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Grammatical profiles and the interaction of the lexicon with aspect, tense, and mood in Russian*

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Abstract

18 *We propose the “grammatical profile” as a means of probing the aspectual behavior of verbs. A grammatical profile is the relative frequency distribution of the inflected forms of a word in a corpus. The grammatical profiles of Russian verbs provide data on two crucial issues: a) the overall relationship between perfective and imperfective verbs and b) the identification of verbs that characterize various intersections of aspect, tense and mood (TAM) with lexical classes. There is a long-standing debate over whether Russian aspectual “pairs” are formed only via suffixation (the Isačenko hypothesis) or whether they are formed via both suffixation and prefixation (the traditional view). We test the Isačenko hypothesis using data on the corpus frequency of inflected forms of verbs. We find that the behavior of perfective and imperfective verbs is the same regardless of whether the aspectual relationship is marked by prefixes or suffixes; our finding thus supports the traditional view.*

28 *Introspective descriptions of Russian aspect have often connected the use of particular inflectional forms with certain uses of aspect; for example, the use of imperative forms with the imperfective aspect to produce expressions that are very polite. Grammatical profiles make it possible to identify verbs that behave as outliers, presenting unusually large proportions of usage in parts of the paradigm. This analysis both gives substance to and extends previous introspective descriptions by identifying the verbs most involved in certain TAM-category interactions. On a methodological level, this study contributes*

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1 to current discussions on the use of inflected forms vs. lemmas in corpus
 2 studies. Newman (2008) finds valuable information at the level of the inflec-
 3 tional form, and Gries (forthcoming) argues that inflectional forms do not nec-
 4 essarily provide a better basis for analysis than lemmas. We agree with them
 5 that the appropriate level of granularity is determined by both the language
 6 and the linguistic phenomenon under analysis.

7
 8 **Keywords:** *Aspect, tense, mood, corpus linguistics, quantitative analysis,*
 9 *Russian.*

12 1. Introduction

13
 14 We present a corpus study of the inflectional forms of Russian verbs, showing
 15 that these distributions, termed “grammatical profiles”, have important impli-
 16 cations for the description of Russian aspect. From a wider perspective this
 17 study also addresses the issue of granularity in corpus analysis.

18 The grammatical profile method is inspired by the work of Divjak and Gries
 19 (Divjak and Gries 2006; Gries and Divjak 2009) and can be described as a
 20 subset of the behavioral profile method they apply. Whereas Divjak and Gries
 21 employed a very comprehensive set of ID tags covering a large range of mor-
 22 phological, syntactic, semantic, and lexical factors, grammatical profiles focus
 23 only on morphological data as encoded in verb forms. This focus on morphol-
 24 ogy is motivated by Šteinfeldt’s (1970: 28) observation that some verbs “are
 25 used in some forms much more frequently than others” and that differences in
 26 distribution are linked to aspect.

27 Gries (forthcoming) questions the use of data on inflectional forms in a
 28 usage-based analysis of corpus data. He is well-justified in pointing out that the
 29 presence of linguistic distinctions does not necessarily entail the presence of
 30 meaningful patterns. Just because we have data at a given fine-grained level of
 31 analysis does not mean that the given level is the optimal level. Gries’ (forth-
 32 coming) study of verbs in the English ditransitive construction demonstrates
 33 that analysis at a more comprehensive level can give more insightful results
 34 than one at a fine-grained level. However, in other studies (Divjak and Gries
 35 2006; Gries and Divjak 2009) we see that a fine-grained analysis is most
 36 appropriate. Newman and Rice (Newman 2008; Newman and Rice 2006; Rice
 37 and Newman 2005) present a series of studies of inflected forms of English
 38 verbs, both in their own right and in constructions such as *going to*, *used to* and
 39 *VERB and VERB*. They on the contrary find that the distribution of English
 40 inflected verb forms provide valuable insights that would be invisible at the
 41 lemma level. For example, while the meanings of English *think*, *know*, and
 42 *mean* appear very similar, their behavior at the inflectional level is very differ-

ent (Newman 2008: 9–11). This disparity suggests that, even within a given language, the appropriate level of granularity for analysis is likely a function of the task at hand: whereas inflectional data may not be revealing for the ditransitive construction, it appears to be valuable for other English constructions.

An additional factor that likely plays a role is linguistic typology. A language that is heavily invested in inflection will offer more opportunities for a meaningful analysis at the level of the inflected form. English has only a handful of inflected forms for verbs. By contrast, the paradigm of a Russian imperfective verb contains up to 121 forms, while that of a perfective verb contains sixty-eight forms (cf. Table 1). Since we analyze verb “pairs” (where a perfective

Table 1. *The inflected forms of Russian verbs*¹

subparadigm	categories within subparadigm	imperfective inflected forms	perfective inflected forms
non-past	person, number	6	6
Past	gender, number	4	4
infinitive		1	1
imperative	person, number	4	4
gerund	tense	2	1
participles	case, gender, number, tense, voice	96	48
short form participles	gender, number, tense	8	4
Totals		121	68
Illustrative example with the verb pair <i>s/delat'</i> ‘do’			
subparadigm	forms of <i>s/delat'</i> ‘do’ (<i>s/</i> indicates that the form exists both as an unprefixated imperfective and as a prefixed perfective)		
non-past	<i>s/delaju</i> (1sg), <i>s/delaes'</i> (2sg), <i>s/delaet</i> (3sg), <i>s/delaem</i> (1pl), <i>s/delaete</i> (2pl), <i>s/delajut</i> (3pl)		
past	<i>s/delal</i> (Msg), <i>s/delala</i> (Fsg), <i>s/delalo</i> (Nsg), <i>s/delali</i> (pl)		
infinitive	<i>s/delat'</i>		
imperative	<i>s/delaj</i> (sg), <i>s/delajte</i> (pl/pol), <i>s/delaem</i> (pl/incl), <i>s/delaemte</i> (pl/incl/pol)		
gerund	<i>delaja</i> (non-p), <i>s/delav</i> (past)		
participles	<i>delajuščij</i> (presact), <i>s/delavšij</i> (pastact), <i>delaemyj</i> (prespass), <i>s/delannyj</i> (pastpass)		
short form participles	<i>delaem</i> (prespass), <i>s/delan</i> (pastpass)		
abbreviations	1, 2, 3: first, second, third person; sg, pl: singular, plural; M, F, N: masculine, feminine, neuter; pol, incl: polite, inclusive; non-p: non-past; presact, pastact, prespass, pastpass: present active, past active, present passive, past passive		

1. The non-past forms express present tense for imperfective verbs but future tense for perfective verbs. Imperative forms distinguish first and second person, and singular and plural. The imperfective can have two gerunds, both the present gerund and the past gerund, whereas perfective verbs form only the past gerund. Imperfective verbs can have up to four participles (the

1 verb and an imperfective verb share lexical meaning), this brings us to a total
2 of 189 forms.

3 Following Gries' lead, however, we should be aware that the most detailed
4 level of granularity available in our data is not necessarily the most optimal
5 one. Figure 1 presents a relatively high-resolution overall grammatical profile
6 for Russian.² Given the variety of forms, grammatical profiles can be repre-
7 sented at varying levels of resolution. Full resolution, representing all 189
8 forms for a given lexical verb, yields cumbersome matrices where most of the
9 cells have values equal or close to zero. Figure 1 collapses all of the adjectival
10 subparadigms of participles as well as number, person and gender distinctions
11 in finite forms.

12 As we see in Figure 1, the most relevant forms in the grammatical profiles
13 for Russian verbs are the non-past, past, infinitive, and imperative, which yield
14 approximately 85% of the total data for verbs.³ Given the fact that these sub-
15 paradigms represent the most information-rich portion of the verbal paradigm,
16 the grammatical profiles in this article offer a "medium" level of resolution,
17 presenting only these four subparadigms and collapsing all information within
18 each subparadigm. The medium level of resolution we have selected does not
19 distinguish among categories not generally acknowledged to interact with aspect
20 (person, number and gender), but focuses instead on those distinctions

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23 present active, past active, present passive and past passive participles), whereas perfective
24 verbs have two (the past active and past passive participles). Each participle in turn has a full
25 complement of twenty-four adjectival paradigm forms, though there is some syncretism
26 within this subparadigm. In addition, each passive participle has four short forms. Note that
27 passives formed with the reflexive *-sja* are not included in this inventory. Of course different
28 grammars might tally up the number of forms in different ways. Here we present the maximal
29 number of forms that can be distinguished. There are some verbs with "defective" paradigms
30 (cf. *pobedit* 'conquer', which lacks a first person singular non-past form), but these are excep-
31 tions. Note that our data takes into account only single-word forms, not paraphrastic forms
32 such as, for example, the imperfective future with the auxiliary *budu* 'I will', *budeš'* 'you
33 will', etc.

- 34 2. Figure 1 presents frequency data available in the database of the frequency dictionary of
35 modern Russian (Lyashevskaya and Sharoff 2009) that is based on a 92-million-word portion
36 of the Russian National Corpus representing samples from 1950–2007.
- 37 3. Gerunds and participles present a problem for comparing the behavior of aspectual pairs based
38 on prefixation vs. suffixation, due to transitivity and morphological restrictions that would
39 skew the data. Only transitive verbs can form passive participles. The morphological shape of
40 an imperfective verb determines whether it can form certain gerunds and participles. Only
41 simplex imperfectives can form past gerunds and past passive participles such as (*ne*) *znavši*
42 '(not) having known [imperfective]' and *brityj* 'shaven [imperfective]'. Verbs with imperfec-
43 tivizing suffixes are categorically prevented from forming past gerunds and past passive
44 participles. Additionally one could justify excluding gerunds and participles on the grounds
45 that they are peripheral members of the verbal paradigm, functioning instead as adverbs and
46 adjectives.

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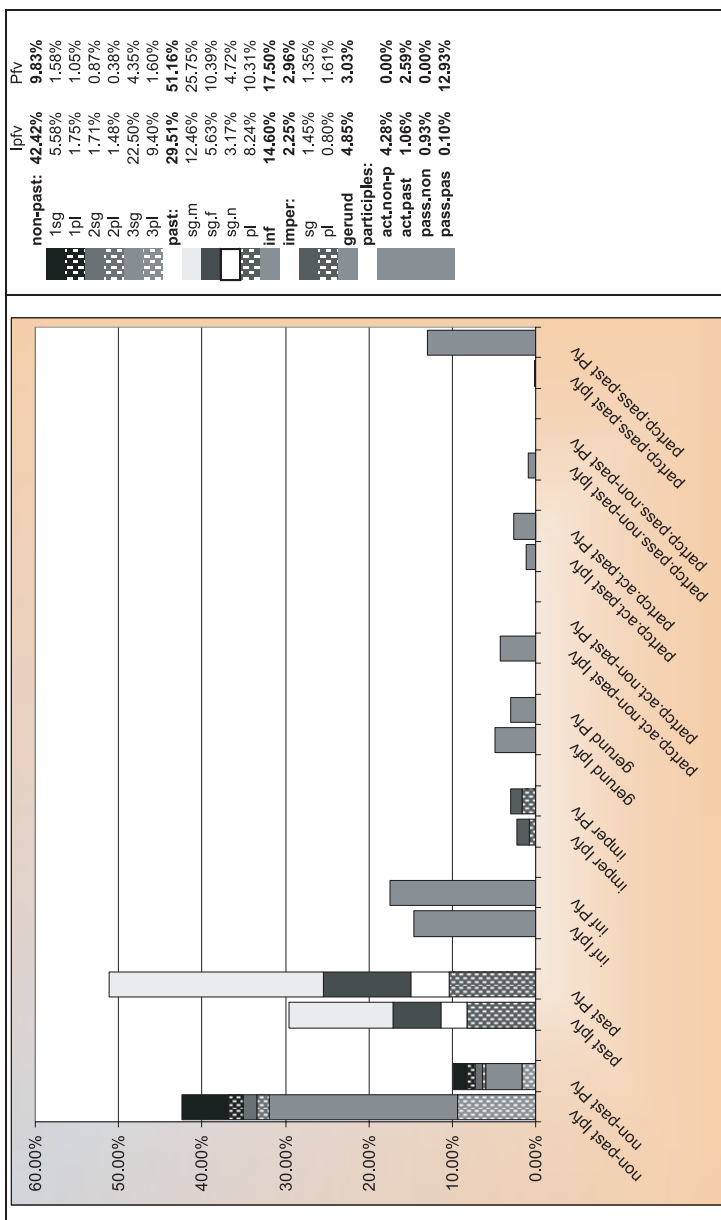


Figure 1. Distribution of forms in corpus data (patterns on bars refer to specific forms within subparadigms, as described in Table 1)

1 most likely to be relevant, namely finiteness, mood, and tense. We have thus
 2 calibrated our level of analysis to both the topic of our investigation (aspect)
 3 and the language of our study (Russian).

4 Since the topic of our analysis is Russian aspect, we offer a brief overview
 5 of relevant facts (Section 2), focusing primarily on the Isačenko hypothesis
 6 (Section 2.1) and special relationships between verbal subparadigms and aspect
 7 (Section 2.2). We describe our two databases (Section 3), one representing
 8 aspectual relationships marked by prefixation (Section 3.1), and one representing
 9 aspectual relationships marked by suffixation (Section 3.2). Our analysis
 10 (Section 4) tests the Isačenko hypothesis (Section 4.1) and examines outliers
 11 showing particularly strong relationships between aspect and verbal subpara-
 12 digms (Section 4.2). We conclude that grammatical profiles provide strong
 13 evidence that the perfective vs. imperfective distinction is the same regardless
 14 of how it is marked (via suffixation or prefixation), and that there are certain
 15 grammatical “idioms” in the interaction of aspect with inflection (Section 5).

17 2. Aspect in Russian

18 Aspect in Russian is the topic of a vast literature that cannot be fully repre-
 19 sented in this article. We focus instead on the most prominent works that serve
 20 as landmarks in the debate about whether aspectual pairs are formed via both
 21 prefixation and suffixation, or by suffixation alone. Before turning to this de-
 22 bate in Section 2.1, we offer some brief remarks on the morphological markers
 23 that signal aspect in Russian.

24 In Russian aspect is realized in all forms of all verbs. Given the ubiquity of
 25 aspect, verbs are usually recognized as being either perfective [p] or imperfec-
 26 tive [i].⁴ Russian uses a variety of morphological means to distinguish perfec-
 27 tive and imperfective verbs, yielding three major patterns, plus some minor
 28 variations. The major patterns are:

- 30 1) Simplex verbs—These are verbs consisting of a stem without any overt
 31 aspectual morphology, such as *delat'*[i] ‘do, make’. The vast majority of
 32 these verbs are imperfective, though there is a handful simplex perfec-
 33 tives, such as *dat'*[p] ‘give’; cf. Švedova (1980: 590) who list only eleven
 34 simplex perfectives in Russian.
- 35 2) Prefixed verbs—These are verbs consisting of a prefix added to a stem,
 36 such as *sdelat'*[p] ‘do, make’ and *peredelat'*[p] ‘redo’, where the prefixes

38
 39 4. While bi-aspectual verbs do exist, most scholars agree that they are unambiguous in context
 40 and they also tend to develop aspectual morphology, as for example the biaspectual verb
 41 *rekomendovat'*[p/i] ‘recommend’ which has a prefixed perfective *otrekomendovat'* despite the
 42 fact that the unprefixated form can serve as a perfective. For a discussion and references, see
 (Janda 2004: 523, 2007: 637–638).

1 *s-* and *pere-* have been added to *delat*'[i] 'do, make'. With very few excep-
 2 tions, these verbs are perfective.⁵ There are nineteen such prefixes (cf.
 3 Krongauz 1998), and they are commonly termed "perfectivizing prefixes"
 4 due to their function in the aspect system. For the purposes of this study,
 5 we need to distinguish among two subtypes: Natural Perfectives (with the
 6 same meaning as the simplex imperfective, like *sdelat*'[p] 'do, make'),
 7 and Specialized Perfectives (with a different meaning from the simplex
 8 imperfective, like *peredelat*'[p] 'redo').⁶

- 9 3) Prefixed and suffixed verbs—These are verbs consisting of a prefix, a
 10 stem, and a suffix, such as *peredelyvat*'[i] 'redo', which has the prefix
 11 *pere-*, the root *-dela-*, and the suffix *-yva(j)*. These verbs involve the same
 12 nineteen prefixes (plus a twentieth, *do-*), plus three "imperfectivizing"
 13 suffixes: *-a(j)*, *-va(j)*, or *-i/yva(j)*. It is primarily only Specialized Perfec-
 14 tives that admit such secondary imperfectivization.

