

ARTICLE

Dual aspectual opposition sensitizes speakers to event stage in conceptualization: Evidence from Russian and English native and non-native speakers

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(Received 19 September 2024; Revised 24 March 2025; Accepted 24 March 2025)

Abstract

Grammatical aspect is a linguistic correlate of the temporal distribution of an event. However, aspect is not identical across languages. Crosslinguistic differences in mapping between aspect and basic temporal features such as event stage can reveal underlying language-specific criteria that guide event conceptualization. We investigated the relationship between grammatical aspect and event stage in conceptualizations of in-progress and completed events by native (L1) and non-native (L2) speakers of aspectual languages Russian and English. In L1, event stage predicted aspect in Russian but not in English. In L2s, event stage did not predict aspect. We discuss these findings in terms of crosslinguistic differences in the relevance of event stage for conceptualization in L1 as well as the role of L1 transfer in L2 aspect use.

Keywords: aspect; bilingualism; English; event conceptualization; Russian

1. Introduction

Events are at the core of the human experience. When we experience events, we often speak about them. To verbally encode an event, we engage in the process of event conceptualization, during which we identify event components we deem important to convey (Levelt, 1999, 1989). We also assume a certain perspective on the event's temporal characteristics (Bylund, 2011; Von Stutterheim & Nüse, 2003; Langacker, 1999). For example, one could select an outside view encompassing an event in its entirety (e.g., an apple was peeled). Alternatively, we could focus on a specific stage (e.g., an apple was in the process of peeling). In some languages, this contrast is conveyed through grammatical aspects. However, the way that grammatical aspect

carves up the temporal space differs across aspectual languages (e.g., Von Stutterheim et al., 2012; Zeller & Clasmeier, 2020). In this paper, we investigated event conceptualizations in two aspectual languages – Russian and English. We asked whether crosslinguistic differences in grammatical aspect systems are reflected in the role that event stage plays for conceptualizations of in-progress and completed events by native (L1) and non-native (L2) speakers.

The human mind segments the continuous stream of experience into discrete events (Radvansky & Zacks, 2011; Zacks et al., 2001). Zacks and Tversky (2001) define events as “a segment of time at a given location that is conceived by an observer to have a beginning and an end” (p. 3), highlighting a central role of temporal properties, such as duration and boundaries, within which events are embedded (Perry & Barwise, 1983; Radvansky & Zacks, 2011). General cognitive biases facilitate the extraction of events through the construction of event models – schematic representations of an event’s basic structure based on previous experience with similar happenings (Zacks et al., 2007). As we perceive events, our prior experience guides prediction as to how an event is going to unfold and eventually end. The unfolding of events can be decomposed into event stages – temporal slices of minimal duration that, depending on the inherent structure of the event, each represent a gradual progression towards the end-state of a (bounded) event (cf. Ji & Papafragou, 2020).

When people communicate about events, they use event models to construct their utterances. This involves the process of event conceptualization, which begins with the creation of a preverbal message (Levelt, 1999). Conceptualization continues with selecting specific event components, structuring them and linearizing them for the utterance (Von Stutterheim & Nüse, 2003). That is, the model of an event is encoded using lexical and grammatical means to form an utterance, which is subsequently decoded by the perceiver to reconstruct an event model derived from the surface forms (the exact wording) and propositions. The process of conceptualization implies that only certain components of the perceived event are included in the message.

How do we select utterance components? An influential hypothesis called Thinking-for-Speaking (Slobin, 1996) suggests that when one is preparing to speak, their processing of events is guided by the constraints of their language. In this vein, a distinction has been made between obligatorily and non-obligatorily encoded concepts. Obligatorily encoded concepts, such as grammaticalized categories are consistently used by speakers and thus result in highly automatized preferences during conceptualization (Schmiedtová, et al., 2011; cf. Slobin, 2006). Much scholarship in this area has focused on the relationship between motion event conceptualization and aspect grammaticalization (e.g., Flecken et al., 2015; Schmiedtová et al., 2011; Von Stutterheim et al., 2012). Aspect denotes the temporal distribution of an event. For example, the progressive aspect in English typically presents an event in progress (e.g., *She was peeling an apple*). When perceiving and conceptualizing motion events, native speakers of languages that grammaticalize aspect tend to focus on the current event stage. For example, a description of an event where an object is moving towards a potential endpoint but does not reach it is less likely to include the endpoint (e.g., Von Stutterheim et al., 2012). Accordingly, the endpoint would receive relatively little visual attention (cf. Carroll et al., 2004). This is in contrast with speakers of non-aspectual languages (e.g., German), who tend to conceptualize such motion events holistically by mentioning their endpoints, which also get more gaze fixations (e.g., Flecken et al., 2015; Von Stutterheim et al., 2012).

Event boundaries play a central role for both event cognition and grammatical aspect. Most events begin and end at some point in time. The progression toward the closing boundary – and the extent to which the culmination is predictable – profoundly affects how we process events. For example, resultative events – ones that have a predictable culmination, such as peeling an apple – lend themselves better to implicit categorization (Ji & Papafragou, 2020), attract more visual attention (Sakariias & Flecken, 2019) and are remembered better (Santin et al., 2021) than non-resultative events. Linguistically, grammatical aspect can shift one’s focus either toward a closing boundary (e.g., *She ate an apple*) or away from it (*She was eating an apple*). This way, it guides event model construction from verbal messages (Madden & Zwaan, 2003; Misersky et al., 2021; Zacks & Tversky, 2012). However, aspectual languages differ with respect to which boundaries their aspect denotes.

1.1. Crosslinguistic differences in the mapping between the temporal distribution of events and grammatical aspect

Aspectual languages differ in how they map grammatical aspect onto various temporal distributions. For example, Janda and Fábregas (2019) compared the use of grammatical aspect in Russian and Spanish – two aspectual languages that grammaticalize the perfective–imperfective contrast, albeit differently. Using parallel corpora, the authors analyzed the instances where an event described with past perfective in Spanish corresponded to past imperfective in Russian. They found such asymmetry in contexts where events were embedded within limited periods of time. Authors suggested that the two languages assume different perspectives on past events whose duration is constrained by a time period as opposed to a natural culmination: Spanish sees them externally as bounded by the specified time period, whereas Russian sees them from within, focusing on their durative nature and disregarding externally imposed boundaries. These findings highlight an important distinction between internal and external boundaries: an internal boundary is one that corresponds to the natural culmination of an event (e.g., an apple gets peeled). Alternatively, an event may be committed to a specific period of time, which imposes an external boundary (e.g., the apple peeling took place yesterday).

