“Grammatical Profiles: What Inflectional Forms Tell us about Lexicon and Grammar”
Laura A. Janda and Olga Lyashevskaya

Introduction
What is a Grammatical Profile?
Tense, Aspect and Mood in Russian

2 Studies of TAM in Russian
Study 1: prefixes and suffixes
Are pairs formed via both prefixes and suffixes?
Study 2: TAM and outlier verbs
What verbs are most attracted to TAM combinations?

Conclusion
Perfective vs. imperfective pairs formed with prefixes and suffixes behave the same way
Grammatical “idioms” in interaction of aspect and inflection

Grammatical Profile =
Relative frequency distribution of the inflected forms of a word in a corpus

TAM in Russian
Tense: Past vs. Non-Past (imperfective = present, perfective = future)
Aspect: Imperfective vs. Perfective “paired” verbs (residue of biaspectuals)
Mood: Indicative, Infinitives in modal constructions, Imperative

Study 1: prefixes and suffixes

Major Patterns of aspectual morphology:
Simplex verbs -- nearly all imperfective (delat’ ‘do’)
Prefixed verbs (prefix + simplex) -- nearly all perfective (sdelat’ ‘do’, peredelat’ ‘redo’)
Prefixed and suffixed verbs (prefix + simplex + suffix) -- secondary imperfectives (peredelyvat’ ‘redo’)

p-partners (Natural Perfectives): simplex & prefixed (delat’ ‘do’ & sdelat’ ‘do’)
s-partners (Specialized Perfectives): prefixed & prefixed and suffixed (peredelat’ ‘redo’ & peredelyvat’ ‘redo’)

Traditional Hypothesis: both p-partners and s-partners form aspectual pairs
Isaçenko Hypothesis: only s-partners form aspectual pairs

Table 1: Grammatical profiles of imperfective vs. perfective verbs

<table>
<thead>
<tr>
<th>Pfv_</th>
<th>Imperfective</th>
<th>Perfective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NonPast</td>
<td>Past</td>
</tr>
<tr>
<td>Ipfv_</td>
<td></td>
<td></td>
</tr>
<tr>
<td>both p- &amp; s- partners</td>
<td>1,330,016</td>
<td>915,374</td>
</tr>
<tr>
<td></td>
<td>47.4%</td>
<td>32.6%</td>
</tr>
</tbody>
</table>

Statistically significant: chi-squared = 947756, df = 3, p-value < 2.2e-16
With nearly 6M datapoints, too much statistical power
Effect size moderate/large: Cramer’s V = 0.399
(0.1 = small, 0.3 = moderate, 0.5 = large)

In other words, imperfective verbs behave differently than perfective verbs.
Table 2: Grammatical profiles of p-partners vs. s-partners

<table>
<thead>
<tr>
<th></th>
<th>Ipfv_ NonPast</th>
<th>Ipfv_ Past</th>
<th>Ipfv_ Inf</th>
<th>Ipfv_ Imper</th>
<th>Pfv_ NonPast</th>
<th>Pfv_ Past</th>
<th>Pfv_ Inf</th>
<th>Pfv_ Imper</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-partners</td>
<td>475,893</td>
<td>397,409</td>
<td>195,926</td>
<td>36,427</td>
<td>72,439</td>
<td>317,570</td>
<td>114,460</td>
<td>24,280</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>35.9%</td>
<td>17.7%</td>
<td>3.3%</td>
<td>13.7%</td>
<td>60.1%</td>
<td>21.6%</td>
<td>4.6%</td>
</tr>
<tr>
<td>s-partners</td>
<td>854,123</td>
<td>517,965</td>
<td>286,934</td>
<td>39,290</td>
<td>302,731</td>
<td>1,654,717</td>
<td>573,857</td>
<td>87,229</td>
</tr>
<tr>
<td></td>
<td>50.3%</td>
<td>30.5%</td>
<td>16.9%</td>
<td>2.3%</td>
<td>11.6%</td>
<td>63.2%</td>
<td>21.9%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Imperfectives: chi-squared = 16155.13, df = 3, p-value < 2.2e-16, but Cramer’s V = 0.076, below “small”

Perfectives: chi-squared = 4365.078, df = 3, p-value < 2.2e-16, but Cramer’s V = 0.037, below “small”

In other words, p-partners do not behave differently from s-partners, not in terms of imperfectives, nor in terms of perfectives.