15 There are additionally some minor patterns, which we list here but do not
 16 discuss further:

- 17
 18 i) Suffixed verbs—There are two subtypes here. The first subtype adds one
 19 of the imperfectivizing suffixes to a simplex perfective, yielding an im-
 20 perfective such as *davat*'[i] 'give'. There are three such verbs (*devat*'[i]
 21 'put' and *padat*'[i] 'fall' in addition to *davat*'[i]); the remaining simplex
 22 perfectives are aspectually paired via suppletion. Another subtype in-
 23 volves the addition of the *-i/yva(j)* suffix to produce habitual verbs such
 24 as *govarivat*'[i] 'talk, say habitually' (from *govorit*'[i] 'talk, say'). The
 25 number of such habitual verbs in Russian is very small and the type is
 26 unproductive (cf. Danaher 2003: 31). Both types of verbs are too mar-
 27 ginal to be included in the current study.
 28 ii) Semelfactive suffixed verbs—These verbs contain a verbal stem plus the
 29 semelfactive perfectivizing suffix *-nu*, as in *čixnut*'[p] 'sneeze once'
 30 (formed from *čixat*'[i] 'sneeze'). There are approximately three hundred
 31 such perfective verbs in Russian; for more discussion, see (Dickey and
 32 Janda 2009). These verbs have a semelfactive meaning and thus do not
 33 normally serve as perfective "partners" for the imperfectives they are
 34

35
 36 5. Most of the exceptions involve the indeterminate stems of motion verbs such as *xodit*'[i]
 37 'walk', which can form both perfective (cf. *zaxodit*'[p] 'begin to walk') and imperfective (cf.
 38 *proxodit*'[i] 'walk through/past') verbs when prefixed. For more discussion of this group of
 39 exceptions, see Janda 2010.

40 6. The distinction between Natural Perfectives and Specialized Perfectives is presented in detail
 41 in Janda 2007, where two further types of perfectives are also distinguished. Note also that
 42 "the same meaning" here refers to lexical meaning, that is, meaning apart from aspectual
 differences.

1 derived from. Since this study specifically examines the “purely aspect-
2 tual” relationships of pairs, the semelfactive suffixed verbs are beyond
3 the scope of our analysis.

- 4 iii) Semelfactive prefixed and suffixed verbs—These verbs add a prefix to
5 the semelfactive suffixed type, yielding verbs such as *vyprygnut'*[p] ‘jump
6 out once’. There appear to be under two hundred such verbs in Russian
7 (for a detailed study, see Makarova and Janda 2009). Like the semelfac-
8 tive suffixed verbs, these verbs do not form aspectual pairs and are thus
9 not included in the present study.

10 While “prefix stacking” is possible in Russian, yielding verbs with multiple
11 prefixes, this type is rather marginal and generally forms perfectives such as
12 *poperepisyvat'*[p] ‘spend a while rewriting’.⁷ There are furthermore a few
13 dozen verbs that form suppletive pairs, such as *govorit'*[i]—*skazat'*[p] ‘talk,
14 say’. These are not systematic types and are therefore likewise excluded from
15 the current study.
16

17 2.1. *Isačenko hypothesis*

18 The three major morphological patterns of Russian verbs offer two options for
19 forming aspectual pairs, namely:
20

- 21
22 a) Via prefixation of a simplex imperfective, yielding pairs such as *delat'*[i]—
23 *sdelat'*[p] ‘do, make’ (henceforth “p-partners” since they involve prefix-
24 ation); and
25 b) Via suffixation of a prefixed perfective, yielding pairs such as
26 *peredelat'*[p]—*peredelyvat'*[i] ‘redo’ (henceforth “s-partners” since they
27 involve suffixation).
28

29 Whereas most traditional analyses (Vinogradov 1938; Šaxmatov 1941; Švedova
30 1980; Bondarko 1983; Čertkova 1996; Anna Zaliznjak and Šmelev 2000) plus
31 virtually all dictionaries and textbooks accept both kinds of pairs, one of the
32 most prominent scholars in the field of Russian aspect, Isačenko (1960:
33 130–175), argues that only the second kind of pair, formed via suffixation,
34 represents a purely aspectual relationship in Russian. Isačenko’s argument is
35 based on introspective claims that a) the addition of a prefix always brings as-
36 sociated meaning to the prefixed verb thus making it non-identical in meaning
37 to the simplex imperfective, and that b) the prefixed perfective is not a perfec-
38 tive “replacement” for the simplex imperfective in all contexts. Isačenko ana-
39

40 7. This verb can be broken down as *po-pere-pis-yva-t'*, where *po-* and *pere-*
41 are prefixes, *pis-* is the root, *-yva(j)* is a suffix, and *-t'* is a desinence. Note that an alternative interpretation of this
42 word is as a distributive meaning ‘rewrite all of’.

1 lyzes the “tests” that scholars have proposed for identifying pairs created via
2 prefixation, presents counterexamples, and also shows that the proponents of
3 such tests do not agree on the results either. The Isačenko hypothesis receives
4 direct support from Andrej Zaliznjak (1980: 6, 136) who implements this dis-
5 tinction throughout his famous grammatical dictionary, recognizing only as-
6 pectual pairs consisting of a prefixed perfective and a suffixed secondary im-
7 perfective. In a recent authoritative grammar of Russian, Timberlake (2004:
8 410–411) takes an intermediary stance on the question of whether there are
9 aspectual pairs formed via prefixation. According to Timberlake, prefixed per-
10 fectives and their secondary imperfectives fulfill the criteria of aspectual pairs,
11 but simplex imperfectives and corresponding prefixed perfectives form “near-
12 partners”.

13 There are thus two opposed hypotheses on the formation of aspectual pairs
14 in Russian:

- 15 (1) Traditional Hypothesis: Aspectual pairs are formed either via prefixation
16 of a simplex imperfective or via suffixation of a prefixed perfective.
17 (2) Isačenko Hypothesis: Aspectual pairs are formed only via suffixation of
18 a prefixed perfective.
19

20 The logical corollaries to these two hypotheses are as follows:

- 21 (1a) Corollary to Traditional Hypothesis: The two kinds of pairs (p-partners
22 and s-partners) are identical in function and should behave identically.
23 (2a) Corollary to Isačenko Hypothesis: Prefixed perfectives paired with suf-
24 fixed imperfectives (s-partners) are the only pairs in the system; since sim-
25 plex imperfectives and corresponding prefixed perfectives (p-partners)
26 represent a different relationship, they should behave differently.
27

28 The aim of this study is to test the two hypotheses based on the logic of the
29 corollaries. We will examine available data in order to compare the behavior of
30 p-partners with s-partners. If our data shows no difference in the behavior of
31 p-partners in comparison with s-partners, that is evidence in support of the tra-
32 ditional hypothesis. If our data shows a difference in the behavior of p-partners
33 in comparison with s-partners, that is evidence in support of the Isačenko hy-
34 pothesis. In order to test the hypotheses, we use data on the corpus frequency
35 of inflected forms of verbs. But before turning to the data and analysis, it is
36 necessary to justify the choice of subparadigms on theoretical grounds.
37

38 2.2. *Aspect and the subparadigms*

39

40 As mentioned in Section 1, there are solid distributional grounds for excluding
41 the gerunds and participles from this study. However, the remaining subpara-
42 digms of the Russian verb are not merely a convenient residue, for they also

1 represent exactly the categories that we most expect to interact with aspect in
 2 significant ways, namely tense (non-past and past) and mood (infinitive, imper-
 3ative, and indicative⁸). The special relationship between aspect, tense, and
 4 mood (the “TAM” categories) is well-established cross-linguistically (Comrie
 5 1976; Chung and Timberlake 1985; Binnick 1991; Bybee et al. 1994; Nuyts
 6 2001, 2007), and is also central to the Russian verbal system. Note that Tim-
 7berlake’s (2004) reference grammar of Russian has only seven chapters, but
 8 one of them is titled “Mood, tense, and aspect” and extends over seventy-three
 9 pages, with numerous detailed descriptions of how both mood and tense inter-
 10act with aspect. Timberlake (2004: 373) identifies three moods expressed mor-
 11phologically in Russian: realis (non-past and past inflected forms), imperative,
 12and infinitive. The imperative mood is claimed to be dominated by perfective
 13verbs, though certain contexts (negation, politeness, insistence) may prefer im-
 14perfective verbs (Timberlake 2004: 374–376; cf. also Pul’kina and Zaxava-
 15Nekrasova 1977: 284–285; Wade 1992: 303–304). The aspect of the infinitive
 16is often influenced by modal markers (*nelzja* ‘it is not permitted’, *nado* ‘it
 17is necessary’), and only imperfective infinitives are permitted in conjunction with
 18phasal verbs (*načat* ‘begin’, *perestat* ‘stop’) and the future auxiliary (*буду* ‘I
 19will’ and remaining forms of the paradigm; Timberlake 2004: 360–370; cf.
 20Pul’kina and Zaxava-Nekrasova 1977: 272–276; Švedova 1980: 605; Wade
 211992: 306–312). In terms of tense, Russian verbs distinguish only non-past
 22from past in their inflection. Aspect disambiguates the present (imperfective
 23non-past) from the future (perfective non-past), although there are other uses
 24of both aspects in the non-past (such as the historical present expressed primar-
 25ily by imperfective non-past forms and the habitual-chain construction, where
 26perfective non-past signals repeated sequences of events; cf. Dickey 2000:
 27126–154, 52–68; Comrie 1976: 73–78). Overall, there seems to be an associa-
 28tion of the imperfective with present [= non-past] tense and the perfective with
 29past tense (Comrie 1976: 83–84).

30 This array of interactions between aspect and the inflectional subcategories
 31 of Russian verbs has not been examined from the perspective of a large-scale
 32 corpus analysis. In this study we use data that compares the frequencies of the
 33 subparadigms of perfective and imperfective verbs to test the traditional vs.
 34 Isačenko hypotheses, and also to shed light on some of the specific claims
 35 about the interaction of tense, mood, and aspect in Russian. In order to get an
 36 overall perspective on the TAM and inflectional interactions, we first look at
 37 data that aggregates the behavior of as many verbs as possible (Section 3–4.1).
 38 We then zero in on specific TAM combinations, and at this level reveal the
 39 behaviors of individual verbs (Section 4.2).

40
 41
 42 8. Subjunctive mood is not expressed inflectionally in Russian, but by paraphrastic means.

1 **3. Databases**

2 For the purpose of this study, we constructed two databases, one with data
3 about p-partners (simplex imperfectives paired with prefixed perfectives) and
4 one with data about s-partners (prefixed perfectives and suffixed secondary
5 imperfectives). Both databases are based on the Modern subcorpus (1950–2007)
6 of the Russian National Corpus (www.ruscorpora.ru; henceforth “RNC”, the
7 source of all examples herein), which contains 92 million words. Each data-
8 base includes information about the frequency of the following grammatical
9 forms:

- 10 – Ipfv_NonPast: the sum of 1sg, 2sg, 3sg, 1pl, 2pl, 3pl imperfective non-past
11 frequencies
- 12 – Ipfv_Past: the sum of masculine, feminine, neuter singular and plural im-
13 perfective past form frequencies
- 14 – Ipfv_Inf: imperfective infinitive form frequency
- 15 – Ipfv_Imper: the sum of 2sg, 2pl, 1pl (*–mte*) imperfective imperative form
16 frequencies
- 17 – Pfv_NonPast: the sum of 1sg, 2sg, 3sg, 1pl, 2pl, 3pl perfective non-past
18 form frequencies
- 19 – Pfv_Past: the sum of masculine, feminine, neuter singular and plural Per-
20 fective past form frequencies
- 21 – Pfv_Inf: Perfective infinitive form frequency
- 22 – Pfv_Imper: the sum of 2sg, 2pl, 1pl (*–mte*) Perfective imperative form
23 frequencies
- 24

25 Because there are rare verbs represented in the RNC that might misrepresent
26 the data, we applied a frequency threshold in the construction of both databases
27 in order to ensure that our data was representative of overall trends in Russian.
28 We removed from the study all potential pairs where either the total frequency
29 of finite perfective forms or the total frequency of finite imperfective forms
30 in the RNC is less than 100 (e.g. *arkanit*’[i] ‘lasso’ with only 2 imperfective forms
31 and its perfective partner *zaarkanit*’[p] with only 21 forms). There were several
32 additional measures that needed to be taken in order to create databases that
33 would facilitate accurate and meaningful comparisons. These measures are de-
34 scribed in the following two subsections.

35
36 3.1. *Database of p-partners (simplex imperfectives and prefixed perfectives)*
37

38 The first task in constructing this database was to obtain a list of all p-partners.
39 The “Exploring Emptiness” database at the University of Tromsø is just such a
40 list. The “Exploring Emptiness” database contains 1981 aspectual pairs, each
41 consisting of an imperfective base verb and the corresponding Natural Perfective,
42 aggregated from two dictionaries (Evgen’eva 1999; Ožegov and Švedova

1 2001) and a list (Cubberly 1982) and acknowledged by a panel of native
 2 speakers.⁹ From this list, we removed the following items in order to reduce
 3 “noise” in the database:

- 4
 5 a) verbs that are not attested in the RNC or do not meet the criterion of the
 6 above-mentioned frequency threshold;
 7 b) verbs for which no unique pair could be identified due to the existence of
 8 two or more prefixed forms (for example, *valit*‘[i] ‘topple’, which has two
 9 perfectives with two different prefixes: *svalit*‘[p] and *povalit*‘[p]; verbs of
 10 this sort would yield multiple perfectives for a given imperfective, mis-
 11 representing the data);
 12 c) verbs with aspectual relations that were either irregular or could not be
 13 accurately disambiguated in our data (this includes biaspectual verbs
 14 like *arendovat*‘[i/p] ‘lease’ and verbs with aspectual homophony like
 15 *sxodit*‘[i/p] ‘descend[i]; walk someplace and come back once[p]’, and
 16 verbs like *sžat*‘[p] which is homophonous in much of its paradigm, mean-
 17 ing either ‘squeeze’ or ‘harvest’).¹⁰

18 It was necessary to take the above measures in order to avoid collecting
 19 ambiguous data and to make the two databases parallel to each other. The
 20 “cleaned” version of the p-partner database includes only candidate partners
 21 that consist of just two uniquely identifiable verbs, making it parallel with
 22 the s-partner database, where challenges to unique pairedness are very rare.
 23 Aspectual pairs formed by suffixation almost never present problems such as
 24 multiple aspectual markers (avoided by measure b) and unambiguatable ho-
 25 mophonous forms (avoided by measure c). After the application of these mea-
 26 sures, the database of p-partners contains over 1.6 million datapoints repre-
 27 senting 264 aspectual pairs and the frequencies of their subparadigms. This
 28 data reliably reflects the p-partners and facilitates straightforward comparison
 29 with parallel data for s-partners.
 30

31 3.2. *Database of s-partners (prefixed perfectives and suffixed secondary*
 32 *imperfectives)*
 33

34 As with the database of p-partners, the first task was to get a list of all potential
 35 s-partners. This was done on the combined basis of Zaliznjak (1980) (who lists
 36 s-partners uniquely) and the RNC, yielding 19,208 pairs. However, many of
 37

38
 39 9. The panel included members of the “Exploring Emptiness” research group at the Univer-
 40 sity of Tromsø: Olga Lyashevskaya, Julia Kuznetsova, Svetlana Sokolova, and Anastasia
 41 Makarova.

42 10. Given that we had nearly six million verb forms in our database, it was not possible to under-
 take such disambiguation by hand.

1 these verbs are of low frequency and in a few rare cases some prefixed verbs
 2 can use more than one suffix to derive imperfectives.¹¹ When the above-
 3 mentioned frequency threshold was applied and verbs with multiple suffixed
 4 partners were removed, the database of s-partners was reduced to 1,311 pairs.

5 We note in addition that there is a certain overlap in the two databases due
 6 to the existence of homophones. For example, *vyrasti*[p] can either mean
 7 ‘grow (up)’, in which case it is the prefixed perfective p-partner of *rasti*[i]
 8 ‘grow’; or it can mean ‘develop into; grow out of’, in which case it has a suf-
 9 fixed secondary imperfective (s-partner) in *vyrastat*’[i].¹² There are thirty-eight
 10 verbs involved in this overlap.