In an empirical study that compared event conceptualizations by native speakers of two genetically close aspectual languages, Russian and Czech, Schmiedtová and Sahonenko (2008) found that participants used different aspectual forms to describe the same events. Participants were presented with video clips of everyday events that culminated in an end-state (e.g., someone throws garbage into a bin) and asked to describe *what was happening*. Czech native speakers preferred the present perfective, conceptualizing events holistically as completed wholes. Russian native speakers, by contrast, preferred present imperfective, conceptualizing events as ongoing happenings. In Russian, using perfective to describe an event unfolding here and now would either be ungrammatical or imply a future reading. To convey and highlight an event’s culmination, past perfective would need to be used. In Czech, however, both imperfective and perfective are acceptable forms in the present tense. Preference for perfective likely stemmed from broader semantics of this aspectual form in Czech, which can be anchored in the here-and-now and describe present situations as having reached completion in a given moment (Schmiedtová et al., 2011). In sum, speakers

of Russian and Czech assumed different perspectives on the same events, where Czech emphasized event completion, while Russian did not.

Crosslinguistic differences in aspectual interpretation were also revealed in a series of eyetracking studies that used the visual world paradigm to investigate online semantic integration of aspectual information in Russian (Minor et al., 2022) and English (Vos et al., 2022). On each experimental trial, participants looked at two pictures depicting an in-progress and a completed version of the same resultative event while listening to sentences describing them either in past imperfective (Russian)/past progressive (English) or past perfective (Russian)/past simple (English). Imperfective/progressive sentences resulted in the visual preference for in-progress events in both languages. However, English and Russian native speakers differed drastically during the processing of perfective/past simple sentences. In Russian, the proportion of looks to the completed pictures significantly increased even before the verb offset. In English, no visual preference was found. These findings suggested that during online sentence comprehension, the Russian imperfective and perfective were distinctly associated with ongoingness and completion, respectively. In contrast, in English, progressive was associated with ongoingness, while past simple was not associated with a clear aspectual interpretation.

To summarize, although intuitively, event stage and boundaries are relevant characteristics for aspect, the definition of what represents a relevant event stage – and boundary – seems to differ across aspectual languages. Depending on whether the aspect choice hinges upon internal or external boundaries, the conceptualization of the same event may correspond to different event models in different languages.

1.2. Grammatical aspect in Russian and English

The focus of this paper is on the grammatical aspect, i.e., an aspect that is expressed in verb morphology. Grammatical aspect systems in Russian and English are not equivalent to each other. In Russian, aspect encompasses a dual opposition between perfective and imperfective. In English, the progressive aspect contrasts with non-progressive but is not opposed to it.

Aspect is an obligatory characteristic of all Russian verbs in all their forms, including the infinitive. Each verb stem is, by default, either perfective or imperfective. Verbs formed from such bare stems are simplex perfectives and imperfectives, i.e., verbal forms that express corresponding aspectual information without affixes or compounds (Examples 1a, b, d and e). Aspectual information can also be specified through affixation, resulting in secondary perfectives and imperfectives, i.e., verbal forms that acquire aspectual information through affixation (Examples 1c, f).

- (1) a. čisti-t'
peel_{IPFV, SIMPLEX-INF}
'to peel'
- b. čisti-l-a
peel_{IPFV, SIMPLEX -PST-F.SG}
'was peeling'
- c. po-čisti-l-a
peel_{PFV, SECONDARY-PST-F.SG}
'peeled'

- d. da-t'
give.PFV.SIMPLEX-INF
'to give'
- e. da-l
give.PFV.SIMPLEX-PST.M.SG
'gave'
- f. da-va-l
give.IPFV.SECONDARY-PST.M.SG
'was giving'

According to formal semantic theories (e.g., Maslov, 1985), perfective verbs express a concrete-factual meaning, referring to events that took place and concluded within a specific time period. The Russian perfective is also commonly used to highlight the result of an event. Imperfective, in contrast, presents events as not delimited by boundaries. Imperfective verbs have a wider range of semantic meanings, such as concrete-processual (similar to English progressive) and general-factual (representing events without a specific temporal distribution). Imperfective is also typically used with states and unrestrictedly iterative (e.g., habitual) events.

Janda (2004) highlighted the unique role of event boundaries for the Russian aspect. Russian imperfective does not conceptually include inherent boundaries, even if enclosed by them externally. Thus, in this view, the imperfective conveys a from-within view of any – even a finished – event. By contrast, boundaries are an essential part of the Russian perfective. Thus, perfective highlights an event's boundaries and is not compatible with unbounded events. This opposition between relevance and irrelevance of inherent, internal boundaries is at the core of the Russian aspect. Crucially, Russian perfective and imperfective have distinct semantics. A change in aspect can either render a sentence ungrammatical or profoundly alter its meaning with respect to the event's temporal distribution (Examples 2a, b).

- (2) a. Devočka desiat' minut čisti-l-a / *po-čisti-l-a banany.
Girl ten minutes peel_{IPFV-PST-F.SG} / *peel_{PFV-PST-F.SG} bananas.
"The girl was peeling/peeled bananas for ten minutes."
- b. Devočka za desiat' minut (?)čisti-l-a / po-čisti-l-a banany.
Girl in ten minutes (?)peel_{IPFV-PST-F.SG} / peel_{PFV-PST-F.SG} bananas.
"The girl was peeling/peeled bananas in ten minutes."

In a different stance on the Russian aspect, Dickey (1997, 2018) singles out temporal definiteness as the central parameter distinguishing perfective and imperfective. In this view, temporal definiteness of perfective is realized, for example, in the presence of sequential and/or causal links between the event described with perfective and other situations within the discourse (Dickey, 2018, p. 82). By contrast, Russian imperfective simply lacks the assertion of being connected to other situations (p. 75) due to this form's temporal indefiniteness. Most relevant to our study, one of the instantiation of temporal definiteness is the link between the Russian perfective and the present utterance situation: perfective is compatible with descriptions of past actions whose result is still in effect at the moment of the utterance. If the result of an action is not on hand or is no longer relevant, only imperfective is acceptable (Dickey, 2018, p. 84).

For example, in statements of fact, Russian imperfective allows one to assert that an event has reached its result, with the basis of imperfective use being the repeatability of the situation. This stands in contrast with the focus on the process of the situation – which, in fact, is not a required component for the use of the imperfective in Russian, according to Dickey.