Study 2: outlier verbs

Imperfective imperative “be doing X!”

Hypothesis:
- categorical negation
- politeness
- insistence (rudeness)

Hypothesis confirmed, but other findings too

Over 200 outliers
- Insistence: hearer is hesitant: stupajte ‘get going’, gljajte ‘look’, zabirajte ‘take’
- Insistence: hearer has not behaved properly (connection with negation): provalivaj ‘get out of here’, končaj ‘stop’, ne perebivaj ‘don’t interrupt’, ne prikidyvajsja ‘don’t
pretend to be something you aren’t’, ne peredergivaj ‘don’t distort the facts’, otvalivaj ‘get out of here’

Other findings
• Polite requests: vyrūčajte ‘help’
• Kind wishes: vyzdorivajte ‘get well’
• Conventional construction: davajte ‘let’s/let me’ (posmotrim ‘take a look’, pomogu ‘help’, rasskažu ‘tell’, pokazhu ‘show’, sdelaj ‘do’)
• Idiomatic/culturally anchored: proščaj(te) ‘farewell’, soedinjajtes ‘unite’ (slogan), obogoščajšija ‘be prosperous’ (NEP), zapevaj ‘sing’ (army), ne pominaj lizom/kak zvali ‘bear no ill will/they just vanished’, spasajšija, kto možet ‘every man for himself’, na čužoj karavaj rot ne razvaj ‘don’t take others’ belongings’

Perfective imperative “make X happen!”
Hypothesis
• Rude
• Instructions
• Warnings
Hypothesis confirmed for rude and instructions, but not for warnings, and there are other findings too

Over 300 outliers
• Rude: otstan’ ‘leave me alone’, otpustis’ ‘let me go’, perestan’ ‘stop it’
• Instructions: (cooking) vskipijatite ‘boil’, (exercising) sognite ‘bend’, (official transactions) raspišites’ ‘sign for’, (text instructions) rassmotrite [grafik x] ‘see [figure x]’
• Additional findings
• Polite expressions: izvinite ‘excuse me’, poterpite ‘please be patient’, predstav’te ‘imagine’
• Attention-directing: posmotrite ‘look at’, vslušajtes’ ‘listen to’, ponjuxajte ‘sniff’, ugadajte ‘guess’
• Discourse markers: požaluj ‘perhaps’, razrešite ‘allow’, podskažite ‘prompt, tell’, uvol’te ‘spare’
• Religious: Gospodi pomiluj ‘Lord have mercy’, blagoslov otč ‘Father bless’
• Conventional construction: dajte ‘let me’ (poceluju ‘kiss’, posmotrju ‘take a look’, vzgljanu ‘take a peek’)
• Idioms: xot’ zalejsja/zavalis’ ‘a very large amount’, ne razlej voda ‘really close friends’, čert razderi ‘to hell with it’

Imperfective non-past “is doing X”
Hypothesis
• On-going processes
• Concrete processes with a duration
• Simultaneous processes
• Repeated actions
Hypothesis NOT confirmed – gnomic situations instead