11

12 4. Analysis

13

14 The data described in Section 3.1–3.2 yield a total of 1,575 pairs of verbs,
 15 which represent 5,951,250 verb forms in the RNC. Our analysis is based on
 16 this data. The sheer size of this mass of data presents certain problems for sta-
 17 tistical analysis that must be handled responsibly. Before proceeding to the
 18 statistical analysis it is necessary to understand the relationship between sam-
 19 ple size and effect size. With a large sample size, one has so much statistical
 20 power that one runs the risk of detecting effects that are so small as to not be
 21 meaningful (cf. Baayen 2008: 114–16; Tabachnik and Fidell 2007: 54–55).
 22 The chi-square model is designed to detect significant differences in distribu-
 23 tions. The more data one has available, the better chi-square is at detecting ever
 24 smaller differences; as the data heads toward infinity, the differences that can
 25 be detected are infinitely small. The Cramer’s V measure has been developed
 26 in order to check on the size of the effect detected by a chi-square test, and is
 27 especially important in situations when there are thousands or millions of data-
 28 points. Cramer’s V balances the chi-square value against the number of data-
 29 points, giving a measure that can theoretically vary between 0 and 1. It is cus-
 30 tomary to consider a Cramer’s V value of 0.5 as representing a large effect, 0.3
 31 as representing a moderate effect, and 0.1 as representing a small effect (Cohen
 32 1988: 215–271; Cohen et al. 2003: 182; King and Minium 2008: 327–330). In
 33 the statistical analyses presented in Section 4.1 we cite a Cramer’s V value
 34 alongside all chi-square figures in order to safeguard against reporting sig-
 35 nificant values that are too small to deserve recognition. Section 4.1 presents

36

37

- 38 11. An example of a prefixed perfective with multiple suffixed imperfective partners is *zagoto-*
 39 *vit*’[p] ‘stockpile’ with the derived imperfectives *zagotovljat*’[i] and *zagotavlivat*’[i].
 40 12. Though there is semantic overlap in such verbs, usually there is some distinction between the
 41 two imperfectives. For example, *rasti*[i] ‘grow’ is mainly associated with concrete uses,
 42 largely in reference to plants, whereas *vyrastat*’[i] ‘develop into; grow out of’ is more likely
 to be used in metaphorical contexts.

1 evidence that the grammatical profiles of p-partners and s-partners do not devi-
 2 ate from the overall behavior of perfective and imperfective verbs in Russian,
 3 nor do the two types of partners differ from each other. Section 4.2 examines
 4 specific TAM combinations and the individual verbs that are strongly attracted
 5 to such combinations.

7 4.1. *Grammatical profiles of aspectual pairs*

9 Aggregating the two databases of p-partners and s-partners gives us a big-
 10 picture perspective on the overall behavior of imperfective vs. perfective verbs.
 11 Table 2 compares the grammatical profiles of imperfective verbs of both types
 12 with the grammatical profiles of perfective verbs of both types. The left-hand
 13 portion of Table 2 gives the grammatical profiles of imperfective verbs, citing
 14 first non-past, then past, then infinitive and then imperative forms. Both the
 15 raw frequencies and the relative frequencies are cited, and the latter add to
 16 100% for imperfective verbs. The right-hand portion of Table 2 gives parallel
 17 information for the perfective verbs.

18 Table 2 shows that the distribution of forms is different for the two aspects.
 19 The non-past forms dominate the distribution of imperfective verbs, whereas
 20 the past forms dominate the distribution of perfective verbs. The chi-square
 21 test (chi-squared = 947756, $df = 3$, $p\text{-value} < 2.2e-16$) indicates that the differ-
 22 ences between imperfective and perfective verbs are significantly different,
 23 and the effect size Cramer's V value is 0.399, which is thus between "medium"
 24 (0.3) and "large" (0.5). Therefore the effect of aspect on grammatical profiles
 25 in Russian is both significant and robust. This finding is in keeping with
 26 Comrie's (1976: 84) theoretical conjecture on the relationship between tense
 27 and aspect. Thus our empirical study confirms this assumed relationship on the
 28 basis of a large database.

29 Next we break the data down according to the p-partner and s-partner data-
 30 bases, and here we see that the factor of whether the aspectual relationship is
 31 based on prefixation or suffixation does not yield an appreciable effect. Table 3
 32 presents the same data as in Table 2, now broken down according to p-partners
 33 (in the top half of the Table) vs. s-partners (in the bottom half of the Table). As
 34 in Table 2, Table 3 reports both the raw and relative frequencies, and the lat-
 35 ter adds to 100% in each quadrant. The upper left quadrant shows forms of
 36 p-partner imperfectives (simplex imperfectives) and can be compared to the
 37 lower left quadrant, which shows forms of s-partner imperfectives (secondary
 38 imperfectives of Specialized Perfectives). A parallel comparison can be made
 39 across the right-hand quadrants, with the upper quadrant showing forms of
 40 p-partner perfectives (prefixed Natural Perfectives), as compared with the
 41 lower quadrant showing forms of s-partner perfectives (prefixed Specialized
 42 Perfectives).

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Table 2. Grammatical profiles of imperfective vs. perfective verbs

	Imperfective			Perfective		
	Ipfv_ NonPast	Ipfv_ Past	Ipfv_ Inf	Pfv_ NonPast	Pfv_ Past	Pfv_ Inf
both p- & s-partners	1,330,016 47.4%	915,374 32.6%	482,860 17.2%	375,170 11.9%	1,972,287 62.7%	688,317 21.9%
						111,509 3.5%
						Imper

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Table 3. Frequencies of verb forms extracted from the RNC

	Imperfective			Perfective			
	Ipfv_ NonPast	Ipfv_ Past	Ipfv_ Inf	Pfv_ NonPast	Pfv_ Past	Pfv_ Inf	Pfv_ Imper
p-partners	475,893 43%	397,409 35.9%	195,926 17.7%	72,439 13.7%	317,570 60.1%	114,460 21.6%	24,280 4.6%
s-partners	854,123 50.3%	517,965 30.5%	286,934 16.9%	302,731 11.6%	1,654,717 63.2%	573,857 21.9%	87,229 3.3%

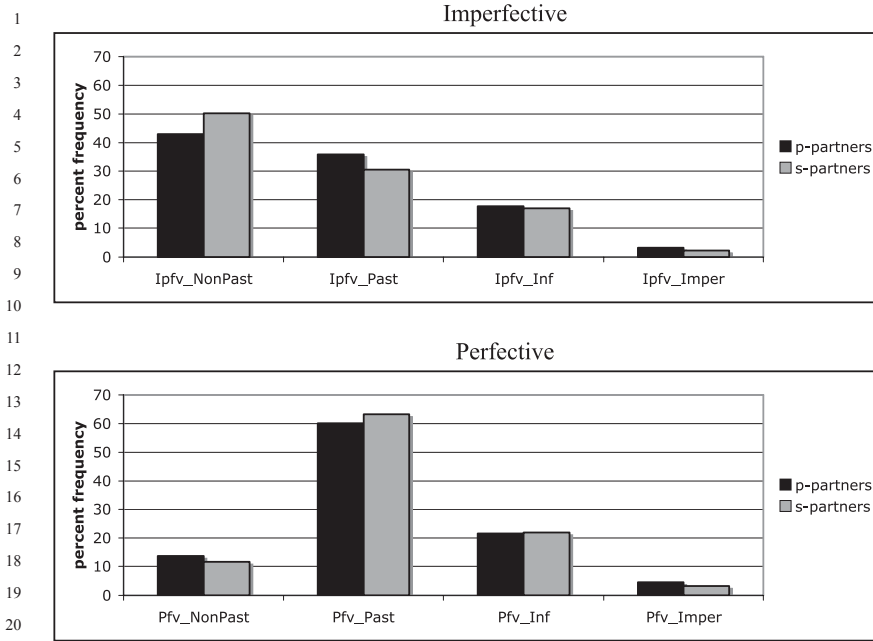


Figure 2. Distribution of p-partner (dark grey) and s-partner (light grey) forms

Figure 2 is a graphic representation of this data using the relative frequencies in order to put the data on the same scale for meaningful comparison. This visualization suggests that there is very little difference between the behavior of the p-partners (dark grey) and the s-partners (light grey) in terms of how aspect interacts with their grammatical profiles. This lack of difference is confirmed by statistical tests.

A chi-square test comparing the behavior of p-partner vs. s-partner imperfectives (cf. top portion of Figure 2) yields a result that is statistically significant (chi-squared = 16155.13, $df = 3$, $p\text{-value} < 2.2e-16$), but tiny, since the Cramer's V value (0.076) does not reach the threshold for a small effect. We get parallel results when we compare the behavior of p-partner and s-partner perfectives (cf. bottom portion of Figure 2). Again the result is statistically significant (chi-squared = 4365.078, $df = 3$, $p\text{-value} < 2.2e-16$), but the effect size (Cramer's V = 0.037) falls far short of the threshold for a small effect. In both cases, we are dealing with a situation where the large quantity of data makes it too easy for the chi-square test to report results as significant. The Cramer's V test safeguards us from recognizing an effect that is so unimportant that it cannot even be regarded as "small". We must conclude that there is no

1 appreciable difference between the distributions of imperfective vs. perfective
2 forms that would distinguish p-partners from s-partners.

3 Looking again at Figure 2, we see that the overall distribution of forms con-
4 firms the parallelism of the p- and s-partners. In the imperfective subparadigm,
5 both p- and s-partners show the same pattern, namely that the non-past forms
6 have the highest frequency, followed by the past forms, then the infinitive forms
7 and finally the imperative forms. The perfective subparadigm continues the
8 parallelism precisely: the highest frequency for both p- and s-partners is among
9 past forms, followed by infinitives, then non-past, and finally imperatives.

10 In short, the distribution of forms is basically the same, regardless of whether
11 the verbs are p-partners or s-partners. This finding supports the traditional hy-
12 pothesis that aspectual pairs are formed in Russian both by means of prefixa-
13 tion and by means of suffixation. Whereas there might be another measure
14 that would find a difference between these two morphologically distinct types,
15 our study did not find one. Thus we do not find support for the Isačenko hy-
16 pothesis. This of course does not rule out the possibility that there might be
17 other factors that would support the Isačenko hypothesis.

18 In the following section we use the same data to examine verbs with un-
19 usual distributions. Given the fact that there is no real difference between the
20 p-partners and the s-partners, our discussion of outliers in that section merges
21 data from both morphological types.

22

23 4.2. *Outliers*

24

25 Given Šteinfeldt's (1970) finding that verbs vary in the frequency distributions
26 of their paradigm forms, we expect individual verbs to behave differently in
27 terms of their grammatical profiles. Because aspect, tense, and mood have se-
28 mantic import, we also expect that differences in behavior are connected to the
29 semantics of verbs. For this reason, we expect that particular TAM combina-
30 tions will be associated with particular groupings of verbs. Our hypothesis is
31 thus that verbs at the top of the distribution for each TAM combination is there
32 for a reason, namely because their semantic content is particularly appropriate
33 for that paradigm slot. This section is devoted to testing this hypothesis.

34 This section is divided into eight subsections according to the eight combi-
35 nations of aspect with tense or mood. Here we present new empirical data on
36 the interaction of TAM categories in Russian and verbal semantics, since this is
37 the first attempt to identify groups of verbs representing various hypothesized
38 phenomena.

39 In each subsection, we first state a hypothesis based on previous scholarship.
40 We then identify individual verbs that behave as outliers, discuss their proper-
41 ties, and compare them with other verbs that are not outliers. Here we define
42 outliers as the points that are displaced beyond 1.5 times the interquartile range

1 (the interquartile range includes 50% of a distribution, with one quartile above
2 the median and one below, cf. King and Minium 2008: 71–72, 76–78). All of
3 the following subsections will focus only on verbs that meet this criterion.
4 Each subsection is illustrated by a figure showing a boxplot of the distribution
5 of verbs. The median is the boldfaced line inside the box, the edges of the box
6 represent the edges of the interquartile range, the whiskers extend to ± 1.5 times
7 the interquartile range, and the small circles represent outliers (Baayen 2008:
8 30). The actual outlier verbs are presented in tables that give the verb, its gloss,
9 the absolute frequency of relevant forms, and the percentage of total forms for
10 that verb in the given subparadigm.

11 Since this section focuses on outliers, the order of presentation reflects the
12 number of outliers found in the various subparadigms of imperfective and per-
13 fective verbs. We find the most outliers among the imperative forms, followed
14 by the non-past, the infinitive, and the past, and the discussion follows this
15 cline. While the tables in each section list verbs in their infinitive forms, they
16 are cited in appropriate forms from the given subparadigm in the discussion.

17
18 4.2.1. *Imperfective imperative.* Linguistic analyses of Russian aspect make
19 three claims about the use of imperfective aspect with imperatives: that imper-
20 fective is associated with negation when it is categorical, that imperfective is
21 used in order to show politeness, and that imperfective is also used to signal
22 urgency or insistence (cf. Bondarko and Bulanin 1967: 127–128; Padučeva
23 1996: 12–17; Švedova 1980: 624; Timberlake 2004: 374–375)¹³. The latter
24 two claims, namely that imperfective imperatives can be used to signal both
25 politeness and rudeness, seem contradictory. Šatunovskij (2002, 2009) suggests
26 a solution to this problem. According to Šatunovskij, the underlying motive for
27 both the polite and rude uses has to do with the hearer’s understanding that the
28 proposed action should take place. If the hearer understands that s/he is sup-
29 posed to act, then imperfective is required, regardless of whether the use is
30 construed as polite or rude. In certain contexts, like visiting a friend, the hearer
31 already knows a lot about what will happen: s/he will come in, sit down, eat or
32 drink something, etc. The speaker’s directions in these contexts are interpreted
33 as polite. In other contexts, the hearer has failed to act appropriately, despite
34 clear indications, and the speaker’s choice of imperfective aspect is rude be-
35 cause it implies insistence. In still other cases the hesitation is less problematic
36 and the speaker merely offers encouragement for something the hearer already
37 intends to do: this yields imperfective imperatives with neutral affect. Our data
38 support Šatunovskij’s analysis, but also extend it.

39
40
41 13. In identifying pragmatic import (politeness, rudeness, urgency, etc.), we follow the conven-
42 tions of the standard grammars of Russian cited here and elsewhere in this article.

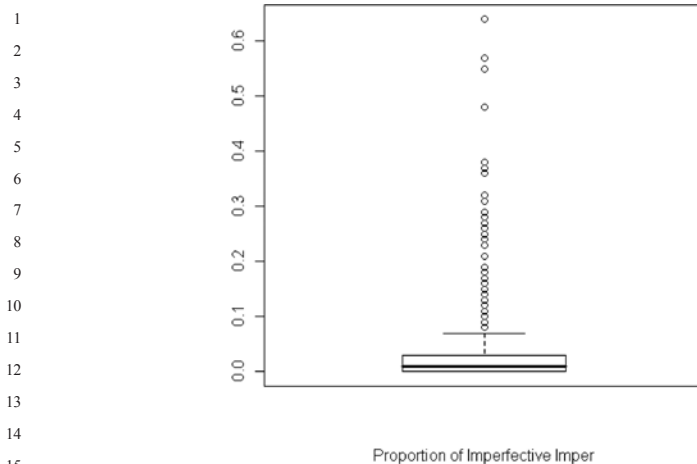


Figure 3. *Distribution of imperfective imperatives*

Our hypothesis is thus that we expect the imperfective imperative to be associated with verbs that are used pragmatically to express politeness and urgency, and also in contexts of categorical negation.

This intersection of imperfective aspect and imperative mood yields over two hundred verbs that behave as outliers because their usage exceeds 1.5 times the semi-interquartile range above the third quartile (small circles in Figure 3; the full list is found in Appendix A). While many of these verbs confirm the standard claims made in the scholarly literature, the data suggest some additional phenomena that have received less attention. Furthermore, the lexical classes that turn up among these outliers give us insights into the motives even for the expected outcomes.