English verbs are characterized by both tense and aspect (Binnick, 1991, 2020; Michaelis, 2006). Although English past simple (e.g., *peeled*) is often conceptualized as aspectually perfective, morphologically, it is marked only for tense. Semanticists recognize that the English past simple does not always entail event completion (e.g., Martin et al., 2020; Martin & Demirdache, 2020; Van Hout, 2018). For example, the past simple can be used in imperfective contexts and acquire imperfective readings in combination with durative (Example 3a), stative (Example 3b) inherent situation aspect (e.g., González & Quintana Hernández, 2018) and Aktionsart (De Swart, 1998). Thus, although English past simple is somewhat semantically comparable to Russian perfective, it has much wider semantics that can be refined through combinations with situation aspect and temporal adverbials (e.g., *for ten minutes*) (Example 3c).

- (3) a. The boy slept all day.
 b. I loved bananas as a child.
 c. The girl peeled bananas for ten minutes.

Unlike Russian, English does not have a morphological imperfective. The progressive aspect (e.g., *was peeling*), formed by combining the inflected auxiliary verb *be* with a present participle (e.g., *was peeling*), typically appears in progressive contexts. English progressive can also carry habitual meaning, like Russian imperfective. However, contrary to Russian, English progressive is not typically used with states or general past references.

These inequivalences in English and Russian aspect have implications for the predictions related to its relationship with the event stage. In-progress events would be, in principle, described with both past simple and progressive in English, but only with imperfective in Russian. Completed events would correspond to either perfective or imperfective in Russian, but only to past simple in English. The realization of an event's closing boundary as well as temporal definiteness are the key conditions licensing the perfective aspect in Russian. In English, the past simple is not restricted to culminated events. By contrast, the English past progressive seems to be grounded in an event's ongoing status conveyed through context or lexical cues. Russian imperfective would not impose similar strict conditions licensing its use.

1.3. Grammatical aspect in L2

Previous studies investigating grammatical aspect acquisition in L2 focused on the effects of inherent predicational aspect (González, 2013) and L1 transfer. The concept of the inherent predicational aspect is based on the aspectual features of an entire predicate, i.e., the verb phrase (VP) with its complements (e.g., *to eat an apple*) rather than the lexical semantics of the lexical verb alone (*to eat*). Predicates can be categorized in terms of an economical two-way distinction based on temporal distributions associated with them. For example, in a study of the perfective-

imperfective distinction in L2 Spanish, native speakers of (non-aspectual) Dutch relied on the terminative-durative inherent aspectual distinction (González & Quintana Hernández, 2018). Terminative predicates are those referring to discrete events with inherent boundaries (e.g., *to eat an apple*). Durative predicates refer to events without a distinct completion boundary (e.g., *to eat apples*). In contrast, Domínguez et al. (2013) found that L1 English speakers learning L2 Spanish were more likely to ground their aspect use in dynamicity of the events described by predicates: while dynamic, non-stative predicates (e.g., *to eat an apple/apples*) were more likely to be used in perfective, the non-dynamic, stative ones (e.g., *to like apples*) were more frequent in imperfective. This, however, did not preclude L1 English speakers from overusing perfective in Domínguez et al. (2013) and González and Quintana Hernández (2018) – as was predicted for an unmarked, more frequently used form to which learners were likely exposed outside of the classroom.

Input frequency effects in L2 acquisition were also pointed out by Wulff et al. (2009): in L2 English acquisition, verbs first learned in progressive are both atelic (i.e., without an inherent goal-state) and frequently used in progressive by L1 English speakers. Likewise, verbs first learned in the past simple are typically telic (i.e., including an inherent end-state) and most frequently used in the past simple (p. 366). These findings, however, ignore the potential effects of L1 transfer. In a cloze task used by Izquierdo and Collins (2008), English L1 speakers overused perfective in L2 French and relied on the predicational aspect more than Spanish L1 speakers, who successfully transferred aspectual concepts from their L1 and distinguished perfective and imperfective even in non-prototypical contexts. In sum, these effects point, on one hand, the role of an event's inherent temporal contour and, on the other, the conceptual transfer from L1.

The relationship between the L1/L2 aspect and the conceptualization of visually presented events is severely understudied. The few studies that investigated this issue point to L1 transfer effects. Schmiedtová and Sahonenko (2008) had Russian and Czech native speakers conceptualize motion events in L2 German. Recall that previously, the Russian group adopted an ongoingness-focused conceptualization strategy, while the Czech group conceptualized the same events as completed. A similar pattern was replicated with motion event conceptualizations in L2 German. The Russian group conceptualized events in terms of the current event stage, mentioning potential end-points less often when the moving object did not reach the end-point. This was in contrast with Czech native speakers who again adopted a completion-focused conceptualization pattern and mentioned end-points even when they were not reached. Gilboy-Rubio and Cortès-Colomé (2019) investigated motion event conceptualization in L2 Catalan by L1 Russian speakers. Although both languages distinguish perfective and imperfective aspect, they do so differently. In the L1 Russian group, the L1-like aspect usage pattern persisted: they used more perfective with boundary-crossing motion events, in contrast with L1 Catalan speakers who preferred imperfective overall. In Bylund and Jarvis (2011), the inclusion of endpoints in motion event descriptions by Spanish (aspectual)–Swedish (non-aspectual) bilinguals negatively correlated with sensitivity towards aspectual violations in L1 Spanish. Overall, L1 seems to affect L2 aspect use. However, no previous studies directly investigated whether the relationship between the L1 aspect and event stage affects the conceptualization of events in L2.

2. The present study

Previous research on the relationship between grammatical aspect and event conceptualization points to cross-linguistic differences in the relevance of temporal characteristics of events in L1 as well as the conceptual influence of L1 during event conceptualization in L2. However, few studies have investigated the relationship between basic event characteristics – such as event stage – and grammatical aspects. Thus, our first research question was:

RQ1. Does the visually presented event stage predict grammatical aspects in Russian and English event descriptions?

Due to the dual aspectual opposition between perfective and imperfective in Russian, we expected that L1 Russian speakers would be sensitized to the temporal characteristics, specifically the realization of event boundaries, that license aspect use. Thus, we predicted that event stage would have an impact on aspect use in Russian event descriptions. Specifically, we expected that L1 Russian speakers would use more imperfective for in-progress events and more perfective for completed events. By contrast, English does not grammaticalize a true aspectual opposition. We expected that neither past simple nor past progressive would be incompatible with completed or in-progress events. Therefore, we predicted that in L1 English, the event stage would have a lesser, if any, impact on the choice of aspect in event descriptions.

