzvIt^{j}	15
Group 2	Factitive verbs	adjectival	C	gUzvyj	30

Table 12. Distribution of the subjects among types of questionnaires

In the selection of subjects I followed parameters traditional for this kind of survey (Romaine 2000: 82 – 83), namely: age, sex, and educational background. Since the study of any possible effect of these variables is beyond the scope of my research, I tried to minimize their impact by means of balancing them within each group of subjects. Let us look at each of these variables in turn.

4.6.1. Gender

The sixty subjects of my experiment include thirty male and thirty female participants. I distributed them among the three types of questionnaire so that each gender is equally

represented in each subgroup of subjects. As shown in Table 2 below, questionnaire A was used with eight female and seven male subjects, while questionnaire B – with seven female and eight male subjects. The column "Gender" demonstrates that taken together, this yields fifteen female and fifteen male participants for verbal stimuli (Group 1), which are equal in number to the corresponding gender groups of subjects who responded to adjectival stimuli (group 2): fifteen female and fifteen male subjects.

Subjects	Target verbs	Stimuli	Q type	Example	Number of subjects	Gender	
Group 1	Motion verbs	verbal	A	gUzvit^{j}	15	female: 8 male: 7	female: 15
			B	guzvIt^{j}	15	female: 7 male: 8	male: 15
Group 2	Factitive verbs	adjectival	C	gUzvyj	30	female: 15 male: 15	

Table 13. Distribution of the subjects among types of questionnaires: Gender criterion

Table 13 shows that subjects of different gender are equally distributed among the three types of questionnaire. Any possible impact of linguistic differences between the two human genders is minimized via such a design.

4.6.2. Age groups

The subjects considerably vary in terms of age. The youngest participants were eighteen years old, and the oldest participant was fifty-nine years old. However, the vast majority of subjects (forty-nine subjects) were between eighteen and thirty years old.

In distribution of subjects among different types of questionnaire I aimed to establish well-balanced groups, where any possible age effect would be minimized. In dividing the subjects into age groups I followed Labov (1972), who distinguishes among the following groups: 14 – 30, 31 – 45, 46 – 60, 61 – 75, 75+ (Labov 1972: 22). Three of these age groups are represented in my sample of subjects, as shown in Table 14:

Age group	Number of subjects	Gender		Type of questionnaire		
		male	female	A	B	C
18 – 30	45	22	23	13	14	18
31 – 45	11	6	5	0	1	10
46 – 60	4	2	2	2	0	2

Table 14. Distribution of the subjects: Age groups, Gender, Type of questionnaire.

Table 14 demonstrates that the three age groups are well balanced in terms of gender and consist of almost equal subgroups of female and male participants. At the same time, the types of questionnaire are distributed among the subjects such, that the dominant age group is the same for each type.

4.6.3. Educational background

It is pointed out in the literature that a linguistic experiment must exclude people with special linguistic training as their subjects (Schütze 1996: 186 – 187). This is crucial for my study, so while selecting the subjects I specifically tried to avoid professional linguists.

Participants vary in their educational background (see Appendix 1). As shown in Table 15, most of the subjects (forty-four) have completed higher education, fourteen are in process of getting a degree, while two subjects have secondary education.

Level of education	Number of subjects	Field of education	Number of subjects	Type of questionnaire		
				A	B	C
Higher	44	Humanities, Arts and Social Sciences	25	7	5	13
		Natural, Formal, Applied Sciences and Medicine	19	2	6	11
Uncompleted higher	14	Humanities, Arts and Social Sciences	7	3	2	2
		Natural, Formal, Applied Sciences and Medicine	7	3	2	2
Secondary	2	Natural, Formal, Applied Sciences and Medicine	2	0	0	2

Table 15. Distribution of the subjects: Level and Field of education vs. Type of questionnaire.

The column "field of education" demonstrates that for each education level I distinguish between two groups of disciplines: *Humanities, Arts and Social Sciences* on one hand and *Natural, Formal, Applied Sciences and Medicine* on the other hand. The first group of disciplines includes history, literature studies, music, sociology, psychology, economics, law, publishing, public and international relations. The other group combines Natural Sciences, Formal Sciences, Applied Sciences and Medicine and therefore includes physics, computer programming, information technologies, mathematics, engineering, and health care.

The numbers in Table 15 show that each educational level is equally represented with participants of both types of disciplines. In total, there are thirty-two subjects educated in *Humanities, Arts and Social Sciences* and twenty-eight subjects educated in *Natural, Formal, Applied Sciences and Medicine*. If we look at the types of questionnaire, they are relatively

equally distributed among the established educational groups (see the last three columns of the Table 15).

Summing up, the sample of Russian speakers employed in my experiment is well-balanced in terms of major psycholinguistic criteria, such as gender, age, and educational background. I have demonstrated that the three types of questionnaire used in the experiment are equally distributed among the different groups of subjects. This means that any possible effect of such factors is minimized in order to collect valid and reliable data.

4.7. Summary

In this chapter I described the design of the experiment. I discussed its goals and experimental materials, the three types of questionnaires and their structure, the nonce word methodology and the role of real words. I also reported on the crucial changes implemented on the basis of the pilot study. I explained how the experimental items were randomized and how the questionnaire types were equally distributed among different groups of subjects. Thus, I have shown that the design of the experiment was thought through in order to collect valid and reliable data. Now I turn to the experimental results that are the focus of Chapter 5.

Chapter 5

Experimental results

In this chapter I report on the results of the experiment. First, I present the general results of collected responses and explain how the data were processed and organized (Subsection 5.1). Next, I discuss the responses given to real verbal and adjectival stimuli (Subsection 5.2.). Then I turn to the results on the nonce words (Subsection 5.3.). Here I demonstrate that the major prediction of the Split Hypothesis meets the experimental results, but some other crucial facts discovered in the experiment suggest a different interpretation of the relations between O, OB and OBO. Subsection 5.4. summarizes the contribution of this chapter.

5.1. Collected responses and organization of the data

The experiment in its final version was carried out with sixty subjects. Each of the subjects successfully understood the task and performed accordingly. Finally, sixty completed questionnaires were collected.

Since each of the sixty questionnaires contained sixty-two tasks (including both the tasks with real and nonce stimuli) one could expect at least 3,720 responses. There was only one refusal, when a subject refused to fill in the blank with a nonce word. In all other cases, it was possible for the subject to generate a response verb.

Some subjects always tried to respond with one variant, while the others often gave more than one answer. Crucially, both groups of subjects experienced hesitations and even those who responded with one final form, often had hard time choosing among possible options. As a result, some stimuli triggered more than one response form. This regards both nonce stimuli and some real stimuli which allow variation in the choice of the prefix (e.g. *o-bežat'* and *ob-bežat'* 'run around'*; o-zlit'* and *obo-zlit'* 'embitter'). In total, more response forms were collected than there were stimuli: 3,720 stimuli triggered 3,878 responses. Table 16 aggregates the numbers of given stimuli and collected responses:

Stimuli type		Number of stimuli		Number of responses		
verbal stimuli	real	16*30=480	1860	497	1941	3878
	nonce	46*30=1380		1444		
adjectival stimuli	real	16*30=480	1840	490	1937	
	nonce	46*30=1380		1447		

Table 16. Number of stimuli and responses for real and nonce words.

According to the numbers presented in Table 16, real verbal and adjectival stimuli triggered about the same amount of variation in the choice of the prefix: 480 real verbal stimuli (e.g. *bežat'* 'run') triggered 497 responses, and 480 real adjectival stimuli (e.g. *zloj* 'angry') triggered 490 responses.

As opposed to real stimuli, the nonce stimuli triggered more variation. Interestingly, within the group of nonce stimuli, verbal and adjectival stimuli triggered the same amount of variation: 1380 nonce verbal stimuli (e.g. *lusit'*) triggered 1444 responses, and the same number of nonce adjectival stimuli (e.g. *lusyj*) triggered 1937 responses.

Most of response forms did not modify the stimulus root. However, since nonce roots were new and unusual for the subjects, some of them were modified. Though it happened rarely, I should explain how such responses were treated. When the change affected the coda of the root, the simple coda was expended with an additional sound (usually *l*: e.g. *lu**s**yj* → *oblus**l**ili*; *tka**b**yj* → *otkab**l**ilo*) or a complex coda was simplified, or reduced (e.g. *vy**rl**yj* → *obvuri**l**a*). Such forms were counted as responses, because the phonological shape of the coda was not the factor that was tested in the experiment. Secondly, word-formation of factitive verbs in the lexicon of Modern Russian allows both kinds of base stem modifications (Švedova et al. 1980: § 830, 835): reduction (e.g. *ru*ssk*ij* 'Russian' – *obru**s**it'* 'russify', *ro**bk**ij* 'shy' – *oro**b**et'* 'timid', *sku**dn**yj* 'scanty' – *osku**d**et'* 'grow scanty'; *mo**kr**yj* 'wet' – *obmo**k**nut'* 'wet, moisten') and addition of a consonant by attaching a suffix (*glu**x**oj* 'deaf' – *glo**xnu**t'* 'become deaf').

If the change of a simplex stem affected the onset (e.g. ***žr**apyj* – *obžaprili,* ***sp**ulyj* – *osuplilo*), such forms were not counted as responses and were not included in the total numbers presented in Table 16 and further calculations. The reason for this policy is that it is the impact of the simplex stem onset that was tested in the experiment, thus the forms that modify the onset by breaking up the initial cluster are not informative for the present study.

The collected data was organized in MS Excel documents[39]. As mentioned in Chapter 4, all subjects were assigned codes regarding the type of questionnaire they filled in. The subjects who responded to the Questionnaire A were coded as A1, A2, A3, etc. and the same strategy was used for the Questionnaire types B and C. First, all responses were put in tables, where lines list the forms generated by each subject, and the columns list all collected response forms for each stimulus. If a subject responded to a stimulus with more than one

[39] In organization of the data I adopted the method used in (Makarova 2009: 41 – 42).

response form, all of them were put in the same table slot and were separated with commas. An excerpt from the database of subjects' responses is presented in Appendix 8.

On this basis, another database was created (see Appendix 9). It aggregates the frequencies of all response forms given to each verbal and adjectival stimulus. It also provides the information on how many times each of the three prefixes was chosen for each particular stimulus. Now I turn to the choices that were made. First, I report on the experimental results for real stimuli (Subsection 5.2.) and then discuss the results obtained for the nonce stimuli (Subsection 5.3.).

5.2. Responses to real stimuli

In total, 987 responses on real stimuli were collected. Recall that real stimuli serve in the experiment as controls. The responses triggered by the real stimuli determine whether the experiment was successful and whether the data collected on the nonce words are reliable. The responses show that the task was understood properly. Some stimuli were expected to allow variation in the choice of the prefix. I look at this issue in detail in the next two subsections. First, I discuss the responses given to verbal stimuli and then move to the responses given to adjectival stimuli.

5.2.1. Responses to real verbal stimuli

Table 17 aggregates the numbers of responses given to sixteen real verbal stimuli used in the experiment.

	#	Stimulus	Gloss	Target form	O	OB	OBO
Only OB / OBO	1	*exat'*	drive	*objExat'*	0	30	0
	2	*nesti*	carry	*obnesli*	0	30	0
	3	*rvat'*	tear	*oborvAt'*	0	0	30
	4	*vit'*	weave, wind	*obov'jU*	0	0	30
	5	*gnut'*	bend	*obognUli*	0	0	30
	6	*gnat'*	drive fast	*obognAl*	1	0	30
Increasing variation	7	*valit'*	throw, pile up	*o(b)valit'*	4	27	0
	8	*katit'*	roll	*o(b)katil*	5	27	0
	9	*polzti*	crawl	*o(b)polzlA*	8	24	0
	10	*bežat'*	run	*o(b)bežAt'*	13	18	0
	11	*plyt'*	swim	*o(b)(o)plYt'*	13	15	5
	12	*vejat'*	blow	*o(b)vEjat'*	16	17	0
	13	*kopat'*	dig	*o(b)kopAt'*	22	10	0
	14	*plesti*	weave, plait	*o(b)plesti*	23	9	0
	15	*čertit'*	draw a line	*o(b)čertit'*	28	2	0
Only O	16	*kružit'*	whirl	*okružit'*	30	0	0
					163	209	125

Table 17. Responses to real verbal stimuli.

The shaded field of Table 17 shows the verbs that exhibit variation in the choice of the prefix. They are interesting in many respects. First, many of them show variants that were not expected (*ovalit', okatit', obkopat', obplesti, opolzti*) or were expected to a lesser extent than they were used by the subjects (*obbežat', obplyt'*).

Table 18 compares the frequency of competing patterns of prefixation as they appear in the Russian National Corpus as apposed to the subjects' responses in the experiment. The shaded fields emphasize the verbs that exhibit different distribution of the prefixes in these two sources of data.

Verb	Database		Experiment results		
	OB	O	OB	O	OBO
o(b)valit'	43	0	27	4	0
o(b)katit'	0	189	27	5	0
o(b)polzti	1	18	24	8	0
o(b)bežAt'	6	189	18	13	0
o(b)(o)plYt'	1	125	15	13	5
o(b)vEjat'	1	105	17	16	0
o(b)kopAt'	1	137	10	22	0
o(b)plesti	0	140	9	23	0
o(b)čertit'	2	705	2	28	0

Table 18. Variation in the choice of the prefix: data from the RNC vs. experimental results

From the corpus data one could get the impression that the prefix OB is very marginal for these verbs. However, the data collected in the experiment suggest that the prefix OB is much more frequent in colloquial speech than expected.

Crucially, as shown in Tables 17 and 18, much variation in the choice of the prefix is connected to the stem-initial labial obstruents *b* and *p*. These stem onsets were expected to create a problematic phonological environment for the prefix OB and therefore rule it out, prioritizing instead the prefix O. Interestingly, the stems with initial *b* and *p* in the subjects' responses cooccur with the prefix OB even more often than with O. So, the OB-forms *obpolzlA, obbežAt', obplYt'* were more frequent in the experiment than their O-counterparts. Although for the verb *o(b)plesti* the prefix O was chosen more often, OB was still a strong competing candidate, as seen in the frequency rates in Table 18. The preference for OB in this phonological context contradicts the prediction of the Split Hypotheses but supports the general idea that the prefix OB is strongly associated with the spatial meaning: it wins here even in spite of being adjacent to the bilabial obstacle.

On the other hand, the verbs with phonological contexts that are non-problematic for OB *(o(b)katit', o(b)kopAt', o(b)čertit', o(b)valit')* show that both O and OB are possible options

for the spatial meaning. The occurrence of the prefix O in the environments non-problematic for OB contradicts the major prediction of the Split Hypothesis.

The different degrees of prefix variation exhibited in the subjects' responses are visualized in Figure 13. Numbers on the horizontal axis correspond to the numbers of the verbs listed in Table 17. One can see that O often competes with OB and this prevents the overgeneralization of the OB-pattern.

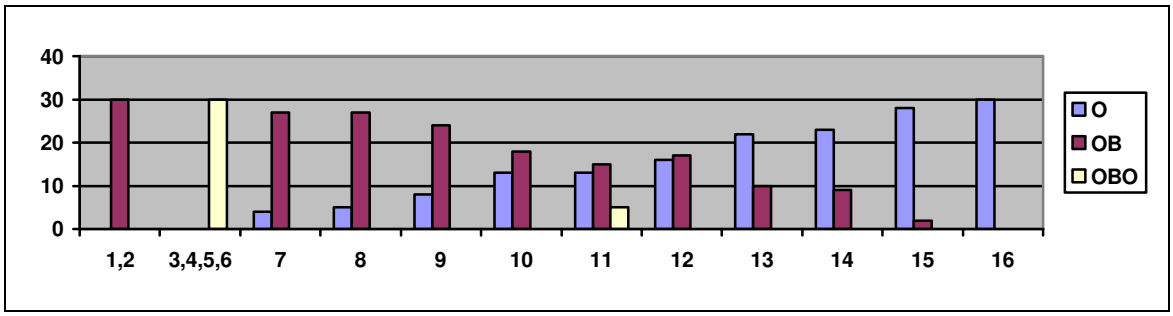


Figure 13. Rates of responses given to real verbal stimuli

One of the subjects who participated in the experiment explicitly described a difference in the spatial meaning of O and OB that was not mentioned in the literature before. Assuming that both of these prefixes carry the meaning MOVE AROUND AN OBJECT, the subject distinguished them as follows: the prefix O can only be used if the Landmark is flat like a field or a stadium, while OB suggests that the Landmark is a prominent obstacle which cannot be crossed through (e.g. a house). So, in the idiolect of this subject it was grammatical to say *o-bežAt' vokrug pol'a* 'run around a field' and *ob-bežAt' vokrug doma* 'run around a house', but the phrases with the opposite prefixation patterns **o-bežAt' vokrug doma* and **obbežAt' vokrug pol'a* were ungrammatical. The Russian National Corpus provides a number of sentences that could serve as counterexamples for this logic (cf. example in (34) from Chapter 3). This issue needs further investigation.

5.2.2. Responses to real adjectival stimuli

Generally, the responses to the adjectival stimuli were more consistent with my expectations. At the same time, the forms *omel'čit'* and *orusit'* were not expected at all. However, they occurred more than once and competed with OB-counterparts, even though the phonological context should have inhibited O. This supports the idea that O is associated with the factitive meaning MAKE X.

Table 19 aggregates the frequencies of each prefix. The response forms themselves can be found in Appendix 8.

#	Stimulus	Gloss	O	OB	OBO
1	*amerikanskij*	American	1	28	0
2	*všivyj*	lousy	23	2	7
3	*gluxoj*	deaf	30	0	0
4	*golyj*	naked, bare	29	1	0
5	*grubyj*	rough	30	0	0
6	*živoj*	alive	30	0	0
7	*zloj*	angry	4	0	24
8	*kruglyj*	round	30	0	0
9	*legkij*	easy	0	30	0
10	*melkij*	small	9	21	0
11	*mračnyj*	dark, gloomy	30	0	0
12	*nagoj*	naked	30	0	0
13	*nemeckij*	German	25	5	0
14	*obščij*	general	0	30	0
15	*russkij*	Russian	3	27	0
16	*svetlyj*	light (color)	30	0	0
			304	144	31

Table 19. Responses to real adjectival stimuli.

Now I turn to discussion of the experimental results on the nonce words.

5.3. Responses to nonce stimuli

The experimental results on nonce words demonstrate a number of facts crucial for the final interpretation of relations between the prefixes in question.

First, I report on the results of the statistical analysis[40] of the data. In order to carry out all statistical tests described below, the statistics software package R was used. The analysis of the data consisted of two steps. First, it was important to discover whether the observed differences in the distribution of the prefixes according to different factors were statistically significant. Second, the factors that were found statistically significant had to be evaluated with respect to each other.

The Welch Two Sample t-test showed that the distribution of prefixes across verbal vs. adjectival stimuli (questionnaires A & B vs. C) was statistically very significant (t = -4.9324, df = 45.946, p-value = 1.105e-05). Wilcoxon test supported this result (W = 167.5, p-value = 2.999e-05)[41]. This means that the distribution of the prefixes according to the stimulus type observed in the experimental results was not an occasional distribution and could not have arisen by chance. This also means that the collected data were valid and reliable and could serve as an empirical basis for further generalizations. Recall that the two stimulus types (verbs and adjectives) correspond to two target meanings (MOVE AROUND AN

[40] The statistical analysis of the experimental data was conducted by Laura A. Janda. My contribution here consists in providing the data and reporting on the results of the analysis. All the shortcomings are mine alone.
[41] A detailed description of how these two tests were run can be found in Appendix 10.

OBJECT vs. MAKE X). Thus, the statistical results conform to the distribution of prefixes predicted by the Split Hypothesis.

The distribution of prefixes across different stress patterns (questionnaire A vs. B) was found to be not statistically significant (neither for stimulus stress nor for response stress)[42]. Both Welch Two Sample t-test (p-value = 0.0985 for stimulus stress and p-value = 0.3778 for response stress) and Wilcoxon test (p-value = 0.1635 for stimulus stress and p-value = 0.852 for response stress) yielded similar values. This result suggests that on the basis of these data one cannot establish whether stress is a factor or not. At any rate, stress is much less a factor than a stimulus type. However, it was important to isolate it and test as it was done in the experiment.

Since subjects were allowed to choose one, two, or all three of the prefixes for each stimulus, it was possible to run three multiple regression analyses for the selection of O, OB, and OBO by the subjects. In each analysis the following factors were examined:

Stimulus Type: verbs vs. adjectives
Cluster Onset: complex stem-initial onsets (*žgavyj*) vs. simple stem-initial onsets (*lusyj*)
Possible with B: "no" for stem-initial clusters such as *žr* (**bžr*), "yes" elsewhere
Onset Place of articulation: labials, dentals, alveopalatals, velars[43]
Onset Manner of articulation: sonorants, stops, fricatives, affricates

The regression analysis looks at the contributions of the various factors in predicting the number of targeted responses. An optimal model for the data was designed. Details are given apparently in Appendix 10.

The factors that were found significant for selecting O were stimulus type (p<2e-16), followed by Onset manner of articulation (p=8.58e-07), with a weaker but significant interaction between onset manner and place of articulation (p values from .0017 to .016). Other factors were not significant.

The factors that were found significant for OB were stimulus type (p<2e-16), onset manner of articulation (p=2.03e-05), and cluster onset (p=.02).

For OBO the only significant factor was cluster onset (p=.00067), though stimulus type approaches significance, as does possible-with-B. As shown further in this chapter, the prefix O was often preferred over OBO as a repair strategy. Therefore, the collected responses provided less data on OBO than expected. Probably, there is too little data for the model to account for the variance here.

[42] More information on this distinction and the test results can be found in Appendix 10.
[43] In classification of Russian consonants across these values I followed Timberlake 2004. The same is true for the values of the factor Onset Manner of articulation.

Summing up the results of the statistical analysis, the two factors (target semantics and onset type) predicted by the Split Hypothesis were found to be statistically significant. In other words, the distribution of O, OB and OBO according to these factors could not occur by chance. Place of stess was found to be not significant and regarding these data cannot be established as a factor. Therefore, stress will not be discussed further in this chapter.

Now I turn to **how** the prefixes were distributed. The distribution of O, OB and OBO across different types of stimuli is shown in Figures 14-17. The different patterns of prefix distribution, observed in these Figures, crucially depend on the type of the stimulus (and therefore the spatial or factitive semantics of the target verb) and thus support the main claim of the Split Hypothesis that semantics significantly determines the choice of the prefix.

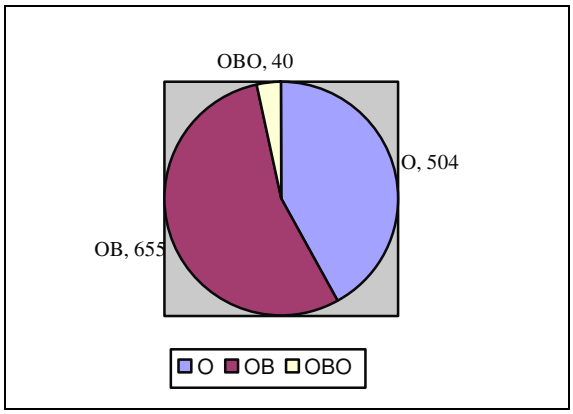


Figure 14. Distribution of prefixes across nonce verbal stimuli with simple onsets.

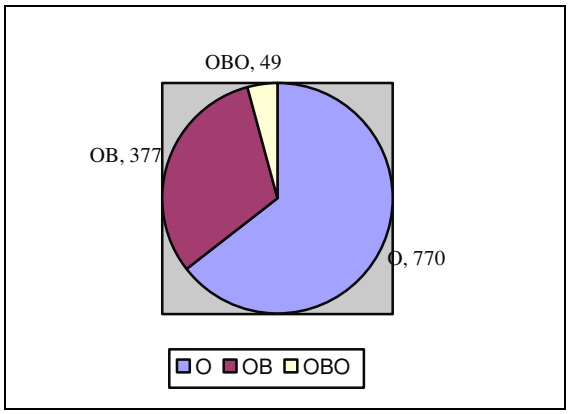


Figure 15. Distribution of prefixes across nonce adjectival stimuli with simple onsets

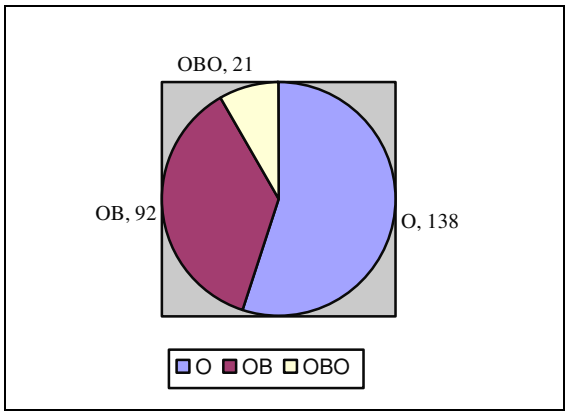


Figure 16. Distribution of prefixes across nonce verbal stimuli with complex onsets

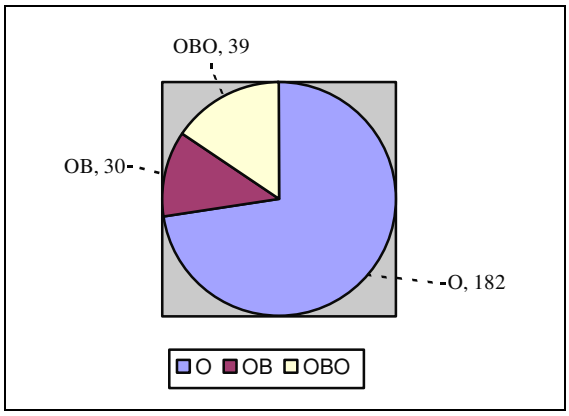


Figure 17. Distribution of prefixes across nonce adjectival stimuli with simple onset

Recall that apart from the major preferences for O vs. OB in the two semantic domains, the Split Hypothesis makes a prediction about the hierarchy of allomorphs for each of the two morphemes. For the morpheme with the spatial meaning, the hierarchy OB >> OBO >> O is expected. Figure 14 demonstrates that the prefix OB is the most frequent prefix for the verbs with spatial semantics. However, O is a strong competing candidate here which contradicts the Split Hypothesis. The hierarchy of prefixes according to their frequency is OB >> O >> OBO, where OBO is the least frequent of the three.

Recall that for the morpheme with a factitive meaning, the hierarchy of allomorphs is expected to be O >> OB >> OBO. Figure 15 shows that O is most preferred prefix in the factitive meaning MAKE X. The predicted hierarchy of the prefixes matches the result: O >> OB >> OBO.

So far, I reported on the prefixes' distribution across the stimuli with simple onsets. Figures 16 and 17 demonstrate the distribution of O, OB and OBO triggered by the stem-initial clusters. Suprisingly, in both semantic domains O is preferred over OBO as a repair strategy for simplification of a consonant cluster. This suggests that O and OB are much more interchangeable than expected.

Thus, the general distribution of O and OB meets the major prediction of the Split Hypothesis: the prefix OB is the most frequent for the spatial meaning MOVE AROUND AN OBJECT, while the prefix O is the most frequent for the factitive meaning MAKE X. One might argue that some inconsistencies of the results with the predictions of the Split Hypothesis are due to those phonological environments that are problematic for O or OB. Therefore, the distribution of O and OB in neuyral phonological contexts must be more informative for the discussion of the morphological status of these prefixes.

Recall that according to the Split Hypothesis, the phonologically neutral environments (simplex onsets other than *b, p*, sonorants and *v*) were expected to show a strong contrast of O and OB according to two the semantic domains and their distribution was expected to be complementary. The relevant results are shown in Table 20 and Figure 18.

The results show that contrastive use of O and OB in non-problematic phonological contexts is not a rule with a few exceptions, but rather a strong tendency which tolerates a high degree of variation between O and OB. The uses of these two prefixes overlap considerably and this shows that both of them are highly possible and attested in both semantic domains even in non-problematic phonological environments, where the clearest contrast was expected.

According to statistics, in the spatial meaning the prefixes O and OB are distributed as 38.8% vs. 61.1%, while in the factitive meaning this is vice versa: O appears in 65.9% and OB – in 34%. These data suggests that the actual overlap between O and OB in both semantic domains is very large (34 – 40 %) and this clearly contradicts the prediction of the Split Hypothesis on the complementary distribution of O and OB in non-problematic phonological environments.

Nonce stem onset	O		OB, OBO	
	verb	adj	verb	adj
d	26	42	37	21
ž	37	36	27	25
z	29	47	35	17
s	27	46	38	19
t	18	45	43	17
c	14	19	18	12
č	33	46	33	20
š	26	47	37	17
š':	15	25	17	5
g	39	52	23	11
k	32	51	33	10
x	19	39	41	23
In total:	315 38.8%	495 61.1%	382 65.9%	197 34%

Table 20. Distribution of the prefixes in non-problematic phonological environments.

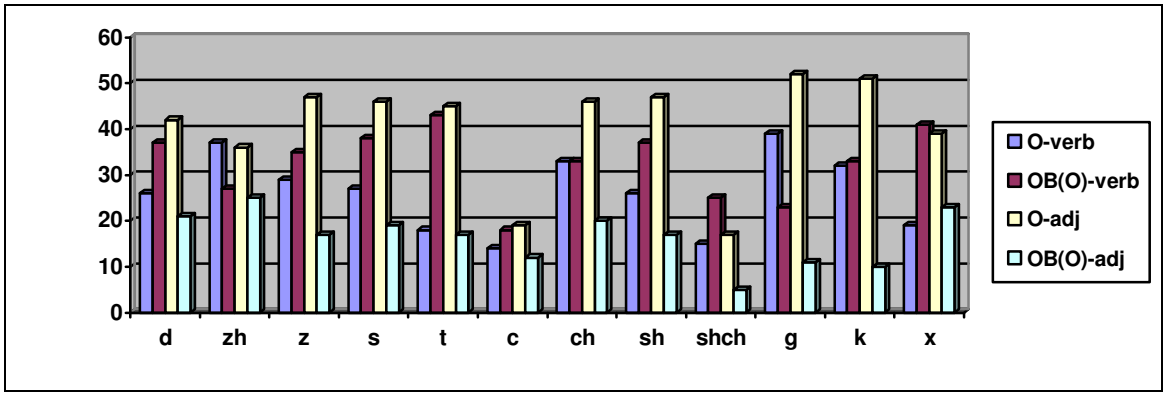


Figure 18. Distribution of the prefixes in non-problematic phonological environments.

This picture might seem quite abstract, because it is drawn by statistics and represents a generalization over all subjects. However, it is supported by the large individual variation in the choice of a prefix and in response patterns attested for different subjects. Figures 19 and 20 present individual patterns of prefix preferences for Questionnaires A and B. The bars show how many times each of the three prefixes was chosen by each subject.

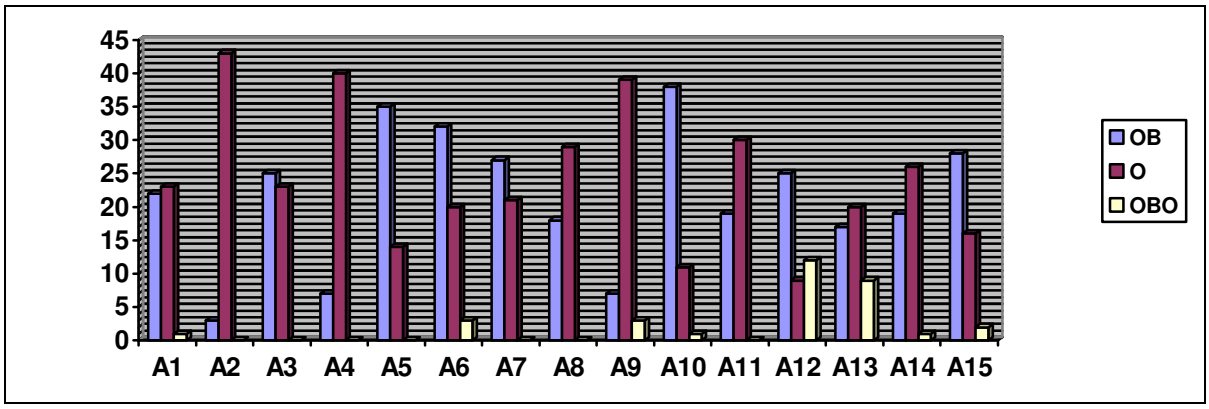


Figure 19. Individual patterns of prefix preferences (Questionnaire A).