<table>
<thead>
<tr>
<th>verb (3sg)</th>
<th>gloss</th>
<th>raw freq</th>
<th>% freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>javljat’sja (javljajaetsja)</td>
<td>‘be’</td>
<td>39543</td>
<td>92%</td>
</tr>
<tr>
<td>okazyvat’sja (okazyvaetsja)</td>
<td>‘turn out to be’</td>
<td>10869</td>
<td>85%</td>
</tr>
<tr>
<td>podverždat’ sja (podverždaetsja)</td>
<td>‘be confirmed’</td>
<td>677</td>
<td>83%</td>
</tr>
<tr>
<td>vyjasnjať sja (vyjasnjaetsja)</td>
<td>‘be explained’</td>
<td>805</td>
<td>89%</td>
</tr>
<tr>
<td>kasat’ sja (kasaetsja)</td>
<td>‘concern’</td>
<td>9719</td>
<td>87%</td>
</tr>
<tr>
<td>isčerpyvat’ (isčerpyvaet)</td>
<td>‘exhaust’</td>
<td>100</td>
<td>89%</td>
</tr>
<tr>
<td>predopredeljat’ sja (predopredeljaetsja)</td>
<td>‘be predetermined’</td>
<td>34</td>
<td>85%</td>
</tr>
<tr>
<td>objazivat’ sja (objazivaetsja)</td>
<td>‘be obliged to’</td>
<td>480</td>
<td>92%</td>
</tr>
<tr>
<td>zatrudnjať sja (zatrudnjaetsja)</td>
<td>‘be made difficult’</td>
<td>275</td>
<td>86%</td>
</tr>
<tr>
<td>vleč’ (vlečet)</td>
<td>‘entail’</td>
<td>1555</td>
<td>85%</td>
</tr>
</tbody>
</table>
Table 3: Imperfective verbs with very high or low incidence of non-past forms

10+1 outlier verbs (slyxat’ ‘hear’ lacks non-past)

10 used in gnomic constructions:
- diskussija vsegda javljaetsja naibolee produktivnoj formoj naučnogo obsuždenija problemy ‘a discussion is always the most productive form for scholarly debate on an issue’
- dannoe obstojatel’stvo vlečet za soboj negativnye posledstvija ‘this situation entails negative consequences for the clients’
- okazyvaetsja ‘turns out to be’; vyjasnjaetsja, čto ‘it turns out that’; čto kasaetsja ‘as far as X is concerned’; storony objazujutsja ‘the parties are obliged to’; zatrudnjaus’ ovetit’ ‘not sure’

Perfective non-past “will get X done”
Hypothesis
- Predicted actions
- Promised actions
Hypothesis is confirmed, but there are other findings too

84 outlier verbs
- Predictions: prevyšit ‘will exceed’, umen’šitsja ‘will decrease’, prodljaetsja ‘will last’, naładietsja ‘will work out well’, vyzdoroveet ‘will get well’, zatrudnit ‘will make things difficult’, razoříšûsja ‘will go broke’, potrebuetsja ‘will be necessary’, podoljen ‘will die’, pripočet ‘will be necessary’, (ne) obojdetsja ‘will (not) manage (without)’
- Promises: upravitsja ‘will take care of something’, postaraetsja ‘will try’, rasterzaet ‘will tear to pieces’, prokljanet ‘will curse’
- Performatives: osmeljus ‘I will take the liberty of’, procitiruju ‘I quote’
- Idioms: ne pridereš’sja ‘don’t find fault with’, nepridereš’sja ‘I wouldn’t wish it on my worst enemy’

Imperfective infinitive “to be Xing”
2 hypotheses
- Šmelev & Zaliznjak (2006): Imperfective used when action is controllable
- Divjak (2009): Imperfective has generic interpretation
Divjak’s hypothesis is confirmed

<table>
<thead>
<tr>
<th>verb</th>
<th>gloss</th>
<th>raw freq</th>
<th>% freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>plevat’</td>
<td>‘spit’</td>
<td>900</td>
<td>65%</td>
</tr>
<tr>
<td>vvjazyvat’sja</td>
<td>‘get mixed up in’</td>
<td>124</td>
<td>66%</td>
</tr>
<tr>
<td>izyskivat’</td>
<td>‘search out, try to find’</td>
<td>92</td>
<td>64%</td>
</tr>
<tr>
<td>ispravljat’</td>
<td>‘repair, carry out’</td>
<td>283</td>
<td>61%</td>
</tr>
<tr>
<td>peredelyvat’</td>
<td>‘redo, alter’</td>
<td>230</td>
<td>57%</td>
</tr>
<tr>
<td>peresmatrivat’</td>
<td>‘revise, reconsider’</td>
<td>198</td>
<td>66%</td>
</tr>
<tr>
<td>razvivat’</td>
<td>‘develop’</td>
<td>1363</td>
<td>57%</td>
</tr>
<tr>
<td>razmešcat’</td>
<td>‘place, distribute’</td>
<td>272</td>
<td>58%</td>
</tr>
<tr>
<td>raspoznavat’</td>
<td>‘recognize, identify’</td>
<td>113</td>
<td>59%</td>
</tr>
<tr>
<td>sobljudat’</td>
<td>‘observe, conform to’</td>
<td>1013</td>
<td>60%</td>
</tr>
<tr>
<td>soglasovvat’</td>
<td>‘conform to, agree with’</td>
<td>176</td>
<td>63%</td>
</tr>
<tr>
<td>učitivyvat’</td>
<td>‘take into account, bear in mind’</td>
<td>1850</td>
<td>66%</td>
</tr>
</tbody>
</table>