Further, L2 research suggests that aspect-related event conceptualization patterns in L1 affect the conceptualization of events in L2. However, no L2 studies have considered to what extent such L1 transfer is grounded in habitual L1 event conceptualization patterns in terms of event stage relevance. Thus, our second research question was:

RQ2. Do L2 English and Russian speakers transfer the relevance of event stage for aspect from L1 when conceptualizing events in L2? That is, does their aspect use with respect to event stage resemble that of native speakers of their L1 or L2?

Stage is an event characteristic that can be perceived from its visual representation. If the relationship between aspect and the visually presented event stage is transparent in one's L2, it is possible that L2 speakers would benefit from such overt mapping and behave similarly to native speakers of their L2. Another possibility was that event stage relevance for aspect choice would be transferred from L1, in which case participants would follow the mapping between event stage and aspect from their L1.

To test these predictions, we designed an event conceptualization task. We presented participants with pictures of events across two levels of event stage: in-progress and completed. The pictures were accompanied by one-sentence captions that lacked the verb. Four groups of participants (L1 Russian, L1 English, L1 English speakers of L2 Russian and L1 Russian speakers of L2 English) were asked to finish the captions by supplying the missing words. We were interested in whether the event stage in the picture would predict aspect use in conceptualizations.

Given the open-ended nature of the task, we also conducted an exploratory analysis of the effect of the relative frequency of each VP in each aspectual form, regardless of event stage. This allowed us to describe more precisely when each group's conceptualizations were guided specifically by the visually presented event

stage and when they opted for the more frequent aspect with a given VP (cf. Wulff et al., 2009). Thus, our third exploratory research question was:

RQ3. To what extent are the choices of grammatical aspect in event descriptions by L1 and L2 speakers of English and Russian affected by the frequency of a given VP in each grammatical aspect?

3. Methods

3.1. Participants

We recruited unpaid participants through social media outlets and university list-servs. Before proceeding to the experiment, potential participants had been screened based on the following criteria: (1) Native speakers of the study language (for L1 groups), native English speakers learning Russian as a second language (for the L2 Russian group) or native Russian speakers learning English as a second language (for the L2 English group); (2) age 18 or older. Only participants who finished the entire task and responded to the demographic questionnaire were included in the analyses. The numbers of participants included in the final analyses, along with their self-reported L2 proficiency and age of L2 acquisition (only for L2 groups), are presented in Table 1.

Of the 51 participants in the L1 Russian group, 14 reported living in English-speaking countries at the time of participation. Of these participants, nine reported Russia as their country of birth and five Ukraine, where Russian was a recognized minority language. The reported ages of moving to the said English-speaking countries were between 13 and 32 years old. Most participants reported knowledge of English as a foreign language and at least one other foreign language. Of the 47 participants in the L1 English group, all reported English-speaking countries as their countries of both birth and residence at the time of participation. Most reported knowledge of at least one foreign language. For six participants, at least one of their known foreign languages was Russian.

Of the 50 participants in the L2 Russian group, four reported living in countries where Russian was spoken as an official language (Russia) or as a recognized minority language (Ukraine, Moldova) at the time of participation. All four reported English-speaking countries as their countries of birth and had moved to the said Russian-speaking countries between the ages of 20 and 27. Additionally, two participants reported Russia as their birth country and one person, Lithuania. All of these participants relocated to an English-speaking country at or before the age of seven. We decided to keep these participants on the grounds that they had spent the majority of their lifetime in countries where English was the majority language, their age of relocation was before puberty and they received all of their formal education in English. Of the 49 participants in the L2 English group, 18 reported living in an English-speaking country at the time of participation. Of these, 14 were born in

Table 1. Participants' ages and language backgrounds

	L1 English	L2 Russian	L1 Russian	L2 English
Number of participants	47 (36 F)	49 (36 F)	51 (43 F)	50 (37 F)
Mean age (SD)	37.00 (12.80)	41.58 (16.56)	37.16 (9.08)	34.18 (7.08)
L2 Proficiency (max. 45)	–	37.33 (6.97)	–	39.74 (5.66)
Age of L2 Acquisition	–	15.52 (6.23)	–	9.72 (5.17)

Russia, while the remaining three were born in countries where Russian is a recognized minority language (Ukraine, Belarus). The reported age of moving to these English-speaking countries for the 18 participants ranged from 13 to 35 years. Most L2 participants in both groups reported knowledge of at least one other foreign language in addition to English and Russian.

The study was approved by the local Institutional Review Board.

3.2. Materials

We created a total of 60 targets (see [Figure 1](#) for an example) and 40 filler images. All images depicted common, everyday events, such as peeling bananas. Of the target images, 30 depicted in-progress events and 30 depicted the same completed events. Images of in-progress events included the hands of an agent performing an action (e.g., hands peeling a banana). Completed event images depicted objects representing a completed action (e.g., peeled bananas on the table) and did not always include an agent. The filler images depicted various motion events. The images were put into two lists so that each participant only saw each event in one condition. Within each list, items were randomized.

To verify that the target images representing events as in-progress and completed were perceived as such, we conducted a norming study, described in [Supplementary Materials](#). The results of the norming study confirmed that in-progress images were significantly more likely to be rated as depicting unfinished events in comparison with completed event images.

3.3. Procedure

The study was carried out online using Qualtrics (Qualtrics, Provo, UT). All instructions and materials, including the consent procedure, were presented in English for participants tested in English and in Russian for participants tested in Russian. Participants first gave informed consent and completed the language background questionnaire. Then, they were presented with one of the lists, each consisting of 30 experimental and 20 filler items. In each trial, a single image appeared with a caption fragment (e.g., *Yesterday she _____ bananas.*). Participants were instructed to fill in the blank with as many words as they deemed necessary. The participation in the experiment took approximately 20 minutes.



Figure 1. Examples of target images.

3.4. Data coding

We coded all responses to the experimental items for the use of imperfective (in Russian task language)/progressive (in English task language) (imperfective/progressive = 1; perfective/past simple = 0). In Russian, a response was scored as imperfective if it included a verb stem with imperfective morphology (Example 4):

- (4) čisti-l-a
 peel.IP.FV.PST-F.SG
 ‘was peeling’

For non-native Russian speakers, we also scored responses that included an incorrect but understandable verb stem with distinctive perfective or imperfective morphology, such as (Example 5)

- (5) *pylysos-yva-l-a
 vacuum.IP.FV-IP.FV.PST-F.SG
 ‘was vacuuming’

Due to our interest in aspect use, responses without distinctive aspectual morphology were excluded. In the English task language, the response was scored as progressive if it included a *was + ing* form. Responses not in the past tense were excluded because all prompts began with a past tense adverbial. Thus, failure to use past tense would suggest inattentive task performance.