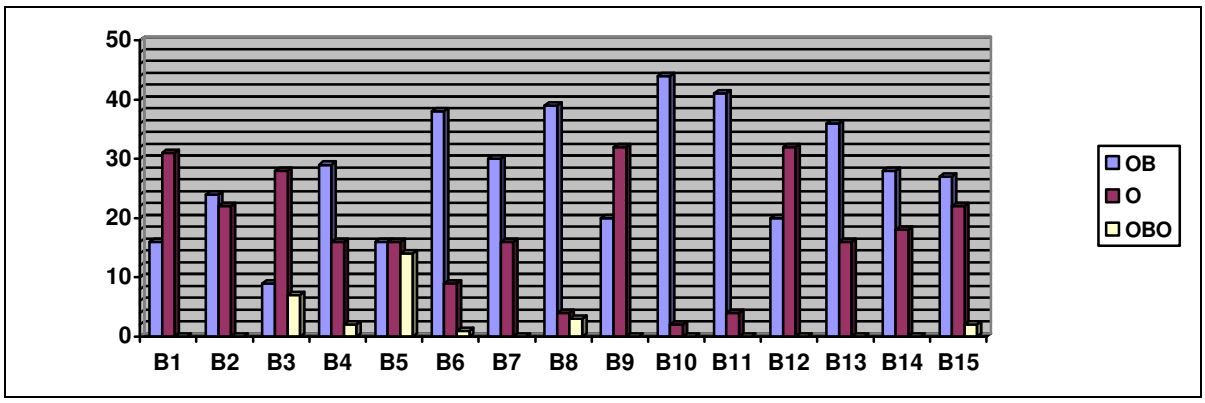


Figure 20. Individual patterns of prefix preferences (Questionnaire B).

The individual patterns are strikingly different. For some subjects (e.g. A5, A10, B6, B8, B10, B11), OB is strongly preferred in the meaning MOVE AROUND AN OBJECT. However, for many subjects (e.g. A2, A4, A9, A11, B1, B3, B9, B12), O is the most dominant prefix in this meaning, while for the third group of subjects (e.g. A1, A3, A7, A13, B2, B5, B15), O and OB are two nearly equally strong competing candidates for the spatial meaning. This fact goes along with numerous decisions to give more than one response form for the same nonce stimulus and the high degree of hesitation observed in the administering of the experiment. Clearly, the Split Hypothesis fails to account for this individual variation in prefix preferences.

Now I turn to the phonologically problematic environments and consider the distribution of prefixes there. Figures 21 and 22 present the distribution of the prefixes O, OB and OBO across nonce verbal and adjectival stimuli respectively with simple onsets.

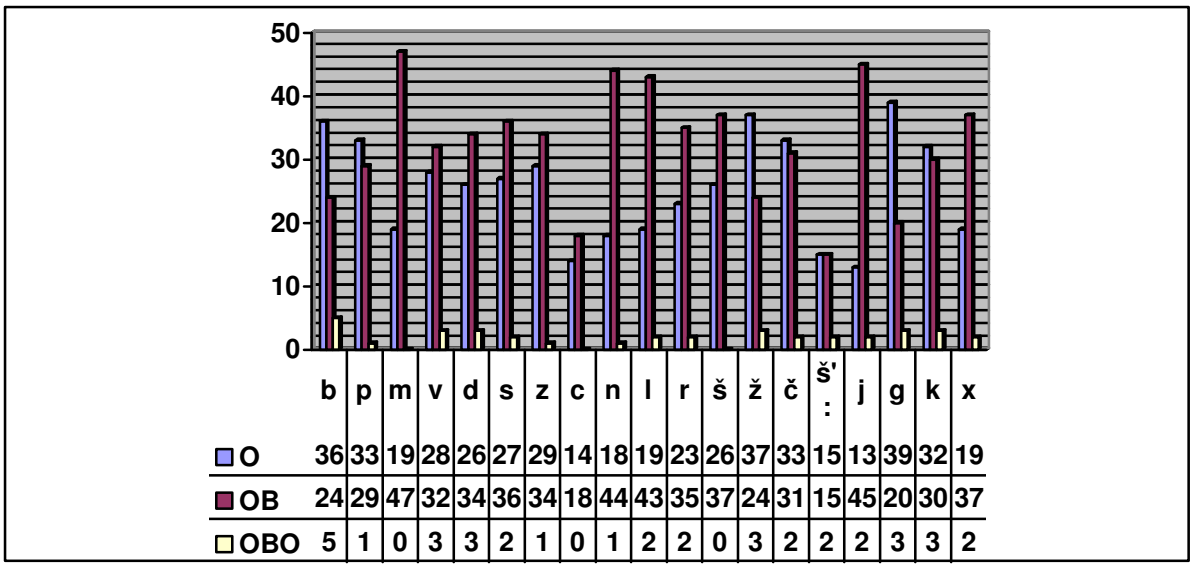


Figure 21. Distribution of the prefixes OB, O and OBO across nonce verbal stimuli with simple onsets.

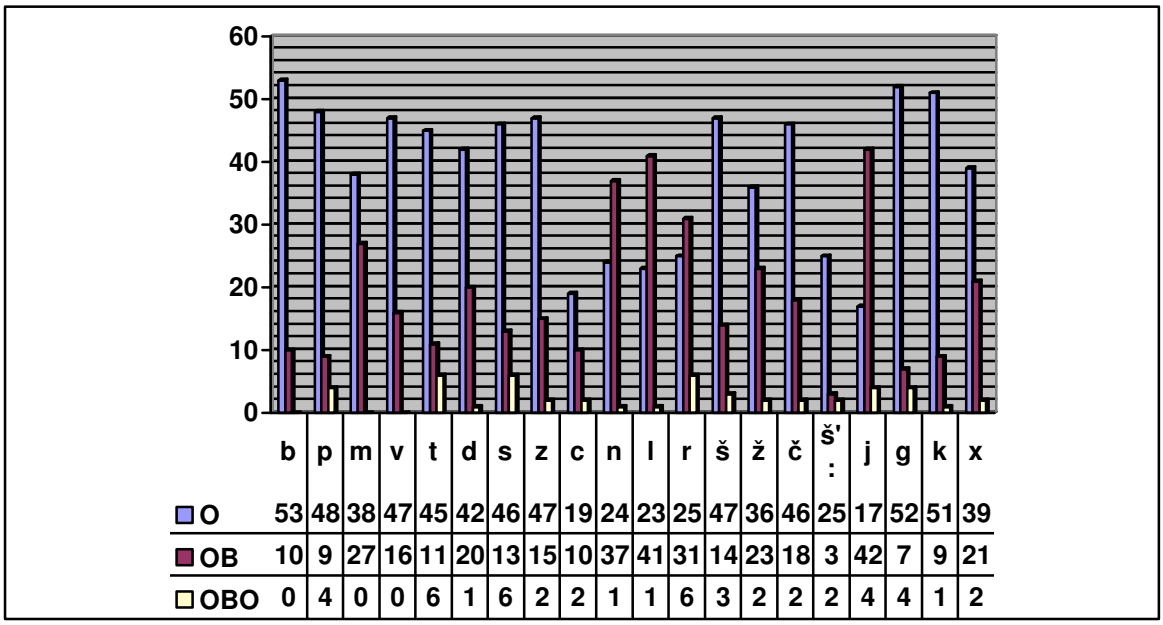


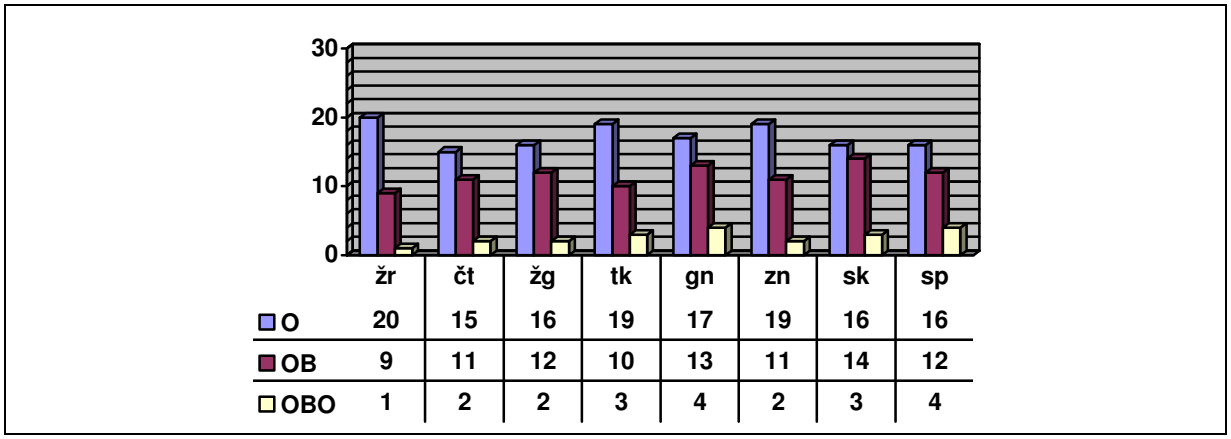
Figure 22. Distribution of the prefixes O, OB, OBO across nonce adjectival stimuli with simple onsets.

Phonological factors play an important role in the choice of the prefix. Most environments that were expected to be problematic for OB (stem-initial *b* and *p*) or O (stem-initial sonorants but not *v*) do trigger a pattern of distribution different than that of neutral contexts.

Figure 21 shows that for the verbs with spatial meaning that start with *p* or *b,* the prefix O is preferred over OB, though the variation between the two prefixes is suprisingly high.

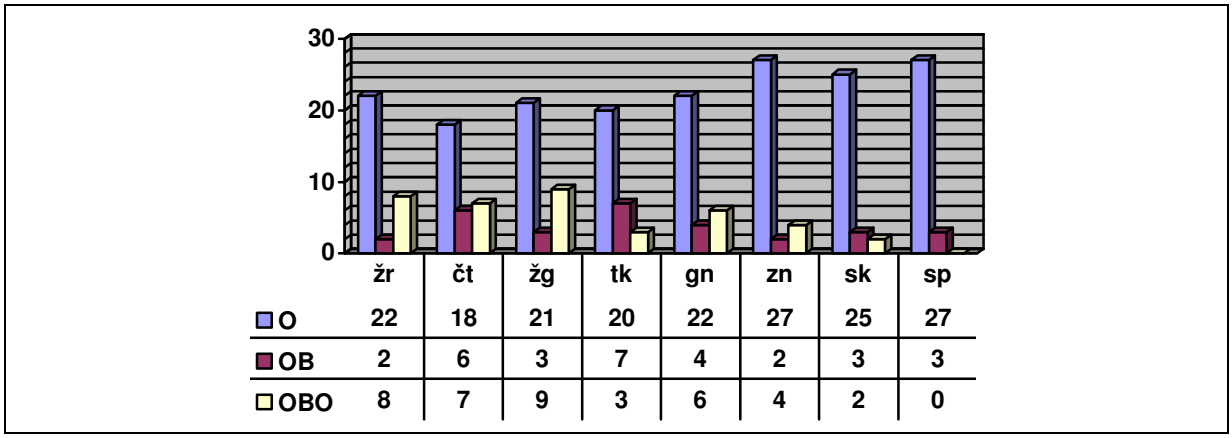
Figure 22 shows that the stem-initial sonorants *n, l, r, j* trigger the prefix OB more often than other simple onsets. However, the prefix O occurs more often in front of the simplex-initial sonorants than expected. These facts show that the semantic factor is stronger than the phonological well-formedness restrictions and often takes precedence in subjects' decisions. The sonorant *m* behaves differently and triggers O more often than expected. The labiodental *v* which has an intermediate status in the Russian phonological system, behaves not like sonorants as predicted by the Split Hypothesis, but rather like other obstruents.

Figures 23 and 24 show the distribution O, OB and OBO across the nonce verbal and adjectival stimuli with complex onsets.



	žr	čt	žg	tk	gn	zn	sk	sp
O	20	15	16	19	17	19	16	16
OB	9	11	12	10	13	11	14	12
OBO	1	2	2	3	4	2	3	4

Figure 23. Distribution of the prefixes OB, O and OBO across nonce verbal stimuli with complex onsets.



	žr	čt	žg	tk	gn	zn	sk	sp
O	22	18	21	20	22	27	25	27
OB	2	6	3	7	4	2	3	3
OBO	8	7	9	3	6	4	2	0

Figure 24. Distribution of the prefixes O, OB and OBO across nonce adjectival stimuli with complex onsets.

These Figures demonstrate that OBO is surprisingly rare in the spatial semantic domain and is often replaced by the prefix O as a repair strategy. The prefix OB occurs more often in the spatial domain than in the factitive one. Interestingly, the effect of compatibility / incompatibility of the onset clusters with the preceding B is not seen from these data. Clusters behave the same regardless of whether they are compatible with *b* or not. The main property

here was that they are complex clusters as opposed to simple clusters and therefore trigger a different strategy. This suggests that the prefix OBO might be more lexicalized in the real words than expected.

Summing up this discussion, the experimental results support the major claim of the Split Hypothesis concerning the semantic preferences for O and OB. However, other experimental results contradict the Split Hypothesis and suggest a different interpretation of relations between O, OB and OBO. The Split Hypothesis fails to account for the high degree of variation in the choice of the prefix in neutral phonological environments. Since we deal with nonce words, those response forms that contradict the predictions of the Split Hypothesis cannot be related to the lexicalization of a pattern that dates from before the morphological split. This suggests a unified account which views O and OB as variants of a single morpheme.

5.4. Summary

The experimental results conform to the main prediction of the Split Hypothesis: the prefix OB is the most frequent for spatial meaning MOVE AROUND AN OBJECT, while the prefix O is the most frequent for factitive meaning MAKE X. This distribution was found to be statistically very significant. However, other experimental results contradict the Split Hypothesis and suggest a different interpretation of relations between O, OB and OBO.

The clearest contrast between O and OB was expected in the phonologically neutral environments (simplex onsets other than *b, p*, sonorants and *v*). In stead of complementary distribution, the prefixes O and OBO show large overlap and variation which presents a challenge for the Overlap Hypoethesis.

Apart from the major result, there are many minor observations that sharpen the impact of the phonological factor. The labiodental *v* behaved not like a sonorant as predicted by the Split Hypothesis but rather like an obstruent. Interestingly, the prefix OB occured more often before stem-initial labial obstruents *b* and *p* than expected. O was used more frequently in front of simplex-initial sonorants than predicted. These facts show that the semantic factor is stronger than phonological well-formedness restrictions and often takes precedence in subjects' decisions. Unexpectedly, OBO was relatively rare as a cluster repair strategy, unlike the prefix O.

In Chapter 6 I compare the experimental results with the results on the corpus-based lexical data from Chapter 3. There I arrive at a final conclusion on the morphological status of the three prefixes in question.

Chapter 6

Morphological status and Allomorphy of O, OB and OBO in Contemporary Standard Russian

So far in this thesis I have adopted an agnostic view on the relations of O, OB, and OBO and have been calling them *prefixes* without passing judgement on what morphological status they have, whether they are separate morphemes or allomorphs of the same morpheme. This position made it possible to maximize objectivity from an unbiased position and collect valid and reliable data that can shed some light on this issue. In this chapter I evaluate the Split Hypothesis according to the results of my study and summarize the arguments of my account. Here I compare the results of the corpus-based analysis presented in Chapter 3 and the experimental results reported on in Chapter 5. I propose that they challenge the Split Hypothesis and favor the alternative unified account of O, OB and OBO.

6.1. Overlap in the lexicon

Recall that the Split Hypothesis was formulated in a rather approximate way being a generalization of a strong tendency observed in the distribution of O, OB and OBO. The opposition observed in some clear classes of verbs (pure motion verbs vs. pure factitive verbs) was further applied to account for the entire group of lexemes that attach these prefixes.

However, I argue that apart from those clear cases used in the argumentation of the Split Hypothesis, there are also many intermediate transitional verbs that fit equally well into both semantic domains. For example, the verbs *obsušit'* 'make dry from all sides', *ozerkalit'* 'cover with mirrors', *oblyset'* 'grow bold', *opušit'* 'edge, trim with fur', *osvincevat'* (tech.) 'cover with lead', *očexlit'* 'put into a case', *oškurit'* 'rub a wooden surface with a sandpaper to make it smooth', *obdernit'* 'cover an area with turf' simultaneously imply spatial enclosure or coverage and a change of state of the Landmark. In my analysis of the corpus-based lexical data I have shown that such semantically transitional perfective verbs are also special in terms of their word-formation. They usually have not only a verbal base but also a nominal or adjectival base and these word-formation links provide multiple motivations. I have shown that this word-formation and semantic pattern is very frequent and cannot be ignored in the account of these prefixes. More precisely, it yields 333 perfective verbs, or 32 % of all verbs

in my database. I argue that this large piece of data was crucially underestimated in the Split Hypothesis and challenges its empirical foundations.

I propose that this transitional type of perfective verbs that fit in both spatial and factitive semantic domains provides a substantial bridge between them and gives evidence of their systematic relations. In this account, the verbs that denote a spatial change via enclosure or affecting the surface(s) of an object like *okrasit'* 'paint', *oblicevat'* 'face', *okruglit'* 'round off' (NP, FP) serve as the source for metaphorical extension of the concept of change into the non-spatial domain of human emotions and behavior and therefore are directly related to verbs like *opečalit'* 'sadden', *osramit'* 'shame', *op'janit'* 'make drunk', etc. Thus, the transitional verbs that provide this link make it possible to incorporate the spatial and factitive meanings into a single model such as the one I presented in Chapter 3 (Figure 4). The Split Hypothesis focuses on the semantic opposition of these domains, while my analysis gives a more faithful and adequate description of the empirical data.

6.2. Variation in the lexicon

In the long list of perfective verbs prefixes with O, OB and OBO there are many minimal pairs that differ only in terms of the prefix. Andrews (1984) in her study concentrated on those pairs that contain two semantically distinct lexemes like *o-žit'* 'revive, come to life' vs. *ob-žit'* 'render habitable, assimilate a new place as a home'. Though she notices in the beginning that the phenomena she is looking at are rather trends that are not completely established in every position (Andrews 1984: 447), the overall conclusion is that O and OB constitute two separate morphemes. Again, Andrews's insightful study suffers from the overgeneralization of the discovered semantic opposition to the entire group of lexemes that exhibit these prefixes.

Here it is crucial that the verbs in many minimal pairs analyzed in Andrews 1984 are polysemous. Being different in one meaning, they often overlap in another meaning and exhibit close synonymic relations. For example, the verbs *o-govorit'* 'set aside in advance' and *ob-govorit'* 'discuss' are interchangeable in their other meaning 'slander'.

There are also many verbs that exhibit variation in the choice of the prefix and are assigned the same meaning in the dictionaries (e.g. *o-bit' – ob-bit', o-vejat' – ob-vejat', o-terebit' – ob-terebit', o-tesat' – ob-tesat', o-kleit' – ob-kleit', o-kurguzit' – ob-kurguzit'*, *o-žeč' – ob-žeč'*, *ozlit' – obozlit'* etc.). They might have a stylistic difference with O-verbs being more standard and OB-verbs being more colloquial (e.g. *o-smotret'* vs. *ob-smotret'* 'look

around') (Alexeeva 1998: 10). The crucial fact here is the possible variation and interchangeability of the prefixes. Interestingly, this creates duplicate linguistic signs that often start developing some semantic difference, because ideally a difference in linguistic form should signify a difference in meaning. This natural tendency was also observed in my experiment, when a subject expressed their intuition about the semantic difference of the verbs *o-bežat'* and *ob-bežat'* 'run around' (recall the discussion from Chapter 5).

Thus, I argue that the variation in the choice of the prefix in many close synonyms weakens the Split Hypothesis and supports a unified account of O, OB and OBO as one morpheme.

6.3. Counterexamples in the lexicon

Apart from the overlap and variation in the lexicon, there are also a number of counterexamples that the Split Hypothesis fails to account for. For example, the verbs with clear spatial meaning *o-kol'cevat'* 'encircle', *o-kružit'* 'surround', *o-kantovat'* 'mount all around', *o-gorodit'* 'fence around' that were expected to have the prefix OB in non-problematic for it phonological environments, have the prefix O instead.

The Split Hypothesis tries to capture these data by saying that some prefixed verbs might have been generated before the morphological split (Krongauz 1998: 147) or that the Split itself is a process that is not completed yet in Modern Russian (Krongauz 1998: 139).

These assumptions suggested an experimental study where I examined the active contemporary patterns of word production. The subjects of this experiment were asked to generate prefixed verbs on the basis of nonce verbal and adjectival stimuli. As opposed to real Russian words, the data obtained in the experiment are clearly not lexicalized and therefore more informative in terms of testing the Split Hypothesis.

6.4. Overlap in experimental word-production

The experimental results have shown that the impact of the semantic and the phonological factors on the choice of prefix is statistically significant. This result supports the major prediction of the Split Hypothesis concerning the distribution of O and OB. However, apart from the major contrastive tendency, a large overlap of the proposed semantic and phonological domains was discovered in the experiment. This overlap is especially informative in non-problematic phonological contexts. The statistical data in Table 21 show the distribution of O and OB responses across nonce verbal and adjectival stimuli which

respectively correspond to spatial (MOVE AROUND AN OBJECT) and factitive (MAKE X) target meanings.

Chosen prefix	O		OB, OBO	
Stimulus type	verb	adj	verb	adj
Target semantics	spatial	factitive	spatial	factitive
Number of responses	315	495	382	197
Total:	810		579	

Table 21. Distribution of the prefixes in non-problematic phonological environments.

Recall that for non-problematic phonological environments the Split Hypothesis predicts a maximal contrast and complementary distribution of O vs. OB/OBO across the two semantic domains. However, the distribution of the prefixes observed in subjects' responces ad shown in Table 21 clearly contradicts this prediction.

One can see that OB/OBO responses in non-problematic phonological environment yield 579 response forms. 66% (2/3) of them were used to express the spatial meaning, while 34% (1/3) were used to express the factitive meaning.

O responses yield 810 response forms. 61% (3/5) of them were used to express the factitive meaning, while 39% (2/5) were used to express the spatial meaning.

If we look at the same data from another perspective, the spatial meaning was expressed in 697 target verbs. Now recall that we consider non-problematic phonological environments where both O and OB/OBO have equal chances to occur because there are no well-formedness constraints that could make one variant be more likely to appear than the other. From 697 (315 + 382) responses with spatial meaning, 315 (45%) were prefixed with O, while 382 (55%) were prefixed with OB/OBO. Notice that no O-responses were expected here according to the Split Hypothesis.

On the other hand, the factitive meaning was expressed in 692 (147 + 495) response forms. In 495 (71.5%) cases they had the prefix O and in 197 (28.5%) cases they were prefixed with OB/OBO. Notice that no OB/OBO verbs were predicted to appear here.

The shaded parts of Table 21 correspond to what correlations between the prefix and the stimulus/meaning were expected. The non-shaded fields present a challenge for the Split Hypothesis.

The overlap between O vs. OB/OBO can be measured where verbal stimuli attach not OB/OBO but O and where adjectival srimuli attach not O but OB/OBO.

The Split hypothesis can tolerate a small overlap between O and OB/OBO uses provided by a few exceptions. This is illustrated in Figure 25.

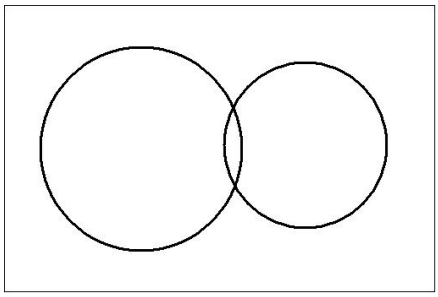


Figure 25. Small overlap (O vs. OB according to the Split Hypothesis).

The actual overlap between the uses of O and OB/OBO discovered in the experiment is much bigger (36.8 % of all responses). It is schematically represented in Figure 2.

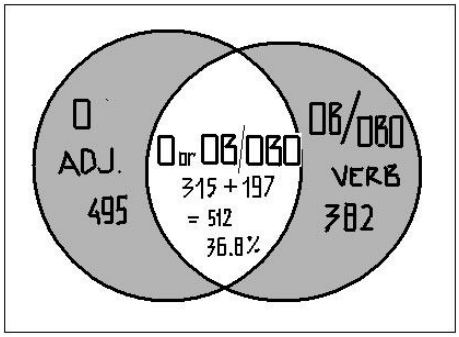


Figure 26. 36.8% overlap (O vs. OB according to experimental results).

Figure 26 represents all 1,389 responses that have non-problematic phonological environment, where each of the three prefixes had equal chances to appear. Thus, the only factor here at work is semantics. In other words, the choice of prefix here depends only on the meaning of the target verb (spatial or factitive). Figure 26 uses the data from Table 21 and demonstrates that 495 responses exhibit the predicted connection between O and factitive meaning (adjectival stimuli) and 382 responses show the connection between OB, OBO and the spatial meaning (verbal stimuli). These parts of the distribution were predicted and are shaded. The non-shaded part of Figure 26 contains 512 responses that do not dufferenciate between O and OB, OBO according to the semantic criterion. These responses yield 36.8% of all 1,389 responses. The Split Hypothesis fails to account for such a large overlap.

6.5. Variation in experimental word-production

Along with overlap, the experimental results also reveal variation in the choice of the prefix. This can be seen in subjects' decisions to give more than one possible response for the same nonce stimulus and the high degree of hesitation observed in the administration of the experiment.

6.6. Subjects' individual patterns

The degree of variation in the choice of the prefix becomes is even more obvious if one looks at the individual response patterns of different subjects. In Chapter 5 I showed that for some subjects OB was more frequent in spatial meaning than O, as expected. At the same time, there were subjects for whom O was the most frequent in spatial meaning. For the third group of subjects, O and OB were equally strong competing options for expressing the spatial meaning MOVE AROUND AN OBJECT.

Summing up, both the corpus-based and the experimental results challenge the Split Hypothesis and suggest the alternative view of the relation among O, OB and OBO.

6.7. The unified account for O, OB and OBO

On the basis of my results I argue that the Split Hypothesis underestimates the degree of overlap and variation. I propose a unified account that treats all three prefixes O, OB and OBO as one morpheme with some internal semantic specification of the allomorphs. This specification can be viewed as a natural consequence of the basic semiotic principle: a difference in phonological shape feeds the development of the difference in meaning. At the same time, the semantic specification of allomorphs does not cross the boundaries of the morphological domain of this complex morpheme.

Thus, the three allomorphs of one morpheme do not completely satisfy either of the two crucial criteria of regular allomorphy. First of all, one may say that the three allomorphs are not completely identical in terms of semantics. Instead of one clear meaning, this morpheme exhibits a rich polysemy that can be modeled as a cognitive radial category hierarchically organized around the central prototype. The three allomorphs of this morpheme differ in their productivity in different submeanings of its semantic network and their difference can be captured by Radial Category Profiling, as shown in Chapter 3. Secondly, the phonological distribution of the three allomorphs is not precisely complementary and allows a

large amount of overlap and variation. At the same time, the phonological distribution follows some strong tendencies that were found to be statistically significant. The allomorphy of O, OB and OBO represents a gradient and complex linguistic phenomenon that can be measured and recognized due to the statistical significance of the allomorphic distribution (both semantic and phonological).

This case study of the three prefixes then has important implications, because it suggests that the traditional well-established theoretical concept of allomorphy is too narrow and should be revised according to the empirical data described in the present study.

Chapter 7

Conclusion

In this study I have examined nontrivial relations between three Russian aspectual prefixes O, OB and OBO. The contribution of this study is twofold.

First, I addressed the issue of whether these prefixes constitute two morphemes, as suggested by the Split Hypothesis, or one morpheme. The Split Hypothesis claims that the distribution of O, OB and OBO in Contemporary Russian is due to the morphological split of a single historical source into two separate morphemes that differ both in their semantics and in the hierarchy of allomorphs. I have tested the Split Hypothesis against corpus-based lexical data as well as against the word-production mechanisms of Russian speakers examined in the psycholinguistic experiment. Both semantic and phonological factors were found statistically significant and do have a role in determining the choice of the prefix. However, the Split hypothesis fails to account for the significant variation and overlap in the uses of prefixes across semantic and phonological domains. Moreover, in Chapter 3 I showed that both spatial and non-spatial meanings of these prefixes are closely related and systematic and can be accounted for within a unified semantic model. Crucially, I demonstrated that all fourteen submeanings in this network can be expressed by each of the three prefixes in question.

The experimental results presented in Chapter 5 meet the major prediction of the Split Hypothesis: the prefix OB is the most frequent for the spatial meaning MOVE AROUND AN OBJECT, while the prefix O is the most frequent for the factitive meaning MAKE X. However, the high degree of variation in the choice of the prefix in neutral phonological environments (simplex onsets other than *b, p*, sonorants and *v*) and in individual response patterns of different subjects, as well as subjects' hesitations in the choice of the prefix present a challenge for the Split Hypothesis and suggest an alternative unified account.

On the basis of my results, I argue for the alternative view that treats O, OB and OBO as one morpheme with a non-complementary but at the same time statistically significant distribution of allomorphs[44]. This suggests that the traditional understanding of allomorphy is too narrow and should be revised according to the gradient and complex nature of this linguistic phenomenon. In this light, the present study contributes to the theoretical

[44] This idea is ullustrated on the front page of the thesis. The three elements might vary and look at different directions but at the same time be under a single harness and draw a single slay/cart.

understanding of allomorphy and provides empirical data that can sharpen the model of a language.

Secondly, in this study I have also addressed another long-standing issue of Russian linguistics – the issue of "empty" uses of prefixes in Natural Perfectives. Traditionally, it is assumed that in Natural Perfectives a prefix has no semantic content but only a purely aspectual perfectivizing function. My findings challenge this view and support the alternative account (the Overlap Hypothesis) that argues that Russian aspectual prefixes are never semantically "empty". According to this account, the zero semantic contribution of the prefix in Natural Perfectives is an illusion that arises from the overlap between the meaning of a simplex base verb and the meaning of a prefix.

In Chapter 3, I have tested the Overlap Hypothesis against the "empty" and "non-empty" uses of the prefixes O, OB and OBO. In order to provide a thorough and detailed semantic analysis, a database was created. It contained 1,039 perfective verbs collected from two sources – the Russian National Corpus and the Grammatical Dictionary of the Russian Language (Zaliznjak 1980). In order to account for the polysemy of individual verbs, five dictionaries were consulted (Ožegov & Švedova 2001; Efremova 2000; Ushakov 2008; Evgen'eva 1999; Kuznetsov 2000). Crucially, the "non-empty" uses of O, OB and OBO in Specialized and Factitive Perfectives and the "empty" uses of these prefixes in Natural Perfectives were found to be closely related: they share the same semantic network and exhibit isomorphic relations.

Unlike most other Russian prefixes, O, OB and OBO form a large number of verbs that belong to the type of Factitive Perfectives[45]. Since this type of perfective is not captured in Janda's (2007b) cluster model of Russian aspect, introduction of this type into the model became a theoretical contribution of the present study. As opposed to other types of perfective verbs, Factitive Perfectives lack a verbal base and have a nominal or an adjectival base instead (e.g. *o-cep'-it'* 'surround, cordon off.FP.' from noun *cep'* 'chain'). Many verbs prefixed with O, OB and OBO are multiply motivated and therefore simultaneously represent Factitive Perfectives and Specialized or Natural Perfectives. As shown in Table 22, such transitional cases are very frequent and yield 333 verbs (32% of all verbs in the database).

