

Does Attrition of Aspect Trigger Grammatical Restructuring?

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1. Introduction

There are many individuals in modern world who no longer live in the country they were born in. All of them have moved to a new country at different age. Regardless of their age, they often find themselves in situations where they have to use a second language, typically the official language of their new country of residence, rather than their native language. Sadly, after many years of contact with the second language, their first language undergoes attrition. In its broad sense, first language (L1) attrition can be defined as a gradual loss of the native language at the individual level. There is a disagreement in the literature whether this loss affects linguistic competence or only linguistic performance. Thus, researchers disagree on whether in the process of L1 attrition the grammar of the first language changes under the influence of the second language or whether it is simply forgotten without ever being modified. This question is particularly difficult to answer as we cannot directly observe linguistic competence. Despite this fact, recent discoveries in the domain of L1 attrition call for careful consideration of several variables that may impact the answer to this question. First, attrition affects different aspects of language differently, with lexical knowledge being the most vulnerable type of knowledge (Olshtain & Barzilay 1991, Hakuta & D'Andrea 1992, Ammerlaan 1996). Second, production suffers more than comprehension (Hakuta & D'Andrea 1992, Ammerlaan 1996). Third, the age of immigration plays a crucial role in L1 attrition. The picture emerging from recent research is that language loss is more dramatic in early than late bilinguals. Montrul (2008) attributes this to relative instability of linguistic competence in early unbalanced bilinguals. She argues that in adults, unlike in children, attrition does not affect linguistic competence but only performance. In other words, L1 attrition in adults results from forgetting their native language and not from using a grammatical system divergent from the one they used to know. She maintains that once the grammatical system is acquired and stabilized, it cannot be changed.

Continuing the general line of inquiry, the present study explores to what extent the first language is affected by attrition. In particular, it examines whether individuals who have acquired Russian as their first language but replaced it with English as a dominant language in adulthood can appropriately use grammatical aspect after a prolonged period of disuse. The results reported in this study suggest that the attrition of the Russian verbal aspect can largely be attributed to the loss of lexical knowledge and, to the lesser extent, transfer from dominant English. Contra to Polinsky (1996, 2009) and Pereltsvaig (2004, 2005), the present study did not find any evidence of grammatical restructuring. The findings support Montrul's view on L1 attrition.

2. Russian aspectual system

The vast majority of Russian dynamic verbs can appear in either one of the two aspectual forms: imperfective (IMP) or perfective (PERF). For instance, the verb 'to write' has two forms: the

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imperfective *pisat'*_{IMP} and the perfective *napisat'*_{PERF}. To speak Russian, one needs to know which of the two aspectual forms is appropriate in a given context. The choice of a suitable form is conditioned by a combination of lexical, morphosyntactic, semantic and discourse constraints.

What makes the Russian aspectual system particularly complex is that although each verb typically has only two aspectual variants with the same meaning, i.e., it forms a so-called *aspectual pair*, the majority of dynamic roots can appear in three morphologically distinct forms: primary imperfective (PI), perfective (PERF) and secondary imperfective (SI). Table 1 contains examples of all three types of Russian verbs.

Table 1 Morphological types of Russian verbs

Primary Imperfective (PI)	Perfective (PERF)	Secondary imperfective (SI)
ROOT+T/AGR	ASP ₁ -ROOT-T/AGR	ASP ₁ -ROOT-ASP ₂ -T/AGR
<i>pisa-t'</i> 'to write _{PI} '	<i>na-pisa-t'</i> 'to write _{PERF} '	--
	<i>pod-pisa-t'</i> 'to sign _{PERF} '	<i>pod-pisy-va-t'</i> 'to sign _{SI} '
<i>pi-t'</i> 'to drink _{PI} '	<i>vy-pi-t'</i> 'to drink _{PERF} '	<i>vy-pi-va-t'</i> 'to drink _{SI} '

As can be seen from this table, PI verbs contain no aspectual morphemes, PERF verbs contain an aspectual prefix and SI verbs contain both an aspectual prefix and the aspectual suffix *-va*. Thus, combining the roots *pisa-* and *pi-* with the infinitival marker *-t'* yields the PI forms of the verbs 'to write' and 'to drink'. Adding an aspectual prefix turns these verbs into PERFs. Finally, prefixed forms can further be inflected with the suffix *-va*, which changes their aspectual status into SIs. Note that not all prefixed stems allow for *-va* suffixation. For instance, the verb **na-pisy-va-t'* 'writes_{SI}' is not attested in Russian. The restriction that is responsible for this pattern will be discussed in section 5.

Native-like competence of Russian aspect implies knowledge of all three morphological forms, along with their syntactic structures as well as lexical and pragmatic knowledge related to aspect.

3. Previous research on L1 attrition of Russian verbal aspect

Previous research on L1 attrition has demonstrated that speakers of American Russian (i.e., a variety of Russian spoken in the US by individuals who have acquired Russian as their first language but subsequently replaced it with English as a dominant language) consistently fail to exhibit appropriate use of Russian aspect. In particular, they often use perfective, where speakers of Full Russian (i.e., a variety of Russian spoken in Russia and neighboring countries) would use imperfective and vice versa (Polinsky 1996, 2009; Pereltsvaig 2002, 2004).¹

Polinsky (2009) claims that these speakers can no longer distinguish Russian verbs according to their aspectual markings. For each verb, they have retained only one member of the aspectual pair, either perfective or imperfective. The loss of aspect is not random, however. Whether or not a given aspectual form will be retained depends on statistical frequency with which it is encountered in Full Russian: the higher the frequency the more likely speakers of American Russian are to retain a given form, and vice versa.

For instance, the subjects that Polinsky tested retained only a perfective form of the verbs 'to do', 'to be able to', 'to write', 'to read', 'to give', 'to know', 'to die', 'to kill', 'to stand', 'to bite' given that in Full Russian these verbs appear more frequently in perfective. Consequently, they used these forms even in the contexts where speakers of Full Russian would use imperfective forms, as shown in (1).

- (1) a. American Russian
 Ja nikogda ne **pročital** ta kniga.
 I never not read_{PERF} that_{NOM} book_{NOM}.

¹ Apart from problems with aspect, these speakers experience problems with such grammatical properties as case and agreement. They also struggle with formation of relative clauses, passives constructions and subjunctive mood. Moreover, their lexicon seems to be reduced as compared to speakers of Full Russian (Polinsky 1996).

b. Full Russian

Ja nikogda ne čital tu knigu.
 I never not read_{IMP} that_{ACC} book_{ACC}.
 'I have never read that book.'