3.5. Aspectual VP frequencies

To account for the possibility that the selection of grammatical aspect in each description is based on the relative frequency of each given VP in a certain aspectual form, rather than the visually presented event stage, we calculated relative frequency of perfective/past simple and imperfective/progressive versions of the VP tokens used in the descriptions. A VP token corresponded to the lexical verb used by the participant plus the direct object. We calculated relative Aspectual VP Frequency using the following formula: Relative Aspectual VP Frequency of a VP token in a given aspect corresponded to the raw frequency of the given VP in a given aspect divided by the sum of raw frequencies of the same VP in both aspects. Therefore, the relative Aspectual VP Frequency for each VP was the proportion of this VP used in a given aspect relative to the other member of the aspectual pair (e.g., past imperfective vs. past perfective in Russian; past progressive vs. past simple in English). For convenience, we will use the term “aspectual VP frequencies” in the rest of the paper to refer to relative aspectual VP frequencies.

In Russian task language, Aspectual VP Frequencies were extracted using the Corpus Query Language (CQL) (Jakubíček et al., 2010) from the Russian Web 2011 (RuTenTen11) corpus on Sketch Engine (Kilgarriff et al., 2014). First, a list of all VP tokens was prepared for each event item (combining VPs used by participants for both completed and in-progress event descriptions), separately for each group. Each token consisted of a lexical verb plus the direct object (as provided in the caption). In rare cases where participants filled in their own direct object, such a direct object was used in the VP. For each token from the list, aspectual pairs were identified based on

the following criteria: (1) if a specific token appeared only in simplex imperfective, the most frequent secondary perfective counterpart was selected from the corpus to form an aspectual pair; (2) if both simplex imperfective and secondary perfective(s) were used by the group, they were considered an aspectual pair – or a group if more than one secondary perfective was used. The cumulative frequency of all secondary perfectives in the group was calculated relative to the simplex imperfective; (3) if both simplex and secondary imperfective with equivalent semantic meanings were used (see Examples 6a and b), such tokens were combined and their cumulative relative frequency was calculated. Each token included only past indicative active verbs in all genders and numbers. Within each aspectual pair or group, the relative frequencies summed to 100%. Example 1S in [Supplementary Materials](#) illustrates the calculation of aspectual VP frequencies in English (1Sa) and Russian (1Sb).

- (6) a. *pec ata-t'*
 print.IPFV.SIMPLEX-INF
 'to print'
- b. *ras-pec at-yva-t'*
 print.IPFV.SECONDARY-INF
 'to print'

In English task language Aspectual VP Frequencies were extracted from English Web 2020 (EnTenTen20) corpus on Sketch Engine (Kilgarriff et al., 2014) using CQL (Jakubiček et al., 2010). First, a list of all tokens was prepared for each event item (combining VPs from both completed and in-progress event descriptions), separately for each group. Each token consisted of a lexical verb plus the direct object, which was provided in the caption. In rare cases where participants filled their own direct object, such a direct object was used in the VP. For each token from the list, aspectual pairs were based on past simple and past progressive forms of the lexical verb used in the VP.

The list of tokens for all groups, as well as examples of CQL queries used to extract Aspectual VP Frequencies, are available at <https://tinyurl.com/48u4m8h7>.

3.6. Statistical analyses

The data were analyzed using a generalized linear mixed model fitted by maximum likelihood. The binary dependent variable was aspect (perfective/past simple = 0, imperfective/progressive = 1). In the main model, categorical predictors were Event Stage (in-progress, completed), Native Language (Russian, English), Task Language (Russian or English) and the continuous predictor Aspectual VP Frequency (empirical log-transformed due to the use of proportions), as well as interactions among them. The categorical predictors were sum-coded to report main effects. Reference levels were set to Russian for Native and Task Languages and to “completed” for Event Stage. Additionally, we included the continuous predictor L2 Proficiency (z-transformed) as a co-variate. The initial random effects (RE) structure included random intercepts by participants and items (corresponding to the event regardless of stage), along with random slopes for Event Stage, Native Language, Task Language and their interactions. The RE structure was simplified until the model converged or reached a non-singular fit (Barr et al., 2013) and resulted in random

intercepts for subjects and items as well as a by-subject random slope for Event Stage and by-items random slopes for Event Stage, Native Language and Task Language. To address convergence issues, the optimizer *bobyqa* was used for all models.

Our main interest was in simple effects. Specifically, to answer RQ1, we were interested whether and how within each group Event Stage predicted aspect. All significant effects were followed up by Bonferroni-corrected pairwise comparisons. To answer RQ2, we were interested whether each L2 group's aspect use with each Event Stage resembled that of native speakers of their L1 or L2. To answer these specific questions, we planned to follow up the model with Bonferroni-corrected pairwise comparisons of the Event Stage by Native Language by Task Language three-way interaction regardless of its statistical significance in the main mode.

For an exploratory analysis of the effect of Aspectual VP Frequency, which was our RQ3, we conducted a planned post-hoc calculation of imperfective/progressive probabilities as predicted by empirical log-transformed Aspectual VP Frequency at each level of Event Stage for each group.

The main model was fitted using the R package *lme4* (Bates et al., 2015). All post-hoc analyses were conducted using the package *emmeans* (Lenth, 2022).

For descriptive reasons, we also fitted a linear mixed-effects model with the dependent variable Aspectual VP Frequency as predicted by Aspect, Event Stage and Group (L1 Russian, L2 Russian, L1 English, L2 English). The random effects structure was simplified until the main model and all nested models converged or reached a non-singular fit and included by-subject and by-item intercepts as well as an item random slope for Event Stage.

We used tidyverse packages (Wickham et al., 2019) to prepare raw data for analyses and *ggeffects* (Lüdtke, 2018) and *ggplot2* (Wickham, 2016) for data visualization. Ordinal regression analyses (cf. Barlaz, 2020) reported in Supplementary Materials were carried out using the R package *ordinal* (Christensen, 2019).

Data files, analysis scripts and visualization scripts are located at <https://tinyurl.com/48u4m8h7>.