[45] More precisely, in Factitive Perfectives O, OB and OBO are parts of a bigger morpheme – a circumfix.

194 NP

589 SP

PF type	Number of entries
NP	44
NP, FP	150
SP	406
SP, FP	183
FP	224
deetymologized PF	32
Total:	1039

557 FP

Table 22. Distribution of perfective verbs prefixed with O, OB, OBO across types of perfectives

In Chapter 3, I have shown that this transitional type of verbs with multiple motivation plays a crucial role in my semantic account for Natural Perfectives.

The idea of semantically "empty" prefixes contradicts the main assumption of cognitive linguistics that meaning is a necessary part of each linguistic sign. The present study shows that traditionally assumed semantic "emptiness" of the prefixes O, OB and OBO in Natural Perfectives is an illusion. Thus, this case study contributes to cognitive linguistic research on Russian aspectual prefixes.

The unified account of the prefixes O, OB and OBO proposed in the thesis can be further elaborated and tested in future research. There are several possible directions. First, it is important to compare the prefixes O, OB and OBO with corresponding prepositions that also have both spatial and non-spatial uses. Secondly, the investigation of the prefix OBO and its distribution can become the goal of a separate experiment that could test a larger number of stem-initial clusters. Thirdly, one may want to undertake a comparative study of O, OB and OBO as opposed to other Russian prefixes, especially those that can form Factitive Perfectives too (e.g. the prefix U). Moreover, since the prefixes O, OB and OBO exist in all Slavic languages, one can investigate to which degree they share the properties of these prefixes found in Russian and in what aspects they are language-specific. Interestingly, some O-verbs might be related not to OB but to the prefix OT (e.g. *ostavit'* 'leave, preserve') as mentioned in (Andersen 1969 a; Alexeeva 1978). They are rare and were excluded from the present study but one could examine this issue in greater detail. Clearly, the prefixes O, OB and OBO form a large area of nontrivial linguistic data that should be further exsplored.

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List of abbreviations

ACC	–	accusative case
ADJ	–	adjective
ADV	–	adverb
FP	–	Factitive Perfective
FUT	–	future tense
GEN	–	genitive case
GER	–	gerund
IMP	–	imperfective aspect
INF	–	infinitive
INSTR	–	instrumental case
INTRANS	–	intransitive
LOC	–	locative case
NOM	–	nominative case
NP	–	Natural Perfective
PART	–	participle
PAST	–	past tense
PF	–	perfective aspect
PP	–	prepositional phrase
PRED	–	predicative
PREP	–	preposition
PRES	–	present tense
RNC	–	Russian National Corpus
SP	–	Specialized Perfective
TRANS	–	transitive

Appendix 1. Excerpt from the database of perfective verbs prefixed with O, OB and OBO

IMP base	GLOSS	NON-VERBAL base	GLOSS	base type	PF Verb	GLOSS	PF type	Pref.	FREQ verbal base	FREQ PF	ONSET	SEMANTIC GROUP
valat'	roll, drag	no	no	verb	obvalat'	rall (in) all over	NP	ob	620	28	v	envelop
rum'anit'	make rosy, ruddy	rum'anyj	rosy, ruddy	verb, adj.	obrum'anit'	make rosy, ruddy all over	SP, FP	ob	9	1	r	envelop, make X
no	no	golyj	naked, bare	adj.	ogolit'(sja)	bare, strip	FP	o	4	250	g	make X

Table 6. Excerpt from the database of perfective verbs prefixed with O, OB and OBO.

Appendix 2: List of verbs for each semantic Subcategory

I. Specialized and Factitive Perfectives

Subcategory 1: MOVE AROUND AN OBJECT

# IMP base	Gloss	PF	Gloss	PFtype	Prefix
1. bežat'	run	o-bežat'	run around	SP	o
2. bežat'	run	ob-bežat'	run around	SP	ob
3. idti	go	obo-jti	go around	SP	obo
4. letet'	fly	ob-letet'	fly around	SP	ob
5. exat'	drive	ob-"exat'	drive around	SP	ob
6. vezti	convey, transport	ob-vezti	convey around	SP	ob
7. vesti	lead	ob-vesti	lead around	SP	ob
8. nesti	carry	ob-nesti	carry smth around	SP	ob
9. polzti	crawl	o-polzti	crawl around	SP	o
10. polzti	crawl	ob-polzti	crawl around	SP	ob
11. plyt'	swim	o-plyt'	swim/sail around	SP	o
12. plyt'	swim	ob-plyt'	swim/sail around	SP	ob
13. skakat'	gallop	ob-skakat'	gallop around	SP	ob
14. prygat'	jump	o-prygat'	jump around	SP	o
15. šagat'	walk	ob-šagat'	walk around	SP	ob
16. taščit'	drag	ob-taščit'	drag around smth	SP	ob
17. katit'	roll, drive fast, transport	ob-katit'	drive around	SP	ob

Table 1.

Subcategory 2: PASS BY

# IMP base	Gloss	PF	Gloss	PFtype	Prefix
1. bežat'	run	o-bežat'	run past, to the side of	SP	o
2. bežat'	run	ob-bežat'	run past, to the side of	SP	ob
3. idti	go	obo-jti	pass, avoid, leave out	SP	obo
4. letet'	fly	ob-letet'	fly past	SP	ob
5. jexat'	drive	ob-jexat'	drive past	SP	ob
6. nesti	carry	ob-nesti	leave out in serving	SP	ob
7. polzti	crawl	o-polzti	crawl past	SP	o
8. polzti	crawl	ob-polzti	crawl past	SP	ob
9. teč'	flow	ob-teč'	flow past	SP	ob
10. gnut'	bend	obo-gnut	bend around	SP	ob

Table 2.

Subcategory 3: OVERTAKE

# Base	Gloss	PF	Gloss	PF type	Prefix
1. gnat'	drive, urge	obo-gnat'	leave behind, pass, outstrip	SP	obo
2. idti	go	obo-jti	leave behind	SP	obo
3. skakat'	gallop	ob-skakat'	gallop ahead, overtake	SP	ob
4. pered	front	o-peredit'	outstrip, leave behind	FP	o

Table 3.

Subcategory 4: OUTDO

#IMP base	Gloss	PF	Gloss	PFtype	Prefix
1. igrat'	play	ob-ygrat'	win, beat at a game	SP	ob
2. idti	go	obo-jti	surpass in some activity	SP	obo
3. skakat'	gallop	ob-skakat'	outdo at some activity	SP	ob
4. lovit'	try to catch	ob-lovit'	outdo others in catching fish[46]	SP	ob
5. borot'(sja)	fight, struggle	o-borot'	overcome, fight down	SP	o
6. ščelkat'	crack	ob-ščelkat'	win over smb in a game	SP	ob
7. silit'(sja)	force to do	o-silit'(sja)	win in a fight, manage to do	SP,FP	o
sila	force (noun)				o…it'
8. deržat'	hold	o-deržat'	win, gain, prevail over	SP	o
9. deetymologized		odolet'	overcome	no	---

Table 4.

Subcategory 5: MISTAKE

# Base	Gloss	PF	Gloss	PF type	Circumfix
1. znat'	know	obo-znat'-sja	take someone for someone else	SP	obo…sja
2. sčitat'	calculate	ob-sčitat'-sja	make a mistake in calculation	SP	ob…sja
3. govorit'	speak	o-govorit'-sja	make a mistake in speaking	SP	o…sja
4. pečatat'	type	o-pečatat'-sja	misprint	SP	o...sja
5. pisat'	write	o-pisat'-sja	make a mistake in writing	SP	o…sja
6. slyšat'	hear	o-slyšat'-sja	mishear	SP	o…sja
7. seč'	flog, cut into pieces	o-seč'-sja	miss the target shooting	SP	o…sja
8. prostofil'a	goof, silly person	o-prostofil-it'-sja	make a mistake, blunder, goof	FP	o…it'sja
9. prostovolosyj	loose-haired	o-prostovolos-it'-sja	disgrace oneself through a mistake	FP	o..it'sja
10.deetymologized		obmišulitsa	make a mistake	no	---
11. deetymologized		ošibit'sja	mistake	no	---

Table 5.

Subcategory 6: DECEIVE

# Base	Gloss	PF	Gloss	PFtype	Morpheme
1. merit'	measure	ob-merit'	cheat in measuring	SP	ob
2. vesit'	weigh	ob-vesit'	cheat in weighing goods	SP	ob
3. sčitat'	calculate	ob-sčitat'	cheat in calculation, short-change	SP	ob
4. delit'	divide, share	ob-delit'	do out of one's fair share	SP	ob
5. xitrit'	use cunning, guile, dissemble	ob-xitrit'	deceive	SP	ob
6. egorit'	cheat	ob-"egorit'	cheat, swindle	SP	ob
7. žulit'	swindle	ob-žulit'	swindle	SP	ob
8. lapošit'	cheat	ob-lapošit'	cheat	SP	ob
9. bolvan	fool (noun)	o-bolvan-it'(sja)	cheat, make a fool out of smb.	FP	o…it'
10. durit'	play tricks	ob-durit'	fool	SP,FP	ob
dur(ak)	fool (noun)				ob…it'
11. idti	go	obo-jti	cheat, take in, fool	SP	obo
12. dut'	blow	ob-dut'	cheat, fool	SP	ob
13. krutit'	wind	ob-krutit'	deceive	SP	ob
14. krutit'	wind	o-krutit'	subdue via cunning	SP	o

[46] This meaning is attested in the Efremova's dictionary (2000).

15. deetymologized	obmanut’	cheat		no	---
16. deetymologized	obmišulit’	deceive		no	---

Table 6.

Subcategory 7: OVERDO

# IMP base	Gloss	PF	Gloss	PFtype	Morpheme
1. est’	eat	ob-"est’-sja	overeat	SP	ob…sja
2. xavat’	eat (vulg.)	ob-xavat’-sja	overeat (vulg.)	SP	ob…sja
3. treskat’	eat	ob-treskat’-sja	overeat	SP	ob…sja
4. lopat’	guzzle, eat	ob-lopat’-sja	overeat	SP	ob…sja
5. žrat’	guzzle, gobble (of animals)	obo-žrat’-sja	overeat, guzzle, stuff	SP	obo…sja
6. pit’	drink	ob-pit’-sja	drink oneself stupid, drink to excess	SP	ob…sja
7. pit’	drink	o-pit’-sja	drink oneself stupid, drink to excess	SP	o…sja
8. kurit’	smoke	ob-kurit’-sja	smoke too much, get over-intoxicated	SP	ob…sja
9. revet’	cry	ob-revet’-sja	cry too much	SP	ob…sja
10. čitat’	read	ob-čitat’-sja	read too much	SP	ob…sja
11. xoxotat’	laugh	ob-xoxotat’-sja	laugh too much	SP	ob…sja
12. ržat’	neigh, laugh at	obo-ržat’-sja	laugh too much	SP	obo…sja
13. šeptat’	whisper	ob-šeptat’-sja	whisper too much	SP	ob…sja
14. dyšat’	breathe	ob-dyšat’-sja	breathe too much (paint fumes, fresh air, etc.)	SP	ob…sja
15. mečtat’	dream	ob-mečtat’-sja	spend too much time dreaming	SP	ob…sja
16. vorovat’	steal	ob-vorovat’-sja	do too much robbing	SP	ob…sja
17. zvonit’	ring	ob-zvonit’-sja	talk, ring, scream for too long	SP	ob…sja
18. pet’	sing	ob-pet’-sja	sing too much	SP	ob…sja
19. smotret’	look at	ob-smotret’-sja	watch smth too much	SP	ob…sja
20. iskat’	search	ob-iskat’-sja	spend too much time searching in vain	SP	ob…sja
21. smejat’sja	laugh	ob-smejat’sja	laugh too much	SP	ob
22. lenit’sja	be lazy	ob-lenit’-sja	become too lazy	SP, FP	ob
len’	lazyness (noun)				ob…it’-sja
23. kormit’	feed	ob-kormit’	overfeed	SP, FP	ob
24. poit’	give to drink	o-poit’	injure by giving too much to drink	SP	o
25. uzit’	make narrow	ob-uzit’	make too narrow	SP, FP	ob
uzkij	narrow (adj.)				ob…it’
26. kurguzit’	cut tail or edges of clothes	ob-kurguzit’(sja)	cut too much	SP, FP	ob
kurguzyj	short (adj.)				ob…it’
27. kurguzit’	cut tail or edges of clothes	o-kurguzit’(sja)	cut too much	SP, FP	o
kurguzyj	short (adj.)				o…it’

Table 7.

Subcategory 8: METAPHORICAL PASS BY

#	IMP base	Gloss	PF	Gloss	PFtype	Morpheme
1.	govorit'	speak	ob-govorit'	slander	SP	ob
2.	govorit'	speak	o-govorit'	slander	SP	o
3.	lgat'	tell lies	obo-lgat'	tell lies about someone	SP	obo
4.	boltat'	chat	o-boltat'	slander	SP	o
5.	klevetat'	calumniate	o-klevetat'	slander, defame	SP, FP	o
	kleveta	slander (noun)				o...at'
6.	zvat'	call	obo-zvat'(sja)	give a bad nickname	SP	obo
7.	slušat'(sja)	obey	o-slušat'sja	disobey	SP	o
8.	ždat'	wait	obo-ždat'	wait for a while	SP	obo

Table 8.

Subcategory 9: AFFECT A NUMBER OF OBJECTS

#	IMP base	Gloss	PF	Gloss	PFtype	Prefix
Unidirectional motion verbs:						
1.	bežat'	run	ob-bežat'	running visit many places	SP	ob
2.	bežat'	run	o-bežat'	running visit many places	SP	o
3.	idti	go	obo-jti	make a round (of doctor, sentry)	SP	obo
4.	letet'	fly	ob-letet'	flying visit many places	SP	ob
5.	vezti	convey, transport	ob-vezti	go the round of	SP	ob
6.	nesti	carry	ob-nesti	serve round to several people	SP	ob
Non-directional motion verbs:						
7.	begat'	run	ob-bEgat'	running visit many places	SP	ob
8.	begat'	run	o-bEgat'	running visit many places	SP	o
9.	letat'	fly	ob-letat'	flying visit many places	SP	ob
10.	xodit'	walk, go	ob-xodit'	walking visit many places	SP	ob
11.	ezdit'	travel, drive	ob-"ezdit'	travelling/driving visit many places	SP	ob
12.	lazit'	climb	ob-lazit'	climb everywhere	SP	ob
13.	lazat'	climb	ob-lazat'	climb all over the place	SP	ob
14.	polzat'	crawl	ob-pOlzat'[47]	crawling visit many spots	SP	ob
15.	polzat'	crawl	o-pOlzat'	crawling visit many spots	SP	o
16.	plavat'	swim	ob-plavat'	swimming visit lots of places	SP	ob
Movement verbs:						
17.	šagat'	walk	ob-šagat'	walking visit lots of places	SP	ob
18.	šastat'	roam, hang about	ob-šastat'	roaming visit many places	SP	ob
19.	šmygat'	dart	ob-šmygat'	darting visit a lot of places	SP	ob
20.	šnyrit'	sniff, snoop	ob-šnyrit'	examine a number of places	SP	ob
21.	šnyrjat'	run, rush	ob-šnyrjat'	run and explore a lot of places	SP	ob
Other:						
22.	ryskat'	search	ob-ryskat'	searching for smth visit many places	SP	ob
23.	zvonit'	give a call	ob-zvonit'	give a call to a number of people	SP	ob
24.	prosit'	ask	o-prosit'	interview, interrogate a number of people	SP	o
25.	zanimat'	borrow	ob-zanimat'	borrow from many people	SP	ob
26.	stirat'	wash clothes	ob-stirat'(sja)	wash clothes for many people or all clothes for one person	SP	ob
27.	činit'	fix	ob- činit'	fix objects for many people or	SP	ob

[47] Here the capital letter indicates the vowel which carries stress. The place of stress in this verb is crucial in distinguishing between perfective and imperfective aspect. If stress is on the thematic vowel (*ob-polzAt'*), the verb is imperfective and cannot be in this Table.

			everything for one person		
28. šit’	sew	ob-šit’	make clothes for a group of people	SP	ob
			make all necessary clothes for one person		
29. štopat’	darn	ob-štopat’	darn all the clothes or	SP	ob
			clothes of many people		
30. delit’	divide, share	o-delit’	present, endow (with)	SP	o
31. rešat’	decide	ob-rešat’	decide on a number of questions	SP	ob
32. stučat’	knock	ob-stučat’	passing by houses or apartments	SP	ob
			knock at the door (Efremova 2006)		
33. stukat’	knock	ob-stukat’	knock everywhere, at many places	SP	ob
34. sčitat’	calculate	ob-sčitat’	calculate a number of things	SP	ob
35. gladit’	iron	ob-gladit’	iron all the clothes for someone	SP	ob
			or clothes for many people		
36. metit’	put a tag, label	ob-metit’	put tags on many places	SP, FP	ob
37. darit’	give a present	o-darit’	give presents to a number of people	SP, FP	o
			or endow generously one person		

Table 9.

Subcategory 10: SURROUND / ENCLOSE

# IMP base	Gloss	PF	Gloss	…..PFtype	Morpheme
attaching to the Landmark:					
1. vjazat’	tie, knit	ob-vjazat’(sja)	tie around, edge in	SP	ob
			chain-stitch (knitting)		
2. gorodit’	build, put a fence	ob-gorodit’(sja)	fence around	SP	ob
3. gorodit’	build, put a fence	o-gorodit’(sja)	fence around	SP	o
4. nesti	carry	ob-nesti	enclose (with), fence	SP	ob
5. murovat’	build a wall out of	ob-murovat’	encircle with a stone wall	SP	ob
	bricks, stones, clay				
6. stroit’(sja)	build	ob-stroit’(sja)	surround with buildings,	SP	ob
			parts of a building		
7. sadit’	plant	ob-sadit’	plant around	SP	ob
8. sadit’	put to sit	o-sadit’	besiege	SP	o
9. ložit’[48]	put, place	ob-ložit’(sja)	put around	SP	ob
10. stavit’	put, place	ob-stavit’(sja)	surround, furnish, arrange	SP	ob
11. vit’	twist, wind	ob-vit’(sja)	wind around, entwine	SP	ob
12. vit’	twist, wind	o-vit’(sja)	wind around, entwine	SP	o
13. krutit’	wind	ob-krutit’(sja)	wind smth around smth	SP	ob
14. krutit’	wind	o-krutit’(sja)	wind smth around smth	SP	o
15. gnut’	bend	obo-gnut’(sja)	bend around	SP	obo
16. motat’	wind	ob-motat’(sja)	wind around	SP…	ob
17. kidat’	throw	ob-kidat’	throw around	SP	ob
18. nizat’	string, thread beads	ob-nizat’	stringing beads, pearls	SP	ob
			decorate smth in a circle		
19. šit’	sew	ob-šit’	edge, border	SP	ob
20. stročit’	sew on a sewing machine	ob-stročit’	sew around on a sewing machine	SP	ob
21. tykat’	stick	ob-tykat’(sja)	surround with sticks	SP	ob
22. paxat’	plough, till	o-paxat’	plough land around	SP	o
23. deetymologized		obnjat’(sja)	embrace	no	---
24. deetymologized		objat’(sja)	surround	no	---

[48] This verb exists in the Russian common language (prostorečie) (Skvorcov 2005: 379 – 380).

Removing from the Landmark:

25. kopat’	dig	ob-kopat’	dig around	SP	ob
26. kopat’	dig	o-kopat’(sja)	dig around, entranch	SP	o
27. ryt’	dig	ob-ryt’	dig around	SP	ob
28. est’	eat	ob-"est’	eat at the edges	SP	ob
29. glodat’	gnaw	o-glodat’	pick, gnaw around	SP	o
30. gryzt’	gnaw	o-gryzt’	gnaw all around	SP	o
31. kosit’	mow grass	ob-kosit’(sja)	mow grass around smth	SP	ob
32. kosit’	mow grass	o-kosit’	mow grass around smth	SP	o
33. toptat’	trample	o-toptat’	trample around smth	SP	o
34. burit’	drill	o-burit’	apply drilling, drill around	SP	o
35. porot’	unpick, rip	o-porot’	unpick, rip around	SP	o
36. kromsat’	cut	ob-kromsat’	uneven and carelessly cut edges	SP	ob
37. kromsat’	cut	o-kromsat’	uneven and carelessly cut edges	SP	o
38. krošit’	crumb, chop, hack to pieces	ob-krošit’(sja)	crumble, break off in pieces from the outside, on the edges	SP	ob
39. kusat’	bite	ob-kusat’	bite around, nibble	SP	ob
40. lomat’	break	ob-lomat’	break off (edges)	SP	ob
41. lomit’	break	ob-lomit’(sja)	break off (edges)	SP	ob

Both directions:

42. gresti	rake	o-gresti(s’)	rake around	SP	o
43. valit’	heap up, pile up throw down	ob-valit’	heap around cause to fall	SP	ob

44. kružit’	circle	o-kruž-it’(sja)	encircle, surround	SP, FP	o
krug	circle (noun)				o…it’
45. kružit’	circle	ob-kruž-it’(sja)	encircle, surround	SP, FP	ob
krug	circle (noun)				ob…it’
46. najtovit’	connect and tie together with a rope	ob-najtovit’	tie around with a rope	SP, FP	ob
najtov	rope (noun)				ob…it’
47. graničit’	border	o-graničit’(sja)	limit, restrict	SP, FP	o
granica	frontier, boundary (noun)				o…it’
48. meževat’	draw a borderline	ob-meževat’	surround with boundaries	SP, FP	ob
meža	boundary (noun)				ob…evat’
49. čertit’	draw	ob-čertit’	draw around	SP, FP	ob
čerta	line (noun)				ob…it’
50. čertit’(sja)	draw	o-čertit’(sja)	outline, draw around	SP, FP	o
čerta	line (noun)				o…it’
51. prudit’	dam (up)	o-prudit’	surround with dams	SP, FP	o
prud	pond (noun)				o…it’
52. pojas	belt (noun)	o-pojas-at’(sja)	gird, girdle	FP	o….at’
53. rama	frame (noun)	ob-ram-it’	put into a frame	FP	ob…it’
54. cep’	chain (noun)	o-cep-it	surround, cordon off	FP	o it’
55. uzda	bridle (noun)	ob-uzd-at’	put a bridle on, control, curb	FP	ob..at’
56. lapa	paw (noun)	ob-lap-it’	embrace	FP	ob…it’
57. kuča	pile (noun)	o-kuč-it’	make a pile of soil around a plant	FP	o…it’
58. val	dyke, a long thick wall that is built to stop water flooding into a low area of land	ob-val-ovat’	dyke a bank (agric.)	FP	ob…ovat’
59. kajma	edging (noun)	o-kajm-it’(sja)	decorate with edging	FP	o..it’

Table 10.

Subcategory 11: AFFECT A SURFACE

#	IMP base	Gloss	PF	Gloss	PFtype	Affix
1.	dat’	give	ob-dat’(sja)	cover with liquid/gas	SP	ob
2.	delat’	do	ob-delat’	cover with some material	SP	ob
3.	šit’(sja)	sew	ob-šit(sja)	plank, sheathe	SP	ob
4.	kalit’	heat with high temperature	ob-kalit’	strongly heat the surface, from outside	SP	ob
5.	goret’	burn	ob-goret’	get burned on the surface	SP	ob
6.	gret’	heat, warm	o-gret’	swipe, hit smb hard (with a stick or other tool)	SP	o
7.	žeč’	burn	o-žeč’	burn, scorch	SP	o
8.	žeč’	burn	ob-žeč’	burn, scorch	SP	ob
9.	katit’	roll	ob-katit’(sja)	pour liquid on, soak	SP	ob
10.	katit’	roll	o-katit’(sja)	pour liquid on, soak	SP	o
11.	bryzgat’(sja)	splash	o-bryzgat’(sja)	splash, besprinkle (with) the surface	SP	o
12.	pleskat’	splash	o-pleskat’	splashing cover smth	SP	o
13.	pryskat’	sprinkle (with), spray	o-pryskat’	sprinkle, spray all the surface	SP	o
14.	sejat’	sow	ob-sejat’(sja)	sow a field	SP	ob
15.	sijAt’	shine, beam	o-sijat’	light the surface of smth	SP	o
16.	trogat’	touch	ob-trogat’	touch all the surface	SP	ob
17.	xvatat’	grab	ob-xvatat’	touching leave fingerprints everywhere	SP	ob
18.	pačkat’	dirty, soil, stain	ob-pačkat’(sja)	dirty all over	SP	ob
19.	pačkat’	dirty, soil, stain	o-pačkat’(sja)	dirty all over	SP	o
20.	myzgat’	dirty, soil, stain	ob-myzgat’(sja)	cover with dirt	SP	ob
21.	terebit’	pull a little, shake	ob-terebit’	pull all over	SP	ob
22.	terebit’	pull a little, shake	o-terebit’	pull all over	SP	o
23.	kapat’	drop	o-kapat’(sja)	cover with drops, spots	SP	o
24.	kapat’	drop	ob-kapat’(sja)	cover with drops, spots	SP	ob
25.	susolit’	dirty with spittle or fat	ob-susolit’(sja)	cover with spittle or fat	SP	ob
26.	tačat’	stitch without gaps; work on a detail	ob-tačat’	making stitches cover; make smooth	SP	ob
27.	tesat’	hew, chopping smooth along the surface, flatten	ob-tesat’(sja)	hew all the surface (wood, stone)	SP	ob
28.	tesat’	hew flatten (wood, stone)	o-tesat’(sja)	hew all the surface	SP	o
29.	šlifovat’	polish	o-šlifivat’	polish all the surface	SP	o
30.	šlixtovat’	(tech.) smooth, finish	o-šlixtovat’	(tech.) smooth, finish	SP	o
31.	topit’	heat	ob-topit’	melt smth on the surface (e.g. fat)	SP	ob
32.	kleit’	glue, stick	o-kleit’	cover with, glue	SP	o
33.	kovat’	forge, hammer	o-kovat’	bind with metal	SP	o
34.	konopatit’	caulk	o-konopatit’	caulk, plug holes everywhere	SP	o
35.	indevet’	get covered with hoar-frost	ob-yndevet’	be covered with hoar-frost	SP	ob
36.	slušat’	listen to	ob-slušat’	check the heartbeat	SP	ob
37.	plakat’	cry	ob-plakat’	cover smth with tears	SP	ob
38.	plevat’	spit	o-plevat’	spit on the surface all over	SP	o
39.	xarkat’	spit	ob-xarkat’	spit on smth, cover with spit	SP	ob
40.	blevat’(sja)	puke	o-blevat’(sja)	puke all over	SP	o
41.	kakat’	excrete	ob-kakat’	cover with excrements, spoil	SP	ob
42.	gadit’	excrete, spoil	o-gadit’	cover with excrements, spoil	SP	o
43.	dristat’	(vulg.) have diarrea	ob-dristat’	cover with excrements, spoil	SP	ob

44. srat’	(vulg.) excrete	obo-srat’(sja)	(vulg.) cover with excrements	SP	obo
45. ssat’	(vulg.) urinate	obo-ssat’(sja)	(vulg.) cover with urine	SP	obo
46. lezt’	crawl, go, fall out	ob-lezt’	loose hair, wool, feathers	SP	ob
47. drat’	strip, peel	obo-drat’(sja)	strip, skin, peel, flay; rob	SP	ob
48. skoblit’	scrape	ob-skoblit’	clean the surface by scraping it	SP	ob
49. toptat’	trample	ob-toptat’	trample all over the place	SP	ob
50. šelušit’(sja)	make flake off, come off, peel off	ob-šelušit’(sja)	make flake off	SP	ob
51. kolotit’	beat	o-kolotit’(sja)	remove by beating (e.g. clean a coat from snow)	SP	o
52. korjabat’	scratch off	o-korjabat’	scratch	SP	o
53. plavit’	melt, smelt	o-plavit’(sja)	melt	SP	o
54. teret’(sja)	rub, wipe	o-teret’(sja)	rub all over	SP	o
55. xlopat’	slap, bang	o-xlopat’	slap a surface	SP	o
56. lovit’	try to catch	ob-lovit’	(spec.) catch all fish in the entire reservoir (Ušakov)	SP	ob
57. klepat’	connect parts with rivets, metal pins	ob-klepat’	cover with rivets, metal pins	SP	ob
58. vesit’	hang	ob-vesit’	hang round (with), cover with	SP	ob
both directions					
59. sypat’	pour	o-sypat’(sja)	pour all over, cover with smth loose; destroy smth loose	SP	o
60. bit’	beat	ob-bit’(sja)	cover with, remove	SP	ob
61. bit’	beat	o-bit’(sja)	cover with, remove wear out at the edges, surface	SP	o

Transitional verbs:

62. ledenit’	freeze	ob-ledenit’	cover with ice	SP, FP	ob
ledjanoj	icy (adj.)				ob…it’
63. melit’	cover with chalk	ob-melit’(sja)	cover with chalk	SP, FP	ob
mel	chalk (noun)				ob…it’
64. mylit’	soap, lather	o-mylit’(sja)	cover with soap	SP, FP	o
mylo	soap (noun)				ob…it’
65. rešetit’	cover with holes	ob-rešetit’(sja)	cover with lattice	SP, FP	ob
rešeto (rešetka)	lattice				ob…it’
66. štampovat’	punch, press, stamp	o-štampovat’	punch, impress, stamp	SP, FP	o
štamp	stamp (noun)				ob…it’
67. škurit’	rub a wooden surface with a sandpaper to make it smooth	o-škurit’	rub a wooden surface with a sandpaper to make it smooth	SP, FP	o
škur(k)a	sandpaper (noun)				o…it’
68. zerkalit’	mirror	o-zerkalit’	cover with mirrors	SP, FP	o
zerkalo	mirror (noun)				o…it’
69. krasit’	paint	ob-krasit’(sja)	cover with paint	SP, FP	ob
kras-k-a	paint (noun)				o…it’
70. bagrit’	paint purple, crimson	o-bagrit’(sja)	crimson, incarnadine	SP, FP	o
bagrovyj	purple, crimson (adj.)				o…it’
71. veršit’	give a top (to a haystack), finish	ob-veršit’	give a top, finish, complete	SP, FP	ob
verx	top (noun)				ob…it’
72. gladit’	stroke	ob-gladit’	make smooth	SP, FP	ob
glagkij	smooth (adj.)				ob…it’
73. gladit’	stroke	o-gladit’	make smooth	SP, FP	o
glagkij	smooth (adj.)				o…it’
74. dernit’	cover with turf	ob-dernit’	cover an area with turf	SP, FP	ob

dern	turf (noun)				ob…it’
75. palubit’ paluba	cover with deck deck	o-palubit’	cover with a deck	SP, FP	o o..it’
76. penit’ pena	cover with foam foam	o-penit’(sja)	cover with foam	SP, FP	o o…it’
77. snežit’ sneg	cover with snow snow	o-snež-it’	cover with snow	SP, FP	o o..it’
78. maslit’ maslo	cover with butter, oil butter, oil	ob-maslit’	cover with oil	SP, FP	ob o…it’
79. belit’(sja) belyj	paint white; whiten one's face (for sja-verb) white (adj.)	o-belit’ (sja)	whitewash, vindicate, clear of blame, prove the innocence of	SP, FP	o o…it’
80. zelenit’ zelenyj	make/paint green green (adj.)	ob-zelenit’(sja)	make green, cover with trees, flowers	SP, FP	ob o…it’
81. grjaznit’ grjaznyj	make dirty dirty	o-grjaznit’	make dirty	SP, FP	o o..it’
82.drevesnet’ drevesnyj	(of plant cells) harden, acquire properties of wood wooden	o-drevesnet’	(of plant cells) harden, acquire properties of wood	SP, FP	o o…et’
83. drjablet’ drjablyj	become flabby flabby	o-drjablet’	become flabby	SP, FP	o o..et’
84. pušit’ pux	make fluffy fluff	o-pušit’(sja)	edge, trim (with fur); cover, powder (of hoar-frost or snow)	SP, FP	o o..it’
86. serebrit’ serebro	cover with silver silver	o-serebrit’	cover with silver	SP, FP	o o..it’
87. sinit’ sinij	make blue blue	o-sinit’	make blue	SP, FP	o o..it’
88. buret’ buruj	become brown brown	o-buret’	become brown	SP, FP	o o..et’
89. bronzovet’ bronzovyj	become tanned, bronzed bronze (adj.)	o-bronzovet’	become bronze	SP, FP	o o..et’
90. pero	feather	o-per-it’(sja)	cover with feathers, plumage	FP	o..it’
91. mox	moss	obo-mš-et’	get covered with moss	FP	obo…et’
92. lokot’	elbow (noun)	ob-lokot’-it’(sja)	prop, lean by an elbow towards smth	FP	o…it’
93. luč’	ray	ob-luč’-it’	irradiate	FP	ob…it’
94. pautina	spider web	o-pautin-it’(sja)	cover with a spider web	FP	o..it’
95. nagoj	bare, naked (adj.)	ob-naž-it’(sja)	open naked	FP	o…it’
96. veter	wind (noun)	ob-vetr-et’	become rough because of being exposed to the wind	FP	ob…et’
97. veter	wind (noun)	ob-vetr-it’(sja)	make rough by exposure to wind	FP	ob…it’(sja)
98. les	forest (noun)	ob-les-it’	plant a forest, cover land with forests	FP	o..it’
99. volosatyj	hairy (adj.)	ob-volosat-et’	become hairy, get lots of hair everywhere	FP	ob…et’
100. salo	fat, lard	ob-sal-it’(sja)	cover with fat	FP	ob..it’
101. kora	bark	o-kor’-it’	peel the bark	FP	o...it’
102. gnit’	decompose	ob-gnit’	decompose on the surface or on edges	SP	ob
103. gravirovat’	engrave	o-gravirovat’	engrave	SP	ob
104. brit’(sja)	shave	o-brit’(sja)	shave off	SP	o
105. dolbat’	hit	ob-dolbat’	remove from edges	SP	ob
106. dolbit’	make a deepening by beating, hitting the spot	ob-dolbit’	remove from edges	SP	ob

107. stupat’	step	ob-stupat’	step on smth a lot	SP	ob

Table 11.