Likewise, her subjects only used imperfective forms of the verbs 'to hide', 'to believe', 'to call', 'to scream', 'to cry, to weep', 'to grow', 'to live', 'to look for, search', 'to sing', 'to sit', 'to hang', since in Full Russian these verbs appear more frequently in imperfective. Hence, they produced errors as in (2), whereby the imperfective verb *nravit'sja* 'to like' appears in a perfective context.

(2) a. American Russian

Mne nravilos' v Princeton, no ja ljublju žit' v Chicago.
 Me_{DAT} liked_{IMP} in Princeton_{NOM}, but I love to live in Chicago.

b. Full Russian

Mne **pon**nravilos' v Princeton, no ja ljublju žit' v Chicago.
 Me_{DAT} liked_{PERF} in Princeton_{NOM}, but I love to live in Chicago.
 'I liked Princeton, but I prefer to live in Chicago.'

Pereltsvaig (2004, 2005) rejects the Frequency Hypothesis, as a hypothesis that only accounts for 50% of the production corpus she analyses. She also argues against the view that attributes attrition to transfer from a dominant language. She reasons that if attrition of aspect was caused by interference from English, speakers of American Russian would assimilate Russian perfective morphology into English perfect and Russian imperfective morphology into English progressive.² They, however, do not exhibit such behavior. As an alternative to these hypotheses, Pereltsvaig proposes the Lexical Aspect Hypothesis which maintains that while in Full Russian aspectual morphology encodes the grammatical distinction, in American Russian it encodes a lexical [\pm P] distinction – a distinction related to verb's lexical meaning. In particular, in American Russian the perfective morphology is used to encode the [+P] verbs or verbs with a bounded Path, and conversely the imperfective morphology is used to encode the [-P] verbs or verbs without a bounded Path.³ Since [\pm P] denotes lexical rather than grammatical distinction, Pereltsvaig concludes that American Russian has undergone lexicalization – a process where grammatical aspect is replaced by lexical one. She then argues that lexicalization results from restructuring of morphosyntactic structure related to aspect. Note that if attrition indeed involves syntactic restructuring, then the linguistic competence of attriters should differ from the linguistic competence of monolingual Russian speakers.

While the studies by Polinsky and Pereltsvaig offer significant insights into American Russian, the conclusion that they make about aspectual attrition triggering syntactic restructuring is premature for two reasons. First, these researchers base their claim largely on spontaneous production data. Unfortunately, the mistakes encountered in production data cannot be controlled for. As we will see in sections 4 and 5, knowledge of Russian aspect comprises morphosyntactic, lexical as well as pragmatic information. One cannot determine whether errors found in spontaneous production result from morphosyntactic restructuring or rather from problems with lexical and/or pragmatic knowledge required for appropriate use of aspect. Recall that recent research on L1 attrition suggest that lexical knowledge is more vulnerable than syntactic knowledge. As such, it may be responsible for imperfect behavior of Russian attriters. Moreover, many studies have shown that production suffers more than

² The morphosyntactic analysis of aspect assumed in this paper differs from the one proposed in Pereltsvaig (2004, 2005). As we will see later, under the present analysis, some phenomena found in American Russian can indeed be explained by transfer from English.

³ Pereltsvaig (2005) insists that the [\pm P] distinction is different from the independently motivated and well-defined telic/atelic distinction, given that speakers of American Russian compute intransitive verbs as perfective. Suspiciously, however, the intransitive verb 'to write' that she provides as an example of such illicit computation is only optionally intransitive.

comprehension under attrition. These findings imply that one should not advocate syntactic restructuring and, hence, changes in linguistic competence only by considering production data.

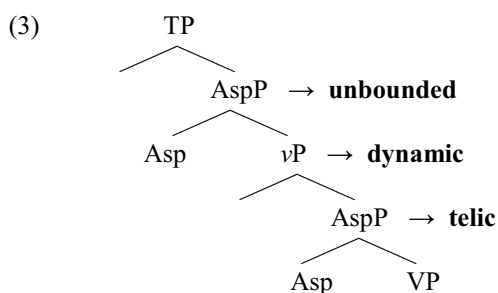
The second problem with Polinsky and Pereltsvaig's studies is that they mainly examine speech of individuals who have switched to English as their primary language prior to puberty, some of them as early as 5;0. Contra to popular beliefs, the complete acquisition of verbal aspect takes a relatively long time. Thus, Kazanina & Phillips (2003) demonstrate that Russian monolingual children do not possess full knowledge of Russian imperfectives even at the age of 10;0. Hence, it is plausible that subjects investigated in Polinsky (1996, 2009) and Pereltsvaig (2004, 2005) have never completely acquired Russian aspect to begin with. In other words, their errors can be products of incomplete L1 acquisition or, most likely, of a combination of incomplete L1 acquisition and L1 attrition rather than of 'pure' L1 attrition.

While designing the experiment reported in this paper, many precautions were taken to properly test whether L1 attrition affects a morphosyntactic structure that has been fully acquired. The results suggest that this is not so. But before discussing the experiment, we need to establish what exactly speakers of Russian need to know to appropriately use verbal aspect.

4. Syntactic approach to aspect

Recent research on aspect point to the existence of two types of aspect (Comrie 1976, Dahl 1985, Smith 1991/1997, Verkuyl 1993, Travis 1994, Depraetere 1995, Slabakova 2001 among many others). On one hand, we have *situation* aspect – aspect that is concerned with inherent boundaries of events or the telic/atelic distinction. On the other hand, we have *viewpoint* aspect – aspect that is concerned with actual boundaries of events or the bounded/unbounded distinction.

Currently, there are several proposals which maintain that aspect is encoded syntactically (Travis 1994, Slabakova 2001, Borer 2005, Ramchand 2008, Nossalik 2009). What unites these proposals is that they postulate a strong correlation between the semantics of event structure and the morphosyntactic structure of verbal predicates. All these analyses assume that both types of aspect, situation and viewpoint, are encoded by their own syntactic projections. While situation aspect is encoded by a *vP*-internal or simply *inner* aspect projection (AspP), viewpoint aspect is encoded by a *vP*-external or simply *outer* AspP, as depicted in (3):



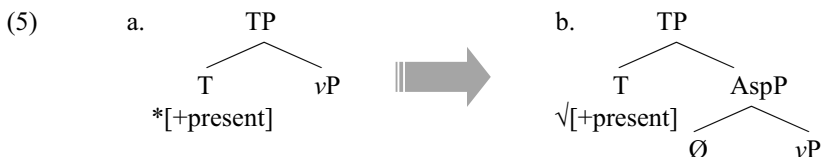
Borer (2005) argues that the inner AspP encodes *telicity* rather than the telic/atelic distinction. In the system that she proposes, only telic verbal predicates contain this projection. Verbal predicates that lack this syntactic projection receive an atelic interpretation. In line with Borer's proposal, in Nossalik (2011), I argue that the outer AspP encodes *unboundedness*. That is to say that this projection is only present in the syntactic structure of verbal predicates that encode unbounded events. Interpretation of verbal predicates that lack an outer AspP in their syntactic structure depends on presence versus absence of the inner AspP. If such verbs contain an inner AspP, they are interpreted as telic. If, however, they lack an inner AspP, they are interpreted as atelic. To completely account for aspectual composition of events, researchers also postulate the third syntactic projection – a projection that encodes *dynamicity*, i.e., the *vP* in (1). Following Travis (1994, 2010) and Slabakova (2001), we will assume that only dynamic as opposed to stative verbs contain this projection.