4. Results

Figure 2 and Table 2 present the summary of imperfective (L1 and L2 Russian) and progressive (L1 and L2 English) use in descriptions of in-progress and completed events by each group. Descriptively, all groups used more imperfective/progressive with in-progress ($M = 35\%$, $SD = 35\%$) than completed events ($M = 26\%$, $SD = 27\%$). The L1 Russian group used imperfective most often overall ($M = 64\%$, $SD = 23\%$), followed by L2 Russian ($M = 49\%$, $SD = 18\%$) and L2 English ($M = 7\%$, $SD = 14\%$). The L1 English group used progressive least often ($M = 0.7\%$, $SD = 2\%$).

Frequencies of VPs across aspects, event stages and groups are summarized in Table 3. A linear mixed effects model fitted by maximum likelihood revealed that in the two groups that performed the task in English (L1 English and L2 English), frequencies of past simple VPs were significantly higher than those of progressive VPs (both $p < 0.005$). For the VPs used by the two Russian Task Language groups, imperfective VPs had significantly higher frequencies overall (both $p > 0.05$).

Table 4 and Figure 3 summarize main effects and interactions of the generalized linear mixed effects model fitted by maximum likelihood.

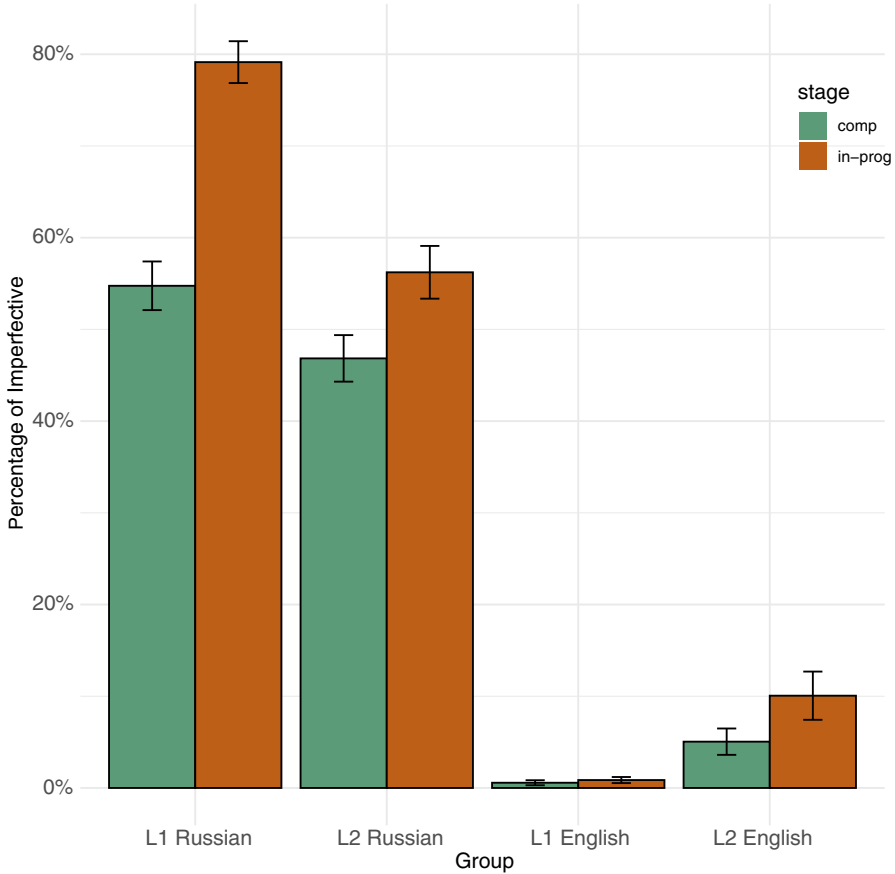


Figure 2. Percentages of imperfective/progressive use.
 Note: Error bars represent the standard error of the mean.

Table 2. Summary of imperfective/progressive aspect use by group and event stage

Group	Event stage	
	In-progress	Completed
L1 Russian	<i>M</i> = 76% (<i>SD</i> = 19%)	<i>M</i> = 52% (<i>SD</i> = 20%)
L2 Russian	<i>M</i> = 53% (<i>SD</i> = 19%)	<i>M</i> = 44% (<i>SD</i> = 16%)
L1 English	<i>M</i> = 0.8% (<i>SD</i> = 2%)	<i>M</i> = 0.6% (<i>SD</i> = 2%)
L2 English	<i>M</i> = 9% (<i>SD</i> = 17%)	<i>M</i> = 5% (<i>SD</i> = 9%)

The main model revealed a significant three-way interaction of Native Language by Task Language by Aspectual VP Frequency as well as four significant two-way interactions: Native Language by Aspectual VP Frequency, Task Language by Aspectual VP Frequency, Event Stage by Task Language and Event Stage by Native Language. There were significant main effects of Event Stage, Native Language, Task Language and Aspectual VP Frequency. The intercept indicated that the overall

Table 3. Predicate frequencies

Group	Event stage	Aspect	Relative frequency (%)
L1 Russian	Completed	Perfective	M = 59.18 (SD = 26.78)
		Imperfective	M = 68.62 (SD = 26.11)
L1 English	In-progress	Perfective	M = 61.64 (SD = 23.85)
		Imperfective	M = 59.69 (SD = 28.02)
L2 Russian	Completed	Past simple	M = 80.88 (SD = 23.79)
		Progressive	M = 21.22 (SD = 56.36)
L2 English	In-progress	Past simple	M = 83.35 (SD = 19.12)
		Progressive	M = 67.41 (SD = 50.50)
L1 Russian	Completed	Perfective	M = 53.08 (SD = 28.02)
		Imperfective	M = 61.38 (SD = 31.26)
L1 English	In-progress	Perfective	M = 53.52 (SD = 27.99)
		Imperfective	M = 62.39 (SD = 28.26)
L2 Russian	Completed	Past simple	M = 83.27 (SD = 21.34)
		Progressive	M = 20.14 (SD = 24.37)
L2 English	In-progress	Past simple	M = 81.91 (SD = 3.03)
		Progressive	M = 18.03 (SD = 19.76)