Subcategory 12: ENVELOP

# IMP base	Gloss	PF	Gloss	PFtype	Prefix
1. žarit’	fry	ob-žarit’(sja)	fry on both sides, all over	SP	ob
2. ževat’	chew	ob-ževat’	chew all over	SP	ob
3. klevat’	peck	ob-klevat’	peck all around	SP	ob
4. vejat’	blow, fan	ob-vejat’	fan with; (agric.) winnow	SP	ob
5. lipnut’	stick	ob-lipnut’	stick all over	SP	ob
6. sosat’	suck	ob-sosat’	suck all over	SP	ob
7. žeč’	burn	ob-žeč’	heat from all sides, bake (bricks)	SP	ob
8. glodat’	gnaw	ob-glodat’	gnaw all over	SP	ob
9. lit’(sja)	pour	ob-lit’(sja)	pour all over	SP	ob
10. myt’	wash	ob-myt’(sja)	wash all over	SP	ob
11. rasti	grow	obrasti	grow all over	SP	ob
12. merit’	measure	ob-merit’	measure all directions	SP	ob
13. brat’	take	obo-brat’	pick, gather, rob	SP	obo
14. streljat’	shoot	ob-streljat’(sja)	fire at, bombard, shoot all over	SP	ob
15. ščupat’	touch, feel for	o-ščupat’(sja)	grope about	SP	o
16. ščupat’	touch, feel for	ob-ščupat’(sja)	grope about	SP	ob
17. xlestat’	lash, whip	ob-xlestat’	whip from all sides	SP	ob
18. xlopat’	slap, bang	ob-xlopat’	slap all over	SP	ob
19. šlepat’	smack	ob-šlepat’	smack all over	SP	ob
20. carapat’	cratch	ob-carapat’	cover with scratches all over	SP	ob
21. celovat’	kiss	ob-celovat’	kiss all over	SP	ob
22. kleit’	glue, stick	ob-kleit’	glue with smth all over	SP	ob
23. vešat’	hang	ob-vešat’(sja)	hang around (with), cover with, all over	SP	ob
24. lizat’	lick	ob-lizat’	lick all over	SP	ob
25. strogat’	plane	o-strogat’	plane from all sides	SP	ob
26. strugat’	plane	ob-strugat’	plane from all sides	SP	o
27. varit’(sja)	boil, cook	ob-varit’(sja)	pour boiling water over, scald	SP	ob
28. valjat’	roll, drag	ob-valjat’sja	roll oneself (in) all over	SP	ob
29. vertet’	twirl, turn round and round	ob-vertet’	wrap up (in)	SP	ob
30. krutit’	wind	ob-krutit’(sja)	wind smth all over	SP	ob
31. voloč’	drag	ob-voloč’	envelop, cover all over	SP	ob
32. vjalit’	jerk, marinate (fish), cover with spices	ob-vjalit’	jerk all over, from all sides	SP	ob
33. gryzt’	gnaw	ob-gryzt’	gnaw from all sides	SP	ob
34. žat’	press, squeeze; reap	ob-žat’(sja)	press out, squeeze round, wring out; reap, cut, mow (the whole of)	SP	ob
35. kurit’	smoke	ob-kurit’	spread the smoke all over the place; fumigate	SP	ob
36. kusat’	bite	ob-kusat’	bite all over	SP	ob
37. lapat’ lapa	touch rudely paw (noun)	ob-lapat’	redely, clumsily hug, touch	SP, FP ob…at’	ob
38. deetymologized		oblačit’(sja)	put a dress on	no	
39. deetymologized		obleč’(sja)	put a dress on	no	
40. lepit’	stick	ob-lepit’(sja)	stick all over	SP	ob
41. musolit’	beslobber, soil (with wet or sticky hands)	ob-musolit’(sja)	beslobber, soil all over	SP	ob

42. moxnatyj	hairy (adj.)	ob-moxnat-et'	become very hairy	FP	ob..et'
43. mundir	uniform (noun)	ob-mundir-ovat'	provide uniforms, dress	FP	ob..ovat'
44. njuxat'	smell (at)	ob-njuxat'	sniff around, all over	SP	ob
45. gret'	heat, warm	obo-gret'(sja)	heat, warm all over	SP	obo
46. putat'(sja)	tangle (a thread)	o-putat'(sja)	entangle all over	SP	o

Table 12.

Subcategory 13: METAPHORICAL SURROUND

#	IMP base	Gloss	PF	Gloss	Ftype	Prefix
1.	govorit'	speak, talk	ob-govorit'	discuss	SP	ob
2.	govorit'	speak, talk	o-govorit'	make a stipulation	SP	o
3.	sudit'	judge	ob-sudit'	discuss	SP	ob
4.	dumat'	think	o-dumat'	think over, consider	SP	o
5.	dumat'	think	ob-dumat'	think over, consider	SP	o
6.	risovat'	draw, paint	ob-risovat'(sja)	outline, depict	SP	ob
7.	pisAt'	write	o-pisAt'	describe	SP	o
8.	vorožit'	practice sorcery	ob-vorožit'	fascinate, charm, enchant	SP	ob
9.	bereč'(sja)	take care of	o-bereč'(sja)	guard, protect	SP	o
10.	deržat'	hold	o-deržat'	gain, prevail over	SP	o
11.	delat'(sja)	do	ob-delat'(sja)	manage, succeed	SP	ob
12.	ladit'	manufacture, build	ob-ladit'(sja)	arrange, bring to the right state	SP, FP	ob
	lad	peace, order (noun)				ob…it'
13.	strjapat'	bake	ob-strjapat'	successfully arrange some business	SP	ob
14.	igrat'	play	ob-ygrat'	use in a creativity process	SP	ob
15.	snimat'	film, make a movie, take pictures	ob-snimat'	film or take pictures	SP	ob
16.	žit'	live	ob-žit'(sja)	render habitable, assimilate a new place as a home	SP	ob
17.	zret'	see, look	obo-zret'	survey, view, look around	SP	obo
18.	zret'	see, look	o-zret'	look around	SP	o
19.	smotret'	look at	ob-smotret'(sja)	look at smth from different sides, look around	SP	ob
20.	smotret'	look at	o-smotret'(sja)	examine, inspect, look around	SP	o
21.	gljadet'	look at	o-gljadet'(sja)	look around, examine	SP	o
22.	gljadet'	look at	ob-gljadet	look around, examine	SP	ob
23.	moročit'	fool	o-moročit	fool	SP, FP	o
	mrak	darkness, gloom				
24.	lstit'	flatter	obo-lstit'(sja)	seduce	SP, FP	obo
	lest'	flatter (noun)				
25.	krutit'	wind	o-krutit'	subdue via cunning	SP	o
26.	bajat'	talk (deetymologized)	obajat'	charm	no	
27.	myslit'	think, reason	ob-myslit'	think over	SP, FP	ob
	mysl'	thought (noun)				ob…it'
28.	mozgovat'	think	ob-mosgovat'	think over	SP, FP	ob
	mozg	brain (noun)				ob…ovat'

Table 13.

Subcategory 14: METAPHORICAL ENVELOP

#	IMP base	Gloss	PF	Gloss	Ftype	Prefix
1.	blejat'	bleat (intr.)	ob-blejat'	bleat at smb. a lot (trans.)	SP	ob
2.	karkat'	craw, croak	ob-karkat'	craw, croak at smb. a lot	SP	ob
3.	kudaxtat'	cackle	ob-kudaxtat'	cackle at smb. a lot	SP	ob

4. lajat'	bark	ob-lajat'	bark at someone a lot	SP	ob
5. tjavkat'	bark	ob-tjavkat'	bark at someone a lot	SP	ob
6. xrjukat'	grunt	ob-xrjukat'	grunt a lot at	SP	ob
7. šikat'	hush	ob-šikat'	hush at smb.	SP	ob
8. šikat'	hush	o-šikat'	express disapproval by hissing	SP	o
9. šukat'	hush	ob-šukat'	hush at smb. a lot	SP	ob
10. materit'	curse, swear	ob-materit'	curse someone a lot	SP	ob
11. xajat'	criticize	ob-xajat'	criticize all over	SP	ob
12. ržat'	neigh, laugh at	obo-ržat'	make fun of, laugh a lot at smb.	SP	obo
13. svistat'	whistle	o-svistat'	hiss off, catcall, boo	SP	o
14. xamit'	be rude	ob-xamit'	insult by being rude	SP	ob
15. vorovat'	steal	ob-vorovat'	rob all over	SP	ob
16. krast'	rob	obo-krast'	rob all over	SP	obo
23. laskat'	fondle	ob-laskat'	treat with tender	SP	ob
24. lelejat'	treat gently & with care	ob-lelejat'	treat gently all the time	SP	ob
25. nežit'	pamper, coddle, caress	ob-nežit'	pamper all over/all the time	SP	ob
26. čixat'	sneeze	ob-čixat'	sneeze on smb. a lot	SP	ob
27. letat'	fly	ob-letat' (a plane)	(tech.) test a plane by flying	SP	ob
28. kurit'	smoke	ob-kurit' (a pipe)	adapt, make the smoking device more convenient to smoke with	SP	ob

Table 14.

Subcategory 15: IMPOSE / ACQUIRE A NEW FEATURE

15-A: MAKE X

# base	Gloss	PF	Gloss	PFtype	Affix
1. bagrit'	paint purple, crimson	o-bagrit'(sja)	crimson, incarnadine	SP, FP	o
bagrovyj	purple, crimson				o…it'
2. banderol'	wrapper (paper), book-post (noun)	o-banderol'-it'	wrap with banderol'	FP	o…it'
3. bankrotit'	make smb a bankrupt	o-bankrotit'	make smb a bankrupt	SP, FP	o
bankrot	bankrupt (person)				o…it'
4. basurman	infidel, person of a diferent religious views, manely a Muslim (MAS)	o-basurman-it'	make a basurman, force into Muslim religion	FP	o…it'
5. vinovatit'	accuse	ob-vinovatit'	accuse	SP, FP	ob
vinovatyj	guilty (adj.)				ob…it'
6. vodnyj	watery	ob-vodn-it'(sja)	fill with water	FP	ob…it'
7. vjalit'	jerk, marinate (fish), cover with spices	ob-vjalit'	jerk all over, from all sides	SP	ob
8. gladit'	stroke	ob-gladit'	make smooth	SP, FP	ob
glagkij	smooth (adj.)				ob…it'
9. bednyj	poor (adj.)	o-bednit'sja	impoverish, lose some crucial content	FP	o…it'
10. belit'(sja)	paint white; whiten one's face (for sja-verb)	o-belit' (sja)	whitewash, vindicate, clear of blame, prove the innocence of	SP, FP	o
belyj	white (adj.)				o…it'
11. zelenit'	make/paint green	ob-zelenit'(sja)	make green, cover with trees, flowers	SP, FP	ob
zelenyj	green (adj.)				ob…it'
12. blagozvučnyj	euphonious (adj.)	o-blagozvuč-it'	make euphonious	FP	o…it'
13. blagoobraznyj	pleasant-looking	o-blagoobrazit'	make pleasant-looking	FP	o…it'

14. blagorazumnyj	prudent, sensible, reasonable, correct	o-blagorazumit’	make prudent, reasonable in decision-making	FP	o…it’
15. blagorodnyj	noble, honest	oblagorodit’(sja)	ennoble	FP	o…it’
16. legkij	easy, light (adj.)	ob-legč-it’(sja)	lighten, relieve, facilitate	FP	o…it’
17. naličnyje	cash	ob-nalič-it’	convert into cash	FP	ob..it’
18. naružu	outside (adverb)	ob-naruž-it’(sja)	make visible; find, appear, come out	FP	ob..it’
19. novyj	new (adj.)	ob-nov-it’	renew	FP	ob..it’
20. nul’	zero (noun)	on-nul’-it’	make a zero out of	FP	ob..it’
21. obščestvo	society (noun)	ob-obščestv-it’(sja)	make public	FP	ob..it’
22. obščij	general, common	ob-obšč-it’(sja)	generalize	FP	ob..it’
23. bogatit’	enrich	obogatit’(sja)	become rich, enrich onself	SP, FP	o
bogatyj	rich (adj.)				o..it’
24. božestvo	God	o-božestv-it’	deify	FP	o..it’
25. bogotvorit’	idolize, deify	o-bogotvorit’	idolize	SP, FP	o
26. bodrit’(sja)	invigorate, refresh	o-bodrit’(sja)	cheer up	SP, FP	o
bodryj	cheerful, alert				o..it’
27. jasnyj	clear	ob-jasn-it’(sja)	clarify	FP	o..it’
28. veščestvo	substance	o-veščestv-it’(sja)	materialize	FP	o…it’
29. glupyj	stupid	o-glup-it’	make stupid	FP	o..it’
30. grubyj	rough, coarse	o-grub-it’	make coarse, rude	FP	o..it’
31. grjaznit’	make dirty	o-grjaznit’	make dirty	SP, FP	o
grjaznyj	dirty				o..it’
32. domašnij	home (adj.)	o-domašn-it’	domesticate	FP	o..it’
33. durit’	stupefy	o-durit’	stupefy	SP, FP	o
dur(ak)	fool				o..it’
34. bolvan	fool (noun)	o-bolvan-it’(sja)	make a fool out of smb.	FP	o…it’
35. turok	Turkish	o-tureč-it’(sja)	make Turkish-like	FP	o..it’
36. francuz	French	o-francuz-it’(sja)	frenchify, make Frenchlike	FP	o..it’
37. školjar	schoolboy	o-školjar-it’	make puristic and scholastic	FP	o…it’
38. čelovek	human (noun)	o-čeloveč-it’(sja)	humanize	FP	o…it’
39. xristian(in)	Christian	o-xristian-it’	convert to Christianity	FP	o…it’
40. sovremennyj	contemporary	o-sovremen-it’	update	FP	o..it’
41. nemec	German	o-nemeč-it’(sja)	germanize	FP	o…it’
42. sirotit’	make smb. an orphan	o-sirotit’	make smb. an orphan	SP, FP	o
sirota	orphan				o..it’
43. pustoš	uninhabited place	o-pustoš-it’	devastate	FP	o..it’
44. serdit’	make angry	o-serdit’	make angry	SP, FP	o
serdityj	angry				o…it’
46. sinit’	make blue	o-sinit’	make blue	SP, FP	o
sinij blue					o..it’
45. slepit’	blind, dazzle	o-slepit’	make blind	SP, FP	o
slepoj	blind				o..it’
46. složnyj	difficult	o-složn-it’	make difficult	FP	o..it’

Table 15.

MAKE WITHOUT X (circumfix o…it’; FP)

# base	Gloss	PF	Gloss
1. bez boli	without pain	o-bez-bol-it’	anaesthetize
2. bez vody	without water	o-bez-vod-it’(sja)	dehydrate
3. bez voli	without will	o-bez-vol-it’	make weak-willed
4. bez vreda	without harm	o-bez-vred-it’	neutralize, render harmless
5. bez glavy	without a head	o-bez-glav-it’	execute, decapitate
6. bez dviž(enija)	without movement	o-bez-dviž-it’	immobilize

7. bez deneg	without money	o-bez-denež-it’	deprive of money
8. bez doli	without share	o-bez-dol-it’	deprive of one’s share
9. bez duši	without a soul	o-bez-duš-it’	make heartless
10. bez žira	without fat	o-bez-žir-it’(sja)	deprive of fat, remove fat
11. bez zarazy	without infection	o-bez-zaraz-it’	disinfect
12. bez zvuka	without a sound	o-bez-zvuč-it’	deprive of sound
13. bez zemli	without land	o-bez-zemel-it’	dispossess of land, take smb’s property
14. bez lesa	without a forest	o-bez-les-it’(sja)	deforest
15. bez lica	without a face	o-bez-lič-it’	deprive of individuality, depersonalize
16. bez lošadi	without a hourse	o-bez-lošad-it’	deprive of a horse
17. bez ljudej	without people	o-bez-ljud-it’	deprive of people
18. bez nadež(d)y	wiyhout a hope	o-bez-nedež-it’	deprive of hope
19. bez nog	without legs	o-bez-nož-it’	deprive of legs
20. bez opas(nosti)	without a danger	o-bez-opas-it’(sja)	secure against
21. bez oružija	without weapon	o-bez-oruž-it’	disarm
20. bez ryby	without fish	o-bez-ryb-it’	deprive of fish
21. bez kisloroda	without oxygen	o-bes-kislorod-it’(sja)	deprive of oxygen
22. bez krovi	without blood	o-bes-krov-it’(sja)	drain of blood
23. nez kryla	without wings	o-bes-kryl-it’	deprive of wings
24. bez kuraža	without courage	o-bes-kuraž-it’	discourage,dishearten, dismay
25. bez ploda	without foetus	o-bes-plod-it’	dterilize, render barren
26. bez saxara	without sugar	o-bes-saxar-it’	deprive of sugar
27. bez smerti	without death	o-bes-smert-it’(sja)	immortalize
28. bez smysla	without sense	o-bes-smysl-it’(sja)	make senseless
29. bez soli	without salt	o-bes-sol-it’	deprive of salt
30. bez suda	without judge	o-bes-sud-it’	only with negation in imperat. (do not be angry, do not take it amiss)
31. bez toka	without electricity	o-bes-toč-it’	de-energize
32. bez uma	without mind	o-bez-um-it’	deprive of mind, senses
33. bez formy	without shape	o-bes-form-it’	deform, deprive of shape
34. bez cveta	without colour	o-bes-cvet-it’(sja)	decolourize, deprive of colour
35. bez ceny	without price	o-bes-cen-it’(sja)	depreciate, cheapen
36. bez peku (pečali)	without troubles deetymologized	o-bes-peč-it’(sja)	provide for, with, deprive of troubles

Table 16.

15-B: BECOME X

# base	Gloss	PF	Gloss	PFtype	Affix
1. babit’sja	(of man) be effeminate	o-babit’sja	(of man) become effeminate;	SP, FP	o
baba	married peasant woman		(of a woman) become sluttish, coarse		o…it’-sja
2. baldet’	grow stupid; be in a state of delight	o-baldet’	become dulled, crazed, stunned (by surprise)	SP, FP	o
balda	blockhead, very stupid person (noun)				o…et’
3. večeret’	grow dark	ob-večeret’	become dark	SP, FP	ob
večer	evening (noun)				ob…et’
4. volosatyj	hairy (adj.)	ob-volosat-et’	become hairy, get lots of hair everywhere	FP	ob…et’

5. bednit'sja	pretend to be poorer than one is, show false modesty	o-bednit'sja	impoverish oneself	SP, FP	o
bednyj	poor (adj.)				o…it'-sja
6. moxnatyj	hairy (adj.)	ob-moxnat-et'	become very hairy	FP	ob..et'
7. nagoj	bare, naked (adj.)	ob-naž-it'(sja)	open naked	FP	o…it'
8. vdovet'	be a widow(er)	o-vdovet'	become a widow(er)	SP, FP	o
vdova(yj)	widow(er)				o..et'
9. glupet'	grow stupid	o-glup-et'	become stupid	SP,FP	o
glupyj	stupid				o…et'
10.drevesnet'	(of plant cells) harden, acquire properties of wood	o-drevesnet'	(of plant cells) harden, acquire properties of wood	SP, FP	o
drevesnyj	wooden				o…et'
11. drjablet'	become flabby	o-drjablet'	become flabby	SP, FP	o
drjablyj	flabby				o…et'
12. dubet'	become stiff	o-dubet'	become stiff	SP, FP	o
dub	oak				o...et'

13. meščan(in)	petit bourgeois	ob-meščan-it'-sja	become petit bourgeois	FP
14. mirskoj	wordly	ob-mirščˇ-it'-sja	become wordly	FP
15. prostofil'a	goof, silly person	o-prostofil-it'-sja	make a mistake, blunder, goof	FP o…it'sja
16. prostovolosyj	loose-haired	o-prostovolos-it'-sja	disgrace oneself through a mistake	FP o..it'sja
17. prozračnyj	transparent	o-prozračn-et'	become transparent	FP o…et'
18. mužik	Russian peasant; (fig.) lout, clod, bumpkin	o-mužič-it'-sja	become loutish, boorish	FP o..it'-sja
19. skotina	cattle	o-skotin-it'sja	become like cattle	FP o..it'-sja
20. skotina	cattle	o-skotin-et'	become like cattle	FP o..et'
21. smelyj	brave	o-smel-it'-sja	dare	FP o..it'-sja
31. gruznyj	weighty, bulky	o-gruzn-ut'	grow stout	FP o..ut'

Table 17.

BECOME WITHOUT X

# base	Gloss	PF	Gloss	PFtype	Affix
1. bez vody	without water	o-bez-vod-et'	get dehydrated	FP	o…et'
2. bez voli	without will	o-bez-vol-et'	become weak-willed	FP	o…et'
3. bez golosa	without voice	o-bez-golos-et'	lose one's voice	FP	o…et'
4. bez deneg	without money	o-bez-denež-et'	run out of money	FP	o…et'
5. bez zemli	without land	o-bez-zemel-et'	lose land	FP	o…et'
6. bez zybov	without teeth	o-bez-zub-et'	lose one's teeth	FP	o…et'
7. bez lesa	without a forest	o-bez-les-et'	lose forests (of land)	FP	o…et'
8. bez lošadi	without a hourse	o-bez-lošad-et'	lose a horse	FP	o…et'
9. bez ljudej	without people	o-bez-ljud-et'	become depopulated	FP	o…et'
10. bez nog	without legs	o-bez-nož-et'	lose legs	FP	o...et'
11. bez ryby	without fish	o-bez-ryb-et'	lose all fish (of a reservoir)	FP	o...et'
12. bez krovi	without blood	o-bez-krov-et'	lose a substantial part of the blood	FP	
13. bez pamjati	without memory	o-bez-pamjat-et'	lose one's memory, consciousness	FP	o…et'

14. bez ploda	without foetus	o-bes-plod-et'	lose foetus or ability to have it	FP	o…et'
15. bez sil	without forces	o-bes-sil-et'	grow weak, lose one's strength	FP	o…et'
16. bez uma bezumet'	without mind lose one's head	o-bez-um-et'	lose one's head, senses	FP, SP	o…et' o

Table 18.

- 15-C: GIVE X

# base	Gloss	PF	Gloss	PFtype	Affix
1. val	dyke, a long thick wall that is built to stop water flooding into a low area of land	ob-val-ovat'	dyke a bank (agric.)	FP	ob…ovat'
2. veršit' verx	give a top (to a haystack), finish top (noun)	ob-veršit'	give a top, finish, complete	SP, FP	ob ob…it'
3. vinit' vina	blame, accuse guilt (noun)	ob-vinit'	blame, accuse	SP, FP	ob ob…it'
4. dernit' dern	cover with turf turf (noun)	ob-dernit'	cover an area with turf	SP, FP	ob ob…it'
5. myslit' mysl'	think, reason thought (noun)	ob-myslit'	think over	SP, FP	ob ob…it'
6. mozgovat' mozg	think brain (noun)	ob-mosgovat'	think over	SP, FP	ob ob…ovat'
7. značit' znak	mean mark, sign (noun)	obo-značit'(sja)	mark, designate	SP, FP	obo obo…it'
8. kružit' krug	circle circle (noun)	o-kruž-it'(sja)	encircle, surround	SP, FP	o o…it'
9. kružit' krug	circle circle (noun)	ob-kruž-it'(sja)	encircle, surround	SP, FP ob…it'	ob
10. najtovit' najtov	connect and tie together with a rope rope (noun)	ob-najtovit'	tie around with a rope	SP, FP ob…it'	ob
11. graničit' granica	border frontier, boundary (noun)	o-graničit'(sja)	limit, restrict	SP, FP o…it'	o
12. meževat' meža	draw a borderline boundary (noun)	ob-meževat'	surround with boundaries	SP, FP ob…evat'	ob
13. prudit' prud	dam (up) pond (noun)	o-prudit'	surround with dams	SP, FP o…it'	o
14. ženit' žena	marry wife	o-ženit'(sja)	marry	SP, FP o..it'	o
15. pušit' pux	make fluffy fluff	o-pušit'(sja)	edge, trim (with fur); cover, powder (of hoar-frost or snow)	SP, FP o..it'	o
16. serebrit' serebro	cover with silver silver	o-serebrit'	cover with silver	SP, FP o..it'	o
17. šporit' špor	spur on spur	o-šporit'	spur on	SP, FP o…it'	o
18. palubit' paluba	cover with deck deck	o-palubit'	cover with a deck	SP, FP o..it'	o
19. penit' pena	cover with foam foam	o-penit'(sja)	cover with foam	SP, FP o…it'	o
20. slavit'	gossip, disgrace	o-slavit'(sja)	gossip, disgrace	SP, FP	o

slava	fame				o..it’
21. snežit’ sneg snow	cover with snow	o-snež-it’	cover with snow	SP, FP o..it’	o
22. orudije	instrument, tool	ob-orud-ovat’	equip	FP	o..ova’
23. zaglabije	title	o-zaglav-it’	entitle	FP	o..it’
24. smysl	sense	o-smysl-it’	interpret, comprehend	FP	o..it’
25. zvuk	sound	o-zvuč-it’	accompany with sound	FP	o..it’
26. pojas	belt (noun)	o-pojas-at’(sja)	gird, girdle	FP	o….at’
27. kajma	edging (noun)	o-kajm-it’(sja)	decorate with edging	FP	o..it’
28. rama	frame (noun)	ob-ram-it’	put into a frame	FP	ob…it’
29. cep’	chain (noun)	o-cep-it	surround, cordon off	FP	o it’
30. pero	feather	o-per-it’(sja)	cover with feathers, plumage	FP	o..it’
31. krylo	wing	o-kryl-it’(sja)	inspire, encourage	FP	o..it’
32. uzda	bridle (noun)	ob-uzd-at’	put a bridle on, control, curb	FP	ob..at’
33. pautina	spider web	o-pautin-it’(sja)	cover with a spider web	FP	o..it’
34. lapa	paw (noun)	ob-lap-it’	embrace	FP	ob…it’
35. veter	wind (noun)	ob-vetr-it’(sja)	make rough by exposure to wind	FP..ob…it’(sja)	
36. lik, lico	look, face (noun)	ob-lič-it’	expose, reveal	FP	ob…it’
37. tovar	good	o-tovar-it’(sja)	give goods	FP	o..it’
38. lokot’	elbow (noun)	ob-lokot’-it’(sja)	prop, lean by an elbow towards smth	FP	o…it’
39. les	forest (noun)	ob-les-it’	plant a forest, cover land with forests	FP	o..it’
40. luč’	ray	ob-luč’-it’(sja)	irradiate	FP	ob…it’
41. mundir	uniform (noun)	ob-mundir-ovat’(sja)	provide uniforms, dress	FP	ob..ovat’
42. kuča	pile (noun)	o-kuč-it’	make a pile of soil around a plant	FP	o…it’
43. nadež(d)a	hope	ob-nadež-it’	reassure, promise, give hope	FP	ob…it’

Table 19.

- 15-D: GET X

# base	Gloss	PF	Gloss	PFtype	Affix
1. bog’	God	o-bož-it’-sja	become religious	FP	o…it’-sja
2. veter	wind	ob-vetr-et’	become rough because of being exposed to wind	FP	ob…et’
3. mox	moss	obo-mš-et’	get covered with moss	FP	obo…et’
4. pamjat’	memory	o-pamjat-ovat’-sja	come to one's senses	FP	o...ovat’-sja
5. bort	ship’s side	o-bort-ovat’-sja	stand side to side with another boat	FP	o...ovat’-sja
6. svidetel’stvovat’ svidetel’stvo	give evidence evidence	o-svidetel’stvo-vat’-sja	get examined	SP,FP o...ovat’-sja	o
7. stebel’	stalk	o-stebel’-it’-sja	(of plants) growing form a stalk	FP	o…it’-sja
8. čuvstvovat’ čuvstvo	feel feeling (noun)	o- čuvstvovat’-sja	come to senses	SP, FP o...ovat’-sja	o…sja
9. kolosit’sja kolos	form ears ear	o-kolos-it’-sja	form ears	SP, FP o…it’-sja	o

Table 20.