In the case of politeness, our data suggest that this phenomenon is largely driven by a single frame, namely that of being a guest or visitor. Under these circumstances, the imperatives do not provide new information, but rather invite the guest to do what both the host and guest already expect to happen. This includes getting out of and into outerwear (*razdevajsja(ites)* ‘take off one’s coat’), changing body positions (*sadi(ite)s* ‘sit down’), joining people at the table (*prisoedinjajsja(ites)* ‘come join at the table’), consuming things (*zakusyvaj(te)* ‘eat chasers’, *zakurivaj(te)* ‘smoke’), and traveling (*zaezžaj(te)* ‘stop by’, *zalezaj(te)* ‘get into the car’). There are however some additional injunctions that are specifically polite, such as requests for assistance (*vyručaj(te)* ‘help’) and kind wishes (*vyzdoravlivaj(te)* ‘get well’) that cannot be motivated in Šatunovskij’s model.

Many high-frequency uses of imperfective imperatives are simply familiar or even specifically rude. Familiar uses involve requests to get moving

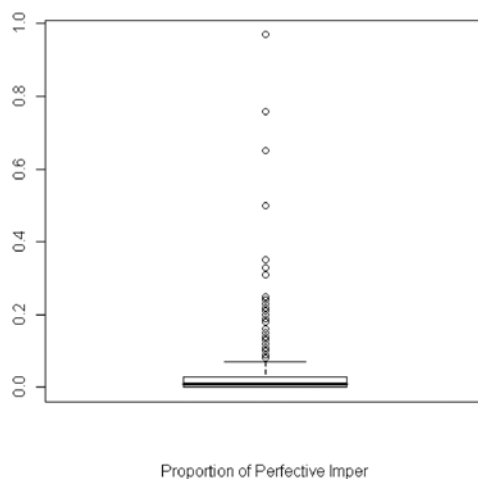
1 (*stupaj(te)* ‘get going’), to focus on a new topic of conversation (*gljadi(te)*
 2 ‘look’), and to take something that is offered (*zabiraj(te)* ‘take’). These uses
 3 illustrate neutral affect. Rude uses have a distinctly insistent flavor, often tell-
 4 ing the interlocutor to leave (*provalivaj(te)* ‘get out of here’) or stop doing
 5 something (*končaj(te)* ‘stop’). However, over half of the rude uses are associ-
 6 ated with negation, carrying the implication that the interlocutor is misbehav-
 7 ing, especially in discourse interactions (*ne perebivaj(te)* ‘don’t interrupt’,
 8 *ne prikidyvajsja(ltes’)* ‘don’t pretend to be something you aren’t’, *ne*
 9 *peredergivaj(te)* ‘don’t distort the facts’). This group is not included in
 10 Šatunovskij’s analysis, which treats negation separately, stating that all imper-
 11 atives are normally imperfective when negated, unless they refer to things
 12 that are hard to control and represent immediate threats. As concerns other
 13 negated imperatives in our data, these mostly represent injunctions not to be
 14 upset (*ne rasstraivajsja(ltes’)* ‘don’t get upset’) or not to be afraid (*ne stesn-*
 15 *jajsja(ltes’)* ‘don’t hesitate’), though a few other types appear such as *ne*
 16 *leni(te)s’* ‘don’t be lazy’ and *ne zabyvaj(te)* ‘don’t forget’. The verbs with rude
 17 meanings also have a stronger tendency to appear in singular form (which is
 18 necessarily familiar) rather than plural (which can signal either plurality or
 19 politeness). For example *otvalivaj(te)* ‘get out of here’ has 95% of its impera-
 20 tive forms in the singular.

21 A residue of verbs appears in fixed grammatical or idiomatic expressions.
 22 The imperative of *davat’* ‘give’ is used as an auxiliary verb in forming peri-
 23 phrastic imperatives, as in *davaj posmotrim* ‘let’s take a look’ or *davajte ja vam*
 24 *pomogu* ‘let me help you’. As Barentsen (2006) points out, this expression
 25 specifically takes the interlocutor’s perspective into account, yielding polite
 26 suggestions and offers, as the verbs that collocate most frequently with *davaj(te)*
 27 indicate: *pomogu* ‘help’, *rasskažu* ‘tell’, *pokažu* ‘show’, *pozvonju* ‘call’, *sde-*
 28 *laju* ‘do’. Thus this idiomatic use of *davaj(te)* is also consistent with the polite
 29 use of imperfective imperatives overall. The imperative *proščaj(te)* functions
 30 idiomatically as a farewell greeting and is thus somewhat detached from the
 31 meaning of the verb ‘forgive’. Three imperfective imperatives have specific
 32 cultural anchors: *obogaščajsja* ‘be prosperous’ was a buzz word of the Soviet
 33 New Economic Policy in the 1920s; *soedinjajtes’* ‘unite’ belongs to the com-
 34 munist slogan *proletarii vsej stran soedinjajtes’* ‘workers of the world unite’,
 35 and *zapevaj* ‘sing’ is an army command, since Russian soldiers are often re-
 36 quired to sing in unison. Three other imperfective imperatives frequently occur
 37 in aphorisms: *ne pominaj lixom* ‘bear no ill will [lit: don’t remember evil]’ and
 38 *ne pominaj, kak zvali* ‘they just vanished [lit: don’t remember, what they were
 39 called]’ (together these phraes account for 76% of RNC citations); *spasajsja,*
 40 *kto mozet* ‘every man for himself [lit: save himself, he who can]’ (42% of RNC
 41 citations); *na čužoj karavaj rot ne razevaj* ‘don’t take others’ belongings [lit:
 42 don’t open your mouth at others’ bread]’ (53% of RNC citations).

1 For comparison we sampled the non-outlier verbs in both the lowest and
 2 middle range of this distribution, and found that neither group of verbs re-
 3 sembles the outliers. At the bottom of the distribution are 36 imperfective,
 4 verbs with 0% frequency of imperative forms. 32 of these verbs contain the
 5 reflexive suffix *-sja*, and as a group they express uncontrolled actions with
 6 inanimate subjects or in impersonal constructions. Some examples (cited in
 7 their infinitive form) are *vspominat'sja* 'come to mind', *načat'sja* 'begin', and
 8 *prixodit'sja* 'happen'. In the middle range, with between 2% and 4% of imper-
 9 imperative forms, we find 18 verbs that describe common actions that are not
 10 associated with politeness or urgency, such as *dumat* 'think', *rešat* 'solve',
 11 and *smejat'sja* 'laugh'.

13 4.2.2. *Perfective imperatives.* Relatively little has been written about per-
 14 fective imperatives in the aspectual literature. The use of perfective verbs to
 15 form imperatives is predominant when the intention is to give instructions (the
 16 primary purpose of the imperative), but perfective imperatives can be rude
 17 (when used in place of polite imperfectives described in Section 4.2.1) or, issue
 18 warnings (Pul'kina and Zaxava-Nekrasova 1977: 284–287; Švedova 1980:
 19 623–624; Wade 1992: 303–306). Šatunovskij (2002), after spending nearly
 20 thirty pages on the imperfective imperative, gives only a few cursory remarks
 21 on the perfective imperative (cf. also Padučeva 1996 and Timberlake 2004).

22 Our hypothesis is thus that the perfective imperative should attract verbs
 23 used to deliver neutral instructions, rude demands, and warnings.



42 Figure 4. *Distribution of perfective imperatives*

1 This group gives us the most skewed distribution, with over three hundred
 2 verbs acting as outliers. The entire list is presented in Appendix B. The list of
 3 verbs thus sheds new light on just exactly what kind of relationship between
 4 aspect and mood these forms represent.

5 As expected, two of the largest groups involve rude expressions and neu-
 6 tral instructions. The rude expressions are dominated by verbs used to tell
 7 someone to leave one alone (*otstan'(te)*) or let someone go (*otpusti(te)s'*) or
 8 stop doing something (*perestan'(te)* 'stop'). Here the perfective aspect height-
 9 ens the harshness of the command. The neutral instructions show evidence
 10 for a number of frames where perfective imperatives are common: cooking
 11 (*vskipjati(te)* 'bring to a boil'), exercising (*sogni(te)* 'bend'), official transac-
 12 tions (*raspiši(te)s'* 'sign for'), and text instructions (*rassmotri(te)* [grafik x]
 13 'see [figure x]').

14 Thus we confirmed the theoretical expectations about perfective impera-
 15 tives concerning rude and neutral uses, but did not find a substantial number of
 16 verbs that would be used in warnings. However, we also found several other
 17 groups of perfective verbs that are often found in the imperative form. These
 18 include a fairly large group of specifically polite expressions, involving re-
 19 questing forgiveness (*izvini(te)*), patience (*poterpi(te)*), and use of imagination
 20 (*predstav'(te)*). There are also groups of verbs that are used to direct the atten-
 21 tion of the interlocutor or to signal transitions in discourse, paralleling this
 22 phenomenon identified by Stefanowitsch and Gries (2003: 233–234) among
 23 English imperatives. The attention-directing type mainly involves verbs used
 24 to ask the hearer to look at something (*posmotri(te)*) or listen to something
 25 (*vshušaj(te)s'*), though other channels of perception (*ponjuxaj(te)* 'sniff') and
 26 imagination (*ugadaj(te)* 'guess') are also invoked. The verbs used as discourse
 27 markers include items like *požaluj* which serves as a modal meaning 'perhaps'
 28 in this form, verbs used to take the floor like *razreši(te)* 'allow' (in construc-
 29 tion with a following infinitive), verbs used to encourage the interlocutor to speak
 30 up like *podskaži(te)* 'prompt, tell', and verbs signalling a request to end a topic
 31 of conversation like *uvol'(te)* 'spare'.

32 Two smaller yet important groups include religious and idiomatic expres-
 33 sions. Both involve formulaic expressions, which in the case of the religious
 34 expressions come from prayers and liturgical texts, as in *Gospodi pomiluj*
 35 'Lord have mercy' (91% of RNC citations are prayers or directly derived there-
 36 from) and *blagoslovi očē* 'father bless' (93% of RNC citations are of this type,
 37 with some variation in the vocative form like *Gospodi* 'Lord', *Alla* 'Allah').
 38 Idiomatic expressions include items that occur only in specific constructions
 39 like *xot' zalejsja/zavalis'* meaning 'a very large amount' [lit: at least be
 40 poured/be toppled] (68% of RNC citations), *razlit'* 'spill' in *ne razlej voda* 're-
 41 ally close friends' [lit: water don't spill] (90% of RNC citations) and *razodrat'*
 42 'tear up' in *čert razderi* 'to hell with it' [lit: devil tear] (100% of RNC citations).

1 Finally there is one verb, *dat* ‘give’ that is used as an auxiliary verb in a spe-
 2 cific construction where many perfective verbs can appear, as in *daj posmotrju*
 3 ‘let me take a look’ [lit: give I will look]. Barentsen (2006) shows that the verbs
 4 that collocate most frequently with this construction indicate that the speaker
 5 is motivated by his/her own desires (rather than the addressee’s): *poceluju*
 6 ‘kiss’, *posmotrju* ‘take a look’, *pogljažu* ‘take a look’, *vzgljanu* ‘take a look’.
 7 These expressions are not directly rude; they minimize consideration for the
 8 interlocutor’s perspective and are thus neutral.

9 At the bottom of the distribution, 13 perfective verbs with 0%–1% impera-
 10 tive forms are all associated with the so-called “quasi-imperative” construction
 11 which describes sudden events rather than human actions, as in (1).

- 12
 13 (1) *Načnis’ svvatka—ee by ubili.*
 14 ‘If a fight were to break out, she would be killed.’

15 These “bottom-dweller” verbs represent a clear departure from the outlier
 16 verbs. However, the 8 verbs in the middle range (3.8%–5.2%) represent typical
 17 neutral instructions such as *poprosi(te)* ‘ask’, *pokaži(te)* ‘show’, and *prinesi(te)*
 18 ‘bring’, and thus overlap with the outlier group in this use.

19
 20
 21 4.2.3. *Imperfective non-past.* Grammars of Russian consistently character-
 22 ize the imperfective non-past as used primarily for description of ongoing
 23 processes, concrete processes that have a duration and/or are simultaneous with
 24 another time or event, and repeated actions (Pul’kina and Zaxava-Nekrasova
 25 1977: 264–270; Švedova 1980: 604; Wade 1992: 283–286). The use of the
 26 imperfective non-past to describe timeless facts (gnomic)¹⁴ or historical pre-
 27 sent is mentioned only secondarily. Given this pattern, we hypothesize that the
 28 positive outliers for this paradigm slot should be dominated by verbs describ-
 29 ing ongoing, durative, and simultaneous actions. However, this hypothesis was
 30 not confirmed.

31 Figure 5 shows that there are some imperfective verbs with an unusually
 32 high proportion of forms in the non-past subparadigm, and one verb with an
 33 unusually low proportion of forms in this subparadigm. Table 4 lists these
 34 verbs and their frequencies.

35 The ten imperfective verbs with unusually high representation in non-past
 36 forms all instantiate a single phenomenon that is expressed in Russian exclu-
 37 sively via the combination of imperfective aspect and non-past tense. This is
 38 the gnomic construction, which describes timeless truths. Examples 2 and 3
 39 illustrate the gnomic use of such verbs.

40
 41
 42 14. For a discussion of gnomic uses of imperfective aspect, see Janda 2004.

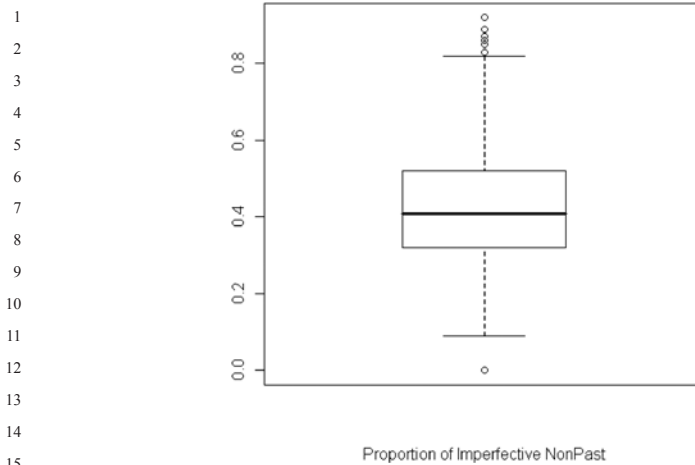


Figure 5. Distribution of imperfective non-past

Table 4. Imperfective verbs with very high or low incidence of non-past forms

verb (3sg)	gloss	raw freq	% freq
<i>javljat'sja (javljaetsja)</i>	'be'	39543	92%
<i>okazyvat'sja (okazyvaetsja)</i>	'turn out to be'	10869	85%
<i>podtverždat'sja (podtverždaetsja)</i>	'be confirmed'	677	83%
<i>vyjasnjat'sja (vyjasnjaetsja)</i>	'be explained'	805	89%
<i>kasat'sja (kasaetsja)</i>	'concern'	9719	87%
<i>isčerpyvat' (isčerpyvaet)</i>	'exhaust'	100	89%
<i>predopredeljat'sja (predopredeljaetsja)</i>	'be predetermined'	34	85%
<i>objazyvat'sja (objazyvaetsja)</i>	'be obliged to'	480	92%
<i>zatrudnjat'sja (zatrudnjaetsja)</i>	'be made difficult'	275	86%
<i>vleč' (vlečet)</i>	'entail'	1555	85%
<i>slyxat' (slyxaet)</i>	'hear'	1	0%

- (2) *Drugimi slovami, ja by xotel sprovcirovat' diskussiju, to vseгда javljaetsja naibolee produktivnoj formoj naučnogo obsuždenija problemy.*
 'In other words, I would like to provoke a discussion, which is always the most productive form for scholarly debate on an issue.'
- (3) *Kak pravilo, dannoe obstožatel'stvo vlečet za soboj negativnye posledstvija dlja klientov.*
 'As a rule, this situation entails [lit: drags after itself] negative consequences for the clients.'

The verb *javljaetsja* 'is' can only be used to identify the category that something is classified in; here, a *discussion* is classified as *the most productive form*

1 for scholarly debate. The first six verbs in Table 4 are all variants on gnomic
 2 statements like this that claim 'X is Y'. The remaining four verbs with high
 3 frequency in the imperfective non-past have the meaning 'X causes/entails Y',
 4 as illustrated by example 3.

5 These verbs can also be organized according to their conventional uses.
 6 Three of the verbs appear in fixed constructions: *okazyvaetsja* 'turns out to be'
 7 (95% of citations in RNC); *vyjasnjaetsja, (čto)kak vyjasnjaetsja* 'turns out
 8 that/as it turns out' (87% of citations in RNC); and *čto kasaetsja X* 'as far as X
 9 is concerned' (68% of citations in RNC). Two of the verbs are prominent in
 10 certain contexts. A stock phrase of mediated negotiations is *storony|partii*
 11 *objazujutsja|predstavitel' objazuetsja* 'the parties are obliged to/the represen-
 12 tative is obliged to' (75% of citations in RNC). When opinion polls are con-
 13 ducted, one of the standard choices is *zatrudnjajus' otvetit'* 'not sure' [lit. I
 14 have difficulty answering] (27% of citations in RNC).