Table 4. Main model estimates on the logit scale

	Estimate	SE	z-value
(Intercept)	-1.752	0.468	-3.777***
Event stage	-0.366	0.162	-2.265*
Native language	0.853	0.218	3.913***
Task language	3.006	0.246	12.215***
Aspectual VP frequency	-1.038	0.170	-6.100***
L2 proficiency	-0.245	0.218	-1.125
Event stage: Native language	-0.256	0.117	-2.196*
Event stage: Task language	-0.290	0.141	-2.055*
Native language: Task language	-0.138	0.207	-0.666
Event stage: Aspectual VP frequency	0.235	0.154	1.528
Native language: Aspectual VP frequency	-0.688	0.158	-4.349***
Task language: Aspectual VP frequency	1.131	0.170	6.673***
Event stage: Native language: Task Language	-0.168	0.117	-1.438
Event stage: Native language: Aspectual VP frequency	0.279	0.152	1.834
Event stage: Task language: Aspectual VP frequency	0.161	0.152	1.061
Native language: Task language: Aspectual VP frequency	0.340	0.158	2.153*
Event stage: Native language: Task language: Aspectual VP frequency	0.105	0.151	0.692

Note: Formula: aspect ~ 1 + Event Stage × Native Language × Task Language × Aspectual VP Frequency + L2 Proficiency + (1 + Event Stage | subject) + (1 + Event Stage | item).
 *** $p < 0.001$,
 * $p < 0.05$.

predicted probability of imperfective/progressive was 0.17 (-1.752 on the log-odds scale). We describe each of the interactions and main effects below.

The three-way interaction of Native Language by Task Language by and Aspectual VP Frequency indicated that, averaged across the event stage, the effect of Aspectual VP Frequency affected each group differently: in the L1 English and L2 English groups, the predicted probability of progressive significantly decreased with higher Aspectual VP Frequency, with a step of 0.242 for the L1 English group and 0.039 for the L2 English group. In the L1 Russian group, the predicted probability of

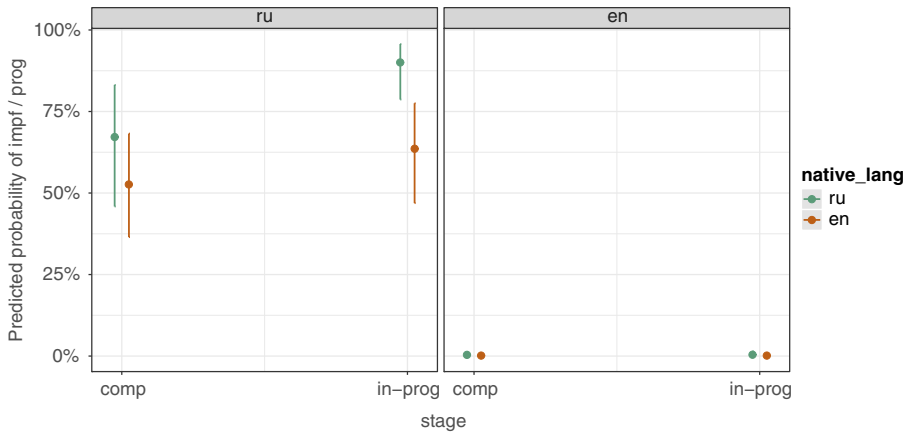


Figure 3. Main model plot: predicted probabilities of imperfective/progressive averaged over Aspectual VP Frequency.

Note: Error bars represent 95% confidence intervals.

imperfective was not significantly affected by changes in Aspectual VP Frequency. In the L2 Russian group, by contrast, the predicted probability of imperfective significantly increased with higher Aspectual VP Frequency, with a step of 0.609. These patterns were confirmed by the two two-way interactions of Task Language by Aspectual VP Frequency and Native Language by Aspectual VP Frequency.

Averaged over the Native Language, the predicted probability of imperfective in the Russian task language was significantly higher with in-progress events (0.799) than completed events (0.601) (odds ratio (OR) = 0.379, $SE = 0.089$, $p < 0.001$). This was not the case in the English Task Language, where the probability of progressive was 0.002 with both event stages ($p > 0.1$). Averaged over the Task Language, the predicted probability of imperfective/progressive in descriptions of in-progress events was significantly higher in Russian native speakers than in English native speakers (OR = 3.989, $SE = 1.987$, $p = 0.03$).

The main effects indicated that the following: first, a higher Aspectual VP Frequency predicted a lower probability of imperfective/progressive with a step of 0.090 for one unit increase in Aspectual VP Frequency. Second, in the Russian Task Language (L1 Russian and L2 Russian groups), the predicted probability of imperfective was higher than that of progressive in English task language (0.710 vs. 0.002, OR = 1082, $SE = 551$, $p < 0.001$). Third, collapsed across the Task Language, Russian native speakers were more likely to use imperfective/progressive than English native speakers (predicted probabilities: 0.115 vs. 0.041, OR = 3.04, $SE = 1.350$, $p = 0.01$). Fourth, the predicted probability of imperfective/progressive was higher with in-progress than completed events overall (0.088 vs. 0.054), but this difference did not reach significance in the post-hoc pairwise comparisons (OR = 0.589, $SE = 0.199$, $p = 0.1$).

The simple effects that are most relevant for our research questions are summarized in Table 5. The planned Bonferroni-corrected pairwise comparisons focused on simple effects revealed that only in the L1 Russian group, the predicted probability of imperfective was significantly higher in descriptions of in-progress events ($\beta = 0.901$, $SE = 0.042$, 95% CI: 0.784–0.958) than completed events ($\beta = 0.672$, $SE = 0.010$, 95%

Table 5. Summary of pairwise comparisons

Group contrast	Event stage Contrast	Odds ratio	SE	z-ratio
Within-group comparisons				
L1 Russian	Completed vs. In-progress	0.226	0.065	-5.151***
L1 English	Completed vs. In-progress	0.939	0.757	-0.078
L2 Russian	Completed vs. In-progress	0.636	0.168	-1.717
L2 English	Completed vs. In-progress	0.894	0.628	-0.160
Between-Group Comparisons				
L2 Russian vs. L1 Russian	Completed	1.842	0.667	1.688
	In-progress	5.192	2.214	3.863**
L2 Russian vs. L1 English	Completed	875.642	746.647	7.945***
	In-progress	1292.543	1060.421	8.733***
L2 English vs. L1 English	Completed	2.917	2.786	1.121
	In-progress	3.064	2.690	1.275
L2 English vs. L1 Russian	Completed	552.881	373.927	9.337***
	In-progress	2190.051	1536.336	10.965***

*** $p < 0.001$,** $p < 0.01$.

CI: 0.458–0.832). In all other groups, the predicted probability of progressive was not significantly different between descriptions of in-progress and completed events.