II. Natural Perfectives

Subcategory 1: MOVE AROUND AN OBJECT

# IMP base	Gloss	PF	Gloss	PFtype	Prefix
1. menjat'(sja)	exchange	ob-menjat'(sja)	exchange	NP	ob

Subcategory 2: PASS BY: not attested
Subcategory 3: OVERTAKE: not attested
Subcategory 4: OUTDO: not attested

Subcategory 5: MISTAKE

# IMP base		PF	Gloss	PFtype	Affix
1. plošat'		o-plošat'	take a false step, blunder	NP, FP	o
ploxoj	bad				o…at'

Subcategory 6: DECEIVE

# IMP base		PF	Gloss	PFtype	Prefix
1. kolpačit'		o-kolpačit'	swindle	NP	o
2. duračit'		o-duračit'	make a fool of	NP, FP	o
durak	fool (NOUN)				o…it'
3. moročit'	fool	ob-moročit'	fool	NP, FP	ob
mrak	darkness, gloom				ob…it'

Subcategory 7: OVERDO

# IMP base		PF	Gloss	PFtype	Prefix
1. kornat'		ob-kornat'	cut too short and uneven	NP	ob
2. kornat'		o-kornat'	cut too short and uneven	NP	o

Subcategory 8: METAPHORICAL PASS BY: not attested
Subcategory 9: AFFECT A NUMBER OF OBJECTS: not attested

Subcategory 10: SURROUND / ENCLOSE

# IMP base		PF	Gloss	PFtype	Prefix
1. kol'cevat'	ring	o-kol'cevat'	ring	NP, FP	o
kol'co	ring (noun)				o…it'
2. kantovat'	border, mount	o-kantovat'	mount all around	NP, FP	o
kant	mount, piping, ending (noun)				o…it'
AFFECT THE EDGES					
3. strič'(sja)		ob-strič'(sja)	cut off	NP	ob
4. strič'(sja)		o-strič'(sja)	cut off	NP	o

Subcategory 11: AFFECT A SURFACE

# IMP base	PF	Gloss	PFtype	Affix
1. kropit'	o-kropit'	spray with holy water	NP	o
2. palit'	o-palit'	singe, burn the surface	NP	o

3. šparit'(sja)		o-šparit'(sja)	scald, pour boiling water on	NP	o
4. pryskat'sja		o-pryskat'sja	sprinkle (with), spray oneself	NP	o
5. strekat'		ob-strekat'	stab, burn	NP	ob
6. strekat'		o-strekat'	stab, burn	NP	o
7. lobyzat'(sja)		ob-lobyzat'(sja)	kiss	NP	ob
8. carapat'		o-carapat'	scratch	NP	o
9. žeč'sja		ob-žeč'sja	get burns	NP	ob
10. rušit'(sja)		ob-rušit'(sja)	break down	NP	ob
11. lupit'(sja)		ob-lupit'(sja)	chip off the outer cover (bark, husk, paint); flog all over	NP	ob
12. sveževat'		o-sveževat'	skin a dead animal	NP	ob
13. štukaturit'		o-štukaturit'	plaster	NP,FP	o
štukaturka	plaster (NOUN)				o…it'
14. licevat'		ob-licevat'	face	NP, FP	ob
lico	face (NOUN)				ob…evat'
15. ledenet'		ob-ledenet'	freeze, grow numb with cold	NP, FP	ob
ledjanoj	icy (ADJ)		become covered with ice		ob…et'
16. lyset'		ob-lyset'	grow bald	NP, FP	ob
lysyj	bald (ADJ)				ob…et'
17. paršivet'		o-paršivet'	become mangy, becovered with crabs	NP, FP	o
paršivyj	mangy, scabby; nasty, rotten (ADJ)				o…et'
18. plešivet'		o-plešivet'	grow bald	NP,FP	o
plešivyj	bald (ADJ)				o…et'
19. meblirovat'		ob-meblirovat'	furnish	NP, FP	ob
mebel'	furniture (NOUN)				ob…irovat'
20. meblirovat'		o-meblirovat'	furnish	NP, FP	o
mebel'	furniture (NOUN)				o…irovat'
21. smolit'		ob-smolit'	cover or saturate with resin	NP, FP	ob
smola	resin (NOUN)				ob…it'
22. smolit'		o-smolit'	cover or saturate with resin	NP, FP	o
smola	resin (NOUN)				o…it'
23. krasit'(sja)		o-krasit'(sja)	paint	NP, FP	o
kraska	paint (NOUN)				o…it'
24. krovavit'(sja)		o-krovavit'(sja)	stain with blood	NP, FP	o
krovavyj	bloody (ADJ)				o…it'
25. pryščavet'		o-pryščavet'	get covered with pimples	NP, FP	o
pryščavyj	pimply (ADJ)				o…et'
26. krovenit'		o-krovenit	stain with blood	NP, FP	o
krovenoj	bloody (ADJ)				o…it'
27. plombirovat'		o-plombirovat'	seal	NP, FP	o
plomba	seal (NOUN)				o…irovat'
28. čistit'		o-čistit'	clean	NP, FP	o
čistyj	clean (ADJ)				o…it'
29. salit'		o-salit'	spread fat on	NP, FP	o
salo	fat, lard (NOUN)				o…it'
30. steklit'		o-steklit'	cover with glass	NP, FP	o
steklo	glass (NOUN)				o…it'
31. ščetinit'(sja)		o-ščetinit'(sja)	bristle up	NP, FP	o
ščetina	bristle, stubble (NOUN)				o…it'

Subcategory 12: ENVELOP

# IMP base	PF	Gloss	PFtype	Affix
1. valjat’	ob-valjat’	roll, drag roll (in) all over	NP	ob
2. kutat’	o-kutat’	wrap up all over	NP	o
3. ščipat’	ob-ščipat’	pluck, pinch	NP	ob
4. ščipat’	o-ščipat’	pluck	NP	o
5. molotit’	ob-molotit’	(agric.) thresh	NP	ob
6. čistit’	ob-čistit’	clean, brush; rob	NP	ob
7. luščit’	ob-luščit’	eat, gnaw seeds cleaning them out of husk	NP, FP	ob
luzga husk, outer cover of seeds (NOUN)				ob…it’
8. všivet’	obo-všivet’	become lice-ridden	NP, FP	obo
všivyj lousy, lice-ridden (ADJ)				ob…et’
9. granit’	o-granit’	cut stone, glass making facets	NP, FP	o
gran’ side (NOUN)				o…it’
10 kruglit’(sja)	o-kruglit’(sja)	round off	NP, FP	o
kruglyj round (ADJ)				o…it’
11. tumanit’(sja)	o-tumanit’(sja)	become foggy	NP, FP	o
tuman fog (NOUN)				o…it’
12. cinkovat’	o-cinkovat’	zinc, galvaize	NP, FP	o
cink zink (NOUN)				o…at’

Subcategory 13: METAPHORICAL SURROUND

# IMP base	PF	Gloss	PFtype	Affix
1. čarovat’	o-čarovat’(sja)	charm, fascinate	NP, FP	o
čary magic forces (noun)				o…ovat’
2. durmanit’	odurmanit’	stupefy	NP, FP	o
durman thorn-apple, drug, intoxicant (NOUN)				o…it’

Subcategory 14: METAPHORICAL ENVELOP

# IMP base	PF	Gloss	PFtype	Affix
1. rugat’	ob-rugat’	swear a lot at smb/smth	NP	ob
2. učit’(sja)	ob-učit’(sja)	teach	NP	ob
3. grabit’	o-grabit’	rob	NP	o
4. xajat’	o-xajat’	criticize, censure	NP	o

Subcategory 15: IMPOSE / ACQUIRE A NEW FEATURE

- 15-A: MAKE X

# IMP base	PF	Gloss	PFtype	Affix
1. skalit’(sja)	o-skalit’(sja)	bare one’s teeth	NP	o
2. ščerit’(sja)	o-ščerit’(sja)	gnash one’s teeth	NP	o
3. skopit’	o-skopit’	castrate (of animal)	NP	o
4. studit’(sja)	o-studit’(sja)	cool	NP	o
5. travit’(sja)	o-travit’(sja)	poison	NP	o

6. xajat’		o-xajat’	criticize, censure	NP	o
7. cepenit’		o-cepenit’	petrify	NP	o
8. činit’		o-činit’	sharpen, point	NP	o
9. duračit’		o-duračit’	make a fool of	NP, FP	o
durak	fool (NOUN)				o…it’
10. zlit’(sja)		obo-zlit’(sja)	embitter	NP, FP	obo
zloj	angry (ADJ)				obo…it’
11. zlit’(sja)		o-zlit’(sja)	embitter	NP, FP	o
zloj	angry (ADJ)				o…it’
12. radovat’		ob-radovat’	gladden, make happy	NP, FP	ob
rad	glad, joyful (PRED)				o…at’
13. ledenit’		o-ledenit’	cold, cool, make ice-cold	NP, FP	o
ledjanoj	icy (ADJ)				o…it’
14. pečalit’(sja)		o-pečalit’(sja)	grieve, sadden	NP, FP	o
pečal’	grief, sorrow (NOUN)				o…it’
15. životvorit’		o-životvorit’	revive	NP, FP	o
živoj+tvorit’	alive (ADJ)+make (VERB)				o…it’
16. znakomit’(sja)		o-znakomit’(sja)	acquaint (with), familiarize	NP, FP	o
znakomyj	familiar (ADJ)				o…it’
17. poganit’(sja)		o-poganit’(sja)	make nasty, unclean, pollute	NP, FP	o
poganyj	foul, unclean, filthy (ADJ)				o…it’
18. poetizirovat’		o-poetizirovat’	poeticize	NP, FP	o
poet-ičnyj	poetic (ADJ)				o…irovat’
19. pjanit’		o-pjanit’	make drunk, intoxicated	NP, FP	o
pjanyj	drunk (ADJ)				o…it’
20. svežit’		o-svežit’	refresh	NP, FP	o
svežij	fresh (ADJ)				o…it’
21. prixodovat’		o-prixodovat’	record, count in parish	NP, FP	o
prixod	parish (NOUN)				o…ovat’
22. svjatit’		o-svjatit’	sanctify, bless	NP, FP	o
svjatoj	saint (ADJ)				o…it’
23. zlatit’		o-zlatit’	light and give a golden color	NP, FP	o
zlato	gold (NOUN)				o…it’
24. xolostit’		o-xolostit’	(of animal) castrate	NP, FP	o
xolostoj	single (ADJ)				o…it’
25. skvernit’		o-skvernit	make untidy; profane, defile	NP, FP	o
skvernyj	foul, bad (ADJ)				o…it’
26. trezvit’		o-trezvit’	make sober	NP, FP	o
trezvyj	sober (ADJ)				o…it’
27. tjaželit’		o-tjaželit’	make heavier	NP, FP	o
tjaželyj	heavy (ADJ)				o…it’
28. černit’		o-černit’	blacken, paint black, slander	NP, FP	o
černyj	black (ADJ)				o…it’
29. čerstvit’	o-čerstvit’	make rude, unsympathetic, soulless		NP, FP	o
čerstvyj	callous (ADJ)				o…it’
30. šel’movat’	o-šel’movat’	punish publicity, blacken, defame		NP, FP	o
šel’ma	rascal, scoundrel (NOUN)				o…ovat’
31. publikovat’		o-publikovat’	publish	NP, FP	o
publika		audience (NOUN)			o…ovat’
32. glušit’		o-glušit’	stun, make someone	NP, FP	o
gluxoj	deaf (ADJ)		unconscious by hitting deafen		o…it’

MAKE WITHOUT X

# IMP base		PF	Gloss	PFtype	Affix
1. bezobrazit'		o-bezobrazit'	disfigure	NP, FP	o
bezobraznyj	disgusting (ADJ)				o...it'
2. bessilit'		obessilit'	weaken	NP, FP	o
bez sil	without forces (PP)				o…it'
3. besslavit'		o-besslavit'	defame	NP, FP	o
bez slavy	without a (good) fame (PP)				o…it'
4. besčestit'		o-besčestit'	dishonour, disgrace	NP, FP	o
bez česti	without honour		deprive of honour		o…it'
5. bespokoit'(sja)		o-bespokoit'(sja)	disturb, bother	NP, FP	o
bez pokoja	without a rest, piece (PP)				o…it'(sja)

- 15-B: BECOME X

# IMP base		PF	Gloss	PFtype	Affix
1. linjat'		ob-linjat'	lose an original colour, fade	NP	ob
2. brjuzgnut'		o-brjuzgnut'	become flabby, flaccid	NP	o
3. zjabnut'		o-zjabnut'	get frozen, suffer from cold	NP	o
4. kočenet'		o-kočenet'	become numb, stiffen	NP	o
5. serčat'		o-serčat'	grow angry, cross	NP	o
6. sklabit'sja		o-sklabit'sja	smile	NP	o
7. stynut'		o-stynut'	cool	NP	o
8. styt'		o-styt'	cool	NP	o
9. cepenet'		o-cepenet'	become rigid, freeze up, be rooted to the spot	NP	o
10. bankritit'sja		o-bankrotit'sja	become a bankrupt	NP, FP	o
bankrot	bankrupt (NOUN)				o...it'(sja)
11. vetšat'		ob-vetšat'	become dilapidated	NP, FP	ob
vetxit'	old, in bad condition, dilapidated (ADJ)				ob…at'
12. bednet'		o-bednet'	become poor	NP, FP	o
bednyj	poor (ADJ)				o…et'
13. ledenet'		ob-ledenet'	freeze, grow numb with cold	NP, FP	ob
ledjanoj	icy (ADJ)		become covered with ice		ob…et'
14. jalovet'		o-jalovet'	(of a cow) stop calve, become barren	NP, FP	o
jalovaja	(of a cow) barren (ADJ)				o…et'
15. melet'		obmelet'	grow shallow	NP, FP	ob
melkij	shallow (ADJ)				o…et'
16. naglet'		ob-naglet'	become impudent, insolent	NP, FP	ob
naglyj	impudent, insolent (ADJ)				o…et'
17. niščat'		ob-niščat'	grow poor, be reduced to beggary	NP, FP	ob
niščij	poor, destitute (ADJ)				o…at'
18. všivet'		obo-všivet'	become lice-ridden	NP, FP	obo
všivyj	lousy, lice-ridden (ADJ)				ob…et'
19. ruset'		ob-ruset'	become russianized	NP, FP	ob
russkij	Russian (ADJ)				ob…et'
20. gloxnut'		o-gloxnut'	become deaf	NP, FP	o
gluxoj	deaf (ADJ)				o…nut'
21. grubet'		o-grubet'	grow coarse, rude	NP, FP	o
grubyj	coarse, rough (ADJ)				ob…et'

22. gruznet'		o-gruznet'	become bulky, corpulent	NP, FP o
gruznyj	weighty, bulky, corpulent (ADJ)			o…et'
23. derevenet'		o-derevenet'	grow stiff, numb	NP, FP o
derevjannyj	wooden (ADJ)			o…et'
24. dičat'		o-dičat'	become wild	NP, FP o
dikij	wild (ADJ)			o…at'
25. drjabnut'		o-drjabnut'	become flabby	NP, FP o
drjablyj	flabby, sluggish (ADJ)			o…nut'
26. drjaxlet'		o-drjaxlet'	grow decrepit	NP, FP o
drjaxlyj	decrepit, senile (ADJ)			o…et'
27. duret'		o-duret'	become stupid	NP, FP o
dur(ak)	fool (NOUN)			o…et'
28. zveret'		o-zveret'	become brutalized	NP, FP o
zver'	beast, wild animal (NOUN)			o…et'
29. kamenet'		o-kamenet'	become petrified, turn to stone	NP, FP o
kamen'	stone (NOUN)			o…et'
30. psovet'		o-psovet'	(of puppies) get covered with hard wool,	NP, FP o
pes	dog (NOUN)		become an adult dog	o…et'
31. zlet'		o-zlet'	become angry	NP, FP o
zloj	angry (ADJ)			o…et'
32. kostenet'		o-kostenet'	ossify	NP, FP o
kostenoj	bony (ADJ)			o…et'
33. krepnut'		o-krepnut'	become stronger	NP, FP o
krepkij	strong, robust (ADJ)			o…nut'
34. krivet'		o-krivet'	lose one eye	NP, FP o
krivoj	one-eyed (ADJ)			o…et'
35. kruglet'		o-kruglet'	become round	NP, FP o
kruglyj	round (ADJ)			o…et'
36. ledenet'		o-ledenet'	freeze, become as cold as ice	NP, FP o
ledjanoj	icy (ADJ)			o…et'
37. mertvet'		o-mertvet'	grow numb	NP, FP o
mertvyj	dead (ADJ)			o…et'
38. nemet'		o-nemet'	become dumb, numb	NP, FP o
nemoj	dumb, mute (ADJ)			o…et'
39. podlet'		o-podlet'	become mean	NP, FP o
podlyj	mean (ADJ)			o…et'
40. pošlet'		o-pošlet'	grow vulgar	NP, FP o
pošlyj	vulgar (ADJ)			o…et'
41. pryščavet'		o-pryščavet'	get covered with pimples	NP, FP o
pryščavyj	pimply (ADJ)			o…et'
43. pustet'		o-pustet'	become empty, deserted	NP, FP o
pustoj	empty (ADJ)			o…et'
44. puxnut'		o-puxnut'	swell	NP, FP o
puxlyj	plump (ADJ)			o…nut'
45. pjanet'		o-pjanet'	get drunk, intoxicated	NP, FP o
pjanyj	drunk (ADJ)			o…et'
46. robet'		o-robet'	timid	NP, FP o
robkij	timid, shy (ADJ)			o…et'
47. rogovet'		o-rogovet'	solidify, get covered with horny scales	NP, FP o
rogovoj	horny, solid (ADJ)			o…et'
48. satanet'		o-satanet'	go mad, come to a state of extreme anger	NP, FP o
satana	satan (NOUN)			o…et'

49. svirepet’		o-svirepet’	grow savage, become violent	NP, FP o
svirepyj	fierce, ferocious (ADJ)			o…et’
50. sipnut’		o-sipnut’	become hoarse, husky	NP, FP o
siplyj	hoarse, husky (ADJ)			o…nut’
51. sirotet’		o-sirotet’	become an orphan	NP, FP o
sirota	orphan (NOUN)			o…et’
52. smelet’		o-smelet’	grow brave	NP, FP o
smelyj	brave, courageous (ADJ)			o…et’
53. slabet’		o-slabet’	become weak	NP, FP o
slabyj	weak (ADJ)			o…et’
54. slabnut’		o-slabnut’	become weak	NP, FP o
slabyj	weak (ADJ)			o…nut’
55. slepnut’		o-slepnut’	go blind	NP, FP o
slepoj	blind (ADJ)			o…nut’
56. skudet’		o-skudet’	grow scanty	NP, FP o
skudnyj	scanty, meagre (ADJ)			o…et’
57. solovet’		osolovet’	become sluggish, dull	NP, FP o
solovyj	yellowish (of horse) (ADJ)			o…et’
58. sovet’		osovet’	fall in half-asleep, drowsy	NP, FP o
sova	owl (NOUN)		state due to fatigue, intoxication, etc.	o…et’
59. steklenet’		o-steklenet’	become glassy, motionless	NP, FP o
stekljannyj	glass (ADJ)			o…et’
60. stolbenet’		o-stolbenet’	get rooted to the ground	NP, FP o
stolb	column, post, pillar (NOUN)			o…et’
61. stervenet’		o-stervenet’	come to extreme anger, go mad	NP, FP o
sterva	selfish, nasty person (NOUN)			o…et’
62. toščat’		o-toščat’	become skinny	NP, FP o
toščij	skinny (ADJ)			o…at’
63. trezvet’		o-trezvet’	become sober	NP, FP o
trezvyj	sober (ADJ)			o…et’
64. tupet’		o-tupet’	become blunt, grow dull	NP, FP o
tupoj	blunt, dull (ADJ)			o…et’
65. tučnet’		o-tučnet’	grow fat, obese	NP, FP o
tučnyj	fat, obese (ADJ)			o…et’
66. tjaželet’		o-tjaželet’	become heavy	NP, FP o
tjaželyj	heavy (ADJ)			o…et’
67. xamet’		o-xamet’	become a boor	NP, FP o
xam	boor, lout (NOUN)			o…et’
68. xripnut’		o-xripnut’	become hoarse	NP, FP o
xriplyj	hoarse (ADJ)			o…nut’
69. xromet’		o-xromet’	become lame	NP, FP o
xromoj	lame (ADJ)			o…et’
70. červivet’		o-červivet’	become worn-eaten	NP, FP o
červivyj	worn-eaten (ADJ)			o…et’
71. čerstvet’		o-čerstvet’	become harden, callous	NP, FP o
čerstvyj	callous (ADJ)			o…et’
72. čumet’		o-čumet’	go mad, go off one’s head	NP, FP o
čuma	plague (NOUN)			o…et’
73. šalet’		o-šalet’	go crazy	NP, FP o
šal’noj	crazy (ADJ)			o…et’
74. šeludivet’		o-šeludivet’	become mangy	NP, FP o
šeludivyj	sffaring from insects (ADJ)			o…et’

- 15-C: GIVE X

# IMP base	PF	Gloss	PFtype	Affix
1. venčat'(sja)	ob-venčat'(sja)	marry	NP, FP	ob
venec	crown (NOUN)			ob…at'(sja)
2. licevat'	ob-licevat'	face	NP, FP	ob
lico	face (NOUN)			ob…evat'
3. meblirovat'	ob-meblirovat'	place furniture all around the place	NP, FP	ob
mebel'	furniture (NOUN)			ob…irovat'
4. štrafovat'	oštrafovat'	fine	NP, FP	o
štraf	fine (NOUN)			o…ovat'
5. granit'	o-granit'	cut stone, glass making facets	NP, FP	o
gran'	side (NOUN)			o…it'
6. revisovat'	ob-revizovat'	carry out inspection	NP, FP	o
revizija	inspection, oudit (NOUN)			o…ovat'
7. remizit'(sja)	ob-remizit'(sja)	(spec.) force to lose	NP, FP	ob
remiz	fine in a card game (NOUN)	a game because of a fine		o…it'
8. smolit'	ob-smolit'	cover or saturate with resin	NP, FP	ob
smola	resin (NOUN)			ob…it'
9. čarovat'	o-čarovat'(sja)	charm, fascinate	NP, FP	o
čary	magic forces (noun)			o…ovat'
10. durmanit'	odurmanit'	stupefy	NP, FP	o
durman	thorn-apple, drug, intoxicant (NOUN)			o…it'
11. zabotit'	o-zabotit'	trouble, worry, cause anxiety	NP, FP	o
zabota	cares, trouble(s) (NOUN)			o…it'
12. pozorit'(sja)	o-pozorit'(sja)	disgrace, defame, discredit	NP, FP	o
pozor	shame, disgrace (NOUN)			o…it'
13. poročit'	o-poročit'	discredit, defame	NP, FP	o
porok	vice, defect (NOUN)			o…it'
14. sramit'(sja)	o-sramit'(sja)	shame	NP, FP	o
sram	shame (NOUN)			o…it'
15. plombirovat'	o-plombirovat'	seal	NP, FP	o
plomba	seal (NOUN)			o…irovat'
16. znamenovat'(sja)	o-znamenovat'(sja)	signify, mark	NP, FP	o
znam(en)a	banner (NOUN)			o…ovat'
17. protestovat'	o-protestovat'	appeal against, protest	NP, FP	o
protest	protest, odjection (NOUN)			o…ovat'
18. svidetel'stvovat'	o-svidetel'stvovat'	give evidence, witness	NP, FP	o
svidetel'stvo	evidence (NOUN)			o…ovat'
19. sedlat'	o-sedlat'	saddle	NP, FP	o
sedlo	addle (NOUN)			o…at'
20. snastit'	o-snastit'	equip	NP, FP	o
snasti	equipment (NOUN)			o…it'
21. xmelit'	o-xmelit'	make entoxicated	NP, FP	o
xmel'	hop-plant, drunkenness (NOUN)			o…at'
22. cenit'	o-cenit'	estimate, evaluate	NP, FP	o
cena	price, cost (NOUN)			o…it'
23. xarakterizovat'	o-xarakterizovat'	describe, charachterize	NP, FP	o
xarakter	character (NOUN)			o…ovat'
24. švartovat'(sja)	o-švartovat'(sja)	moor	NP, FP	o
švartov	hawser, mooring line (NOUN)			o…ovat'
25. krestit'(sja)	o-krestit'(sja)	baptize	NP, FP	o
krest	cross (NOUN)			o…it'-sja

- 15-D: GET X

# IMP base		PF	Gloss	PFtype	Affix
1. jagnit'sja		o-jagnit'sja	(of a sheep) give a birth to a lamb	NP, FP	o
jagn-enok	lamb (NOUN)				o…it'-sja
2. jagnit'sja		ob-jagnit'sja	(of a sheep) give a birth to a lamb	NP, FP	ob
jagn-enok	lamb (NOUN)				ob…it'-sja
3. kotit'sja		o-kotit'sja	bring kittens	NP, FP	o
kot-enok	kitten (NOUN)				o…it'-sja
4. ščenit'sja		o-ščenit'sja	whelp, bring puppies	NP, FP	o
ščen-ok	puppy (NOUN)				o…it'-sja
5. žerebit'sja		o-žerebit'sja	(of a horse) give a burth to a foal	NP, FP	o
žereb-enok	foal (NOUN)				o…it'-sja
6. porosit'sja		o-porosit'sja	(of a pig, hedgehog, badger	NP, FP	o
poros-enok	piglet (NOUN)		females) dive a birth to pups		o…it'-sja
7. telit'sja		o-telit'sja	calve	NP, FP	o
tel-enok	calf (NOUN)				o…it'-sja
8. žiret'		o-žiret'	become fat	NP, FP	o
žir	fat (NOUN)				o…et'
9. zlobit'sja		o-zlobit'sja	become embittered	NP, FP	o
zloba	malice, anger (NOUN)				o…it'-sja
10. skoromit'sja		o-skoromit'sja	eat food which s not allowed at Lent		o
skoromnyj	food not allowed at Lent (eggs, meat, milk) (ADJ)			NP, FP	o…it'-sja
11. xmelet'		o-xmelet'	become entoxicated	NP, FP	o
xmel'	hop-plant, drunkenness (NOUN)				o…et'

Appendix 3. The Subjects

#	code	gender	age	level of education	profession
1	A1	male	59	higher	engineer
2	A2	female	20	uncompleted higher	mathematics and computer programming
3	A3	female	21	uncompleted higher	literature studies
4	A4	female	26	higher	geology
5	A5	female	21	uncompleted higher	international relationships
6	A6	male	21	uncompleted higher	biology
7	A7	male	20	uncompleted higher	psychology
8	A8	male	23	higher	translator
9	A9	female	23	higher	French literature
10	A10	female	24	higher	economics
11	A11	female	21	higher	finances and credit
12	A12	female	55	higher	economics
13	A13	male	29	higher	basketball umpire
14	A14	male	26	higher	sociology
15	A15	male	23	uncompleted higher	computer programming
16	B1	female	20	uncompleted higher	philology
17	B2	female	26	higher	medicine
18	B3	female	18	uncompleted higher	international relationships
19	B4	male	21	uncompleted higher	medicine
20	B5	male	23	uncompleted higher	medicine
21	B6	male	21	higher	history
22	B7	female	23	higher	public relations
23	B8	male	31	higher	translator
24	B9	female	24	higher	philology
25	B10	male	26	higher	medicine
26	B11	female	30	higher	applied mathematics
27	B12	male	23	higher	computer programming
28	B13	female	23	higher	cognitive neurophysiology
29	B14	male	23	higher	computer programming
30	B15	male	24	higher	management and economics
31	C1	male	20	uncompleted higher	law
32	C2	female	24	higher	musician
33	C3	female	24	higher	musician
34	C4	female	58	higher	engineer
35	C29	female	45	higher	engineer
36	C5	male	22	uncompleted higher	medicine
37	C6	female	32	higher	publishing
38	C7	male	28	higher	engineer
39	C8	male	23	higher	management
40	C9	female	24	higher	literature studies
41	C10	female	23	higher	mathematics, yoga instructor
42	C11	female	29	higher	philology
43	C12	female	28	higher	translator
44	C13	male	35	higher	computer programming

45	C14	female	31	secondary	quality insurance engineer
46	C15	male	35	higher	lawer
47	C16	female	18	uncompleted higher	economics
48	C17	female	29	higher	literature studies
49	C18	male	23	secondary	computer programming
50	C19	male	57	higher	engineer
51	C20	female	31	higher	engineer of nuclear reactors
52	C21	male	22	higher	information technologies
53	C22	male	37	higher	avionics, computer programming
54	C23	female	32	higher	marketing
55	C24	male	26	higher	engineer
56	C25	male	25	uncompleted higher	business
57	C26	female	29	higher	philology
58	C27	male	30	higher	economics
59	C28	male	36	higher	nuclear phisics
60	C30	male	32	higher	information technologies

Appendix 4. The nonce words used in the experiment (Russian original)

#	C	adj-base	meaning of the adjective	verb-base	meaning of the verb
1	б	бостый	умеющий изготовлять красивую глиняную посуду	бостить	перемещаться, считая шаги и измеряя длину участка
2	б	буклый	гордый своим успехом	буклить	передвигаться на задних лапах
3	в	вурлый	полный инициативы	вурлить	двигаться, лавируя между препятствиями
4	в	важдый	испытывающий сильное чувство патриотизма	важдить	перемещать коляску с ребенком
5	г	гузвый	красочный	гузвить	(о птице) прихрамывать, притворяясь, что одно крыло сломано
6	г	габый	восхищенный красотой природы	габить	передвигаться очень медленно, приставляя пятку одной ступни к носку другой
7	д	дуктый	невесомый, воздушный	дуктить	кое-как с непривычки перемещаться на высоких каблуках
8	д	дамлый	испытывающий чувство ностальгии	дамлить	воздушно вальсировать
9	ж	жахлый	проводящий все время за чтением книг	жахлить	перемещаться на двухметровых ходулях
10	ж	жусклый	предающийся лени	жусклить	передвигаться с закрытыми глазами
11	з	зопрый	имеющий выдающиеся музыкальные способности	зоприть	перемещаться на коне
12	з	зупый	никому не доверяющий	зупить	перемещаться в санях на собачьей упряжке
13	й	юпый	суеверный	юпить	передвигаться на лыжах без лыжных палок, энергично работая руками
14	й	ялый	не способный переносить визг	ялить	перемещаться по воздуху (о воздушном шаре)
15	к	кочлый	полный спокойствия	кочлить	перемещаться вперед на одной ноге
16	к	кампый	полный надежд и новых планов	кампить	передвигаться, вглядываясь в лица встречных людей
17	л	лусый	не способный есть рыбу	лусить	тихонько перемещаться в свое удовольствие
18	л	лопрый	стойкий, несгибаемый	лоприть	передвигаться, громко топая ногами
19	м	мурлый	плавно текущий, медленный	мурлить	передвигаться на цыпочках, изображая кошку
20	м	момлый	томно закатывающий глаза и вздыхающий	момлить	передвигаться, весело пританцовывая
21	н	надый	требовательный к чистоте и порядку	надить	передвигаться, держа в руках большой букет цветов
22	н	нокрый	умеющий хорошо готовить	нокрить	передвигаться на коленках
23	п	пурый	не переносящий транспорт	пурить	передвигаться, хватаясь лапами и хвостом за ветки деревьев
24	п	патлый	забывчивый	патлить	перемещаться на лодке
25	р	роглый	фашистский	роглить	перемещаться на роликовых коньках
26	р	ражный	чрезмерно расточительный	ражнить	перемещаться на индийском слоне
27	с	саглый	имеющий пристрастие к компьютерным играм	саглить	передвигаться задом наперед, изредка оглядываясь, чтобы не упасть
28	с	сурый	погруженный в уныние	сурить	перемещаться босиком
29	т	тулый	неуверенный в себе	тулить	медленно перемещаться, от скуки пиная найденный на дороге камень
30	т	товый	тоскующий по дому	товить	перемещаться на одноколесном велосипеде

31	х	хопый	испытывающий непреодолимую тягу к покупкам	хопить	стремительно перемещаться, прыгая при этом на скакалке
32	х	хушный	привередливый	хушнить	передвигаться, пиная перед собой футбольный мяч
33	ц	цавый	неискренний, лицемерный	цавить	перемещаться на пиратской шхуне
34	ч	чупый	немного выпивший	чупить	перемещаться со скоростью 70 километров в час
35	ч	чавый	с хорошими манерами поведения	чавить	передвигаться пешком, играя на гитаре
36	ш	шадрый	не способный видеть объемные предметы	шадрить	перемещаться на метле
37	ш	шаклый	разочарованный	шаклить	перемещаться верхом на верблюде
38	щ	щулый	легко обижающийся	щулить	передвигаться, щурясь от солнечного света
39	гн	гнорый	употребляющий в пищу только сладкое	гнорить	передвигаться на руках вверх ногами, улыбаясь от счастья
40	жр	жрапый	берущий взятки	жрапить	с трудом перемещать на веревке ящик с боеприпасами
41	зн	знупый	идущий полным ходом, интенсивный	знупить	перемещаться в санях, запряженных северными оленями
42	чт	чтусый	сосредоточенный на деталях	чтусить	передвигаться, сильно шатаясь
43	жг	жгавый	имеющий навязчивую идею постоянно мыть руки	жгавить	перемещаться в мешке
44	сп	спулый	не способный работать правой рукой	спулить	перемещаться на водных лыжах
45	ск	сколый	знаменитый	сколить	перемещаться в лодке на веслах
46	тк	ткабый	стеснительный	ткабить	перемещаться на вертолете