4.1. Dynamic verbs that lack an outer AspP

There are two groups of dynamic verbs that lack an outer AspP. One group also lacks an inner AspP. The verbs belonging to this group are commonly known as *activities*.⁴ The other group contains an inner AspP. The verbs from this group are known as *accomplishments*. A prominent property of activities and accomplishments is that they are incompatible with the present tense.⁵ This is why in English the present tense forms of these verbs cannot receive an ongoing-event interpretation – an interpretation where an event unfolds simultaneously with the speech time (Cowper 1998, Copley 2002). This fact is demonstrated by the ungrammatical sentences in (4) which contain simple tense forms of the verbs *to play* and *to write* together with the adverbial *at this moment*.

- (4) a. **At this moment*, Mary plays piano. *activity*
 b. **At this moment*, Roxanne writes letters. *accomplishment*

Despite their incompatibility with the present tense, these forms are still attestable in English. They undergo a semantic shift, however. This shift results from *coercion* – an operation that alters the underlying morphosyntactic structure of a verbal predicate and, consequently, its aspectual value (Depraetere 1995, Rothstein 2004). In English, the illegitimate structure presented in (5a) is coerced into a structure that contains a phonologically null outer AspP as in (5b).



The outer AspP endows the present tense forms of English activities and accomplishments with a habitual reading (Rothstein 2004). As a result, these verbs are compatible with a habitual adverbial, as shown below:

- (6) a. Mary *often* plays piano. *activity*
 b. Roxanne *regularly* writes letters. *accomplishment*

Just like English accomplishments, Russian accomplishments are incompatible with the present tense.⁶ As expected, their present tense forms cannot appear with the adverbial *v nastojas'ij moment* 'at this moment' which enforces an ongoing-event interpretation, as demonstrated by the ungrammatical sentences in (7). This observation is true of verbs that preserve the original meaning of the root (7a) as well as of the verbs that have acquired a new meaning in the process of prefixation (7b).

- (7) a. **V nastojas'ij moment* Maša **napišet** dva pis'ma. *perfective (dynamic)*
 At this moment Masha writes_{PERF} two letters.
Intended: 'At this moment, Masha is writing two letters.'
 b. **V nastojas'ij moment* Maša **podpišet** svoi knigi. *perfective (dynamic)*
 At this moment Masha signs_{PERF} self books.
Intended: 'At this moment, Masha is signing her books.'

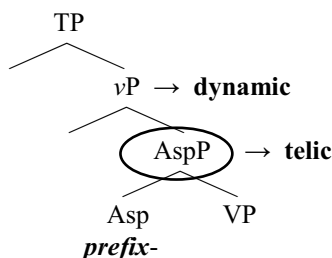
⁴ In this paper the terms *activity* and *accomplishment* are used to refer to dynamic verbs that lack an outer AspP. Their English counterparts containing an outer AspP are termed *progressive activities* and *progressive accomplishments* and their Russian counterparts are called *primary imperfectives* and *secondary imperfectives*.

⁵ Non-dynamic verbs such as achievements are also incompatible with the present tense in English and Russian. Since this study only examines attrition of dynamic verbs, in what follows I'll remain silent about achievements.

⁶ Unlike English, Russian lacks 'simple' activities – activity verbs that do not contain an outer AspP in their syntactic structure (Nossalik 2011).

Russian verbs that lack an outer AspP have a special name. They are known as *perfectives*. Recall that perfective verbs typically contain an aspectual prefix in their morphological structure. Researchers disagree as to which of the two aspectual projections a perfective prefix occupies, inner or outer. In Nossalik (2009) I demonstrate, using well-known morphosyntactic and syntactico-semantic diagnostics, that it occupies the inner AspP. I adopt the similar view in this paper. In other words, I assume that Russian accomplishments have the following structure:

(8) PERFECTIVE VERBS (DYNAMIC)



Despite their incompatibility with the present tense, Russian perfective verbs can surface with a present tense morpheme. Similarly to their English counterparts, they undergo semantic shift. While Russian too uses a repairing strategy to fix an illegitimate structure, the strategy itself is different from the one used in English. Instead of coercing the illicit structure into a structure with a phonologically null outer AspP, as in (5), it replaces the feature [+present] by [+future], as in (9).



As a result of this coercion operation, the present tense forms of Russian perfective verbs receive a future tense interpretation. Consequently, these forms are compatible with a time adverbial that enforces a future tense reading, as exemplified in (10).

- (10) a. *Zavtra* Maša **napišet** dva pis'ma. *perfective (dynamic)*
 Tomorrow Masha writes_{SPERF} two letters.
 'Tomorrow Masha will write two letters.'
- b. *Zavtra* Maša **podpišet** svoi knigi. *perfective (dynamic)*
 Tomorrow Masha signs_{SPERF} self books.
 'Tomorrow Masha will sign her books.'

Given that in Russian, unlike in English, coercion does not yield a habitual interpretation, present tense forms of Russian accomplishments cannot receive a habitual reading, contra to their English counterparts. Hence, sentences as in (11) which contain an accomplishment alongside a habitual adverbial are ungrammatical in Russian.

- (11) a. *Maša *reguljarno* **napišet** dva pis'ma. *perfective (dynamic)*
 Masha regularly writes_{SPERF} two letters.
Intended: 'Masha regularly writes two letters.'
- b. *Maša *vsegda* **podpišet** svoi knigi. *perfective (dynamic)*
 Masha always signs_{SPERF} self books.
Intended: 'Masha always signs her books.'

Moreover, since the present tense forms of Russian perfective verbs receive a future tense interpretation, perfective verbs cannot form a so-called *analytic future* – a form in which an infinitival verb is combined with a modal to signal a future tense reading, equivalent to the English form ‘will + V’. For instance, Russian sentences presented in (12) are ungrammatical, since they contain a perfective verb alongside the modal *byť* ‘will’.