15 The one verb that is an outlier at the bottom end of the scale, with only one
 16 non-past form, *slyxat'* 'hear', is a morphological anomaly. This verb simply
 17 does not have non-past forms. This anomaly is motivated by the fact that this
 18 verb has the evidential function of reporting hearsay, which is connected with
 19 the past tense (cf. Section 4.2.7 where this verb appears as an outlier on the top
 20 end of the scale for imperfective past tense forms). The neutral verb for 'hear'
 21 is *slyšat'*.

22 Neither the low end nor the mid-range of this distribution presents verbs
 23 that are associated with gnomic uses. At the low end (under 20% imperfec-
 24 tive non-past forms) we find verbs like *obedat'* 'eat lunch' and *golosovat'*
 25 'vote', while in the middle we find verbs like *rabotat'* 'work' and *pomogat'*
 26 'help'.
 27

28 4.2.4. *Perfective non-past.* The perfective non-past is the morphological
 29 form used to express simple future in Russian and is associated with con-
 30 crete single actions expected to be completed in the future, though more rarely
 31 it can be used to describe habitually repeated actions (usually ones belong-
 32 ing to a sequence) and exemplary actions (Pul'kina and Zaxava-Nekrasova
 33 1977: 264–270; Švedova 1980: 604; Wade 1992: 283–286). Our hypothesis
 34 is correspondingly that the verbs at the top of the distribution should re-
 35 flect description of predicted or promised actions, and that hypothesis is
 36 confirmed.

37 Eighty-four perfective verbs, listed in Appendix C, qualify as outliers due to
 38 their unusually strong representation in the non-past subparadigm. These verbs
 39 reflect the default interpretation of perfective non-past as referring to the fu-
 40 ture, since most of them are used in expressing predictions and promises. Pre-
 41 dictions can be parametric, involving increasing (*prevysit* 'will exceed'), de-
 42 creasing (*umen'sitsja* 'will decrease') and length of continuation (*prodlitsja*

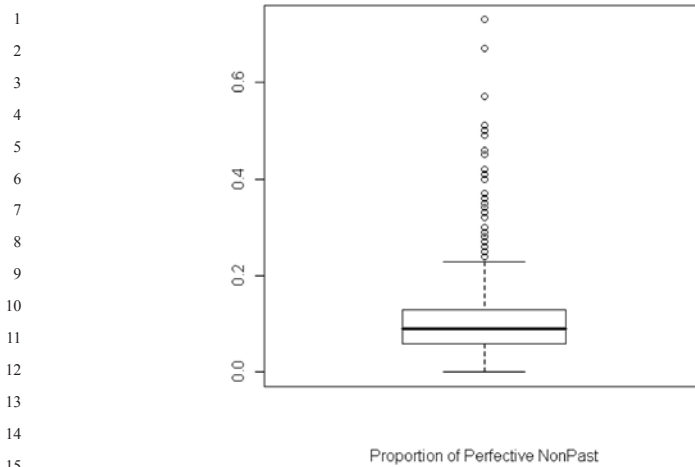


Figure 6. Distribution of perfective non-past

‘will last’). Predictions also often target expected improvements (*naladitsja* ‘will work out well’, *vyzdoroveet* ‘will get well’), problems (*zatrudnit* ‘will make things difficult’, *razoritsja* ‘will go broke’) and needs (*potrebuetsja* ‘will be necessary’). A problem that is often predicted is death; five verbs such as *podoxnet* and *zagnetsja*, both meaning ‘will die’, are used to announce impending mortality. Closely related to verbs signalling needs are two verbs that appear in impersonal modal constructions: *pridetsja* ‘will be necessary’ and (*ne*) *obojdetsja* (*bez*) ‘will (not) manage (without)’. Promises are a specialized kind of prediction, as in *upravitsja* ‘will take care of something’ and *postaraetsja* ‘will try’. Threats are in a sense negative promises, and this group includes items like *rasterzaet* ‘will tear to pieces’ and *prokljanet* ‘will curse’. Many of the verbs involving death or threats are also metaphorical or metonymic: *sožret* is literally ‘will eat up’, but is parallel to the English expression *will eat X alive*, which is a warning of various kinds of danger, but usually does not refer to beasts devouring people; *sgniet* ‘will rot’ refers to death via the prediction of what happens afterward. Also related to promises are verbs used as performatives in discourse, usually in first person singular forms such as *osmeljus* ‘I (will) dare, I (will) take the liberty of’ or *procitiruju* ‘I (will) quote’. Several of the verbs are found among the outliers for this subparadigm because they occur in fixed expressions: *ne priderešsja* ‘don’t find fault with’ (98% of RNC citations), *ostal’noe priložitsja* ‘the rest will come’ (74% of RNC citations), *ot tebjja ne ubudet* ‘nothing is going to happen to you’ (96% of RNC citations), *vragu ne poželaes* ‘I wouldn’t wish it on my worst enemy’ (with slight variations, 65% of RNC citations). Finally there is a residue of verbs

1 with lexical meanings that don't seem to fit into any of the above-mentioned
2 groups, such as: *vysoxnet* 'will dry out', *poletit* 'will fly/take off'.

3 At the bottom end of this distribution (0%–1%) we find two types of verbs
4 that describe actions which are not usually predictable: manner-of-speech
5 verbs like *probormočet* 'will mumble' and *vzvizgnet* 'will squeal' and verbs of
6 interpretation (Apresjan 2004) like *izvinit* 'will apologize' and *nedoocenit* 'will
7 underestimate'. The mid-range (12%–15.35%) is a homogenous group that is
8 not particularly associated with predictions, promises or performatives, with
9 verbs like *uslyšit* 'will hear', *pokažet* 'will show' and *pošlet* 'will send'.

10
11 4.2.5. *Imperfective infinitive.* In addition to its use in the periphrastic im-
12 perfective future and after phasal verbs, the imperfective infinitive is associ-
13 ated with modal expressions (Pul'kina and Zaxava-Nekrasova 1977: 272–275;
14 Wade 1992: 307–312). Contrary to typological trends, the default aspect for
15 modal expressions in Russian is perfective, although imperfective is also com-
16 mon (cf. Divjak 2009 for a comparison of Russian with usual typological
17 observations). Šmelev and Zaliznjak (2006) point out that in such modal con-
18 structions the perfective aspect describes “alethic” (also known as “dynamic”)
19 modality, in other words physical necessity or possibility, whereas the imper-
20 fective expresses deontic modality, in other words social or moral desirability.
21 Šmelev and Zaliznjak claim that this difference is accounted for by controlla-
22 bility, namely that perfectives are used in contexts where the event is out of the
23 subject's control, whereas imperfectives are used when the subject is in con-
24 trol. This introspective analysis seems to work for the minimal-pair-type ex-
25 amples that Šmelev and Zaliznjak offer, such as *Nel'zja razbudit' otca* 'It is
26 impossible to wake father' (he physically cannot be wakened) vs. *Nel'zja budit'*
27 *otca* 'Don't wake father' (it is the wrong thing to do). In a quantitative analysis,
28 Divjak (2009) shows that it is not controllability, but rather specificity that
29 predicts the aspect of infinitives in such constructions. In other words, because
30 the Russian perfective aspect is associated with specific situations, it favors
31 interpretations in terms of individual capacity. The imperfective aspect is
32 associated instead with generic situations (like the gnomic uses discussed in
33 Section 4.2.3), and this favors an interpretation in terms of overall norms of
34 responsibility and desirability, as illustrated in example 3. Divjak coded a
35 database of corpus examples according to various factors and fitted a mixed
36 effects logistic regression model to the data to predict aspect. She found that
37 the one factor that was crucial was specificity: in modal expressions, imperfec-
38 tive infinitives describe non-specific events, whereas perfective infinitives are
39 used with specific events.

40 As it turns out, all of the outlier verbs in this distribution reflect use of modal
41 expressions, for which we accordingly have two hypotheses. The first hypoth-
42 esis tests Šmelev and Zaliznjak's (2006) claim, which would predict imperfec-

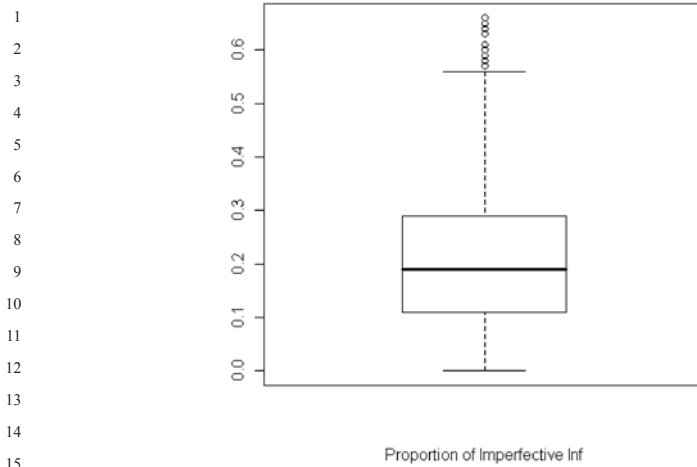


Figure 7. Distribution of imperfective infinitives

Table 5. Imperfective verbs with very high incidence of infinitive forms

Verb	gloss	raw freq	% freq
<i>plevat'</i>	'spit'	900	65%
<i>vyjazvat'sja</i>	'get mixed up in'	124	66%
<i>izyskivat'</i>	'search out, try to find'	92	64%
<i>ispravljat'</i>	'repair, carry out'	283	61%
<i>peredel'ivat'</i>	'redo, alter'	230	57%
<i>peresmatrivat'</i>	'revise, reconsider'	198	66%
<i>razvivat'</i>	'develop'	1363	57%
<i>razmeščat'</i>	'place, distribute'	272	58%
<i>raspoznavat'</i>	'recognize, identify'	113	59%
<i>sobljudat'</i>	'observe, conform to'	1013	60%
<i>soglasovyvat'</i>	'conform to, agree with'	176	63%
<i>učityvat'</i>	'take into account, bear in mind'	1850	66%

tive infinitives that express controllable actions. The second hypothesis tests Divjak's (2009) claim, which would predict imperfective infinitives used to describe non-specific actions.

Twelve imperfective verbs, listed in Table 5, have an unusually high proportion of infinitive forms. The first verb in the table appears to be motivated by a fixed construction, namely *mne plevat'* 'I don't give a damn' [lit: I (feel like) spitting] (90% of citations in RNC). The remaining verbs are associated with modal constructions that consist of an infinitive in conjunction with a modal word like the following: *nado* 'have (to)', *nužno* 'need (to)', *dolžen* 'supposed

1 (to)', *možno* 'can/is possible (to)', *nel'zja* 'not possible/not allowed (to)', *pri-*
 2 *oditsja/pridetsja* 'is/will be necessary (to)', *sleduet* 'ought, should'.

3 Our study provides new data that supports Divjak's (2009) analysis. The
 4 eleven verbs in Table 4 that are used in modal expressions do not all express
 5 actions that are necessarily controllable; *vyjazyvat'sja* 'get mixed up in', *ra-*
 6 *spoznavat* 'recognize, identify', and *soglasovyvat* 'conform to, agree with'
 7 can all describe actions beyond the subject's conscious control. Divjak's (2009)
 8 hypothesis that imperfective infinitives are used in expressions of circum-
 9 stances because they refer to generic obligations and possibilities is supported
 10 by the lexical meanings of our eleven verbs. These verbs target actions such as
 11 abiding by rules (*sobljudat* 'observe, conform to'), revising and repairing
 12 things (*peredelyvat* 'redo', *ispravljat* 'repair') and in general trying to behave
 13 properly and make things better (*učityvat* 'take into account'). In addition one
 14 of the verbs in our list for imperfective infinitives is paired with a verb that
 15 also appears on the list in the following subsection of perfective infinitives:
 16 *sobljudat*[i] vs. *sobljusti*[p] 'observe, conform to'. Examples comparing the
 17 use of these two infinitives in modal constructions appear in (4) and (5).

18
 19 (4) *Po-moemu esli ty dejstvitel'no verujuščij čelovek, to konečno nado*
 20 *sobljudat*'[i], *kak velit cerkov*'.

21 'In my opinion if you really are a religious person, then of course you
 22 need to conform to what the church commands.'

23 (5) *Edinstvennoe pravilo, kotoroe vy pri ètom dolžny sobljusti[p]: stil' vašej*
 24 *odeždy dolžen byt' identičen obščemu stilju, prinjatomu na firme.*

25 'The only rule that you need to observe in this situation is this: the style
 26 of your clothing must be identical to the overall style that is customary at
 27 the firm.'

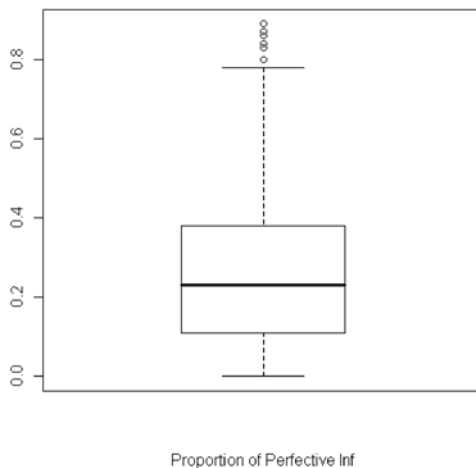
28
 29 The appearance of both of these verbs as high-frequency items in modal
 30 constructions is important because this verb pair is lexically restricted to refer-
 31 ence to circumstances: neither the imperfective nor the perfective can express
 32 physical necessity or capacity. Furthermore, neither of these verbs can express
 33 a non-controllable situation since observance of rules and norms can occur
 34 only through conscious effort, not by accident. Yet still we see an aspectual
 35 difference in modal constructions, and that difference conforms to Divjak's
 36 (2009) findings. Example (4) describes a generalized rule for all behavior lack-
 37 ing any specific context, and this is where we find the imperfective. Example
 38 (5), with the corresponding perfective, describes the choice of clothing (skirt
 39 vs. slacks) for a professional woman in a very specific business situation.

40 Comparison of the top, middle and bottom portions of this distribution shows
 41 that each is associated with a certain type of verb. The outliers at the top, as we
 42 have seen, are used in modal expressions. In the middle (16.4%–20%) we find

1 verbs that are typically used in the periphrastic future, like (*budet*) *demon-*
 2 *strirovat'* 'will demonstrate' and (*budet*) *privetstvovat'* 'will welcome'. At the
 3 bottom of the distribution we find verbs that don't work well in either type of
 4 construction, such as *uxitrvat'sja* 'contrive' and *perepolnjat'* 'overfill'.

5
 6 4.2.6. *Perfective infinitive.* The perfective infinitive is subject to the con-
 7 verse of the same hypotheses stated for the imperfective infinitive in Section
 8 4.2.5. The first hypothesis follows (Šmelev and Zaliznjak 2006), according to
 9 which we expect a high incidence of verbs expressing non-controllable ac-
 10 tions, and the second hypothesis follows (Divjak 2009), expecting a high inci-
 11 dence of specific actions.

12 In some ways this group parallels the verbs that show high incidence of
 13 imperfective infinitives. The verb *naplevat'*[p] 'spit' is the paired aspectual
 14 correlate of the imperfective *plevat'*[i] and its presence is motivated by the
 15 same fixed phrase (which can appear in both aspects): *mne naplevat'* 'I don't
 16 give a damn' (100% of citations in RNC). The remaining verbs can all combine
 17 with modals, in which case the perfectives refer to specific situations as op-
 18 posed to the imperfectives (cf. the comparison of examples 3 and 4 above).
 19 However, these perfective infinitives are associated with some additional con-
 20 structions, all of which favor the perfective aspect. These constructions, illus-
 21 trated in (6), (7), and (8) with the verb *vospolnit'* 'fill in', involve the so-called
 22 "tentative" verbs (meaning trying, wanting, etc.), *čtoby* 'in order to [achieve
 23 X]' and various adverbs describing how important or difficult it is to achieve
 24 X.