Appendix 5. The nonce words used in the experiment (translated into English)

#	C	adj-base	meaning of the adjective	verb-base	meaning of the verb
1	b	bostyj	able to make beautiful dishes out of clay	bostit'	move counting steps and measuring the distance
2	b	buklyj	proud of one's success	buklit'	move on back paws
3	v	vurlyj	full of initiative	vurlit'	move, maneuvering between obstacles
4	v	važdyj	experiencing a strong feeling of patriotism	važdit'	move a carriage with a child
5	g	guzvyj	colorful	guzvit'	(of a bird) limp pretending that a wing is broken
6	g	gabyj	fascinated with the beauty of nature	gabit'	move very slowly placing one foot to the front of the other heel to toe
7	d	duktyj	weightless, lightweight	duktit'	move with difficulty on high heels
8	d	damlyj	experiencing a feeling of nostalgia	damlit'	waltz lightly
9	ž	žaxlyj	spending all time reading books	žaxlit'	move on two-meter-long stilts
10	ž	žusklyj	being lazy	žusklit'	move with eyes closed
11	z	zopryj	having outstanding musical abilities	zoprit'	move on a horse
12	z	zupyj	trusting nobody	zupit'	move dog-sledding
13	j	jupyj	superstitious	jupit'	move skiing without poles and intensively working the arms
14	j	jalyj	not able to tolerate screaming	jalit'	move by air (about a hot-air balloon)
15	k	kočlyj	full of calmness	kočlit'	move forward on one leg
16	k	kampyj	full of hopes and new plans	kampit'	move staring at people's faces
17	l	lusyj	not able to eat fish	lusit'	move along at a comfortable pace
18	l	lopryj	firm, indestructible	loprit'	move while loudly stamping one's feet
19	m	murlyj	floating smoothly, slow	murlit'	move on tiptoe pretending to be a cat
20	m	momlyj	languorously rolling eyes and sighing	momlit'	move dancing joyfully
21	n	nadyj	demanding everything to be tidy and in order	nadit'	move carrying a big bouquet of flowers
22	n	nokryj	able to cook well	nokrit'	move on one's knees
23	p	puryj	not able to tolerate travel by vehicle	purit'	move grabbing branches of the tress by paws and a tail
24	p	patlyj	forgetful	patlit'	move by boat
25	r	roglyj	fascist	roglit'	move on roller skates
26	r	ražnyj	extremely wasteful	ražnit'	move riding an Indian elephant
27	s	saglyj	obsessed with playing computer games	saglit'	walk backwards, looking over one's shoulder occasionally so as not to fall
28	s	suryj	dejected	surit'	move barefoot
29	t	tulyj	lacking self-confidence	tulit'	move slowly kicking a stone found on a road from boredom
30	t	tovyj	being homesick	tovit'	move by unicycle
31	x	xopyj	shopoholic	xopit'	move fast jumping over a jumprope

32	x	xušnyj	picky	xušnit’	move kicking a football ball in front
33	c	cavyj	insincere, hypocritical	cavit’	move sailing a pirate ship
34	č	čupyj	a little drunk	čupit’	move at the speed of 70 km per hour
35	č	čavyj	with good manners	čavit’	move on foot while playing guitar
36	š	šadryj	not able to see volumetric objects	šadrit’	move on a broom
37	š	šaklyj	disappointed	šaklit’	move sitting on a camel’s back
38	šč	ščulyj	touchy, being easily offended	ščulit’	move while squinting at the sunshine
39	gn	gnoryj	eating only sweet food	gnorit’	move walking on palms upside down smiling happily
40	žr	žrapyj	taking bribes	žrapit’	move a box of ammunition on a rope with difficulty
41	zn	znupyj	going at full speed, intensive	znupit’	move riding a sleigh drawn by reindeers
42	čt	čtusyj	concentrated on details	čtusit’	move while staggering
43	žg	žgavyj	having an obsessive idea to wash one’s hands all the time	žgavit’	move (jumping) in a bag
44	sp	spulyj	not able to work with the right hand	spulit’	move on waterskis
45	sk	skolyj	famous	skolit’	move by paddling a boat
46	tk	tkabyj	shy	tkabit’	move by helicopter

Appendix 6: Sample of Questionnaire A[49] (verbal stimuli)
Анкета

Данный эксперимент проводится в рамках проекта, посвященного исследованию русского языка, при поддержке Университета города Трумсе Королевства Норвегия.

Инициалы участника: _____ (конфиденциальность ваших данных гарантируется)

Пол: □ мужской □ женский

Возраст: _____

Образование: □ среднее □ неоконченное высшее □ высшее

Специальность / основная сфера деятельности: _____

Уважаемый участник эксперимента!
Пожалуйста, внимательно прочтите нижеследующую инструкцию.

Перед вами 62 микротекста. Перед каждым текстом Вы увидите глагол, выделенный жирным шрифтом. Он может оказаться хорошо известным, редким или совсем незнакомым для Вас словом. Ни то, ни другое, ни третье, однако, не будет помехой для выполнения задания. Для Вашего удобства значение глагола будет кратко истолковано.

Прочитайте предложение до конца и найдите пропуск. Чтобы заполнить пропуск, преобразуйте выделенный глагол, используя при этом одну из трех приставок современного русского языка: *о-, об-* или *обо-*. Ваша задача – вставить в пропуск тот вариант с одной из этих приставок, который Вы считаете подходящим. Обратите внимание на ударение.

Если Вы решите, что возможно несколько вариантов, приведите их и прокомментируйте, различаются ли они по смыслу или нет. Если различаются, поясните, пожалуйста, в чем состоит различие.

Обращаем Ваше внимание на то, что при выполнении данных заданий не может быть правильных или неправильных ответов. Мы просим Вас следовать Вашей языковой интуиции. Спасибо!

Пример:

О-	**ОБ-**	**ОБО-**

Идтú – передвигаться при помощи ног, пешком.
Давай попробуем …… вокруг дворца и найти другой вход.
►Давай попробуем …***обойти***..…… вокруг дворца и найти другой вход.

Вестú – помогать идти, сопровождать идущего.
Экскурсовод …….. нас вокруг собора и рассказал о технике мозаики, фрески и рустовки.
►Экскурсовод …***обвел***….. нас вокруг собора и рассказал о технике мозаики, фрески и рустовки.

Внимание!
Эксперимент начинается на следующей странице.
Если у Вас есть вопросы, задайте их экспериментатору сейчас.

[49] Questionnaire B differs from A only in place of stress on nonce stimuli. Questionnaire A has stem-stressed nonce stimuli, while Questionnaire B has theme-vowel-stressed nonce stimuli.

О-	ОБ-	ОБО-

1. **Копа́ть** – рыть, заниматься земляной работой.
Необходимо было провести работы по изоляции фундамента, однако после случившегося наводнения ……. все здание кругом по периметру было невозможно.

_____

2. **Черти́ть** – проводить линию, черту.
Чтобы сорвать папоротник, нужно в ночь Ивана Купала разостлать около растения священную скатерть, …….. вокруг себя на земле ножом круг, окропить папоротник святой водой и молиться. Сорвав цветок, нужно спрятать его за пазуху и бежать без оглядки.

_____

3. **Гу́звить** – (о птице) прихрамывать, притворяясь, что одно крыло сломано.
Птица заметила лису и стала манить ее прочь от гнезда. Приподняв одно крыло, как будто оно было сломано, птица отбежала чуть подальше, …….. вокруг камня, и, подождав, когда лиса последует за ней, взмыла вверх.

_____

4. **Тка́бить** – перемещаться на вертолете.
Чтобы взглянуть на критическую ситуацию собственными глазами, глава правительства несколько раз …….. вокруг метеорологической станции и рассудил, что пора принять экстренные меры.

_____

5. **Рва́ть** – выдергивать с силою, резким движением.
Когда все нужные детали отшлифованы, необходимо …….. защитную пленку шириной 4-5 см по всему периметру изделия.

_____

6. **Ду́ктить** – кое-как с непривычки перемещаться на высоких каблуках.
Цокая высокими каблуками, дама прошла вдоль скамейки, кое-как …… вокруг клумбы, вдруг зацепилась за что-то и чуть не упала.

_____

7. **Ра́жнить** – перемещаться на индийском слоне.
Согласно древней индийской традиции, жених должен подъехать к дому своей невесты верхом на слоне, торжественно ……. вокруг дома и поставить слона на одно колено.

_____

8. **´Юпить** – передвигаться на лыжах без лыжных палок, энергично работая руками.
Сегодня юпить на лыжах было трудновато: ветер дул в лицо, да еще гололед. Так что ……. вкруг леса я только один раз, зато сто раз пожалел, что палки с собой не взял.

_____

9. **Ша́клить** – перемещаться верхом на верблюде.
Согласно древней легенде, если …….. вокруг египетской пирамиды Хеопса в Гизе ровно девять раз, то загаданное в этот день желание обязательно исполнится.

_____

10. **Мо́млить** – передвигаться, весело пританцовывая.
В тот вечер Андрей Иванович был в лучшем расположении духа. Сияя лучезарной улыбкой, он …….. вокруг рояля, на котором играла Лизавета, затем подсел к ней поближе и стал переворачивать ноты.

_____

О-	ОБ-	ОБО-

11. **Га́бить** – передвигаться очень медленно, приставляя пятку одной ступни к носку другой.
По дороге ему встретился гигантский камень больше человеческого роста. Он ……. вокруг камня, потрогал подошвой его мшистый бок и продолжил путь.

_____

12. **Е́хать** – передвигаться на колесах.
Те, кто сдавал на права, знают, что одно из первых заданий на экзамене – аккуратно …… вокруг столба.

_____

13. **Ко́члить** – перемещаться вперед на одной ноге.
Мишка часто соревновался со Славиком, кто сможет быстрее …… вокруг песочницы в одну сторону и обратно.

_____

14. **Жра́пить** – с трудом перемещать на веревке ящик с боеприпасами.
Силы Павла были на исходе, однако он собрал все мужество и ……. вокруг землянки.

_____

15. **Но́крить** – передвигаться на коленках.
Маша боролась с сорняками около часа. Она не один раз …….. по периметру вокруг всей морковной грядки, пока добилась, чтобы на ней не осталось ни одного сорняка.

_____

16. **Ползту́** – передвигаться на животе.
Змея страшно зашипела. Она медленно ……. вокруг веранды и, остановившись, долго смотрела на мангуста.

_____

17. **Ца́вить** – перемещаться на пиратской шхуне.
Наш корабль ……. вокруг Австралии всего за два месяца.

_____

18. **Ху́шнить** – передвигаться, пиная перед собой футбольный мяч.
Ведя мяч к воротам, Кирсанов …… вокруг противника, пробежал еще несколько шагов и неожиданно для всех вдруг забил гол.

_____

19. **Ву́ть** – скручивать, сплетать.
Я думал, как усажу ее рядом с собой на скамейку, …… руку вокруг ее талии и поцелую.

_____

20. **Гно́рить** – передвигаться на руках вверх ногами, улыбаясь от счастья.
Когда я вдруг узнал, что меня приняли на первый курс, я готов был ……. вокруг всего здания консерватории, крича на всю улицу о своем успехе.

_____

21. **Па́тлить** – перемещаться на лодке.
Увидев прямо по курсу дом, стоящий на воде, мы подгребли поближе и решили …… вокруг него, чтобы посмотреть, есть ли под ним хоть маленький кусочек суши или нет._____

О-	ОБ-	ОБО-

22. **Чту́сить** – передвигаться, сильно шатаясь.
Данила шел на хутор долго и с трудом. Зато было, о чем потом рассказать: и о том, как он вылетел из кабака, и как приятно дул ветер в спину на раздолье, и как он, в конце концов, ……. вокруг мельницы и наткнулся там на Емельяна.

_____

23. **Зо́прить** – перемещаться на коне.
Дворец был так велик, что даже на отличном английском скакуне нельзя было …….. вокруг него за один день.

_____

24. **Кружи́ть** – передвигаться по кругу.
Стремление США …… Китай военными базами, поддержка независимости Тайваня, а также военное сотрудничество с Индией подталкивали Пекин к ответным мерам.

_____

25. **На́дить** – передвигаться, держа в руках большой букет цветов.
Говорят, чтобы окончательно вскружить голову женщине, нужно …… вокруг нее более 200 раз.

_____

26. **Спу́лить** – перемещаться на водных лыжах.
Честно говоря, я думал что ……. вокруг такого небольшого озера – пара пустяков. Однако, встав на лыжи, я убедился, что не все так просто.

_____

27. **То́вить** – перемещаться на одноколесном велосипеде.
Вдруг из-за кулис появился хохочущий клоун. Балансируя на одном колесе, он …… вокруг фокусника, выхватил у него цилиндр и достал из него еще двух кроликов.

_____

28. **Ча́вить** – передвигаться пешком, играя на гитаре.
И нечего Вам всё вокруг дома моего ходить! Один раз Вы вокруг дома …… – ну, думаю, ладно, а Вы – и другой, и третий! Нужно же и честь знать!

_____

29. **Плести́** – перевивать, соединяя в одно целое.
Когда-то, в дополимерную, допенопластовую эпоху, почти единственным способом защитить бутылку от ударов было …… ее камышом или соломой.

_____

30. **Зу́пить** – перемещаться в санях на собачьей упряжке.
Ему снилось, что он уже стремительно зупит на упряжке из десяти лохматых хаски в направлении долгожданного Северного полюса, и вот ему остается преодолеть последнюю сотню метров, победно …… вокруг заветной точки притяжения и закрепить гордый флаг завоевателя так, чтобы его не унесло ветром.

_____

О-	ОБ-	ОБО-

31. **Ло́прить** – передвигаться, громко топая ногами.
В бане живет банник. Это особый банный дух, лохматый и вредный. Он любит шпарить кипятком и кидаться камешками из печки. Поэтому перед тем как идти париться, говорят, надо банника припугнуть, а для этого нужно ……. вокруг бани, покрикивая и грозя веником.

_____

32. **Ва́ждить** – перемещать коляску с ребенком.
Фонтан был так велик, что когда Марина …… вокруг него, малыш уже мирно спал.

_____

33. **Бежа́ть** – двигаться, быстро отталкиваясь от земли ногами.
Чтобы пройти нужную дистанцию, лыжники должны были …… вокруг снежного поля 111 раз.

_____

34. **Ша́дрить** – перемещаться на метле.
Когда Баба-Яга увидала, что золотое яичко разбито, а курочка Ряба сбежала с Колобком, она вскочила на метлу, разок-другой …….. вокруг своей избушки и отправилась в погоню.

_____

35. **Лу́сить** – тихонько перемещаться в свое удовольствие.
Что может быть лучше, чем поутру вылить себе на голову в ванной ведро ледяной воды, ……. разок-другой вокруг стадиона, позавтракать овсяной кашей, а затем спешить на работу, улыбаясь яркому солнечному дню, который так приятно начался.

_____

36. **Жу́склить** – передвигаться с закрытыми глазами.
Играли в жмурки. Миша ……. вокруг комнаты, шаря перед собой руками, но никого не поймал. Все со смехом разбежались.

_____

37. **Кату́ть** – везти какой-нибудь предмет, поставленный на колеса, или ехать самому.
Этот велосипед – вещь историческая. На нем я дважды вокруг всего света ……!

_____

38. **Ву́рлить** – двигаться, легко лавируя между препятствиями.
При помощи нового автоматического управления на этом космическом корабле можно …….. вокруг земного шара, ловко уклоняясь от встречных метеоритов.

_____

39. **Жа́хлить** – перемещаться на двухметровых ходулях.
Этой весной во время разлива Нила вода поднялась так высоко, что местные жители вынуждены были удлинить свои обычные ходули на полметра. Они с трудом добрались до храма Хапи, повелителя наводнений, …….. вокруг храма, однако вход был затоплен водой и войти в него было просто невозможно.

_____

О-	ОБ-	ОБО-

40. **Ско́лить** – перемещаться в лодке на веслах.
В поисках удобной бухты нам пришлось ……. вокруг всего острова. Причалили мы, в конце концов, у северного мыса, поскольку окрестность выглядела вполне приветливо и рифов у берега видно не было.

_____

41. **Гну́ть** – изгибать, отклонять.
Они добежали до парка, …… по кругу танцплощадку и спрятались в зарослях за эстрадой.

_____

42. **Ро́глить** – перемещаться на роликовых коньках.
Мишке вчера купили новые ролики. Теперь для полного счастья нужно ……. вокруг школы, чтобы все видели, скататься до магазина, несколько раз упасть на мягкие налокотники и заполучить парочку царапин, чтобы потом было чем похвастаться.

_____

43. **Пу́рить** – передвигаться, хватаясь лапами и хвостом за ветки деревьев.
Маугли поднял голову и увидел на деревьях с полдюжины обезьян. Самая крупная обезьяна …….. вокруг него и быстро спустилась по лиане на землю.

_____

44. **´Ялить** – перемещаться по воздуху (о воздушном шаре).
Воздушный шар поднялся в небо. Он плавно проплыл по воздуху до самой горы, …… вокруг ее вершины и полетел дальше, чуть задевая встречные облака.

_____

45. **Чу́пить** – перемещаться со скоростью 70 километров в час.
Из пункта А выехал грузовик. Проехав расстояние 105 км., он по периметру …… вокруг леса, площадь которого имела форму квадрата и составляла 180 км^2.

_____

46. **Ве́ять** – воздействовать легкой струей воздуха.
Расстегнув ремешок, он выпустил рубашку наружу и попытался …… влажное, разгоряченное тяжелой работой тело.

_____

47. **Хо́пить** – стремительно перемещаться, прыгая при этом на скакалке.
И вот командные соревнования начались. Первым заданием было добежать до середины дорожки, взять лежащую на земле скакалку, затем хопить что есть силы до корзины с кеглями, ……. вокруг корзины, а после – спешить обратно к своей команде.

_____

48. **Му́рлить** – передвигаться на цыпочках, изображая кошку.
У маленькой Любы просто талант изображать разных животных. Вчера она мастерски играла мышку, а сегодня, смотрю, – она уже мурлит в сторону папы, …….. вокруг кресла, где он сидел, а потом вдруг прыг – к нему и как замяукает!

_____

49. **Жга́вить** – перемещаться в мешке.
Ребята придумали новое развлечение: кто быстрее сможет …… вокруг газонокосилки тети Шуры.

_____

О-	ОБ-	ОБО-

50. **Гна́ть** – быстро ехать, вести автомобиль на большой скорости.
Петров завел мотор, за пару секунд ……. автомобиль вокруг здания районного центра, и они во всю мочь помчались по сухой проселочной дороге.

_____

51. **Зну́пить** – перемещаться в санях, запряженных северными оленями.
Дед Мороз спешил с подарками. Всё собирать по списку пришлось в последний момент, поэтому он прыгнул в сани, ……. разок вокруг волшебного леса, удостоверился, что ни один заветный мешок он не оставил, и помчался на санях развозить подарки.

_____

52. **Ка́мпить** – передвигаться, вглядываясь в лица встречных людей.
Он доехал до станции метро, вышел на улицу и стал ждать Тоню. Сначала она опаздывала на 5 минут, потом на 10. Вдруг ему пришло в голову, что, может быть, Тоня уже приехала и ждет его у другого выхода. Он …….. вокруг всего здания метро, но Тоню не встретил.

_____

53. **Ту́лить** – медленно перемещаться, от скуки пиная найденный на дороге камень.
Блок вышел из дома и стал тихонько тулить в сторону табачной лавки. Там ему предстояло ждать еще битых полчаса. Он уже успел …… вокруг лавки 4 раза, когда, наконец, из-за угла появился Анненский.

_____

54. **Плыть** – передвигаться по поверхности или в глубине воды.
Остров был небольшим, поэтому мы решили …….. его по кругу и присмотреть бухту получше.

_____

55. **Су́рить** – перемещаться босиком.
Земля разъезжалась, трещины уходили вглубь, дуб уносило водой. Захар метнулся к дому, выскочил с верёвкой, накинул петлю на сучок отъезжающего дуба, …….. вокруг дерева и стал изо всех сил тянуть, соединять землю.

_____

56. **Бо́стить** – перемещаться, считая шаги и измеряя длину участка.
Знаете, у землемеров есть своя технология для высчитывания площади участка. Это только кажется, что достаточно …… по периметру вокруг поля – и все дела. Это, извините меня, уже вчерашний день.

_____

57. **Да́млить** – воздушно вальсировать.
Юнкер подхватил Юлию и закружил ее в вихре вальса. Горели свечи, гремела музыка. Они несколько раз …… вокруг залы, потом голова у Юлии закружилась, и она без сил упала на диванные подушки.

_____

58. **Вали́ть** – беспорядочно бросать, класть в большом количестве куда-либо.
Готовясь к зиме, крестьянину нужно ……. избу кругом землей, утыкать мхом, и защитить от стужи соломой.

_____

О-	ОБ-	ОБО-

59. **Бу́клить** – передвигаться на задних лапах.
Когда приходят гости, Пампи любит показывать фокусы. Если покрутить перед ее носом кусочком печенья, она последует за ним и может даже …… вокруг журнального столика.

_____

60. **Нести́** – перемещать, возводить.
Потом город завоевали римляне, они дали ему новое имя, …… стеной и разбили традиционную римскую планировку.

_____

61. **Са́глить** – передвигаться задом наперед, изредка оглядываясь, чтобы не упасть.
Говорят, если саглить регулярно, то можно выработать приличное чувство равновесия. Я начала с того, что вчера два раза …….. вокруг телевизора, но в результате чуть не уронила фарфоровую вазу, которая на нем стояла.

_____

62. **Щу́лить** – передвигаться, щурясь от солнечного света.
Яркое солнце слепило глаза. Эдик несколько раз …… вокруг машины, но так и не нашел предательски отвалившийся болтик.

_____

Спасибо за участие в эксперименте!
Если Вы хотите узнать о результатах исследования, Вы можете связаться с нами по адресу
aba039@post.uit.no

Cover page translated into English

Questionnaire

The present experiment is part of a project devoted to the investigation of the Russian language. The experiment is supported by the University of Tromsø, the Kingdom of Norway.

Initials: _____ (complete confidentiality of your personal data is guaranteed)

Gender: □ male □ female

Age: _____

Education: □ secondary □ uncompleted higher □ higher

Profession / Main occupation: _____

Dear participant!
Please make sure you read the following instructions carefully!

There are sixty-two short texts in front of you. Each text is preceded by a boldfaced verb[50] in bold. The verb might be a well-known, rare or totally unknown word for you. This should present no obstacle for the completion of your task. For the sake of your convenience, the meaning of each verb is briefly explained.

Please read each sentence in its entirety and find the blank. In order to fill in the blank, you should transform the boldfaced verb using one of the three prefixes of contemporary standard Russian: O, OB, or OBO. Your task is to fill in the blank with the prefixed verb which you find most appropriate. Please pay attention to the stress.

If you decide that a number of variants are possible, please list all of them and comment on whether they differ in meaning or not. If yes, please specify what the difference is.

We want to emphasize that there are no right and wrong answers in these tasks. We ask you to follow your linguistic intuition. Thank you!

Example:

O	OB	OBO

The examples are described in Chapter 4.

Attention!
The experiment starts on the next page.
If you have any questions, it is a good time to ask them now.

[50] In questionnaire C with adjectival stimuli, the instructions were the same except that the base boldfaced word was an adjective and the task was to transform it into a verb.

Appendix 7: Sample of Questionnaire C (adjectival stimuli)
Анкета

Данный эксперимент проводится в рамках проекта, посвященного исследованию русского языка, при поддержке Университета города Трумсе Королевства Норвегия.

Инициалы участника: _____ (конфиденциальность ваших данных гарантируется)

Пол: □ мужской □ женский

Возраст: _____

Образование: □ среднее □ неоконченное высшее □ высшее

Специальность / основная сфера деятельности: _____

Уважаемый участник эксперимента!
Пожалуйста, внимательно прочтите нижеследующую инструкцию!

Перед вами 62 микротекста. Перед каждым текстом Вы увидите прилагательное, выделенное жирным шрифтом. Оно может оказаться хорошо знакомым, редким или совсем не известным Вам словом. Ни то, ни другое, ни третье, однако, не будет помехой для выполнения задания. Для Вашего удобства значение прилагательного будет кратко истолковано.

Прочитайте предложение до конца и найдите пропуск. Чтобы заполнить пропуск, преобразуйте выделенное прилагательное в глагол, используя при этом одну из трех приставок современного русского языка: *о-, об-* или *обо-*. Ваша задача – вставить в пропуск тот вариант с одной из этих приставок, который Вы считаете подходящим. Запишите Ваш вариант в пропуск и поставьте в нем ударение.

Если Вы решите, что возможно несколько вариантов, приведите их и прокомментируйте, различаются ли они по смыслу или нет. Если различаются, то напишите, пожалуйста, в чем, на Ваш взгляд, состоит различие.

Обращаем Ваше внимание на то, что при выполнении данных заданий не может быть правильных или неправильных ответов. Мы просим Вас следовать Вашей языковой интуиции. Спасибо!

Образец:

О-	ОБ-	ОБО-

1. **Сложный** – вызывающий трудности.
Отношения между союзниками были и без того сложными, однако секретное вооружение военных частей еще более …… ситуацию.
►Отношения между союзниками были и без того сложными, однако секретное вооружение военных частей еще более …***осложнило***… ситуацию.

2. **Острый** – напряженный.
Экономический кризис и природные катаклизмы ……. внутриполитическую ситуацию в Северной Осетии.
►Экономический кризис и природные катаклизмы …***обострили***…. внутриполитическую ситуацию в Северной Осетии.

Внимание!
Эксперимент начинается на следующей странице.
Если у Вас есть вопросы, задайте их экспериментатору сейчас.

О-	ОБ-	ОБО-

1. **Легкий** – исполняемый, преодолеваемый без большого труда, усилий.
В прошлом году библиотека закупила дополнительную партию книг для студентов, что разительно …… учебный процесс.

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2. **Глухой** – не способный слышать.
Тут Игнат совсем рассвирепел: «Ты что, глухой? Не слышишь, что ли, что я тебе говорю?» А Федор, усмехаясь, проговорил в бороду: «Да ты меня, брат, своим криком совсем ……».

_____

3. **Надый** – требовательный к чистоте и порядку.
Когда дедушка узнал о приезде Паши, он стал таким надым, что все просто диву дались. А сколько разговоров потом было, что это известие его так сильно …….. .

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4. **Тулый** – неуверенный в себе.
Катерина Николаевна всю ситуацию представила совсем в ином свете, так что чиновник оказался во всей этой истории робким, нерешительным и тулым человеком. Да-да, именно тулым. Хотя заметьте, что это Катерина Николаевна сделала его тулым, а иначе сказать – …….. его.

_____

5. **Нокрый** – умеющий хорошо готовить.
Кирилл всегда мечтал стать отличным поваром, однако то, что он готовил, есть никто не мог. После школы кулинаров его словно подменили! За пару месяцев его научили и варить, и жарить, и выпекать, сделали нокрым и подкованным в разных технологиях, то есть …….. его.

_____

6. **Общий** – содержащий только самое существенное, без подробностей.
Перед Кириллом Викторовичем стояла непростая задача: все результаты полугодовой работы в лаборатории профессора Ильинского теперь нужно было суммировать и представить в общем виде, то есть максимально ……..…… .

_____

7. **Чупый** – немного выпивший.
Этот напиток очень освежает, утоляет голод и жажду, вызывает небольшой пот и делает сонливым после утомительной езды. Однако, если он пролежит в погребе года два-три, то может даже ……., особенно такого непривычного, как Вы.

_____

8. **Важдый** – испытывающий сильное чувство патриотизма.
Издалека ветер доносил звуки раздольной русской песни. Николай вышел в поле, вдохнул вечерней прохлады и остро ощутил, как родной мотив и простые слова сделали его глубоко важдым, тронули его до слез, …… его.

_____

9. **Гнорый** – употребляющий в пищу только сладкое.
Машуня у нас теперь не ест ни кашу, ни суп, ни второе! Только сладкое и ест! Это бабушкины сахарные крендели и рогалики с джемовой начинкой ее так …….. . Что теперь будешь с ней делать?

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О-	ОБ-	ОБО-

10. **Хопый** – испытывающий непреодолимую тягу к покупкам.
Каждая получка бросает Марианну в омут неутомимого шопинга. И в этот раз, как всегда, очередная зарплата изменила экономную Марианну до неузнаваемости: сделала ее кокетливой, озорной и хопой, иными словами, ……. ее и закрутила в вихре новых магазинов и покупок.

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11. **Злой** – полный злобы.
Вчерашний разговор до того меня …….., что я сегодня без волнения не мог думать о случившемся.

_____

12. **Гузвый** – красочный.
Пришла осень и принесла с собой свежесть, ветер и новые краски. Осень раскрасила листья в золото и пурпур, застелила тропы мягким ковром, превратила лес в богато украшенный, гузвый терем. Осень-мастерица постаралась на славу, преобразила лес, …..……..…….. его.

_____

13. **Товый** – тоскующий по дому.
После короткого разговора с сестрой по телефону Артем вдруг весь ушел в себя, стал молчаливым и грустным. Всем было понятно, что это телефонный разговор его так …… .

_____

14. **Жахлый** – проводящий все время за чтением книг.
Если вы вдруг решите сделаться ходячей энциклопедией, то первым делом нужно обзавестись богатой библиотекой, которая могла бы вас …….. .

_____

15. **Круглый** – имеющий форму круга.
Чтобы произнести немецкий звук ü в слове Мюнхен, нужно ……. губы, как бублик.

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16. **Саглый** – имеющий пристрастие к компьютерным играм.
Новая компьютерная игра «Юпитер», которая только что вышла в продажу, может …… любого, даже взрослого. Она так захватывает, что просто невозможно оторваться.

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17. **Щулый** – легко обижающийся.
Постоянная критика со стороны учителей развила в Любе сильный комплекс неполноценности и сделала ее невероятно щулой девочкой, иными словами, ……. ее.

_____

18. **Жгавый** – имеющий навязчивую идею постоянно мыть руки.
Еще год назад Павел где-то прочитал о многочисленных микробах, населяющих поверхности различных предметов – овощей, фруктов, рук, мебели и пр. С тех пор он моет руки по сто раз в сутки, все кипятит и дезинфицирует. Ума не приложу, что за книга произвела такое сильное впечатление на его воображение, так его ……. !

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О-	ОБ-	ОБО-

19. **Нагой** – не имеющий на себе покрова.
Елена Николаевна резко встала с кресел и направилась к двери. Накидка упала к ее ногам и …….. белые плечи.

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20. **Чавый** – с хорошими манерами поведения.
Когда мы нашли Мусю во дворе, она была совсем дикой и сначала только царапалась и кусалась. Но домашняя обстановка, молочко и манная кашка Мусю вскоре …….. – она стала ручной и чавой.

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21. **Момлый** – томно закатывающий глаза и вздыхающий.
Бесконечные дамские романы, которыми Роза зачитывалась в последнее время, ее ……... .

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22. **Американский** – имеющий отношение к Америке.
Хеппи-энд – обязательный элемент голливудских фильмов. Однако такой счастливый поворот сюжета на американский манер уже давно перешагнул границы США. Чтобы увеличить кинопрокат и потенциальную зрительскую аудиторию, даже Индия стремится ……..…. свои современные фильмы.