- (12) a. **Zavtra* Maša **budet** **napisat’** dva pis’ma. *perfective (dynamic)*
 Tomorrow Masha will write_{PERF} two letters.
Intended: ‘Tomorrow Masha will write two letters.’
- b. **Zavtra* Maša **budet** **podpisat’** svoi knigi. *perfective (dynamic)*
 Tomorrow Masha will sign_{PERF} self books.
Intended: ‘Tomorrow Masha will sign her books.’

Note that the English equivalents of (12) are grammatical, as can be witnessed by the translation of these sentences. Table 2 sums up the behavior of English and Russian dynamic verbs that lack an outer AspP.

Table 2 Dynamic verbs that lack an outer AspP

Property	English Non-progressive Vs	Russian Perfective Vs
<i>Ongoing-event reading</i>	*	*
<i>Habitual reading</i>	√	*
<i>Future tense reading</i>	*	√
<i>Analytic future form</i>	√	*

The differences between English and Russian reported in this table should help us establish whether or not Russian attriters with English as a dominant language transfer some properties from their dominant language into Russian.

4.2. Dynamic verbs that contain an outer AspP

In English, the outer AspP is standardly associated with the progressive marker *-ing* (Smith 1991/1997, Depraetere 1995). This morpheme renders the underlying verbs *unbounded* in time and, hence, compatible with the present tense, as shown in (13).

- (13) a. *At this moment*, Mary is playing piano. *progressive activity*
 b. *At this moment*, Roxanne is writing letters. *progressive accomplishment*

The suffix *-ing* can also endow dynamic verbs with a habitual reading, as demonstrated in (14).⁷ Similarly to an ongoing-event reading, this reading expresses *unboundedness*. The main difference between the ongoing and habitual reading is that while the former signals an unbounded episodic event, the latter signals an unbounded sequence of events.

- (14) a. Mary is *often* playing piano. *progressive activity*
 b. Roxanne is *regularly* writing letters. *progressive accomplishment*

As demonstrated in (13) and (14), *-ing* can attach to an activity or accomplishment verb. This implies that *-ing* can attach to any type of dynamic stem, being atelic or telic.

⁷ Speakers who exhibit a strong preference for encoding habitual using simple tense rather than progressive may judge the sentences in (14) as odd, especially in the absence of relevant contexts.

Russian too has an overt morpheme that is standardly associated with the outer AspP, i.e., the suffix *-va* (Slabakova 2001). Just like *-ing*, *-va* endows the underlying verb with a present or habitual reading, as exemplified in (15). The forms obtained by this type of suffixation are labeled *secondary imperfectives*.

- (15) a. *V nastojas'ij moment* Maša **podpisyvaet** svoi knigi. *secondary imperfective*
 At this moment Masha signs_{SI} self books.
 'At this moment, Masha is signing her books.'
- b. Maša *vsegda* **podpisyvaet** svoi knigi. *secondary imperfective*
 Masha always signs_{SI} self books.
 'Masha always signs her books.'

Unlike *-ing*, *-va* cannot attach to any type of dynamic stems. Specifically, it can only appear with telic stems, i.e., those that contain a prefix. Thus, activity verbs inflected with the suffix *-va* are ungrammatical in Russian, e.g., **pisyvat'* 'to write'. As extensively argued in Nossalik (2009), Russian activity verbs always contain a phonologically nil outer AspP, despite their apparent morphological simplicity. This is why, contra to their English counterparts as well as Russian simple accomplishments, they are compatible with the present and habitual, as shown in (16).

- (16) a. *V nastojas'ij moment* Maša pišet pis'ma. *primary imperfective*
 At this moment Masha writes_{PI} letters.
 'At this moment, Masha is writing letters.'
- b. Maša *vsegda* pišet pis'ma. *primary imperfective*
 Masha always write_{PI} letters.
 'Masha always writes letters.'

In other words, Russian activity verbs behave similarly to secondary imperfectives in respect to the habitual and present tense. As they do not contain any overt aspectual marking, they are labeled *primary imperfectives*.

Importantly, because Russian primary and secondary imperfectives contain an outer AspP, they are not subject to coercion in (9). Hence, unlike their perfective counterparts, they cannot receive a coerced future tense interpretation, as demonstrated in (17). To express future their infinitival forms must combine with the modal *byt'* 'will', as in (18). In other words, unlike perfective verbs, imperfective verbs form the analytical future.

- (17) a. **Zavtra* Maša pišet pis'ma. *primary imperfective*
 Tomorrow Masha writes_{PI} letters.
Intended: 'Tomorrow Masha will write letters.'
- b. **Zavtrat* Maša **podpisyvaet** svoi knigi. *secondary imperfective*
 Tomorrow Masha signs_{SI} self books.
Intended: 'Tomorrow Masha will sign her books.'
- (18) a. *Zavtra* Maša **budet** pisat' pis'ma. *primary imperfective*
 Tomorrow Masha will write_{PI} letters.
 'Tomorrow Masha will write letters.'
- b. *Zavtrat* Maša **budet** **podpisyvat'** svoi knigi. *secondary imperfective*
 Tomorrow Masha will sign_{SI} self books.
 'Tomorrow Masha will sign her books.'

Table 3 summarizes behavior of English and Russian dynamic verbs that contain an outer AspP.

Table 3 Dynamic verbs that contain an outer AspP

Property	English Progressive Vs	Russian Imperfective Vs
<i>Ongoing-event reading</i>	√	√
<i>Habitual reading</i>	√	√
<i>Future tense reading</i>	*	*
<i>Analytic future form</i>	√	√

As can be seen from this table, Russian imperfective verbs behave similarly to English progressive verbs in respect to the four properties discussed above. They exhibit opposite behavior from their perfective counterparts, however. As we have established, these differences arise from the distinction in the syntactic structures of perfective and imperfective verbs. While perfective verbs lack an outer AspP, imperfective verbs contain this projection. Given this fact, we can assume that speakers who know how perfective and imperfective verbs behave in respect to the properties listed in Table 2 and Table 3 also know their appropriate syntactic structure.

So far, we have considered morphosyntactic knowledge necessary for computation of verbal aspect in Russian. Let us now turn to lexical knowledge related to verbal aspect.