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 42 Figure 8. *Distribution of perfective infinitives*

Table 6. *Perfective verbs with very high incidence of infinitive forms*

verb	gloss	raw freq	% freq
<i>naplevat'</i>	'spit'	860	89%
<i>sovmestit'</i>	'combine'	385	87%
<i>predotvratit'</i>	'prevent'	792	86%
<i>vossozdat'</i>	'reconstruct'	248	84%
<i>pomyslit'</i>	'contemplate'	129	84%
<i>Sobljusti</i>	'observe, conform to'	200	84%
<i>Sootnesti</i>	'correlate'	118	84%
<i>vozmestit'</i>	'compensate'	304	83%
<i>vospolnit'</i>	'fill in'	171	80%
<i>podrabotat'</i>	'earn additionally, work up'	91	80%
<i>srazit'sja</i>	'fight, join in battle with'	108	80%
<i>ustranit'</i>	'remove'	686	80%

(6) *Poèтому my popytaemsja vospolnit' ètot probel, opirajas' na fakty i cifry, privedennye v rabotax sovremennyx istorikov.*

'That is why we are going to try to fill in that gap by relying on the facts and figures cited in the works of contemporary historians.'

(7) *Posle zanjatija možno vypit' vody, čtoby vospolnit' ee poterju.*

'After working one can drink some water in order to make up for its loss.'

(8) *Fruktami istinnyj deficit kalija vospolnit' očen' tjaželo, praktičeski nevozmožno.*

'It is very difficult, practically impossible, to make up for a real calcium deficiency by [eating] fruit.'

Divjak (2004: 256) shows that tentative verbs strongly favor the use of perfective infinitives in examples like (6). The constructions in examples (7) and (8) both describe achievements, so the choice of the perfective is natural.

Both the low (0%–0.5%) and middle (20%–23%) part of this distribution is inhabited by verbs that express changes of state that are not particularly associated with modal expressions, such as (bottom:) *poser'eznet* 'become serious' and *posinet* 'turn blue', and (middle:) *lišit'sja* 'lose' and *otkryt'* 'open.'

4.2.7. *Imperfective Past.* According to grammars of Russian, the imperfective past is used primarily to describe durative or repeated actions in the past. This form can additionally express statements of fact, attempted actions, and annulled actions, though these uses are secondary (Pul'kina and Zaxava-Nekrasova 1977: 278; Švedova 1980: 604–611; Wade 1992: 289–293). We thus hypothesize that the outliers will be dominated by verbs that express past actions that are either durative or repeated.

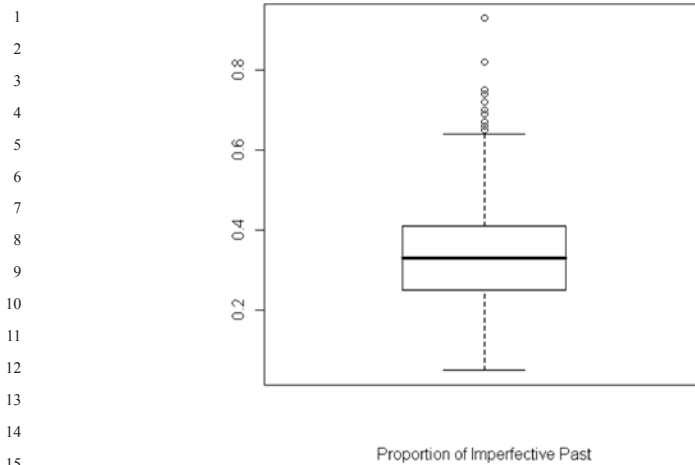


Figure 9. Distribution of imperfective past

Table 7. Imperfective verbs with very high incidence of past tense forms

verb	gloss	raw freq	% freq
<i>slyxat'</i> (<i>slyxal</i>)	'hear'	1161	93%
<i>slyt'</i> (<i>slyl</i>)	'have a reputation for'	212	72%
<i>prosiživat'</i> (<i>prosižival</i>)	'sit up repeatedly'	123	67%
<i>proxoživat'sja</i> (<i>proxoživalsja</i>)	'go for strolls'	207	69%
<i>belet'</i> (<i>belel</i>)	'show white'	366	70%
<i>mračnet'</i> (<i>mračnel</i>)	'show dark, glower'	99	75%
<i>černet'</i> (<i>černel</i>)	'show black'	348	75%
<i>svešivat'sja</i> (<i>svešivalsja</i>)	'hang, dangle'	105	74%
<i>nadvigat'sja</i> (<i>nadvigalsja</i>)	'be approaching'	260	66%
<i>pomyšljat'</i> (<i>pomyšljal</i>)	'think, dream of'	189	69%
<i>unimat'sja</i> (<i>unimalsja</i>)	'be stoppable'	381	82%
<i>ščurit'sja</i> (<i>ščurilsja</i>)	'squint'	196	67%
<i>otšučivat'sja</i> (<i>otšučivalsja</i>)	'make joking replies'	80	74%

A variety of morphological, lexical and constructional factors contribute to the behavior of the outliers representing the imperfective past tense. The verb with by far the highest relative frequency in this group is *slyxal* 'heard', which, as we saw in Section 4.2.3, lacks non-past forms. Its use is largely restricted to the past and infinitive due to its morphologically defective paradigm. Furthermore, both *slyxal* 'heard' and *slyl* 'had the reputation of being' serve as evidentials, which are typologically associated with the past tense (Aikhenvald 2003).

1 Most of the verbs on this list probably have larger-than-normal frequency in
 2 the past paradigm partly because they lack imperative forms altogether.
 3 This includes *prosižival* ‘sat up repeatedly’, *proxoživalsja* ‘went for strolls’,
 4 *belel* ‘showed white’, *černel* ‘showed black’, *slyxal* ‘heard’, *slyl* ‘had the reputa-
 5 tion of being’, *ne unimalsja* ‘was unstoppable’, *nadvigalsja* ‘was approach-
 6 ing’, *mračnel* ‘showed dark, glowered’, *svešivalsja* ‘hung, dangled’.

7 Two of these verbs are habituals: *prosižival* ‘sat up repeatedly’ and
 8 *proxoživalsja* ‘went for strolls’. Habituals are by definition imperfective and
 9 tend to be in the past because they require observation over a number of often
 10 discontinuous events. Danaher (2003) reports that habituals are strongly asso-
 11 ciated with the past tense in Russian.

12 Narration of observations motivates several verbs. Three verbs (*belel*
 13 ‘showed white’, *černel* ‘showed black’, and *mračnel* ‘showed dark’) are used
 14 to report the visibility of objects that appear either dark or bright to an ob-
 15 server. One verb describes an observed posture: *svešivalsja* ‘hung, dangled’,
 16 which is restricted in the kinds of subjects it can take to items like *bel’e* ‘(just
 17 washed) clothing’ and *nogi* ‘legs’. A further verb is used to report meteorolo-
 18 gical observations, as in *groza nadvigalas* ‘a storm was approaching’. The
 19 reporting of such observations is typically given in the past tense, and since
 20 these verbs describe characteristics rather than unique events, imperfective is
 21 the appropriate aspect.

22 Two verbs, *(ne) pomysljal* ‘(not) thought about, dreamt of’ and *(ne) unimalsja*
 23 ‘there was no stopping X’ are strongly associated with the use of negation to
 24 make categorical statements. These verbs instantiate the acknowledged rela-
 25 tionship between negation and imperfective aspect (cf. Janda 2004 and refer-
 26 ences therein). Past tense is prioritized because these verbs describe an expecta-
 27 tion that was not fulfilled over a period of time.

28 Finally there are some extended behaviors that are observed in the course of
 29 accompanying dialog: *ščurilsja* ‘squinted’, *otšučivalsja* ‘made joking replies’,
 30 *mračnel* ‘glowered’.

31 At the bottom of this distribution (below 10%) we find verbs that are either
 32 gnomic (as in Section 4.2.3) like *javljalsja* ‘was’ and *kasalsja* ‘concerned’ or
 33 are found mostly in the imperative form like *proščalsja* ‘was saying farewell’.

34
 35 4.2.8. *Perfective past.* Despite its high overall frequency, the scholarly
 36 literature has little to say about the perfective past other than that it is used to
 37 describe single completed events (Pul’kina and Zaxava-Nekrasova 1977: 279;
 38 Švedova 1980: 604; Wade 1992: 289). It is hard on this basis to construct much
 39 in the way of a specific hypothesis.

40 For this group, the median and variance are such that ± 1.5 times the inter-
 41 quartile range covers the entire spectrum of possibilities, from 0% to 100%, so
 42 there are no outliers.

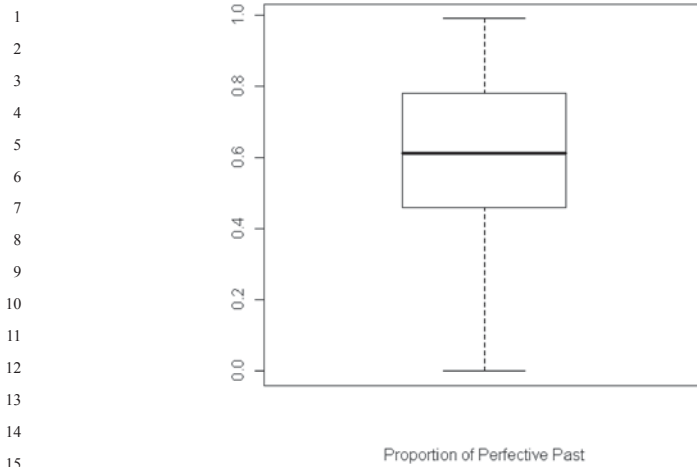


Figure 10. *Distribution of perfective past*

5. Conclusions

One challenge for linguistic analysis of corpus data is calibration of the level of granularity. It is technically possible to collect data at a very fine-grained level, but that level may not be the one that is most propitious since it may include factors that are not relevant for the object of study. At the other extreme, the lemma level might collapse too much information, obscuring important structure in the data. Decisions about granularity need to take into account both the linguistic object of study and specific facts about the language in question. Languages vary greatly in terms of the complexity of their morphologies, as well as to what extent various linguistic categories interact with those morphologies. It is necessary to target precisely the level of granularity at which the interaction between linguistic category and morphology (or other formal structure) is most concentrated.

The findings in this article argue for the subparadigm as the appropriate level of granularity for corpus data on TAM categories in Russian. The subparadigm is the level at which the major verbal categories are realized (tense, finiteness, voice). This level also eliminates categories that are presumably not relevant to TAM, such as person, number, gender, and case. The subparadigm gives us valuable insights into both the overall behavior of aspect and the lexical classes that are most driven by the interaction of aspect with tense and mood.

A database of nearly six million uses of forms representing verb pairs derived via prefixation (p-partners) as opposed to suffixation (s-partners) sheds

1 new light on a long-standing debate in Russian linguistics. According to the
 2 traditional hypothesis both types of derivation lead to aspectual pairs, whereas
 3 according to the Isačenko hypothesis aspectual pairs are created only via suf-
 4 fixation. Our data finds no appreciable difference in the behavior of the two
 5 kinds of partners, thus supporting the traditional hypothesis. Given these find-
 6 ings, it makes sense to ask why Isačenko suggested that there should be a dif-
 7 ference between p- and s-partners in the first place. The reason is that Isačenko
 8 (1960: 130–175) was opposed to the traditional claim that the prefixes in the
 9 p-partners were semantically “empty”. Isačenko made his protests with good
 10 reason, insisting that the prefixes must contribute meaning since the same
 11 prefixes are uncontroversially non-empty in the formation of Specialized and
 12 Complex Act Perfectives. Thus Isačenko reasoned that the p-partner relation-
 13 ship was not “purely aspectual” since it involved a lexical contribution from
 14 the prefix. However, there is a third logical possibility that can reconcile the
 15 traditional hypothesis with the Isačenko hypothesis, namely that the prefix,
 16 while retaining its lexical meaning, overlaps in meaning with the base verb to
 17 the extent that its meaning does not significantly change the meaning of the
 18 prefixed verb beyond signalling perfectivity. This third option, originally pro-
 19 posed by Vey (1952) and van Schooneveld (1958) has received new empirical
 20 support from Janda and Nessel (2010), and is also compatible with our findings.

21 The possibility that the meanings of the prefix and verb overlap and are thus
 22 co-selected also finds support from corpus studies of lexical semantics. The
 23 prefix-verb combination in a p-partner relationship can be likened to a colloca-
 24 tion. As Stubbs (2001: 63) points out, collocations often involve forms that
 25 “share” semantic features, as in English phrases such as *physical assault*,
 26 where the adjective *physical* “adds little to the meanings of the noun, but
 27 merely emphasizes or focuses on an expected feature”. Stubbs laments that
 28 linguists seem to lack a standard term for this phenomenon, which is often
 29 referred to as “bleaching” or “elimination”, terms that are parallel to the tradi-
 30 tional use of the term “empty prefix” (*pustaja pristavka*) in Russian linguistics.

31 The database of verb forms was probed for outliers: lexical items that ex-
 32 ceeded ± 1.5 times the interquartile range in their representation in the various
 33 subparadigms. The findings here are highly relevant to ongoing debates on the
 34 interrelations of lexical meaning with tense, mood, and aspect in Russian. Our
 35 data support some scholarship in this area, challenge other works, and suggest
 36 some new areas for further research.

37 Outliers among imperfective imperatives confirm Šatunovskij’s (2002, 2009)
 38 introspective analysis, but also extend the list of polite injunctions for “scripted”
 39 behaviors that typify this intersection of mood and aspect to include requests
 40 for assistance and kind wishes. The examples of rude forms give new evidence
 41 of what kinds of actions are included here. Additionally we find a group of
 42 imperfective imperatives that are neither polite nor rude, but simply familiar.

1 This latter group has not been the subject of previous research. Perfective im-
 2 peratives present a similarly large and revealing group of outlier verbs. Whereas
 3 previous research has focused on rude and neutral uses, we can detail which
 4 contexts call for neutral perfective imperatives, and we also find that there
 5 are some uses that are specifically polite. In addition, we find a parallel to En-
 6 glish (Stefanowitsch and Gries 2003) in the use of imperatives for attention-
 7 directing.

8 The main driving force for outliers among imperfective non-past forms is
 9 apparently gnomic reference, which is a bit surprising given the fact that the
 10 ongoing-durative meaning of the imperfective is usually considered the most
 11 prototypical use. Perfective non-past forms appear to be motivated by various
 12 kinds of predictions, among them predictions of improvements and problems,
 13 as well as threats and promises. In discourse the perfective non-past also serves
 14 a performative function.

15 Due to the lack of modal verbs in Russian (cf. Divjak 2004), modal expres-
 16 sions rely on a variety of constructions containing infinitives, which can be
 17 either imperfective or perfective. Scholars have presented different proposals
 18 concerning the role of aspect in such constructions, but our data supports the
 19 hypothesis that imperfective infinitives are used primarily for expressing
 20 generic circumstances, as opposed to perfective infinitives which are used for
 21 specific situations, where they can express either circumstances or physical
 22 necessity/capacity. Perfective infinitives participate in a number of other con-
 23 structions, including those containing tentative verbs and adverbs describing
 24 the difficulty or importance of an achievement.

25 Only imperfective verbs surface as outliers in the past subparadigm, and
 26 these are associated with evidentials, habituals and the narration of observations.

27 All outlier groups exhibit some lexical items that are strongly metaphorical
 28 and/or appear in fixed idiomatic phrases, and many of these items are strongly
 29 associated with certain discourse situations.

30 These results are valuable both for their linguistic insights and for their
 31 potential in language teaching, where instruction can be tailored to target the
 32 forms given verbs are most likely to appear in.