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23. **Сурый** – погруженный в уныние.
На выходных ребята хотели поехать кататься на роликах, однако погода была никудышная: с пятницы зарядил дождь. Рома и Славик повесили носы, а вот Павлика это совсем не ……., у него в запасе всегда было много затей.

_____

24. **Дамлый** – испытывающий чувство ностальгии.
Серая дождливая погода, старые пластинки, в одиночестве проведенный вечер – все это заставило Станислава Николаевича мысленно перенестись в былые дни, сделало его дамлым и чувствительным – …….. его.

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25. **Зопрый** – имеющий выдающиеся музыкальные способности.
Регулярные занятия музыкой сильно развили Катин голос и слух – ……. ее. Более того, теперь, когда она читала ноты, вокруг уже звучала музыка, наполняя душу звуками и переливами.

_____

26. **Дуктый** – невесомый, воздушный.
Надю было просто не узнать. Она стала изумительно дуктой. Кажется, это новое платье и прическа ее так ……. .

_____

27. **Юпый** – суеверный.
Недавно Галина Петровна вдруг сделалась донельзя юпой. А причиной тому был черный кот, который перешел ей дорогу. После того кота и посыпались на нее все несчастья: и каблук сломался по дороге в магазин, и сумку утащили, и автобус опоздал. Этот случай …… Галину Петровну, сделал ее грозой всех котов, особенно черных.

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О-	ОБ-	ОБО-

28. **Мрачный** – угрюмый.
Вчера Миша пришел домой из школы мрачный, как туча. «Миша, что тебя так ……..…..?» – спросила его мама.

_____

29. **Патлый** – забывчивый.
Раньше баба Шура все помнила, а теперь говорит: «Голова – решето, положишь в него, а из дырки и выпадет. Что поделаешь! Это старость меня ……. !»

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30. **Жусклый** – предающийся лени.
Постоянное сидение у телевизора не привело ни к чему, только …….. Толика, то есть сделало его жусклым и неповоротливым, а это, в свою очередь, стало раздражать и маму, и бабушку, и Наташу.

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31. **Вшивый** – имеющий много вшей.
Очередное летнее нашествие насекомых вместе с недостатком гигиены в походных условиях так …… солдат, что каждый новый переход заставлял их невыносимо страдать.

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32. **Спулый** – не способный работать правой рукой.
Данила вылетел из кабака очень неудачно, повредил правую руку так сильно, что его …….. . Оставалось либо на время сделаться левшой, либо звать на покос соседей.

_____

33. **Ражный** – чрезмерно расточительный.
Неожиданный выигрыш в воскресной лотерее …….. Захара и он решил отправиться на ярмарку и купить там подарки всем своим домашним.

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34. **Немецкий** – свойственный немцам, характерный для них.
Четыре года, проведенные в Германии, заметно …… сержанта. Особенно это касалось его внешнего вида.

_____

35. **Шадрый** – не способный видеть объемные предметы.
В автокатастрофе никто из пассажиров тяжело не пострадал, однако у Владислава случилось сотрясение мозга, которое его …….., сделав медлительным и рассеянным.

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36. **Светлый** – не темный.
Оказывается, можно значительно …… волосы не только разными химикатами вроде перекиси водорода, а естественными народными средствами, например раствором крапивы и ромашки.

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37. **Зупый** – никому не доверяющий.
Михаила столько раз обманывали на рынке, что он стал зупым и подозрительным. Да такое и любого бы ……, не только его.

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О-	ОБ-	ОБО-

38. **Габый** – восхищенный красотой природы.
Поездка в Монголию сделала Гришу истинным любителем походов и палаток, габым и неутомимым путешественником, …….. его.

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39. **Русский** – свойственный русским людям по языку, обычаям.
Жители Смоленской области изначально были белорусами, и только полстолетия назад их окончательно …… .

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40. **Кампый** – полный надежд и новых планов.
Возможность получить двойной отпуск не просто ……. Никитина, а превратила его в жизнерадостного и энергичного человека.

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41. **Знупый** – идущий полным ходом, интенсивный.
Англия стремилась добиться того, чтобы ее внешняя торговля стала процветающей и знупой. В этом стремлении ……. внешнюю торговлю Англия учреждала в чужеземных странах колониальные владения.

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42. **Бостый** – умеющий изготовлять красивую глиняную посуду.
Два года, проведенные в мастерской, не только помогли Емельяну развить нужную сноровку, но просто напросто ……. его, сделали настоящим мастером своего дела.

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43. **Голый** – без убранства.
Все картины, тарелочки и фотографии со стен сняли и упаковали в коробки. Мебель перевозили постепенно. Когда совсем …….. стены, в комнате поселилось эхо.

_____

44. **Шаклый** – разочарованный.
Костя что есть силы спешил на почту, поэтому то, что ее закрыли на полчаса раньше, …….. его и повергло в глубокое уныние.

_____

45. **Лусый** – не способный есть рыбу.
В детстве Вику так много кормили рыбой, что в результате …….. ее, так что теперь на рыбу она смотреть не может.

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46. **Жрапый** – берущий взятки.
Бюрократический дух и подобострастная атмосфера, царящие в организации, ……. и начальника, сделав его корыстным и безнравственным.

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47. **Мелкий** – незначительный по величине, размеру, стоимости.
Закрыть государственный исторический музей – значит умалить значение государственной истории, …… его подлинно национальное содержание и достоинство.

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О-	ОБ-	ОБО-

48. **Ткабый** – стеснительный.
Выйдя на сцену лицом к огромному залу зрителей, Поливанов почувствовал, что его …… , так что от стеснительности он был не в силах произнести ни слова.

_____

49. **Лопрый** – стойкий, несгибаемый.
Многочисленные препятствия и жизненные трудности закалили его характер, укрепили волю, …….. его, сделав стойким и решительным.

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50. **Чтусый** – сосредоточенный на деталях.
Скрупулезная профессия инженера наложила отпечаток и на его характер: …….. Муравьева, сделав еще к тому же дотошным, педантичным и пунктуальным.

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51. **Буклый** – гордый своим успехом.
В погоне за карьерными достижениями Влад добился повышения по службе, и это придало ему уверенности в себе, самоуважения, …… его и сделало еще более амбициозным.

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52. **Грубый** – жестокий, неучтивый, неделикатный в обращении.
В облике разных по характеру и возрасту фронтовиков А.Т. Твардовский показал, что война не …….. их души.

_____

53. **Ялый** – не способный переносить визг.
В детском садике дети всегда громко визжали. Поработав там несколько месяцев, Вероника уже не могла переносить детский визг, у нее начинала болеть голова, работа ее окончательно …….. .

_____

54. **Мурлый** – плавно текущий, медленный.
В тот вечер Елена Николаевна баловала всех занимательными историями. Помню, однако, что в рассказе о катании на санках ее бесконечные подробности и детали значительно …… повествование, а мне не терпелось узнать, чем же дело кончилось.

_____

55. **Пурый** – не переносящий транспорт.
Постоянные утомительные поездки на метро и автобусах, электричках и маршрутках туда и обратно, сделали Решетова хронически усталым, нервным и пурым, …….. его, так что по выходным он предпочитал никуда не ездить.

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56. **Кочлый** – полный спокойствия.
Андрей так переживал, что просто места себе не находил. Даша дала ему выпить настоя трав, и это сняло волнение, расслабило и ……. Андрея, сделав его вдруг спокойным и невозмутимым.

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57. **Вурлый** – полный инициативы.
Участие в новом инженерном проекте не только сделало из апатичного и рассеянного Виталия собранного и деловитого разработчика, но еще и …….. его.

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О-	ОБ-	ОБО-

58. **Цавый** – неискренний, лицемерный.
Необходимость постоянно выслуживаться и угождать начальству ……. Молчалина, сделав его подлым и хитрым.

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59. **Роглый** – фашистский.
Нищета и националистские настроения в Германии 30-х годов сделали многих людей сторонниками фашизма, ……. их.

_____

60. **Хушный** – привередливый.
Любу дома так избаловали, что в садике она теперь почти ничего не ест. Воспитательница говорит, что это дома Любу ……. , вот она и стала такой привередой.

_____

61. **Сколый** – знаменитый.
Изобретение микроскопа было скачком в развитии оптики. Оно сделало Антони ван Левенгука по-настоящему знаменитым, иными словами …… его.

_____

62. **Живой** – полный жизни, энергии.
Приезд офицеров …….. местное общество, кроме того, в городке появился генерал. Званые обеды, которые он часто устраивал, собирали много народа.

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Спасибо за участие в эксперименте!
Если Вы хотите узнать о результатах исследования, Вы можете связаться с нами по адресу aba039@post.uit.no

Appendix 8. Excerpt from the database of subjects' responses.

code	зОприть	зУпить	Юпить	Ялить	кОчлить	кАмпить
A1	озопрИть	обзУпить	объЮпил	объЯлил	обкОчлить	окАмпил
A2	озОприть	озУпить	оЮпил	оЯлил	окОчлить	окАмпил
A3	озОприть	озУпить	объюпИл	объялИл	обкОчлить	окАмпил
A4	озОприть	озУпить	оЮпил	оЯлил	окОчлить	окАмпил
A5	обзОприть	обзУпить	объЮпил	объЯлил	обкОчлить	окАмпил
A6	обзОприть	озУпить, обзУпить	объЮпил	объялИл	окОчлить	обкАмпил
A7	обзОприть	озУпить	объЮпил	оЯлил	обкОчлить	обкАмпил
A8	озОприть	озУпить	объюпИл	оЯлил	окОчлить	окАмпил
A9	озОприть	озУпить	оЮпил	объЯлил	окОчлить, окочлИть	обкАмпил
A10	обзОприть	обзУпить	объЮпил	объЯлил	обкОчлить	обокАмпил
A11	озОприть	обзУпить	объЮпил	объЯлил	окОчлить, обкОчлить	окАмпил
A12	обозОприть	обзУпить	объюпИл	обоялИл	окОчлить	обокАмпил
A13	озОприть	обозУпить	объЮпил	объЯлил	окОчлить	обкАмпил
A14	обзОприть	озУпить	объЮпил	оЯлил	окОчлить	обкАмпил
A15	обзОприть	обзУпить	объЮпил	объЯлил	обкОчлить	обкАмпил
B1	озопрИть	озупИть	оюпИл	оялИл	окочлИть	окампИл
B2	обзопрИть	озупИть	объюпИл	объялИл	окочлИть	окампИл
B3	озопрИть, обзопрИть	озупИв	объюпИл	объялИл	окочлИть	окампИл
B4	обзопрИть	обзупИть	объюпИл	объялИл	обкочлИть	окампИл
B5	обзопрИть	озупИл	обоЮпил	оЯлил	обокОчлить	обкампИл
B6	обзопрИть	обзупИть	объЮпил	оялИл, объялИл	окочлИть	обкампИл
B7	обзопрИть	озупИть	оюпИл	объялИл	обкочлИть	обкампИл
B8	обзопрИть	обзупИть	объюпИл	объялИл	обкочлИть	обкампИл
B9	озопрИть	обзупИть, озупИть	объюпИл	оЯлил	обкочлИть	окампИл
B10	обзопрИть	обзуплИв	объюпИл	объялИл	обкочлИть	обкамплИл
B11	обзопрИть	обзупИть	объюпИл	объялИл	обкочлИть	обкампИл
B12	обзопрИть	озупИв	объюпИл	оялИл, объялИл	обкочлИть	окампИл
B13	обзопрИть	озупИть, обзупИть	объюпИл	объялИл	обкОчлить, окОчлить	обкампИл
B14	озопрИть	обзупИть	объюпИл	объялИл	обкочлИть	окампИл
B15	обзопрИть	обзупИть	обоЮпил	объялИл	обкочлИть	окампИл

Appendix 9. Frequencies of each response form

Real verbs:

бежать		**валить**		**веять**		**вить**		**гнать**		**гнуть**		**ехать**		**катить**		**копать**	
оббежАть	18	обвалИть	27	обвЕять	17	обовьЮ	30	обогнАл	30	обогнУли	29	объЕхать	30	обкатИл	26	обкопАть	10
обежАть	13	овалИть	4	овЕять	16			огнАл	1	обогнУв	1			обкатАл	1	окопАть	22
														окатИл	5		
	31		31		33		30		31		30		30		32		32

кружить		**нести**		**плести**		**плыть**		**ползти**		**рвать**		**чертить**	
окружИть	30	обнеслИ	30	обплестИ	9	обплЫть	15	обползлА	24	оборвАть	30	обчертИть	2
				оплестИ	23	оплЫть	13	оползлА	8			очертИть	28
						обоплЫть	5						30
	30		30		32		33		32		30		30

Real adjectives:

американский		**вшивый**		**глухой**		**голый**		**грубый**		**живой**		**злой**		**круглый**	
обамериканить	22	обовшИвили	1	оглушил	29	оголИли	22	огрубИла	30	оживИл	30	обозлИл	24	округлить	30
обамериканизировать	6	обовшИвило	6	оглушишь	1	оголИлись	7					озлИл	4		
оамериканить	1	овшИвили	5			обголИли	1					обозлИл	4		
омериканить	1	овшИвило	18												
		обвшИвило	2												
	29		32		30		30		30		30		28		30

легкий		**мелкий**		**мрачный**		**нагой**		**немецкий**		**общий**		**русский**		**светлый**	
облегчИло	12	обмЕльчить	2	омрачИло	26	обнажИла	29	обнемЕчили	3	обобщИть	29	обрусИли	21	осветлить	30
облЕгчило	17	обмельчИть	18	омрачнИло	4	онагИла	1	обнемЕцили	1	обобщЁнно	1	обрУсили	5		
облегчИть	1	обмельчИв	1	омрАчнило	1			онемЕчили	20			обрусифицИровали	1		
		омельчИть	8					онемЕцили	2			орУсили	1		
		омЕльчить	1					онемчИли	1			орУсило	1		
								онЕмила	1			орусИли	1		
								онемефицИровали	1						
								обнемЕцкели	1						
	30		30		31		30		30		30		30		30

*Responses to nonce stimuli with initial labial obstruents **b** and **p** that are problematic for OB*

	бостить		**буклить**		**патлить**		**пурить**	
A	оббОстить	5	оббУклить	5	обпАтлить	4	обпУрила	4
	оббостИть	0	оббуклИть	1	опАтлить	10	обпурИла	1
	обОстить	8	обУклить	8	обопАтлить	1	опУрила	11
	обостИть	3	обуклИть	1			опурИла	1
	обобОстить	2						
	5 ОВ, 11 О, 3 ОВО		6 ОВ vs 9 О		4 ОВ, 10 О, 1 ОВО		5 ОВ, 12 О	
B	оббОстить	0	оббУклить	0	обпатлИть	8	обпУрила	0
	оббостИть	6	оббуклИть	7	опатлИть	7	обпурИла	11
	обОстить	0	обУклить	0			опУрила	0
	обостИть	8	обуклИть	8			опурИла	4
	обобОстить	0	обобУклить	1			обпурлИла	1
	обобстИть	1						
	6 ОВ, 8 О, 1 ОВО		7 ОВ, 8 О, 1 ОВО		8 ОВ, 7 О		12 ОВ, 4 О	
	11 ОВ, 19 О, 4 ОВО		13 ОВ 17 О 1 ОВО		12 ОВ, 17 О, 1 ОВО		17 ОВ, 16 О	
		33		31		30		33
	бостый		**буклый**		**пурый**		**патлый**	
C	обОстили	16	обУклило	26	опУрили	18	опАтлила	18
	обОстыли	1	обуклИло	3	опУрило	2	опатлИла	3
	обостИли	9	оббУклило	2	опурИли	5	обпАтлила	5
	обостИлили	1			опурИла	1	обпАтила	1
	оббОстили	3			опурИв	1	обпатлИла	1
	оббостИли	1			обпУрили	2	обопАтлила	1
					обопУрили	1	обопАтила	1
					обопУрило	1		
	27 О, 4 ОВ		29 О, 2 ОВ		27 О, 2 ОВ, 2 ОВО		21 О, 7 ОВ, 2 ОВО	
		31		31		31		30

Questionnaires A & B (verbal stimuli): in total 53 OB, 69 O, 6 OBO; Questionnaire C (adjectival stimuli): in total 104 O, 15 OB, 4 OBO.

*Responses to nonce **verbal stimuli** with problematic for O onsets (labiodental v and sonorants)*

	важдить		**вурлить**		**ялить**		**юпить**		**лоприть**		**лусить**	
A	обвАждила	8	обвУрлить	4	объЯлил	7	объЮпил	9	облОприть	8	облУсить	10
	овАждила	7	обвурлИть	2	объялИл	3	объюпИл	3	облопрИть	1	облусИть	1
	обоваждИла	1	овУрлить	8	оЯлил	5	оЮпил	3	олОприть	5	олУсить	5
			овурлИть	1					оболОприть	2		
	8 ОВ, 7 О, 1 ОВО		6 ОВ, 9 О		10 ОВ, 5 О		12 ОВ, 3 О		9 ОВ, 5 О, 2 ОВО		11 ОВ, 5 О	
B	обваждИла	7	обвурлИть	11	объялИл	12	объюпИл	10	облопрИть	12	облусИть	10
	оваждИла	7	овурлИть	5	оялИл	3	объЮпил	1	облОприть	1	олусИть	6
	обовАждила	1	обовУрлить	1	оЯлил	2	оюпИл	2	олопрИть	3		
							обоЮпил	2				
	7 ОВ, 7 О, 1 ОВО		11 ОВ, 5 О, 1 ОВО		12 ОВ, 5 О		11 ОВ, 2 О, 2 ОВО		13 ОВ, 3 О		10 ОВ, 6 О	
	15 ОВ, 14 О, 2 ОВО	31	17 ОВ, 14 О, 1 ОВО	32	22 ОВ, 10 О	32	23 ОВ, 5 О, 2 ОВО	30	22 ОВ, 8 О, 2 ОВО	32	21 ОВ, 11 О	32
	момлить		**мурлить**		**надить**		**нокрить**		**ражнить**		**роглить**	
A	обмОмлил	6	обмУрлила	7	обнАдить	8	обнОкрила	11	обрАжнить	5	обрОглить	8
	омОмлил	9	обмурлИла	5	онАдить	6	онОкрила	4	обрАжнила	1	орОглить	6
			омУрлила	3	обонАдить	1			ображнИть	3	обороглИть	1
									орАжнить	5		
									оборАжнить	1		
	6 ОВ-, 9 О-		15 ОВ-, 3 О-		8 ОВ-, 6 О-, 1 ОВО-		11 ОВ-, 4 О-		9 ОВ-, 5 О-, 1 ОВО-		8 ОВ-, 6 О-, 1 ОВО-	
B	обмомлИл	11	обмурлИла	11	обнадИть	11	обнокрИла	13	ображнИть	8	оброглИть	9
	обмОмлил	1	обмурлИв	2	онадИть	4	обнОкрила	1	оражнИть	6	обрОглить	1
	омомлИл	4	обмУрлила	1			онокрИла	4	оражнИв	1	ороглИть	5
	омОмлил	1	омурлИла	2								
	12 ОВ-, 5 О-		14 ОВ-, 2 О-		11 ОВ-, 4 О-		14 ОВ-, 4 О-		8 ОВ-, 7 О-		10 ОВ-, 5 О-	
	18 ОВ, 14 О	33	29 ОВ, 5 О	31	19 ОВ, 10 О, 1 ОВО	30	25 ОВ, 8 О	33	17 ОВ, 12 О, 1 ОВО	30	18 ОВ, 11 О, 1 ОВО	30

*Responses to nonce **adjectival stimuli** with problematic for O onsets (labiodental v and sonorants)*

	вурлый		**важдый**		**юпый**		**ялый**		**лусый**		**лопрый**	
С	овУрлило	12	овАждили	20	оЮпил	8	оЯлила	7	олУсили	8	олОприли	13
	овУрлили	1	оваждИли	3	оюпИл	1	объЯлила	16	олУстили	1	олОпрыли	1
	овурлИло	8	оваждЕлили	1	объЮпил	14	объялИла	5	облУсили	11	олопрИли	1
	обвУрлило	5	обвАждили	6	объюпИл	7	объялИли	2	облУслили	1	облОприли	15
	обвУрлили	1			обоЮпил	2	обоЯлила	1	облУсило	1	облопрИла	1
	обвУрило	1							облусИли	10	облопрЫли	1
	обвурлИло	3									оболОприли	1
	21 О, 10 ОВ	31	24 О, 6 ОВ	30	9 О, 21 ОВ, 2 ОВО	32	7 О, 23 ОВ,1 ОВО	31	9 О, 23 ОВ	32	15 О, 17 ОВ, 1 ОВО	33
	мурлый		**момлый**		**надый**		**нокрый**		**роглый**		**ражный**	
С	омУрлили	12	омОмлили	19	онАдило	12	онОкрили	6	орОглили	9	орАжнил	7
	омУрлило	1	омомлИли	3	онАдыло	1	онокрИли	3	орОглив	1	ораженИл	5
	омурлИли	5	обмОмлили	6	обнАдило	12	онокрИв	1	ороглИли	2	оражИл	1
	обмУрлили	8	обмомлИли	4	обнадИло	3	обнОкрили	13	обрОглили	11	обрАжнил	9
	обмурлИли	7			обнадЫло	2	обнОкрыли	1	обрОглив	1	обрАжил	2
					обонАдило	1	обнокрИли	6	обрОглили11	4	ображнИл	2
					онадИло	1			оборОглили	2	ображнЫл	1
									ороглИли	1	оборАжнил	2
											оборАжил	1
	18 О, 15 ОВ	33	22 О, 10 ОВ	32	14 О, 17 ОВ, 1 ОВО	32	10 О, 20 ОВ	30	12 О, 16 ОВ, 3 ОВО	31	13 О, 14 ОВ, 3 ОВО	30

*Responses to nonce **verbal stimuli** with non-problematic onsets (Initial obstruents: Part 1)*

	габить		**гузвить**		**дамлить**		**дуктить**		**жахлить**		**жусклить**	
A	обгАбил	3	обгУзвила	3	обдАмлили	5	обдУклила	7	обжАхлили	6	обжУсклил	4
	огАбил	12	обгузвИла	1	одАмлили	10	обдУклив	1	ожАхлили	7	обжусклИл	1
			огУзвила	9	одамлИли	2	одУктила	7	ожахлИли	2	ожУсклил	11
			огузвИла	2								
			обогУзвила	1								
	3 ОВ, 12 О		4 ОВ, 11 О, 1 ОВО		5 ОВ, 10 О, 2 ОВО		8 ОВ, 7 О		6 ОВ, 9 О		5 ОВ, 11 О	
B	обгабИл	9	обгузвИла	3	обдамлИли	10	обдуклИла	4	обжахлИли	7	обжусклИл	6
	обгАбил	1	огузвИла	7	одамлИли	5	обдуктИла	6	обжАхлили	1	ожусклИл	9
	огабИл	5	огузвИв	1	ободАмлили	1	обдусИв	1	ожахлИли	7	обожУсклил	3
	обогАбил	1	огУзвила	3			одуклИла	2				
			обогУзвила	1			одуктИла	2				
	10 ОВ, 5 О, 1 ОВО		3 ОВ, 11 О, 1 ОВО		10 ОВ, 5 О, 1 ОВО		11 ОВ, 4 О		7 ОВ, 8 О		6 ОВ, 9 О, 3 ОВО	
	13 ОВ, 17 О, 1 ОВО		7 ОВ, 22 О, 2 ОВО		15 ОВ, 15 О, 3 ОВО		19 ОВ, 11 О		13 ОВ, 17 О		11 ОВ, 20 О, 3 ОВО	
		31		31		33		30		30		34

*Responses to nonce **verbal stimuli** with non-problematic onsets (Initial obstruents: Part 2)*

зоприть		**зупить**		**кампить**		**кочлить**	
обзОприть	6	обзУпить	7	обкАмпил	6	обкОчлить	7
озОприть	7	озУпить	8	окАмпил	7	окОчлить	9
озопрИть	1	обозУпить	1	обокАмпил	2	окочлИть	1
обозОприть	1						
6 ОВ, 9 О		7 ОВ, 8 О, 1 ОВО		6 ОВ, 7 О, 2 ОВО		7 ОВ, 10 О	
обзопрИть	12	обзупИть	8	обкампИл	6	обкочлИть	9
озопрИть	4	обзуплИв	1	обкамплИл	1	обкОчлить	1
		озупИть	5	окампИл	8	окочлИть	4
		озупИв	2			окОчлить	1
		озупИл	1			обокОчлить	1
12 ОВ, 4 О		9 ОВ, 8 О		7 ОВ, 8 О		10 ОВ, 5 О, 1 ОВО	
18 ОВ, 13 О		16 ОВ, 16 О, 1 ОВО		13 ОВ, 17 О, 2 ОВО		17 ОВ, 15 О, 1 ОВО	
	31		33		30		33

*Responses to nonce **adjectival stimuli** with non-problematic onsets (Initial obstruents: Part 1)*

	гузвый		**габый**		**дуктый**		**дамлый**		**жахлый**		**жусклый**		**зопрый**		**зупый**	
C	огУзвила	19	огАбила	11	одУктили	12	одАмлило	16	ожАхлить	16	ожУсклило	12	озОприли	19	озУпило	15
	огузвИла	7	огАбило	5	одУклили	1	одамлИло	9	ожахлИть	1	ожусклИло	7	озопрИли	7	озУплило	4
	огузИла	1	огАбив	1	одуктИли	3	обдАмлило	4	обжАхлить	10	обжУсклило	8	обзОприли	5	озупИло	3
	огузИв	1	огАбили	1	одуклИли	1	обдАмлив	1	обжахлИть	2	обжУщило	1	обозОприли	1	обзУпило	6
	обгУзвила	1	огабИла	5	обдУктили	13	обдАмило	1	обожАхлить	1	обжусклИло	2			обзУплило	1
	обогузИла	1	огАбила	5	обдуктИли	1	ободамлИло	1	обожахлИть	1					обзупИло	2
			огАблили	1											обозУпило	1
			обгабИла	1												
			обогАбила	2												
			обогабИла	1												
	28О,1ОВ,1ОВО	30	29О,1ОВ,3ОВО	33	17О,14ОВ	31	25О, 6ОВ, 1ОВО	32	17О, 12ОВ, 2ОВО	31	19О, 11ОВ	30	26О, 5ОВ, 1ОВО	32	22О,9ОВ, 1ОВО	32
	кочлый		**кампый**		**саглый**		**сурый**		**тулый**		**товый**		**хопый**		**хушный**	
C	окОчлило	16	окАмпила	19	осАглить	16	осУрило	14	отУлила	11	отОвил	10	охОпила	15	охУшнили	16
	окОчило	1	окампИла	6	осаглИть	7	осурИло	8	отулИла	13	отОвлил	1	охОплила	2	охУшили	2
	окочлИло	8	окампЫла	1	осаглАть	1	обсУрило	5	обтУлила	4	отовИл	7	охопИла	2	охушнИли	2
	обкОчлило	6	окАмплила	1	осагАлить	1	обсурИло	1	обтулИла	1	отовАл	3	обхОпила	8	обхУшнили	6
	обокОчлило	1	обкАмпила	3	обсАглить	6	обосУрило	3	оботУлила	1	обтОвил	1	обхопИла	2	обхУштили	1
					обсаглАть	1	обосурИло	1			обтовАл	3	обохОпила	2	обхУшили	1
					обосАглить	2					обтовлИл	1			обхушнИли	3
											обтовИл	1				
											оботОвил	4				
											оботовАл	1				
	25О, 6ОВ, 1ОВО	32	27О, 3ОВ	30	25О, 5ОВ, 2ОВО	34	22О, 6ОВ, 4ОВО	32	24О, 5ОВ, 1ОВО	30	21О, 6ОВ, 5ОВО	32	19О,10ОВ, 2ОВО	31	20О, 11ОВ	31

*Responses to nonce **adjectival stimuli** with non-problematic onsets (Initial obstruents: Part 2)*

	чавый		**чупый**		**шадрый**		**шаклый**		**цавый**		**щулый**	
С	очАвили	18	очУпить	16	ошАдрило	17	ошАклило	16	оцАвила	15	ощУлила	19
	очАвлили	1	очУприть	1	ошадрИло	6	ошаклИло	8	оцАвлила	1	ощулИла	6
	очавИли	5	очупИть	5	обшАдрило	7	обшАклило	7	оцавИла	3	общУлила	3
	обчАвили	7	обчУпить	7	обошАдрило	2	обошАклило	1	обцАвила	10	обощУлила	1
	обочАвили	2	обчУплить	1					обоцАвила	2	обощулИла	1
			обчупИть	3								
	24О, 7ОВ, 2ОВО	33	22О, 11ОВ	33	23О, 7ОВ, 2ОВО	32	24О, 7ОВ, 1ОВО	32	19О, 10ОВ, 2ОВО	31	25О,3ОВ,2ОВО	30

Responses to nonce stimuli with cluster onsets.

	гнорить	**жрапить**	**знупить**	**чтусить**	**жгавить**	**спулить**	**сколить**	**ткабить**
A	обгнОрить 7	обжрАпил 4	обзнУпил 3	обчтУсил 3	обжгАвить 4	обспУлить 4	обскОлить 5	обткАбил 3
	огнОрить 7	ожрАпил 11	обзнупИл 1	очтУсил 9	ожгАвить 10	обспУлило 1	оскОлить 9	обткабИл 1
	обогнОрить 2		ознУпил 10	очтусИл 1	обожгАвить 2	оспУлить 9	осколИть 1	откАбил 9
			обознУпил 1	*очУстил* 1		обоспУлить 2	обоскОлить 1	оботкАбил 2
				обочтУсил 1				
	7ОВ, 7О, 2ОВО	4 ОВ, 11 О	4ОВ, 10О, 1ОВО	3ОВ, 10О, 1ОВО	4ОВ, 10О, 2ОВО	5ОВ, 9О, 2ОВО	5ОВ, 10О, 1ОВО	4ОВ, 9О, 2ОВО
B	обгнорИть 6	обжрапИл 5	обзнупИл 7	обчтусИл 8	обжгавИть 7	обспулИть 7	обсколИть 8	обткабИл 6
	огнорИть 7	ожрапИл 9	ознупИл 8	*обчустИл* 1	обжгАвить 1	оспулИть 7	обскорлИть 1	откабИл 8
	обогнОрить 1	ожрАпил 1	ознУпил 1	очтусИл 5	ожгавИть 6	обоспулИть 1	осколИть 6	откАбил 2
	обогнорИть 1		обознупИл 1	обочтусИл 1	обожгАвить 1	обоспУлил 1	обосколИть 1	оботкабИл 1
	6ОВ, 7О, 2ОВО	5ОВ, 9О, 1ОВО	7ОВ, 9О, 1ОВО	8 ОВ, 5 О, 1 ОВО	8ОВ, 6О, 1ОВО	7ОВ, 7О, 2ОВО	9ОВ, 6О, 2ОВО	6ОВ, 10О, 1ОВО
	13ОВ, 17О, 4ОВО 31	9ОВ, 20О, 1ОВО 30	11ОВ, 19О, 2ОВО 32	11 ОВ, 15 О, 2 ОВО 28	12ОВ, 16О, 3ОВО 31	12ОВ, 16О, 4ОВО 32	14ОВ, 16О, 3ОВО 33	10ОВ, 19О, 3ОВО 32
	гнорый	**жрапый**	**знупый**	**чтусый**	**жгавый**	**спулый**	**сколый**	**ткабый**
C	огнОрили 17	ожрАпили 16	ознУпить 22	очтУсила 16	ожгАвила 19	оспУлило 22	оскОлило 22	откАбило 18
	огнорИли 5	ожрапИли 7	ознупИть 5	очтУслила 1	ожгавИла 2	*осУплило* 1	осколИло 3	откабИло 3
	обгнОрили 4	*обжАприли* 1	обзнУпить 2	очтусЫла 1	обжгАвила 3	оспулИло 5	обскОлило 3	откАблило 1
	обогнОрили 6	обжрАпили 2	обознУпить 4	обчтУсила 5	обожгАвила 9	обспУлило 3	обоскОлило 2	обткАбило 4
		обожрАпили 8		обчтусИла 1				обткабИли 1
				обочтУсила 6				оботкАбило 2
				обочтУслила 1				оботкабИло 1
								отказ 1
	22О, 4ОВ, 6ОВО 32	23О, 2ОВ, 8ОВО 33	27О, 2ОВ, 4ОВО 33	18О, 6ОВ, 7ОВО 31	21О, 3ОВ, 9 ОВО 33	27О, 3ОВ 30	25О, 3ОВ, 2ОВО 30	22О, 5ОВ, 3ОВО 30

Appendix 10: Results of the statistical analysis

(corpus data and experimental data)

2. Corpus data

Trial 1.