5. Lexical knowledge related to Russian verbal aspect

To properly use Russian aspect, it is not enough to construe an accurate morphosyntactic structure and use appropriate type of coercion. Knowledge of perfective verbs and, to lesser extent, imperfective verbs is partially lexical in nature.⁸ Thus, the process of prefixation that yields perfective verbs is highly idiosyncratic. First, each verbal root takes a variable number of prefixes. There are roots that can take only one prefix and there are those that can take up to 16 different prefixes. Second, roots that take multiple prefixes, often acquire a new meaning in the process of prefixation. Typically, only one of these prefixes preserves the root's original meaning. For instance, the root *pisa* 'write' keeps its meaning only when combined with the prefix *na-*, i.e., *na-pisa-t'* 'to write_{PERF}'. All other prefixes endow this root with some new shades of meaning or completely change its meaning, i.e., *iz-pisa-t'* 'to write all over_{PERF}', *pod-pisa-t'* 'to sign_{PERF}', *o-pisa-t'* 'to describe_{PERF}', *za-pisa-t'* 'to write down_{PERF}', etc. What makes the whole system particularly complex is that the prefix which preserves the original meaning varies from root to root. For instance, while the prefix *na-* preserves the meaning of the root *pisa-* 'write', it changes the meaning of the root *čita-* 'read'. In contrast, the prefix *pro-* preserves the meaning of the root *čita-* 'read', but alters the meaning of the root *pisa-* 'write'.

The information about which roots can combine with which prefixes as well as which combinations preserve or change the original meaning of the root is stored in the lexicon (Nossalik 2009). This entails that lexical knowledge is very important for proper computation of Russian perfective verbs. This being said note that in the system proposed here even verbs which have acquired a new, idiosyncratic, meaning in the process of prefixation are derivational in nature in that they contain a prefix in their morphosyntactic structure which occupies the inner AspP. Failing to decompose these verbs into a prefix and the base would result in a computational error, since such verbs would be computed as lacking an inner AspP and, hence, superficially similar to primary imperfectives. Given that primary imperfectives behave differently from their perfective counterparts, such a mistake in computation would be indeed a very grave one, leading to drastic consequences.⁹

⁸ Proper use of Russian aspect also relies on some pragmatic knowledge. In particular, speakers must know under which pragmatic conditions IMP verbs can exceptionally appear in events delimited in the real world. Since this study does not investigate exceptional uses of imperfective, I will not discuss these pragmatic conditions.

⁹ Low proficiency L2 speakers of Russian often fail to recognize that Russian perfective verbs with idiosyncratic meanings contain a prefix (Nossalik 2009). As a result, they inaccurately allow for these verbs to appear with ongoing-event or habitual adverbials, but not with future tense adverbials.

In addition to perfective verbs, learning imperfective verbs also requires extensive memorization. In particular, while it is true that the suffix *-va* can attach to telic but not atelic stems, in reality not all telic stems take this suffix. For instance, as demonstrated in Table 1, *-va* can successfully attach to the prefixed base *pod-pisa-* ‘sign’ yielding *pod-pisy-va-t* ‘to sign_{SI}’, but not to the prefixed base *na-pisa-* ‘write’. Typically, *-va* can attach to stems that have acquired a new meaning in the process of prefixation. Nonetheless, since there are many exceptions to this ‘rule’, we must assume that information about which among telic stems is attestable with *-va* is encoded in the lexicon. To properly use imperfectives, speakers need to know this information along with the morphosyntactic structure of imperfective verbs.

In conclusion, native-like use of Russian aspect presupposes native-like competence of Russian morphosyntactic structure related to aspect together with the appropriate coercion operation as well as extensive lexical knowledge.

6. The experiment

The experiment described in this section was conducted with the aim of determining whether attrition indeed affects linguistic competence. More specifically, the research question that it investigated in this study is whether it is true that L1 attrition of Russian aspect involves syntactic restructuring, as claimed by Pereltsvaig (2004, 2005). It was assumed that if this hypothesis is true, then Russian attriters should exhibit behavior drastically different from that of monolingual Russian speakers not only in production but also in comprehension. There is one obvious advantage of testing comprehension, as opposed to production. It allows one to tease apart and test separately morphosyntactic and lexical properties related to Russian aspect, thus obtaining a more comprehensive view on which components of aspect are affected by attrition.

6.1. Participants

10 subjects participated in the experiment: 5 Russian-English bilinguals who immigrated to Canada after puberty and 5 Russian monolinguals. The age of the bilingual participants ranged from 45;0 to 56;0. Their age at immigration ranged from 15;0 to 17;0. Although these subjects started learning English only after their arrival in Canada, they have subsequently switched their language dominance to English. Currently, they all use English in their everyday life. Their use of Russian is very limited and has been so for the past 30 years or more.

Importantly, only subjects whose Russian has undergone noticeable attrition were chosen for this study. Specifically, only subjects who no longer sound like Russian native speakers participated in the study.¹⁰ These individuals have a ‘foreign’ accent and non-native-like intonation when speaking Russian. They also make some grammatical errors, mainly with verbal agreement, as well as experience word finding difficulties.

Note that since the bilingual participants started acquiring English after 15;0, we can safely assume that their acquisition of Russian was completed prior to the onset of attrition. Any ‘deficiencies’ found in their Russian cannot be attributed to incomplete acquisition, unlike in the case of subjects investigated in Polinsky (1996, 2009) and Pereltsvaig (2004, 2005).

6.2. Tasks

To test the participants’ comprehension, a computerized Grammaticality Judgment task was used. The participants were asked to indicate whether sentences presented to them, one at the time, are acceptable or not in Russian. They were specifically instructed to choose ‘Don’t know’ only when encountering unfamiliar vocabulary.

¹⁰ All potential subjects were first interviewed by a native Russian speaker. Unfortunately, many of them did not pass this criterion. This explains the relatively small number of bilingual participants.

6.3. Stimuli

The entire test consisted of 340 sentences containing a dynamic verb. 240 of these were test sentences and 100 distractors.

40 of the test sentences contained present tense forms of primary imperfective (PI) verbs and 40 present tense forms of secondary imperfective (SI) verbs. 10 sentences of each type appeared in ongoing (ONGO) contexts, as in (16a) and (15a), 10 in habitual (HAB) contexts, as in (16b) and (15b), 10 in synthetic future (SYNFUT) forms, as in (17a) and (17b), and 10 in analytic future (ANFUT) forms, as in (18a) and (18b). These sentences tested whether the attriters still know that Russian PI verbs contain an outer AspP and, as such, are computed as unbounded in time and, hence, compatible with present, habitual, but not future tense adverbials. To convey future, these verbs must assume an analytic form.