Table 4: Imperfective verbs with very high incidence of infinitive forms

12 outlier verbs
- 1 is idiomatic: mne plevat’ ‘I don’t give a damn’
- Others used in modal constructions
• Our data supports Divjak
• outlier verbs include uncontrollable actions: "vvjazyvat’ja ‘get mixed up in’, raspoznavat’ ‘recognize, identify’, soglasovvat’ ‘conform to, agree with’
• outlier verbs target conformist behavior: sobljudat’ ‘conform to’, peredelyvat’ ‘redo’, ispravljet’ ‘repair’, učityvat’ ‘take into account’

**Perfective infinitive “to get X done”**

2 hypotheses
• Šmelev & Zaliznjak (2006): Perfective used when action is controllable
• Divjak (2009): Perfective has specific interpretation; also used with “tentative verbs”, čtoby ‘in order to’ construction and adverbs describing difficulty/importance of achieving X

Divjak’s hypothesis is confirmed

<table>
<thead>
<tr>
<th>verb</th>
<th>gloss</th>
<th>raw freq</th>
<th>% freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>naplevat’</td>
<td>‘spit’</td>
<td>860</td>
<td>89%</td>
</tr>
<tr>
<td>sovmestit’</td>
<td>‘combine’</td>
<td>385</td>
<td>87%</td>
</tr>
<tr>
<td>predotvratit’</td>
<td>‘prevent’</td>
<td>792</td>
<td>86%</td>
</tr>
<tr>
<td>vossozdat’</td>
<td>‘reconstruct’</td>
<td>248</td>
<td>84%</td>
</tr>
<tr>
<td>pomyslit’</td>
<td>‘contemplate’</td>
<td>129</td>
<td>84%</td>
</tr>
<tr>
<td>sobljusti</td>
<td>‘observe, conform to’</td>
<td>200</td>
<td>84%</td>
</tr>
<tr>
<td>sootnestr’</td>
<td>‘correlate’</td>
<td>118</td>
<td>84%</td>
</tr>
<tr>
<td>vozmeslit’</td>
<td>‘compensate’</td>
<td>304</td>
<td>83%</td>
</tr>
<tr>
<td>vospolnit’</td>
<td>‘fill in’</td>
<td>171</td>
<td>80%</td>
</tr>
<tr>
<td>podrabotat’</td>
<td>‘earn additionally, work up’</td>
<td>91</td>
<td>80%</td>
</tr>
<tr>
<td>srazit’ja</td>
<td>‘fight, join in battle with’</td>
<td>108</td>
<td>80%</td>
</tr>
<tr>
<td>ustranit’</td>
<td>‘remove’</td>
<td>686</td>
<td>80%</td>
</tr>
</tbody>
</table>

Table 5: Perfective verbs with very high incidence of infinitive forms

12 outlier verbs (mne naplevat’ ‘I don’t give a damn’)
• Modal uses for specific situations
• Tentative verbs:
  • Poetomu my povytaemsja vospolnit’ etot probel, opirajas’ na fakty i cifry. ‘That is why we are trying to fill in that gap, relying on facts and figures.’
  • Čtoby ‘in order to’ construction:
    • Posle zanjatija možno vypit’ vody, čtoby vospolnit’ ee poterju. ‘After working one can drink some water in order to make up for its loss.’
• Adverbs describing difficulty/importance
  • Fruktami istinnyj deficit kalija vospolnit’ očen’ tjaželo, praktičeski nevozmožno. ‘It is very difficult, practically impossible, to make up for a real calcium deficit by [eating] fruit.’