Wald Statistics Response: prefix

Factor	Chi-Square	d.f.	P
base	161.58	3	<.0001
frequency	0.41	1	0.5220
onsetType	0.77	1	0.3795
place	1.52	3	0.6769
StressTargetVerb	0.46	3	0.9284
manner	130.42	3	<.0001
TOTAL	235.66	14	<.0001

In the first trial all the factors in the dataset were tested. Stress, Onset place of articulation, Frequency and Onset type were found to be not significant. In the next trial, these factors were taken out of the calculation.

Trial 2.

lrm(formula = prefix ~ base + manner, data = corpusdata, x = T, y = T)

Wald Statistics Response: prefix

Factor	Chi-Square	d.f.	P
base	170.04	3	<.0001
manner	153.77	3	<.0001
TOTAL	235.22	6	<.0001

Obs	Max Deriv Model L.R.	d.f.	P	C	Dxy	Gamma	Tau-a	R2	Brier
840	2e-08 368.79	6	0	0.842	0.683	0.751	0.345	0.451	0.145

	Coef	S.E.	Wald Z	P
y>=ob	-2.50631	0.6246	-4.01	0.0001
y>=obo	-6.94612	0.6968	-9.97	0.0000
base=ambiguous	-0.05310	0.4396	-0.12	0.9039
base=noun	0.01203	0.5008	0.02	0.9808
base=verb	2.43262	0.4264	5.70	0.0000
manner=fricative	0.89360	0.4846	1.84	0.0652
manner=sonorant	3.13588	0.5121	6.12	0.0000
manner=stop	-0.01994	0.4833	-0.04	0.9671

Verb base and sonorant manner were found to be strong determiners of prefix.

2. Experimental data

2.1. Stimulus type (Questionnaires A & B vs. C)

In order to test the difference between the responses to verbal stimuli (Questionnaires A & B) vs. adjectival stimuli (Questionnaire C), two strings of values were needed. They showed how many times each participant chose O (instead of OB or OBO). Each string had the value for participant 1, the value for participant 2, etc. The first string of values aggregated the data from Questionnaires A & B and the other string was for the data from Questionnaire C. Each string had thirty pieces of data. The strings of values were as follows:

A & B: 23, 43, 23, 40, 14, 20, 21, 29, 39, 11, 30, 9, 20, 26, 16, 31, 22, 28, 16, 16, 9, 16, 4, 32, 2, 4, 32, 16, 18, 22
C: 24, 32, 31, 26, 37, 26, 34, 29, 27, 38, 42, 34, 41, 33, 36, 27, 43, 26, 41, 38, 34, 20, 32, 25, 29, 29, 36, 31, 24, 36

These strings of values were taken from Table 1 and Table 2 below:

Subject code	OB	O	OBO	Total	Simple onset			Complex onset		
					OB	O	OBO	OB	O	OBO
A1	22	23	1	46	19	18	1	3	5	0
A2	3	43	0	46	3	35	0	0	8	0
A3	25	23	0	48	24	16	0	1	7	0
A4	7	40	0	47	5	34	0	2	6	0
A5	35	14	0	49	31	10	0	4	4	0
A6	32	20	3	55	31	13	0	1	7	3
A7	27	21	0	48	23	17	0	4	4	0
A8	18	29	0	47	15	24	0	3	5	0
A9	7	39	3	49	7	31	3	0	8	0
A10	38	11	1	50	31	10	1	7	1	0
A11	19	30	0	49	18	23	0	1	7	0
A12	25	9	12	46	23	5	10	2	4	2
A13	17	20	9	46	15	17	6	2	3	3
A14	19	26	1	46	16	21	0	3	5	1
A15	28	16	2	46	25	13	0	3	3	2
B1	16	31	0	47	15	24	0	1	7	0
B2	24	22	0	46	22	16	0	2	6	0
B3	9	28	7	44	7	24	2	2	4	5
B4	29	16	2	47	25	11	2	4	5	0
B5	16	16	14	46	16	12	11	0	4	3
B6	38	9	1	48	32	7	1	6	2	0
B7	30	16	0	46	26	12	0	4	4	0
B8	39	4	3	46	35	1	2	4	3	1
B9	20	32	0	52	18	25	0	2	7	0
B10	44	2	0	46	36	2	0	8	0	0
B11	41	4	0	46	35	2	0	6	2	0
B12	20	32	0	52	17	27	0	3	5	0
B13	36	16	0	52	31	13	0	5	3	0
B14	28	18	0	46	22	16	0	6	2	0
B15	27	22	2	51	24	18	1	3	4	1

Total	739	632	61	1442	647	497	40	92	135	21

Table 1. Distribution of the prefixes in subjects' responses to novel verbal stimuli (Questionnaires A & B)

Subject	O	OB	OBO	Total number of responses
C1	24	8	13	45
C2	32	9	3	44
C3	31	12	5	48
C4	26	29	3	58
C5	37	8	1	46
C6	26	16	4	46
C7	34	7	4	45
C8	29	16	1	46
C9	27	21	0	48
C10	38	8	0	46
C11	42	3	1	46
C12	34	9	12	55
C13	41	7	3	51
C14	33	12	3	48
C15	36	9	1	46
C16	27	19	0	46
C17	43	5	2	50
C18	26	19	2	47
C19	41	5	0	46
C20	38	23	2	63
C21	34	13	1	48
C22	20	26	1	47
C23	32	7	8	47
C24	25	15	7	47
C25	29	12	5	46
C26	29	13	5	47
C27	36	10	1	47
C28	31	15	0	46
C29	24	32	0	56
C30	36	9	1	46
Total:	961	397	89	1447

Table 2. Distribution of the prefixes in subjects' responses to novel adjectival stimuli (Questionnaire C)

Welch Two Sample t-test

data: o.verbs and o.adjs
t = -4.9324, df = 45.946, p-value = 1.105e-05
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-15.442271 -6.491062
sample estimates:
mean of x mean of y
21.06667 32.03333

Figures 1 and 2 clearly show that the distributions are different for adjectival and verbal stimuli. They also show that they are approaching normal distribution. T-test assumes that the data is normally distributed. In order to double check the result, Wilcoxon test was run.

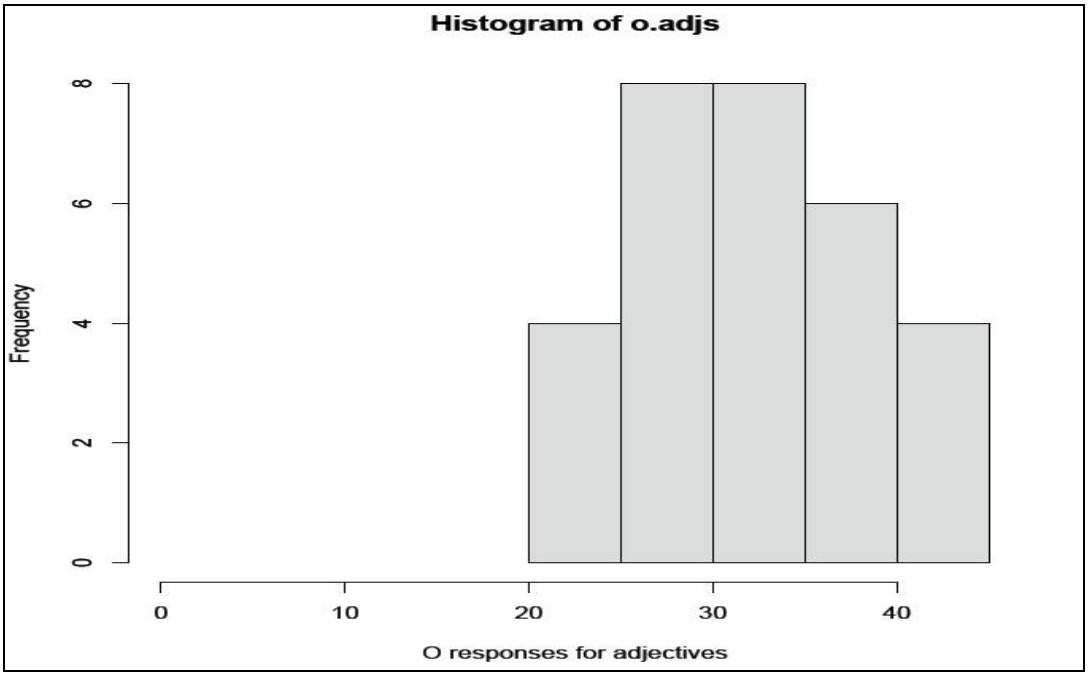

Figure 1.

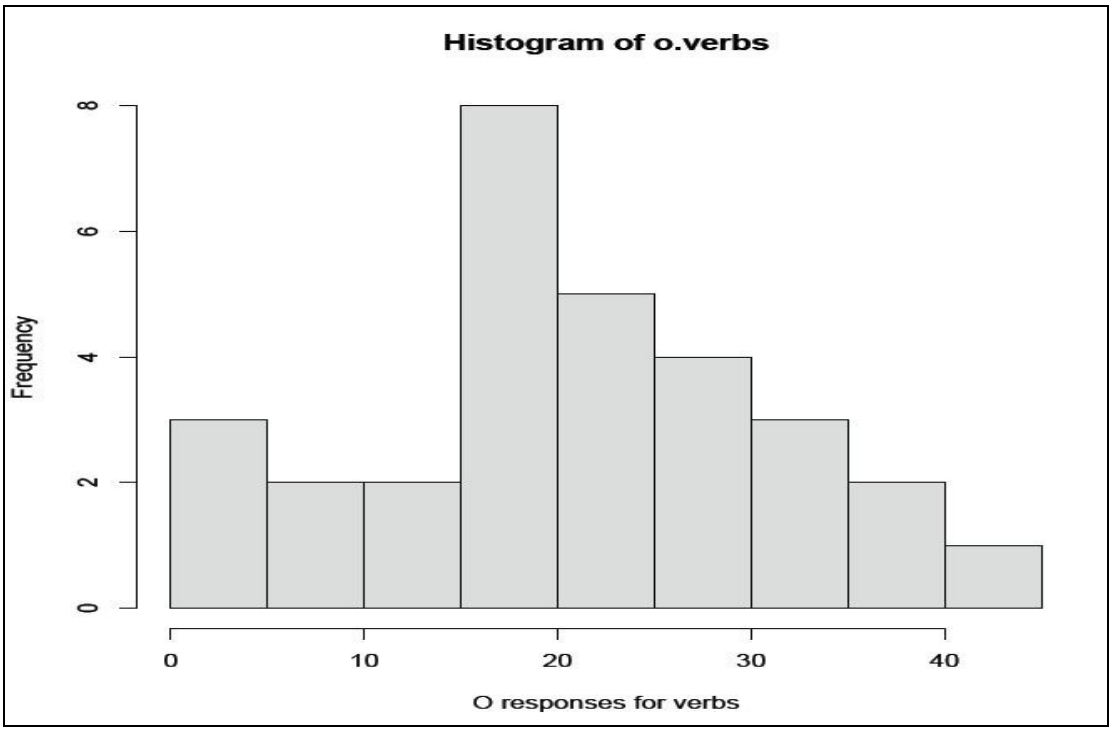

Figure 2.

Wilcoxon test showed that the distribution of prefixes according to stimulus type was statistically significant.

Wilcoxon rank sum test with continuity correction

data: o.verbs and o.adjs
W = 167.5, p-value = 2.999e-05
alternative hypothesis: true location shift is not equal to 0

2.2. Place of stress (Questionnaires A vs. B)

In order to test whether the distribution of prefixes across different stress patterns was statistically significant, I had to account for the stress shift that sometimes happened in subjects responses (e.g. *gUzvit'* → *obguzvIt'* instead of *obgUzvit'* or vice versa *guzvit'* → *obgUzvit'* instead of *obguzvIt'*). Welch Two Sample t-test and Wilcoxon rank sum test were run first for data organized according to stimulus stress and then for data organized according to response stress. Two sets of data were required:

Set 1: Two strings of values **organized according to stimulus stress**
Here each value indicates how many times each participant chose O as opposed to OB and OBO. Each string contains fifteen values: fifteen subjects were exposed to stem-stressed stimuli (e.g. *gUzvit'*) and fifteen subjects were exposed to theme-vowel-stressed stimuli (e.g. *gizvIt'*).
A: 23, 43, 23, 40, 14, 20, 21, 29, 39, 11, 30, 9, 20, 26, 16
B: 31, 22, 28, 16, 16, 9, 16, 4, 32, 2, 4, 32, 16, 18, 22

Set 2: Two strings of values **organized according to response stress**
Here each value says how many times each participant chose O as opposed to OB and OBO. Each string contains thirty values because each subject could shift stress.
"A" verbs are stem-stressed the verbs that with the prefix O.
"B" verbs are theme-vowel stressed verbs with the prefix O.

A: 18, 43, 23, 40, 13, 19, 21, 28, 36, 10, 27, 6, 20, 25, 16, 0, 0, 0, 0, 6, 1, 0, 0, 3, 0, 1, 0, 1, 1, 0
B: 5, 0, 0, 0, 1, 1, 0, 1, 3, 1, 3, 3, 0, 1, 0, 31, 22, 28, 16, 10, 8, 16, 4, 29, 2, 3, 32, 15, 17, 22

The tables below show that the shift of stress happened rarely. However, it was necessary to account for it.

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15
A	18	43	23	40	13	19	21	28	36	10	27	6	20	25	16
B	5	0	0	0	1	1	0	1	3	1	3	3	0	1	0

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
A	0	0	0	0	6	1	0	0	3	0	1	0	1	1	0
B	31	22	28	16	10	8	16	4	29	2	3	32	15	17	22

Figures 3-6 demonstrate that the distributions are not normal: not continuous (Figures 3 and 4), not parabolic and not symmetric (Figures 4, 5, 6). Therefore, in addition to Welch Two Sample t-test a Wilcoxon test was run. First, I show the Figures and then the tests results.

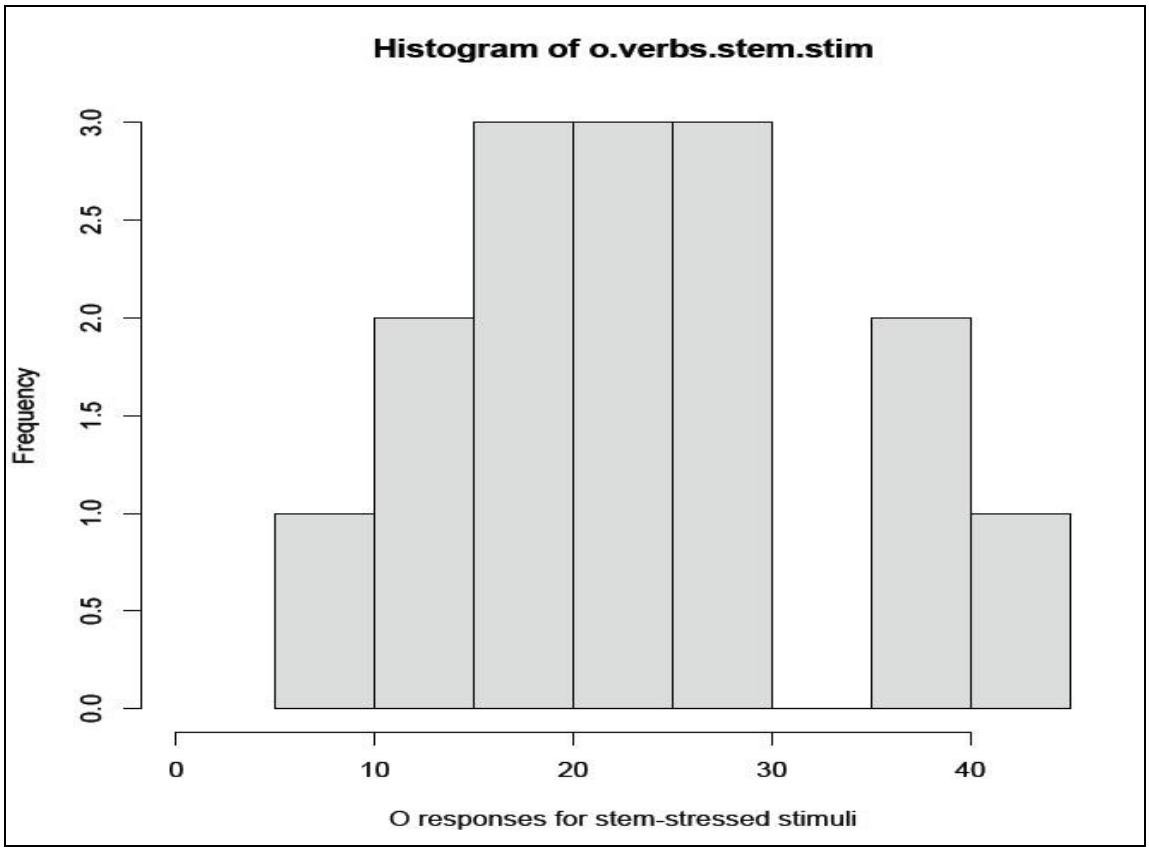

Figure 3.

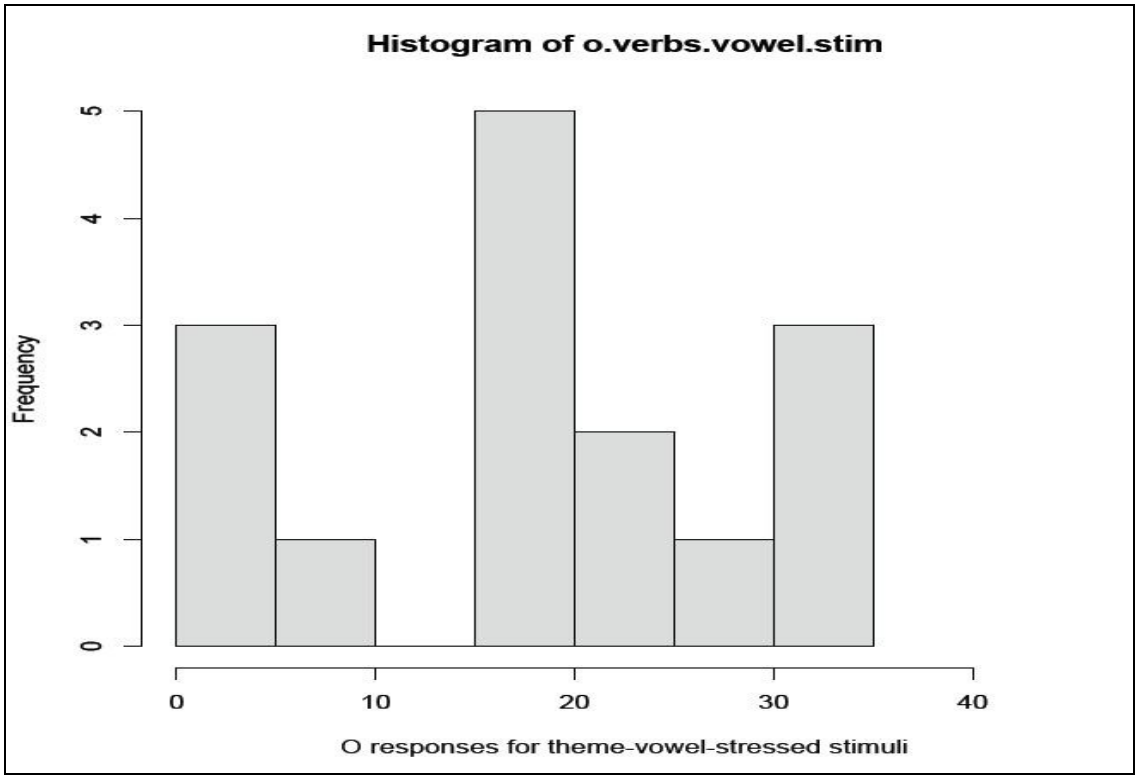

Figure 4.

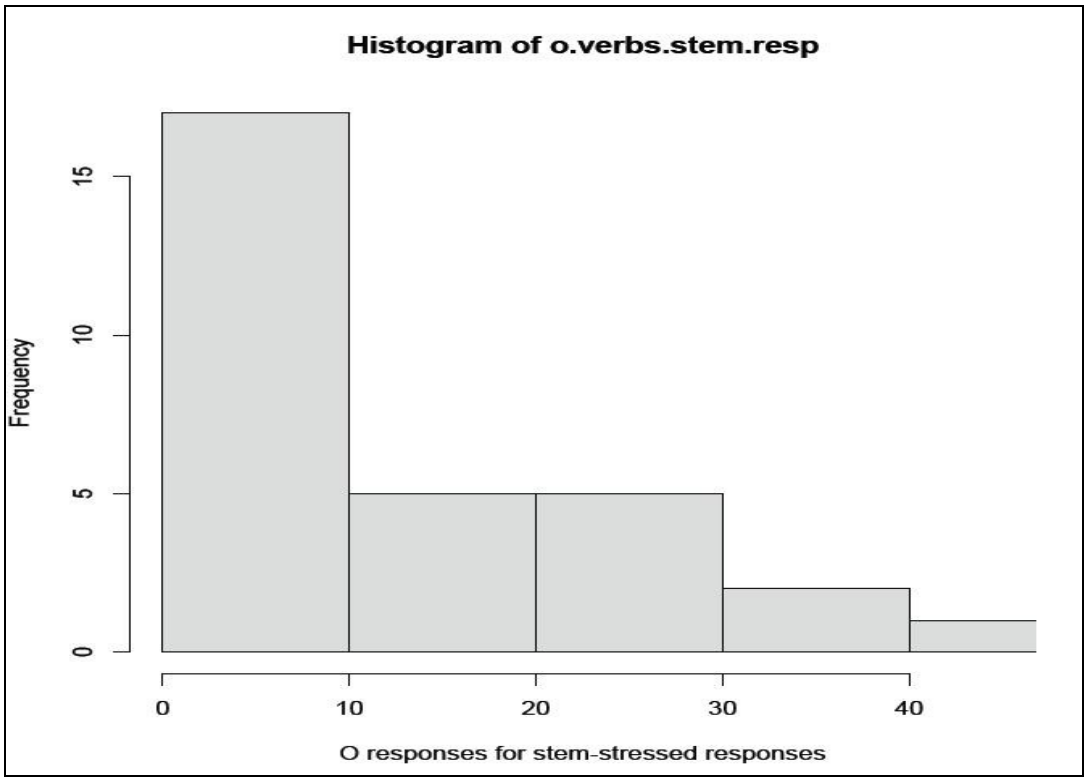

Figure 5.

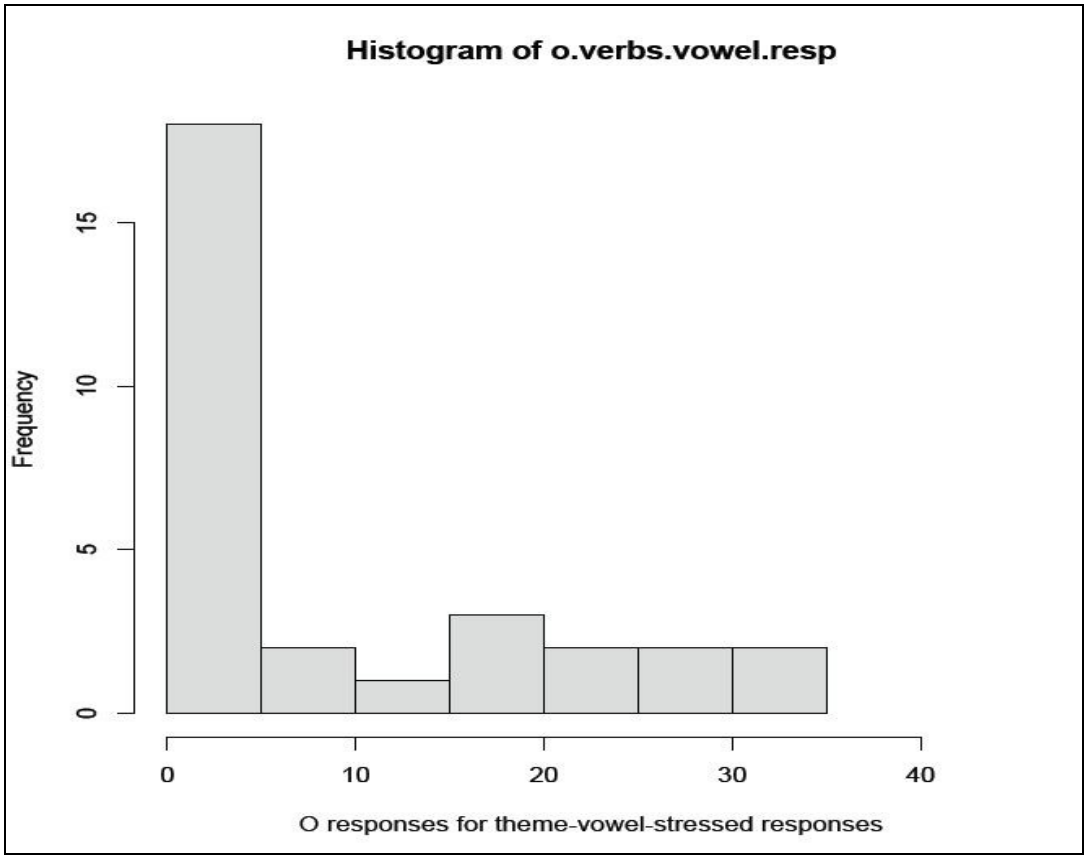

Figure 6.

Stimulus Stress

Welch Two Sample t-test

data: o.verbs.stem.stim and o.verbs.vowel.stim
t = 1.7091, df = 27.985, p-value = 0.0985
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-1.270709 14.070709
sample estimates:
mean of x mean of y
24.26667 17.86667

Wilcoxon rank sum test with continuity correction

data: o.verbs.stem.stim and o.verbs.vowel.stim
W = 146.5, p-value = 0.1635
alternative hypothesis: true location shift is not equal to 0

Response Stress

Welch Two Sample t-test

data: o.verbs.stem.resp and o.verbs.vowel.resp
t = 0.8892, df = 55.251, p-value = 0.3778
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-3.51018 9.11018
sample estimates:
mean of x mean of y
11.933333 9.133333

Wilcoxon rank sum test with continuity correction

data: o.verbs.stem.resp and o.verbs.vowel.resp
W = 463, p-value = 0.852
alternative hypothesis: true location shift is not equal to 0

Both tests showed that these distributions were not statistically significant (neither for stimulus stress nor for response stress). This result suggests that one cannot establish yet whether stress is a factor or not. It is much less a factor than a stimulus type.

2.3. Optimal results for O, OB, OBO (multiple regression analyses)

O

lm(formula = Oresponses ~ stimulus + clusterOnset + manner +
place:manner, data = ania.exp.data)

Residuals:

Min	1Q	Median	3Q	Max
-5.9022	-1.8625	-0.2231	2.3252	5.3478

Coefficients:	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	21.6823	1.2814	16.921	< 2e-16 ***
stimulusverb	-6.6957	0.6165	-10.860	< 2e-16 ***
clusterOnsetyes	0.9965	0.8989	1.109	0.27104
mannerfricative	0.3094	1.4434	0.214	0.83085
mannersonorant	-10.3345	1.9320	-5.349	8.58e-07 ***
mannerstop	2.7662	1.5316	1.806	0.07476
manneraffricate:placedental	-1.8345	2.4327	-0.754	0.45306
mannerfricative:placedental	0.8576	1.1249	0.762	0.44811
mannersonorant:placedental	3.0000	1.7071	1.757	0.08278
mannerstop:placedental	-4.3000	1.3223	-3.252	0.00169 **
manneraffricate:placelabial	NA	NA	NA	NA
mannerfricative:placelabial	0.1061	1.6959	0.063	0.95026
mannersonorant:placelabial	6.2500	2.0908	2.989	0.00374 **
mannerstop:placelabial	0.1493	1.4140	0.106	0.91618
manneraffricate:placevelar	NA	NA	NA	NA
mannerfricative:placevelar	-4.1439	1.6959	-2.443	0.01681 *
mannersonorant:placevelar	NA	NA	NA	NA
mannerstop:placevelar	NA	NA	NA	NA

Coefficients: 4 not defined because of singularities

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2.957 on 78 degrees of freedom
Multiple R-squared: 0.7768, Adjusted R-squared: 0.7396
F-statistic: 20.88 on 13 and 78 DF, p-value: < 2.2e-16

OB

lm(formula = OBresponses ~ stimulus + clusterOnset + possiblewithB +
place * manner, data = ania.exp.data)

Residuals:

Min	1Q	Median	3Q	Max
-5.9457	-2.0016	-0.1447	1.9286	7.4457

Coefficients:	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	7.3582	2.0648	3.564	0.000632 ***
stimulusverb	7.3913	0.6396	11.557	< 2e-16 ***
clusterOnsetyes	-3.1591	1.3678	-2.310	0.023594 *
possiblewithByes	1.4988	1.8697	0.802	0.425233
placedental	1.4474	2.5402	0.570	0.570484
placelabial	-2.6842	2.9751	-0.902	0.369750
placevelar	-2.7524	2.9480	-0.934	0.353407
mannerfricative	-1.0789	1.4979	-0.720	0.473521
mannersonorant	9.1974	2.0250	4.542	2.03e-05 ***
mannerstop	-0.8684	2.3895	-0.363	0.717283
placedental:mannerfricative	-1.3529	2.8220	-0.479	0.633009
placelabial:mannerfricative	3.2105	3.3930	0.946	0.347002
placevelar:mannerfricative	5.7787	3.3693	1.715	0.090350
placedental:mannersonorant	-3.9474	3.0966	-1.275	0.206230
placelabial:mannersonorant	-0.5658	3.6818	-0.154	0.878269
placevelar:mannersonorant	NA	NA	NA	NA
placedental:mannerstop	NA	NA	NA	NA
placelabial:mannerstop	NA	NA	NA	NA
placevelar:mannerstop	NA	NA	NA	NA

Coefficients: 4 not defined because of singularities

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.067 on 77 degrees of freedom
Multiple R-squared: 0.8016, Adjusted R-squared: 0.7655
F-statistic: 22.22 on 14 and 77 DF, p-value: < 2.2e-16

OBO

lm(formula = OBOresponses ~ stimulus + clusterOnset + possiblewithB,
data = ania.exp.data)

Residuals:

Min	1Q	Median	3Q	Max
-3.3967	-0.9256	-0.1974	1.0744	4.3533

Coefficients:	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	2.7191	0.7692	3.535	0.000652 ***
stimulusverb	-0.5435	0.3064	-1.774	0.079548
clusterOnsetyes	1.9276	0.5462	3.529	0.000665 ***
possiblewithByes	-1.2500	0.7347	-1.701	0.092397

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.469 on 88 degrees of freedom
Multiple R-squared: 0.3429, Adjusted R-squared: 0.3205
F-statistic: 15.31 on 3 and 88 DF, p-value: 4.255e-08
Appendix 10. Statistical analysis.