Another 80 sentences tested the attriters' knowledge of perfective (PERF) verbs: the fact that the present tense forms of these verbs can receive a future tense interpretation, but not an ongoing or habitual interpretation. The subjects were also asked to indicate whether PERF verbs can appear in analytic forms. Out of these 80 sentences, 40 contained a PERF verb with a prefix that preserves the meaning of the root, e.g., *napisat'* 'to write', and 40 a PERF verb with a prefix that yields an idiosyncratic meaning, e.g., *podpisat'* 'to sign'. The idiosyncratic verbs were used to test whether the attriters can recognize that these verbs contain an aspectual prefix. Both idiosyncratic and non-idiosyncratic PERFs were distributed over 4 conditions: PERF_ONGO, PERF_HAB, PERF_SYNFUT and PERF_ANFUT. Both idiosyncratic and non-idiosyncratic examples of each condition can be found in (7), (11), (10) and (12) respectively. Note that all tested PERF verbs contained the same root as the corresponding PI or SI verbs.¹¹

To test the syntactic restriction on *-va* attachment, 40 stimuli included ungrammatical verbs in which an atelic base is inaccurately inflected with *-va*, e.g., **pisyvat'* 'to write'. Since these verbs contained stems morphologically identical to PIs, they were labeled *PI-*va* verbs.

The remaining 40 sentences contained SI verbs not attested in Russian, e.g., **napisyvat'* 'to write'. For lack of a better term, these verbs will be referred to as *SI. The sentences containing them tested purely lexical knowledge related to SIs, given that they do not violate any morphosyntactic restriction. For consistency, non-attested *PI-*va* and *SI verbs appeared in four different contexts: ONGO, HAB, SYNFUT and ANFUT.

Table 4 summarizes grammaticality of different types of verbs in the four contexts used.¹²

Table 4 Tested conditions, (un)grammaticality

Context	PI (n = 10)	SI (n = 10)	PERF (n = 20)	*PI- <i>va</i> (n = 10)	*SI (n = 10)
ONGO	√	√	*	*	*
HAB	√	√	*	*	*
SYNFUT	*	*	√	*	*
ANFUT	√	√	*	*	*

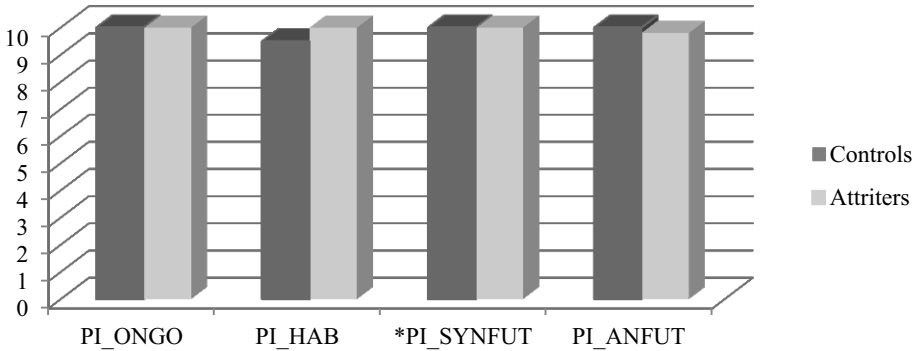
6.4. Results

All participants, including the attriters, exhibited native-like behavior with respect to the stimuli that contained PI verbs. The relevant results are reported in Figure 1.

¹¹ To make sure that attriters compute inner AspP accurately, even if they resort to the English telicity assigning mechanism, the value of the internal argument was fixed: only non-quantized nouns were used with atelic predicates, i.e., with PIs, and only quantized nouns were used with telic predicates, i.e., with PERFs and SIs.

¹² To balance out the number of grammatical and ungrammatical sentences, many of distractors were grammatical.

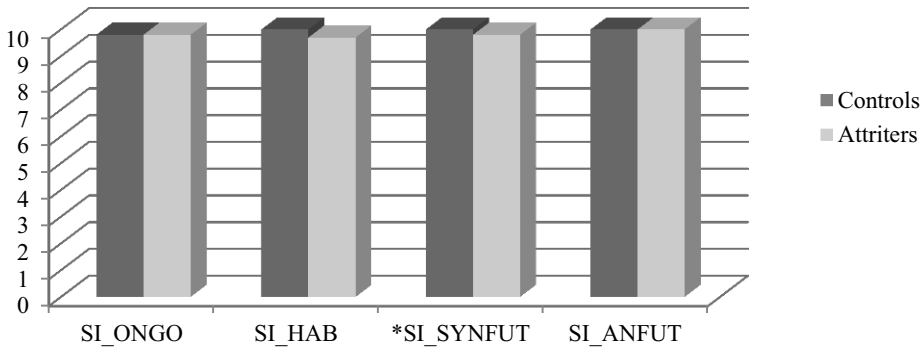
Figure 1 Group results: PI verbs, mean accuracy (out of 10)



Consistently with Figure 1, a two-way ANOVA revealed no significant differences between performances of the attriters and the controls ($F = 1.8$; $P = 0.217$) on all four conditions ($F = 6.6$; $P = 0.015$). There was no significant interaction between groups and conditions ($F = 0.733$; $P = 0.561$).

The attriters also exhibited native-like behavior with SIs, as evident from Figure 2.

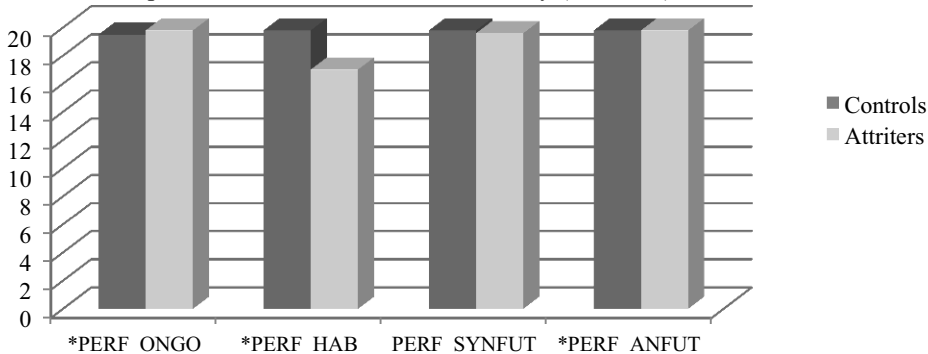
Figure 2 Group results: SI verbs, mean accuracy (out of 10)



As expected, a two-way ANOVA found no group effect ($F = 1.09$; $P = 0.327$), no condition effect ($F = 0.610$; $P = 0.627$) nor significant interaction between groups and conditions ($F = 0.369$; $P = 0.777$).