33
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36 37 38 **Appendix A: Imperfective imperative**

39	<i>bljusti</i>	<i>bljudi(te)</i>	‘observe (the laws); take 40 care (of yourself)’	21	10%	0.71
41	<i>bojat’sja</i>	<i>boj(te)s’</i>	‘be afraid’	1690	8%	0.69
42	<i>brosat’</i>	<i>brosaj(te)</i>	‘throw; stop doing that’	361	9%	0.66

1	<i>vnimat'</i>	<i>vnimaj(te)</i>	'pay attention'	36	9%	0.67
2	<i>volnovat'sja</i>	<i>ne volnujsja(tes')</i>	'don't be nervous'	1039	28%	0.54
	<i>vstavat'</i>	<i>vstavaj(te)</i>	'stand up'	702	14%	0.80
3	<i>vstrevat'</i>	<i>ne vstrevaj(te)</i>	'don't butt in'	19	16%	0.89
4	<i>vybirat'</i>	<i>vybiraj(te)</i>	'choose'	473	9%	0.52
5	<i>vydumyvat'</i>	<i>ne vydumyvaj(te)</i>	'don't invent excuses'	70	12%	0.74
6	<i>vyzdoravlivat'</i>	<i>vyzdoravlivaj(te)</i>	'get well'	62	27%	0.56
7	<i>vykladyvat'</i>	<i>vykladyvaj(te)</i>	'tell'	140	23%	0.76
	<i>vyključat'</i>	<i>vyključaj(te)</i>	'turn off'	33	9%	0.58
8	<i>vykručivat'sja</i>	<i>vykručivajsja(tes')</i>	'slip out'	14	8%	0.57
9	<i>vyručat'</i>	<i>vyručaj(te)</i>	'help; try to help me'	80	14%	0.76
10	<i>vysovyvat'sja</i>	<i>ne vysovyvajsja(tes')</i>	'don't make yourself out to be better than you are'	51	11%	0.78
11						
12	<i>vysylat'</i>	<i>vysylaj(te)</i>	'send'	32	10%	0.25
	<i>gljadet'</i>	<i>gljadi(te)</i>	'look'	1260	16%	0.83
13	<i>gresti</i>	<i>grebi(te)</i>	'row; get out of here'	57	11%	0.82
14	<i>gruzit'sja</i>	<i>gruzis'(tes')</i>	'embark; worry'	17	11%	0.82
15	<i>davat'</i>	<i>davaj(te)</i>	'give; 'let's do smth.'	4964	15%	0.73
16	<i>dogovarivat'</i>	<i>dogovarivaj(te)</i>	'finish; speak'	32	24%	0.53
17	<i>doedat'</i>	<i>doedaj(te)</i>	'finish eating'	18	13%	0.72
	<i>žat'</i>	<i>žmi(te)</i>	'squeeze; hurry up'	125	12%	0.84
18	<i>zabirat'</i>	<i>zabiraj(te)</i>	'take'	259	15%	0.68
19	<i>zabyvat'</i>	<i>ne zabyvaj(te)</i>	'don't forget'	690	14%	0.43
20	<i>zaezžat'</i>	<i>zaezžaj(te)</i>	'call in on the way'	42	11%	0.48
21	<i>zakurivat'</i>	<i>zakurivaj(te)</i>	'smoke'	26	9%	0.65
22	<i>zakusyvat'</i>	<i>zakusyvaj(te)</i>	'eat chasers'	55	11%	0.76
	<i>zalezat'</i>	<i>zalezaj(te)</i>	'get into (the car)'	56	14%	0.66
23	<i>zapasat'sja</i>	<i>zapasajsja(tes')</i>	'take'	11	11%	0.09
24	<i>zapevat'</i>	<i>zapevaj(te)</i>	'start singing'	16	12%	0.75
25	<i>zapisyvat'</i>	<i>zapisyvaj(te)</i>	'write down'	173	8%	0.42
26	<i>zapominat'</i>	<i>zapominaj(te)</i>	'remember'	93	13%	0.69
27	<i>zaprjagat'</i>	<i>zaprjagaj(te)</i>	'harness; let's get started'	18	13%	0.78
	<i>zvonit'</i>	<i>zvoni(te)</i>	'ring'	794	9%	0.43
28	<i>idti</i>	<i>idi(te)</i>	'go; come'	6507	8%	0.69
29	<i>izvinjat'</i>	<i>izvinjaj(te)</i>	'excuse'	62	48%	0.18
30	<i>končat'</i>	<i>končaj(te)</i>	'stop'	362	25%	0.82
31	<i>lenit'sja</i>	<i>ne lenis'(tes')</i>	'don't be lazy'	32	15%	0.75
32	<i>ložit'sja</i>	<i>ložis'(tes')</i>	'lie down'	544	18%	0.77
	<i>lopaj'</i>	<i>lopaj(te)</i>	'eat up'	14	11%	0.79
33	<i>nagovarivat'</i>	<i>ne nagovarivaj(te)</i>	'don't slander'	9	8%	0.67
34	<i>nakručivat'</i>	<i>ne nakručivaj(te)</i>	'don't exaggerate'	18	11%	0.44
35	<i>nalivat'</i>	<i>nalivaj(te)</i>	'fill (with wine)'	163	17%	0.74
36	<i>naslaždat'sja</i>	<i>naslaždajsja(tes')</i>	'enjoy'	99	9%	0.39
37	<i>obižat'</i>	<i>ne obižaj(te)</i>	'don't offend'	104	9%	0.55
	<i>obižat'sja</i>	<i>ne obižajsja(tes')</i>	'don't be offended'	460	25%	0.58
38	<i>obogaščat'sja</i>	<i>obogaščajsja(tes')</i>	'be prosperous'	24	17%	0.04
39	<i>obraščat'</i>	<i>obraščaj(te)</i>	'mind'	375	9%	0.45
40	<i>ogorčat'sja</i>	<i>ne ogorčajsja(tes')</i>	'don't get upset'	123	29%	0.41
41	<i>odevat'sja</i>	<i>odevajsja(tes')</i>	'get dressed'	176	11%	0.67
42	<i>otvalivat'</i>	<i>otvalivaj(te)</i>	'get out of here'	22	19%	0.95

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1	<i>otvlekat'sja</i>	<i>ne otvlekajsja(tes')</i>	'don't distract'	66	12%	0.61
2	<i>otvorjat'</i>	<i>otvorjaj(te)</i>	'open (the gate)'	18	18%	0.89
	<i>otpravljat'sja</i>	<i>otpravljajsja(tes')</i>	'go'	169	8%	0.45
3	<i>otčaiivat'sja</i>	<i>ne otčaiivajsja(tes')</i>	'don't despair'	81	37%	0.41
4	<i>perebivat'</i>	<i>ne perebivaj(te)</i>	'don't interrupt'	139	18%	0.65
5	<i>peredergivat'</i>	<i>ne peredergivaj(te)</i>	'don't distort the facts'	18	15%	0.89
6	<i>podavat'</i>	<i>podavaj(te)</i>	'bring'	295	9%	0.78
7	<i>podključat'</i>	<i>podključaj(te)</i>	'link up'	14	8%	0.43
	<i>podsaživat'sja</i>	<i>podsaživajsja(tes')</i>	'take a seat (near us)'	16	12%	0.31
8	<i>podyxat'</i>	<i>podyxaj(te)</i>	'kick the bucket'	18	13%	0.72
9	<i>pozorit'</i>	<i>ne pozor'(te)</i>	'don't dishonor (self or parents)'	26	13%	0.73
10						
11	<i>pominat'</i>	<i>pominaj(te)</i>	'mention; bear no ill will; vanish into thin air'	117	21%	0.79
12	<i>popravljat'sja</i>	<i>popravljajsja(tes')</i>	'get well'	69	28%	0.59
13	<i>prenebregat'</i>	<i>ne prenebregaj(te)</i>	'neglect'	32	8%	0.13
14	<i>pridirat'sja</i>	<i>ne pridirajsja(tes')</i>	'don't nag; don't pick on'	23	9%	0.57
15	<i>priezzat'</i>	<i>priezzaj(te)</i>	'come'	899	13%	0.53
16	<i>prikidyvat'sja</i>	<i>ne prikidyvajsja(tes')</i>	'don't pretend to be smth. you aren't'	39	13%	0.87
17	<i>prisoedinjat'sja</i>	<i>prisoedinjajsja(tes')</i>	'come join us at the table'	90	14%	0.42
18	<i>pristupat'</i>	<i>pristupaj(te)</i>	'get busy'	94	12%	0.37
19	<i>prisylat'</i>	<i>prisylaj(te)</i>	'send'	119	14%	0.19
20	<i>pritorjat'sja</i>	<i>ne pritorjajsja(tes')</i>	'don't pretend'	58	8%	0.72
21	<i>provalivat'</i>	<i>provalivaj(te)</i>	'get out of here'	80	64%	0.79
22	<i>proščat'</i>	<i>proščaj(te)</i>	'adieu'	1324	55%	0.68
23	<i>razdevat'sja</i>	<i>razdevajsja(tes')</i>	'take off one's coat'	169	25%	0.53
	<i>razevat'</i>	<i>razevaj(te)</i>	'don't open your mouth'	14	11%	1.00
24	<i>rasstraivat'sja</i>	<i>ne rasstraivajsja(tes')</i>	'don't get upset'	225	38%	0.51
25	<i>robet'</i>	<i>ne robej(te)</i>	'don't be shy'	52	19%	0.81
26	<i>sadit'sja</i>	<i>sadis'(tes')</i>	'sit down'	1854	31%	0.58
27	<i>svalivat'</i>	<i>svalivaj(te)</i>	'get out of here'	24	8%	0.75
28	<i>serdit'sja</i>	<i>ne serdis'(tes')</i>	'don't get annoyed'	351	21%	0.65
	<i>skidyvat'</i>	<i>skidyvaj(te)</i>	'take off (shoes)'	10	8%	0.90
29	<i>slezat'</i>	<i>slezaj(te)</i>	'get out (of the car)'	86	32%	0.84
30	<i>smet'</i>	<i>ne smej(te)</i>	'don't do it'	476	21%	0.80
31	<i>smotret'</i>	<i>smotri(te)</i>	'look'	5881	13%	0.64
32	<i>smučat'sja</i>	<i>ne smučajsja(tes')</i>	'don't be shy'	37	11%	0.46
33	<i>soedinjat'sja</i>	<i>soedinjajsja(tes')</i>	'unite'	58	8%	0.00
	<i>soznavat'sja</i>	<i>soznavajsja(tes')</i>	'tell the truth'	21	8%	0.71
34	<i>spasat'sja</i>	<i>spasajsja(tes')</i>	'save yourself'	80	14%	0.68
35	<i>stesnajat'sja</i>	<i>ne stesnajsja(tes')</i>	'don't hesitate'	299	15%	0.42
36	<i>stupat'</i>	<i>stupaj(te)</i>	'get going'	663	57%	0.67
37	<i>toropit'sja</i>	<i>toropis'(tes')</i>	'be quick'	385	12%	0.53
	<i>ubirat'sja</i>	<i>ubirajsja(tes')</i>	'get out of here'	206	36%	0.55
38	<i>uvol'njat'sja</i>	<i>uvol'njajsja(tes')</i>	'quit'	15	10%	0.87
39	<i>utešat'sja</i>	<i>utešajsja(tes')</i>	'be comforted'	14	10%	0.43
40	<i>xvalit'sja</i>	<i>ne xvalis'(tes')</i>	'don't brag'	16	8%	0.88
41	<i>xvastat'</i>	<i>ne xvastaj(te)</i>	'don't brag'	18	9%	0.39
42	<i>jazvit'</i>	<i>ne jazvi(te)</i>	'don't be sarcastic'	33	26%	1.00

1 **Appendix B: Perfective imperative**

2						
3	<i>blagoslovit'</i>	<i>blagoslovi(te)</i>	'(God) bless you'	124	20%	0.81
4	<i>brosit'</i>	<i>bros'(te)</i>	'stop; leave, enough about it'	1289	12%	0.72
5	<i>vgljadet'sja</i>	<i>vgljadis'(tes')</i>	'look closely'	40	10%	0.43
6	<i>vzvesit'</i>	<i>vzves'(te)</i>	'weigh; consider'	36	10%	0.19
7	<i>vzgljanut'</i>	<i>vzgljani(te)</i>	'look'	428	9%	0.39
8	<i>vlit'</i>	<i>vlej(te)</i>	'pour in'	23	8%	0.43
9	<i>voobrazit'</i>	<i>voobrazi(te)</i>	'imagine'	183	18%	0.35
10	<i>vskipjati'</i>	<i>vskipjati(te)</i>	'boil'	15	12%	0.40
11	<i>vslušat'sja</i>	<i>vslušajsja(tes')</i>	'listen'	39	25%	0.33
12	<i>vsmotret'sja</i>	<i>vsmotris'(tes')</i>	'look closely'	22	8%	0.09
13	<i>vyklučit'</i>	<i>vykluči(te)</i>	'turn off'	112	10%	0.64
14	<i>vysušit'</i>	<i>vysuši(te)</i>	'dry up'	17	9%	0.65
15	<i>dat'</i>	<i>daj(te)</i>	'let'	7747	15%	0.68
16	<i>dopustit'</i>	<i>dopusti(te)</i>	'suppose'	3006	50%	0.01
17	<i>zabyt'</i>	<i>(ne) zabud'(te)</i>	'don't forget'	1413	9%	0.47
18	<i>zavalit'sja</i>	<i>zavalis'(tes')</i>	'be toppled'	40	9%	0.98
19	<i>zavarit'</i>	<i>zavari(te)</i>	'brew'	35	11%	0.40
20	<i>zakryt'</i>	<i>zakroj(te)</i>	'close'	438	8%	0.53
21	<i>zalit'</i>	<i>zalej(te)</i>	'fill up'	130	12%	0.12
22	<i>zalit'sja</i>	<i>zalejsja(tes')</i>	'be poured'	28	11%	1.00
23	<i>zapastis'</i>	<i>zapasis'(tes')</i>	'don't forget to take smth. with you'	21	8%	0.14
24	<i>zapisat'</i>	<i>zapiši(te)</i>	'write down'	285	9%	0.39
25	<i>zapomnit'</i>	<i>zapomni(te)</i>	'you must remember'	804	20%	0.60
26	<i>izbavit'</i>	<i>izbav'(te), izbavi</i>	'(God) forfend'	156	19%	0.86
27	<i>izvinit'</i>	<i>izvini(te)</i>	'forgive'	5367	97%	0.30
28	<i>nalit'</i>	<i>nalej(te)</i>	'pour'	313	14%	0.67
29	<i>napomnit'</i>	<i>napomni(te)</i>	'remind'	965	18%	0.03
30	<i>naprjač'</i>	<i>naprjagi(te)</i>	'tense; use your brain'	39	16%	0.54
31	<i>nateret'</i>	<i>natri(te)</i>	'rub'	20	12%	0.55
32	<i>načertit'</i>	<i>nacherti(te)</i>	'draw'	14	11%	0.36
33	<i>obratit'</i>	<i>obрати(te) (vnimanie)</i>	'notice'	900	16%	0.13
34	<i>obyskat'</i>	<i>obyšči(te)</i>	'search smb.'	22	8%	0.41
35	<i>ostavit'</i>	<i>ostav'(te)</i>	'stop; leave smb. alone'	1758	13%	0.39
36	<i>otvalit'</i>	<i>otvali(te)</i>	'push off; get out of here'	79	22%	0.87
37	<i>otvorit'</i>	<i>otvori(te)</i>	'open (the gate)'	36	10%	0.50
38	<i>otdoxnut'</i>	<i>otdoxni(te)</i>	'take a rest'	222	9%	0.66
39	<i>otmetit'</i>	<i>otmet'(te)</i>	'note'	884	9%	0.01
40	<i>otпустit'</i>	<i>otпусти(te)</i>	'let smb. go; forgive'	544	14%	0.57
41	<i>otstat'</i>	<i>otstan'(te)</i>	'get out of here'	325	23%	0.75
42	<i>oxladit'</i>	<i>oxladi(te)</i>	'chill'	25	9%	0.16
43	<i>očistit'</i>	<i>očist'(ite)</i>	'clean'	77	9%	0.35
44	<i>perestat'</i>	<i>perestati'(te)</i>	'stop'	891	10%	0.68
45	<i>perečislit'</i>	<i>perečisli(te)</i>	'enumerate'	100	9%	0.06