**Imperfective past “was X-ing”**

Hypothesis
• Durative past actions
• Repeated past actions

Hypothesis is confirmed, but there are other findings too

<table>
<thead>
<tr>
<th>verb</th>
<th>gloss</th>
<th>raw freq</th>
<th>% freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>slyxat’ (slyxal)</td>
<td>‘hear’</td>
<td>1161</td>
<td>93%</td>
</tr>
<tr>
<td>slyt’ (syl)</td>
<td>‘have a reputation for’</td>
<td>212</td>
<td>72%</td>
</tr>
<tr>
<td>prosiživat’ (prosižival)</td>
<td>‘sit up repeatedly’</td>
<td>123</td>
<td>67%</td>
</tr>
</tbody>
</table>
Table 6: Imperfective verbs with very high incidence of past tense forms

<table>
<thead>
<tr>
<th>Verb (imperfective)</th>
<th>Meaning</th>
<th>Count</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>proxaživat’sja (proxaživalsja)</td>
<td>‘go for strolls’</td>
<td>207</td>
<td>69%</td>
</tr>
<tr>
<td>belet’ (belel)</td>
<td>‘show white’</td>
<td>366</td>
<td>70%</td>
</tr>
<tr>
<td>mračnel’t (mračnel)</td>
<td>‘show dark, glower’</td>
<td>99</td>
<td>75%</td>
</tr>
<tr>
<td>černet’t (černel)</td>
<td>‘show black’</td>
<td>348</td>
<td>75%</td>
</tr>
<tr>
<td>svešivat’sja (svešivalsja)</td>
<td>‘hang, dangle’</td>
<td>105</td>
<td>74%</td>
</tr>
<tr>
<td>nadvigat’sja (nadvigalsja)</td>
<td>‘be approaching’</td>
<td>260</td>
<td>66%</td>
</tr>
<tr>
<td>pomyšļat’ (pomyšļal)</td>
<td>‘think, dream of’</td>
<td>189</td>
<td>69%</td>
</tr>
<tr>
<td>unimat’sja (unimalsja)</td>
<td>‘be stoppable’</td>
<td>381</td>
<td>82%</td>
</tr>
<tr>
<td>ščurit’sja (ščurilsja)</td>
<td>‘squint’</td>
<td>196</td>
<td>67%</td>
</tr>
<tr>
<td>otšučivat’sja (otšučivalsja)</td>
<td>‘make joking replies’</td>
<td>80</td>
<td>74%</td>
</tr>
</tbody>
</table>

13 outlier verbs

- Evidentials: slyxal, slyl ‘heard’
- Defective paradigms: 10 of these verbs have no imperative
- Narration of observations: belel ‘showed white’, černel ‘showed black’, mračnel ‘showed dark’, svešivalsja ‘hung, dangled’
- Negation for categorical statements: ne pomyšļal ‘not thought about, dreamt of’, ne unimalsja ‘there was no stopping X’
- Behaviors accompanying dialog: ščurilsja ‘squinted’, otšučivalsja ‘made joking replies’, mračnel ‘glowered’

Perfective past “Xed, got X done”

no outlier verbs

Conclusions

- Aspectual pairs behave similarly, regardless of whether they are formed via suffixation or prefixation
  - It may be that meanings of prefixes and verbs overlap
- Outlier verbs support some previous scholarship, but also present new insights and challenges
- Imperfective imperative
  - extend list of typical polite and rude expressions; added familiar uses
- Perfective imperative
  - new details on rude and neutral uses; added polite uses and use for attention-directing
- Imperfective non-past
  - gnomic reference (instead of ongoing-durative)
- Perfective non-past
  - predictions of improvements/problems, threats, promises, performatives
- Imperfective & Perfective infinitive
  - Mainly modal uses
  - Imperfective infinitives express generic circumstances
  - Perfective infinitives express specific situations (both circumstances and physical necessity/capacity); constructions with tentative verbs, adverbs, čtoby ‘in order to’
- Imperfective past
  - evidentials, habituals, narration of observations

Impact

- Better linguistic analysis
- Pedagogical applications
Works Cited