Figure 3 reports the results pertaining to PERF verbs. Since the participants treated all PERF verbs, those that appeared with an idiosyncratic prefix and those that appeared with a non-idiosyncratic prefix, identically, this figure contains combined results of all PERFS.

Figure 3 Group results: PERF verbs, mean accuracy (out of 20)

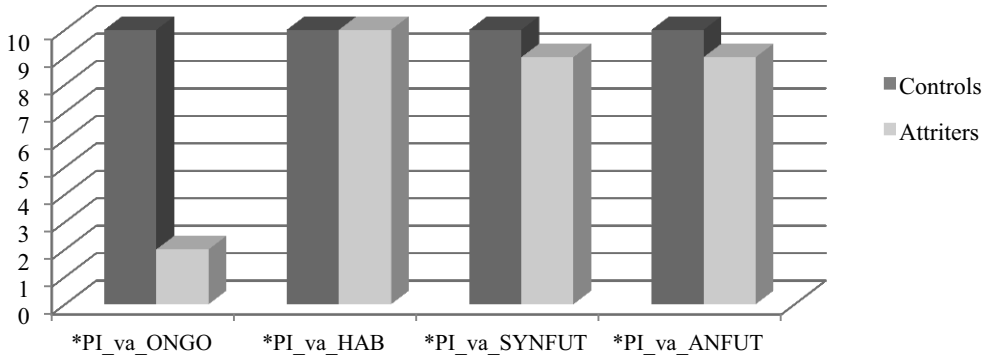


When it comes to PERF verbs, a two-way ANOVA found a significant group effect ($F = 28.252$, $P = 0.001$) and a significant condition effect ($F = 23.267$, $P < 0.001$). The interaction between groups and

conditions was also significant ($F = 32.449$, $P < 0.001$). As determined by Scheffe's post hoc test, only in habitual contexts did the behavior of the attriters diverge significantly from that of the controls. Unlike the monolingual subjects, they occasionally allowed for perfective verbs to appear in habitual contexts: roughly 20% of the time.

Figure 4 depicts how the participants treated unattested in Russian *PI-va verbs. As can be observed from this figure, the attriters accurately rejected these verbs only in three out of four tested contexts:

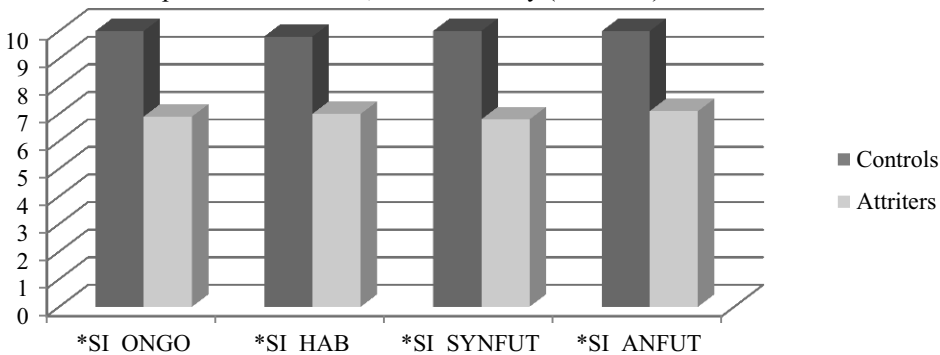
Figure 4 Group results: *PI-va verbs, mean accuracy (out of 10)



As expected, a two-way ANOVA detected a group effect ($F = 92.593$; $P < 0.001$), a condition effect ($F = 50.617$; $P < 0.001$) and the interaction between groups and conditions ($F = 50.617$; $P < 0.001$). A Scheffe's post hoc test confirmed that the attriters mistakenly judged *PI-va verbs as grammatical only in ongoing contexts.

Lastly, Figure 5 reports the results pertaining to the stimuli containing unattested secondary imperfective verbs.

Figure 5 Group results: *SI verbs, mean accuracy (out of 10)



With these verbs too, the performance of the attriters significantly diverged from that of controls ($F = 57.541$; $P < 0.001$). A two-way ANOVA, however, found no significant condition effect ($F = 0.122$; $P = 0.946$) nor significant interaction between groups and conditions ($F = 0.343$; $P = 0.795$). This implies that the attriters performed differently from the controls in all four conditions.

It should be mentioned that not all attriters struggled to the same extent with the stimuli containing the *SI verbs. In fact, one of them accurately rejected 94% of these verbs. Another, however, mistakenly accepted 80% of them. The rest of bilinguals performed very similar to the group results presented in Figure 5. Intriguingly, only stimuli with *SI verbs were subject to individual variation.¹³

¹³ As in production, the bilingual participants had problems with verbal agreement while performing the test: they occasionally accepted distractors containing an agreement error. This indirect finding suggests that verbal agreement may be more susceptible to attrition than verbal aspect. This being said note that grammaticality judgment task may be not suitable for proper testing of verbal agreement.

7. Discussion

As we have seen in the previous section, the bilingual participants treated the PI and SI verbs indistinguishably from the monolingual subjects. Under the theoretical analysis adopted in this paper, their native-like performance suggests that they accurately computed these verbs as being *unbounded* in time. In other words, they recognize that imperfective verbs, either primary or secondary, contain an outer AspP – a projection responsible for *unboundedness* in dynamic verbs. Consistently with these results, we must conclude that L1 attrition does not affect the outer AspP.

What about the inner AspP? To answer this question, let us look at the results pertaining to PERF verbs. Recall that the attriters did mistakenly allow for these verbs to occur in habitual contexts. Does this behavior imply that they no longer know that perfective verbs contain an inner AspP? Not necessarily. The fact that they treated these verbs accurately in the PERF_ONGO, PERF_SYNFUT and PERF_ANFUT conditions suggests that they still use the same system as monolingual Russian speakers. In particular, they know that present tense forms of Russian perfective verbs cannot receive an ongoing-event reading, but shift their interpretation into future. Likewise, they know that these verbs do not form analytic future. Why do they then inaccurately allow for PERF verbs to assume a habitual reading? If we look back at Table 2, it would become evident that these errors are due to transfer from English. In addition to using the Russian type of coercion, as in (9), the bilingual participants occasionally use the English type of coercion, as in (5), thus allowing the verbs that lack an outer AspP to receive a habitual reading, as they would in English.

Transfer from English can also explain why the attriters accepted illegitimate *PI-va forms in ongoing contexts. Recall that *-ing* is a suffix that can attach to atelic stems and prototypically yields an ongoing-event reading. Treating *-va* on a par with *-ing* would hence produce errors with *-va* attachment only in ongoing contexts.