1	<i>pobojat'sja</i>	<i>pobojsja(tes')</i>	'do you not fear God'	54	8%	0.35
2	<i>poverit'</i>	<i>pover'(te)</i>	'believe'	1475	18%	0.29
	<i>pogljadet'</i>	<i>pogljadi(te)</i>	'look'	406	15%	0.61
3	<i>poguljat'</i>	<i>poguljaj(te)</i>	'take a walk'	109	10%	0.40
4	<i>podogret'</i>	<i>podogrej(te)</i>	'warm up'	10	8%	0.20
5	<i>podskazat'</i>	<i>podskazhi(te)</i>	'tell'	324	16%	0.10
6	<i>podumat'</i>	<i>podumaj(te)</i>	'think of'	1898	8%	0.43
7	<i>požalovat'</i>	<i>požaluj(te)</i>	'come; perhaps'	170	21%	0.21
	<i>pozvat'</i>	<i>pozovi(te)</i>	'call'	320	8%	0.54
8	<i>pozvolit'</i>	<i>pozvol'(te)</i>	'let'	1503	11%	0.11
9	<i>pokljast'sja</i>	<i>pokljanis(tes')</i>	'take an oath; swear'	64	10%	0.63
10	<i>pokurit'</i>	<i>pokuri(te)</i>	'smoke'	104	14%	0.28
11	<i>polenit'sja</i>	<i>ne polenis(tes')</i>	'don't be lazy'	46	15%	0.22
12	<i>polit'</i>	<i>polej(te)</i>	'pour (upon)'	23	8%	0.22
13	<i>poljubovat'sja</i>	<i>poljubujsa(tes')</i>	'look at smth.'	140	24%	0.46
	<i>pomilovat'</i>	<i>pomiluj(te)</i>	'for goodness' sake'	441	76%	0.55
14	<i>pomolit'sja</i>	<i>pomolis(tes')</i>	'pray'	59	16%	0.71
15	<i>pomoč'</i>	<i>pomogi(te)</i>	'help'	1600	8%	0.45
16	<i>pomjanut'</i>	<i>pomjani(te)</i>	'mention; mark my words'	123	23%	0.50
17	<i>ponjuxat'</i>	<i>ponjuxaj(te)</i>	'sniff'	47	10%	0.57
18	<i>posvetit'</i>	<i>posveti(te)</i>	'hold a light'	22	20%	0.73
19	<i>posmotret'</i>	<i>posmotri(te)</i>	'look'	4251	16%	0.42
20	<i>postarat'sja</i>	<i>postarajsja(tes')</i>	'try'	899	23%	0.32
21	<i>postoronit'sja</i>	<i>postoronis(tes')</i>	'step aside'	35	18%	0.89
22	<i>postojat'</i>	<i>postoj(te)</i>	'wait'	858	33%	0.66
	<i>poterpet'</i>	<i>poterpi(te)</i>	'be patient'	351	24%	0.68
23	<i>potoropit'sja</i>	<i>potoropis(tes')</i>	'hurry up'	55	13%	0.49
24	<i>poščadit'</i>	<i>poščadi(te)</i>	'spare one's life'	66	22%	0.52
25	<i>poščupat'</i>	<i>poščupaj(te)</i>	'touch'	28	8%	0.75
26	<i>predstavit'</i>	<i>predstav'(te)</i>	'imagine'	2852	21%	0.24
27	<i>prekratit'</i>	<i>prekrati(te)</i>	'stop it'	518	16%	0.50
28	<i>prigljadet'sja</i>	<i>prigljadis(tes')</i>	'look closely'	59	15%	0.47
29	<i>prideržat'</i>	<i>priderži(te)</i>	'restrain; curb (your dog)'	34	11%	0.79
30	<i>prikinut'</i>	<i>prikin'(te)</i>	'go figure'	240	31%	0.77
31	<i>prilaskat'</i>	<i>prilaskaj(te)</i>	'caress'	13	8%	0.62
32	<i>prislušat'sja</i>	<i>prislušajsja(tes')</i>	'listen'	96	8%	0.25
	<i>prismotret'</i>	<i>prismotris(tes')</i>	'take care of smb.'	27	19%	0.63
33	<i>prismotret'sja</i>	<i>prismotris(tes')</i>	'regard smb. closely'	107	19%	0.28
34	<i>prišit'</i>	<i>prišej(te)</i>	'sew (to)'	43	12%	0.72
35	<i>proverit'</i>	<i>prover'(te)</i>	'check'	444	9%	0.36
36	<i>prokonsul'tirovat'sja</i>	<i>prokonsul'tirujsja(tes')</i>	'consult'	29	15%	0.14
37	<i>promyt'</i>	<i>promoj(te)</i>	'wash out'	44	12%	0.07
38	<i>prostit'</i>	<i>prosti(te)</i>	'excuse'	5474	65%	0.40
39	<i>proteret'</i>	<i>protri(te)</i>	'wipe; take a better look'	52	11%	0.52
40	<i>pustit'</i>	<i>pusti(te)</i>	'let smb. go'	475	12%	0.64
41	<i>razbavit'</i>	<i>razbav'(te)</i>	'dilute'	10	10%	0.30
42	<i>razvjazat'</i>	<i>razvjaži(te)</i>	'untie'	56	9%	0.57

1	<i>razlit'</i>	<i>razlej(te)</i>	'pour out'	35	8%	0.74
2	<i>razogret'</i>	<i>razogrej(te)</i>	'warm up'	14	9%	0.57
	<i>razodrat'</i>	<i>razderi(te)</i>	'tear; damn'	10	9%	1.00
3	<i>razrešit'</i>	<i>razreši(te)</i>	'allow'	797	18%	0.09
4	<i>raspisat'sja</i>	<i>raspišis'(tes')</i>	'sign'	109	16%	0.23
5	<i>rasskazat'</i>	<i>rasskaži(te)</i>	'tell'	1915	10%	0.45
6	<i>rasslabit'</i>	<i>rasslab'(te)</i>	'relax (tight muscles)'	43	31%	0.21
7	<i>rasslabit'sja</i>	<i>rasslab'sja(tes')</i>	'relax'	168	15%	0.52
8	<i>rassmotret'</i>	<i>rassmotri(te)</i>	'see (figure x)'	849	24%	0.01
9	<i>rastvorit'</i>	<i>rastvori(te)</i>	'dissolve'	18	10%	0.33
10	<i>rasteret'</i>	<i>razotri(te)</i>	'rub'	29	12%	0.38
11	<i>slit'</i>	<i>slej(te)</i>	'pour off'	26	9%	0.15
12	<i>smazat'</i>	<i>smaž'(te)</i>	'smear (the door)'	29	9%	0.24
	<i>soglasit'sja</i>	<i>soglasis'(tes')</i>	'you must admit'	1004	8%	0.16
13	<i>sognut'</i>	<i>sogni(te)</i>	'bend'	33	13%	0.27
14	<i>sogret'</i>	<i>sogrej(te)</i>	'warm'	22	8%	0.77
15	<i>spasti</i>	<i>spasi(te)</i>	'save'	504	8%	0.63
16	<i>stancevat'</i>	<i>stancuj(te)</i>	'dance'	17	11%	0.71
17	<i>ubrat'</i>	<i>uberi(te)</i>	'hands off; get this out of here'	508	14%	0.50
18	<i>uvolit'</i>	<i>uvol'(te)</i>	'stop, I don't want to speak about it'	136	12%	0.12
19						
20	<i>ugadat'</i>	<i>ugadaj(te)</i>	'guess'	167	10%	0.67
21	<i>umnožit'</i>	<i>umnož'(te)</i>	'multiply'	20	11%	0.40
22	<i>umyt'sja</i>	<i>umoj'sja(tes')</i>	'wash up'	48	10%	0.81
	<i>unjat'sja</i>	<i>ujmis'(tes')</i>	'keep still'	59	35%	0.76
23	<i>uspokoit'sja</i>	<i>uspokojsja(tes')</i>	'calm down'	848	24%	0.68
24	<i>utešit'sja</i>	<i>uteš'sja(tes')</i>	'be comforted'	11	8%	0.82
25	<i>učest'</i>	<i>učiti(te)</i>	'keep in mind'	735	24%	0.51
26						
27						

Appendix C: Perfective non-past

29	<i>vleč'</i>	<i>vlečet</i>	'entail'	1555	85%	
30	<i>vozrasti</i>	<i>vozrastet</i>	'grow'	490	24%	
31	<i>vozrodit'sja</i>	<i>vozrodi'sja</i>	'revive'	75	27%	
32	<i>vosstanovit'sja</i>	<i>vosstanovitsja</i>	'be restored'	81	25%	
33	<i>vygnat'</i>	<i>vygonit</i>	'drive out, expel'	428	24%	
34	<i>vyzdorovet'</i>	<i>vyzdoroveet</i>	'get well'	110	28%	
	<i>vykrutit'sja</i>	<i>vykrutitsja</i>	'get oneself out of trouble'	66	29%	
35	<i>vylit'sja</i>	<i>vyl'etsja</i>	'flow out'	132	27%	
36	<i>vymeret'</i>	<i>vymret</i>	'die out'	96	27%	
37	<i>vysoxnut'</i>	<i>vysoxnet</i>	'dry up'	132	29%	
38	<i>vyjasnjat'sja</i>	<i>vyjasnjaetsja</i>	'be explained'	805	89%	
39	<i>dožit'</i>	<i>doživet</i>	'live until, come to'	369	26%	
	<i>dotjanut'</i>	<i>dotjanet</i>	'hold out until'	103	25%	
40	<i>zagnut'sja</i>	<i>zagnetsja</i>	'die'	59	49%	
41	<i>zamerznut'</i>	<i>zamerznet</i>	'freeze to death'	232	25%	
42	<i>zapolnit'sja</i>	<i>zapolnitsja</i>	'fill up'	35	29%	

1	<i>zatrudnit'</i>	<i>zatrudnit</i>	'make things difficult'	83	50%
2	<i>zatrudnjat'sja</i>	<i>zatrudnjaetsja</i>	'be made difficult'	275	86%
	<i>isčerpyvat'</i>	<i>isčerpyvaet</i>	'exhaust'	100	89%
3	<i>kasat'sja</i>	<i>kasaetsja</i>	'concern'	9719	87%
4	<i>naladit'sja</i>	<i>naladitsja</i>	'work out well'	193	40%
5	<i>obojtis'</i>	<i>obojdetsja</i>	'I'll manage without'	1642	32%
6	<i>obslužit'</i>	<i>obslužit</i>	'serve'	40	26%
7	<i>objazyvat'sja</i>	<i>objazyvaetsja</i>	'be obliged to'	480	92%
	<i>ogovorit'sja</i>	<i>ogovorjus': . . .</i>	'make a reservation'	112	33%
8	<i>ograničit'sja</i>	<i>ograničus' liš' tem . . .</i>	'not go beyond'	305	25%
9	<i>okazyvat'sja</i>	<i>okazyvaetsja</i>	'turn out to be'	10869	85%
10	<i>okupit'sja</i>	<i>okupitsja</i>	'will be rewarded, will pay off'	130	73%
11					
12	<i>osmelit'sja</i>	<i>osmeljus' zametit' . . .</i>	'dare, take the liberty of'	239	35%
	<i>otvalit'sja</i>	<i>otvalitsja</i>	'fall off'	86	26%
13	<i>otpugnut'</i>	<i>otpugnet</i>	'frighten off'	34	27%
14	<i>otrazit'sja</i>	<i>otrazitsja</i>	'be reflected'	372	27%
15	<i>oštrafóvat'</i>	<i>oštrafóvet</i>	'fine'	41	25%
16	<i>pereseč'sja</i>	<i>peresečetsja</i>	'intersect'	54	27%
17	<i>pobožat'sja</i>	<i>ne pobožus' skazat' . . .</i>	'don't fear'	168	24%
	<i>povleč'</i>	<i>povlečēt</i>	'entail'	181	25%
18	<i>povtorit'sja</i>	<i>povtorjus', čto . . .</i>	'repeat'	569	46%
19	<i>povyisit'sja</i>	<i>povyisitsja</i>	'rise'	165	27%
20	<i>podoxnut'</i>	<i>podoxnet</i>	'die'	106	45%
21	<i>podpustit'</i>	<i>podpustit</i>	'allow to approach'	77	33%
22	<i>podrasti</i>	<i>podrastet</i>	'grow a little'	182	32%
	<i>podskazat'</i>	<i>podskazēt</i>	'tell'	549	27%
23	<i>podtverždat'sja</i>	<i>podtverždaetsja</i>	'be confirmed'	677	83%
24	<i>poželat'</i>	<i>vragu ne poželaeš'</i>	'I wouldn't wish it on my worst enemy'	498	24%
25					
26	<i>pozvolit'</i>	<i>pozvolju zametit' . . .</i>	'let oneself'	4491	34%
27	<i>pojti</i>	<i>tak ne pojdet</i>	'that won't work'	12107	24%
	<i>poletet'</i>	<i>poletit</i>	'fly'	623	25%
28	<i>polučit'sja</i>	<i>polučitsja</i>	'turn out'	3539	28%
29	<i>pomeret'</i>	<i>pomret</i>	'die'	479	35%
30	<i>pomestit'sja</i>	<i>pomestitsja</i>	'fit in, find a place'	122	33%
31	<i>pomoč'</i>	<i>pomožet</i>	'help'	4964	26%
32	<i>popravit'sja</i>	<i>popravitsja</i>	'get better, put on weight'	183	26%
	<i>posmet'</i>	<i>posmeju zametit'</i>	'dare'	284	34%
33	<i>posposobstvovat'</i>	<i>posposobstvuēt</i>	'assist'	29	24%
34	<i>postarat'sja</i>	<i>postaraetsja</i>	'try'	1372	35%
35	<i>potrebovat'sja</i>	<i>potrebuetsja</i>	'be necessary'	1385	57%
36	<i>prevysit'</i>	<i>prevysit</i>	'exceed'	256	24%
37	<i>predopredeljat'sja</i>	<i>predopredeljaetsja</i>	'be predetermined'	34	85%
	<i>predstavit'sja</i>	<i>predstavitsja</i>	'arise'	993	37%
38	<i>pridrat'sja</i>	<i>ne prideresh'sja</i>	'won't find fault with'	69	28%
39	<i>prijtis'</i>	<i>pridetsja</i>	'have to'	10292	42%
40	<i>priložit'sja</i>	<i>priložitsja</i>	'put near'	78	27%
41	<i>pripomnit'</i>	<i>pripomnit</i>	'remind'	351	29%
42	<i>prišit'</i>	<i>prišet</i>	'kill, judge unjustly'	90	26%
	<i>prodlit'sja</i>	<i>prodlitsja</i>	'last'	318	67%

1	<i>prodolžit'sja</i>	<i>prodolžitsja</i>	'continue'	229	49%
2	<i>prokljast'</i>	<i>prokljanet</i>	'curse'	58	28%
	<i>prorasti</i>	<i>prorastet</i>	'sprout'	50	25%
3	<i>procitirovat'</i>	<i>procitiruju . . .</i>	'quote'	114	25%
4	<i>razmazat'</i>	<i>razmažet</i>	'spread'	31	26%
5	<i>razobrat'sja</i>	<i>razberetsja</i>	'make sense of'	1393	27%
6	<i>razorit'sja</i>	<i>razoritsja</i>	'go broke'	74	29%
7	<i>razrešit'sja</i>	<i>razrešitsja</i>	'be solved'	82	26%
	<i>razrušit'sja</i>	<i>razrušitsja</i>	'collapse'	45	24%
8	<i>rasterzat'</i>	<i>rasterzaet</i>	'tear to pieces'	37	27%
9	<i>svestis'</i>	<i>svedetsja</i>	'come to something'	54	24%
10	<i>sgnit'</i>	<i>sgniet</i>	'rot; die'	75	33%
11	<i>skazat'sja</i>	<i>skažetsja</i>	'will have an effect'	399	25%
12	<i>slopat'</i>	<i>slopaet</i>	'devour'	41	25%
	<i>sogret'</i>	<i>sogreet</i>	'warm up'	78	27%
13	<i>sožrat'</i>	<i>sožret</i>	'devour'	161	36%
14	<i>spast'</i>	<i>spaset</i>	'save'	89	51%
15	<i>spravit'sja</i>	<i>spravetsja</i>	'cope'	991	27%
16	<i>stancevat'</i>	<i>stancuet</i>	'dance'	40	27%
17	<i>ubyt'</i>	<i>ot tebjja ne ubudet</i>	'nothing is going to happen to you'	63	35%
18	<i>užit'sja</i>	<i>uživetsja</i>	'get on (with someone)'	34	24%
19	<i>ulučšit'sja</i>	<i>ulučšitsja</i>	'improve'	138	24%
20	<i>umen'sit'sja</i>	<i>umen'sitsja</i>	'decrease'	255	24%
21	<i>upravit'sja</i>	<i>upravitsja</i>	'take care of smth.'	159	41%
22	<i>utait'</i>	<i>utait</i>	'conceal'	65	30%
	<i>utešit'sja</i>	<i>utešitsja</i>	'be comforted'	40	28%
23	<i>uxudšit'</i>	<i>uxudšit</i>	'get worse'	38	28%
24	<i>javljat'sja</i>	<i>javljaetsja</i>	'be'	39543	92%

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