From this study alone we can't tell whether the observed transfer affects linguistic competence of attriters or whether it is simply a surface phenomenon. Yet, the fact that the bilingual participants can use the Russian coercion operation and make errors with PI-va only in ongoing contexts does suggest that their linguistic competence of Russian is preserved, despite interference from English.

What is especially fascinating about the results of this study is that while the bilingual participants produced only a marginal amount of errors when tested on purely morphosyntactic properties related to aspect, they did struggle with some lexical properties. Although they were successful at recognizing that even idiosyncratic PERF verbs contain a prefix, they were less so in identifying SI verbs that are not attested in Russian. It looks as if they have forgotten which among SIs are legitimate and which are not. Individual variation suggests that some attriters are more successful at retaining lexical information than the others, which is to be expected of information dependent on memory. Individuals who have a gap in their lexical knowledge of SIs tend to make the system more regular. The fact that the bilingual participants have retained lexical information about PERF verbs, as opposed to lexical information about SI verbs, is not particularly surprising. Unlike various aspectual prefixes which behave as derivational morphemes (Filip 2001), *-va* behaves as an inflectional morpheme and, as such, is more prone to overgeneralization. This behavior is consistent with findings of Waas (1996) and Köpke (1999) who report that German L1 attriters tend to overgeneralize inflectional plural morphology.

8. Conclusion

The results of the present study demonstrate that pure L1 attrition only affects lexical but not morphosyntactic properties related to aspect. While Russian attriters do make some mistakes in their computation of verbal aspect, these errors can be explained by transfer from the dominant English. These findings argue against Pereltsvaig's (2004, 2005) claim that L1 attrition involves syntactic restructuring. On the bigger scale, they suggest that linguistic competence is not affected by L1 attrition.

There are different possibilities as to why the results of the present study do not support findings by Polinsky (1997, 2009) and Pereltsvaig (2004, 2005). First, this study did not test all properties related to aspect. It might well be that the bilingual participants would experience considerable problems with pragmatic knowledge related to aspect. Second, it is possible that production of aspect is affected by L1 attrition more severely than its comprehension. Third, the grammatical system of subjects tested by Polinsky and Pereltsvaig is most likely not a product of L1 attrition, but rather of a combination of L1 attrition and incomplete L1 acquisition, as these researchers tested individuals who immigrated to the US before their L1 acquisition of aspect had been completed.

The next step that this study should partake is to test some production data of Russian attriters who immigrated to North America after puberty. Such a study would help clarify whether in such individuals production of aspect is more severely affected than its comprehension.

References

- Ammerlaan, Tom. (1996). You get a bit wobbly...exploring bilingual retrieval processes in the context of first language attrition. Doctoral dissertation, University of Nijmegen.
- Borer, Hagit. (2005). *Structuring sense*. Volume II: *The normal course of events*. Oxford University Press.
- Comrie, Bernard. (1976). *Aspect*. Cambridge: Cambridge University Press.
- Copley, Bridget. (2002). The Semantics of the Future. Doctoral Dissertation, MIT.
- Cowper, Elizabeth. (1998). 'The simple present in English: a unified treatment.' *Studia Linguistica* 52: 1-18.
- Dahl, Östen. (1985). *Tense and aspect systems*. Oxford: Basil Blackwell.
- Depraetere, Ilse. (1995). 'On the necessity of distinguishing between (un)boundedness and (a)telicity.' *Linguistics and Philosophy* 18: 1-19.
- Hakuta, Kenji & Daniel D'Andrea. (1992). 'Some properties of bilingual maintenance and loss in Mexican background high-school students.' *Applied Linguistics*, 13(1): 72-99.
- Kazanina, Nina & Colin Phillips. (2003). 'Russian Children's Knowledge of Aspectual Distinctions.' In *Proceedings of the 27th annual Boston University Conference Language Development*, B. Beachley, A. Brown and F. Conlin (eds.). Somerville, MA: Cascadilla Press. pp. 390-401.
- Köpke, Barbara. (1999). L'attrition de la première langue chez le bilingue tardif: implications pour l'étude psycholinguistique de biliguisme. Unpublished Ph.D. diss, Université de Toulouse-LeMirail.
- Montrul, Silvina. (2008). *Incomplete Acquisition in Bilingualism. Re-examining the Age Factor*. Amsterdam: John Benjamins.
- Nossalik, Larissa. (2009). L2 acquisition of Russian aspect. Doctoral dissertation, McGill University.
- Nossalik, Larissa. (2011). 'What exactly does outer aspect encode?' In *Proceedings of the 2010 annual conference of the Canadian Linguistic Association*, Melinda Heijl (ed.).
- Olshtain, Elite & Margaret Barzilay. (1991). 'Lexical retrieval difficulties in adult language attrition.' In *First language attrition*, H. W. Seliger, & R. M. Vago (eds.). Cambridge University Press, pp. 139-150.
- Pereltsvaig, Asya. (2004). 'Immigrant Russian: Factors in the restructuring of the aspectual system under attrition.' *Proceedings of BLS* 29. Berkeley: University of California.
- Pereltsvaig, Asya. (2005). 'Aspect lost, aspect regained: Restructuring of aspectual marking in American Russian.' In *Aspectual Inquiries*, P. Kempchinsky and R. Slabakova (eds.). Dordrecht: Kluwer, pp. 369-395.
- Polinsky, Maria. (1996). American Russian: An endangered language? Ms. USC-UCSD.
- Polinsky, Maria. (2009). 'Without aspect.' In *Case and Grammatical Relations*, Corbett, G., & Noonan, M. (eds.), Amsterdam: John Benjamins, pp. 263-282.
- Ramchand, Gilian. (2008). *Verb meaning and the Lexicon. A first phase syntax*. Cambridge University Press.
- Rothstein, Susan. (2004). *Structuring Events: A Study in the Semantics of Lexical Aspect*. Blackwell: Oxford.
- Slabakova, Roumyana. (2001). *Telicity in second language*. Amsterdam: John Benjamins.
- Smith, Carlota. (1991/1997). *The Parameter of Aspect*. Dordrecht. The Netherlands: Kluwer Academic Publishers.
- Travis, Lisa. (1994). 'Event phrase and a theory of functional categories.' In *Proceedings of 1994 Annual Conference of the Canadian Linguistics Association (CLA)*. Toronto Working Papers in Linguistics.
- Travis, Lisa. 2010. *Inner aspect: the articulation of VP*. Dordrecht: Springer.
- Verkuyl, Henk. (1993). *A theory of aspectuality: The interaction between temporal and atemporal structure*. Cambridge: Cambridge University Press.
- Waas, Margit. (1996). *Language Attrition Downunder*. Frankfurt: Peter Lang.

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