Between-group pairwise comparisons indicated that for the L2 Russian group, the predicted probability of imperfective with completed events was significantly different from the probability of progressive for the L1 English group but not from the probability of imperfective in the L1 Russian group. However, in the descriptions of in-progress events, the probability of imperfective was significantly different from both L1 groups (lower than in L1 Russian but higher than in L1 English). For the L2 English group, the predicted probability of progressive in descriptions of both event stages was significantly lower than in the L1 Russian group but not statistically different from the predicted probability of progressive in the L1 English group.

For the exploratory analysis of the effect of Aspectual VP Frequency, we calculated the probabilities of imperfective/progressive as predicted by Aspectual VP Frequency separately for each Event Stage and group. The results are summarized in [Figure 4](#) and [Supplementary Table 1S](#) in [Supplementary Materials](#). In the L1 Russian group, the predicted probability of imperfective decreased with higher Aspectual VP Frequency in descriptions of in-progress events and increased in descriptions of completed events. In the L1 English group, the probability of progressive was not predicted by Aspectual VP Frequency. In the L2 Russian group, the predicted probability of imperfective increased with higher Predicate Frequency in both Event Stage conditions. In the L2 English group, the lower Aspectual VP Frequency correlated with a higher predicted probability of progressive.

5. Discussion

We investigated whether a visually presented event stage predicted aspect selection in L1 and L2 speakers of English and Russian. We found that the event stage interacted with native language and task language in predicting the likelihood of aspect selection. Native speakers of Russian used more imperfective/progressive than native speakers of English in descriptions of in-progress events. In the Russian task

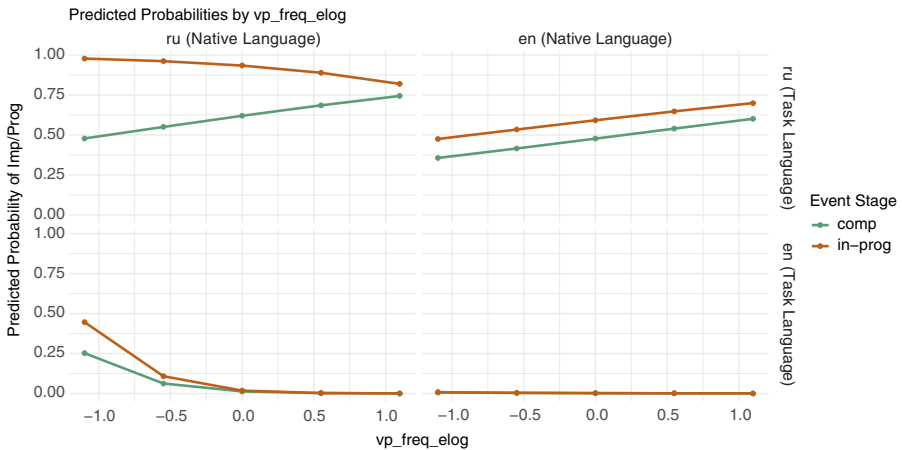


Figure 4. Main model plot: predicted probabilities of imperfective/progressive as a factor of Aspectual VP Frequency, at each level of Native Language and Task Language.

language, imperfective was used more often overall than progressive in English task language. Additionally, in Russian task language was more imperfective in descriptions of in-progress events than completed events. More specifically, while the L1 Russian group used more imperfective with in-progress than completed events, the L1 English group did not differentiate between event stages through aspect selection. The L2 English group patterned with the L1 English group. First, the use of progressive was not statistically different in each event stage condition from the L1 English group. Second, the difference between in-progress and completed conditions within the L2 English group was not statistically significant. The L2 Russian group used imperfective with both event stages, but the difference between event stages was not statistically significant. Exploratory analyses of Aspectual VP Frequency effects provided further nuance: the L1 Russian group used imperfective with in-progress events even when the imperfective VP frequency was lower; the group also used imperfective with completed events more often when the frequency of the VP in imperfective was higher. By contrast, the L2 Russian group's use of imperfective positively correlated with VP frequency regardless of event stage. We discuss these findings below.

5.1. Grammatical aspect and event stage in L1 Russian

The L1 Russian group used perfective and imperfective with both event stages. However, the group was significantly more likely to use imperfective with in-progress than completed events. This finding quantifies the distribution of perfective and imperfective with respect to event stage. Although formally Russian has a dual aspectual opposition, the distribution of these forms in usage is not complementary, as our findings show. In our study design, imperfective was most common in event descriptions overall. This finding is in line with linguistic observations that Russian imperfective has wider semantics, which encompass, for example, a general-factual meaning (Maslov, 1985) that shifts the focus away from the resultant state (Dickey, 1997, 2018). Importantly, however, our findings indicate that this underspecification

of the temporal distribution was not the only predictor of imperfective use in event descriptions.

The depicted event stage increased the likelihood of imperfective: in-progress events were more likely to elicit imperfective than completed events. On one hand, this could suggest that the L1 Russian group used imperfective to mark ongoingness or the concrete-processual meaning (Maslov, 1985). This finding also lends support and adds further nuance to Janda and Fábregas (2019)'s proposed view of Russian imperfective as “seeing” an event from within, regardless of externally imposed boundaries. In our study, the temporal adverbial *Yesterday* externally imposed a time period within which the events were embedded. Nevertheless, it did not affect the use of the imperfective: literally *seeing* an unconstrained event elicited more imperfective in L1 Russian. At the same time, the visually depicted internal boundary – i.e., a completed event – decreased the likelihood of imperfective.

The L1 Russian findings are consistent with those of previous experimental studies. In Schmiedtová and Sahonenko (2008), Russian native speakers used the imperfective present to describe event videos that culminated in an end-state. We show that framing an event as specifically past reveals that the use of imperfective with culminated events is not a wholesale characteristic of L1 Russian: the choice of aspect could be modulated by the attainment or non-attainment of the end-state. Further, our findings extend those by Minor et al. (2022), who found that during on-line sentence comprehension, Russian native speakers tended to associate imperfective and perfective verbs with in-progress and completed events, respectively. First, we show that a similar pattern emerges in event conceptualization. Second, our findings indicate that imperfective can also be associated with completed events. This inconsistency reflects a difference between experimental designs. Participants in our study were not engaged in interpreting the implicatures of aspectual forms but had the freedom to use any aspectual verb to describe the picture they saw on the screen. Recall that the process of conceptualization involves selecting relevant elements for subsequent verbal encoding. We find it plausible that in our study, participants could subjectively perceive completion as more or less relevant for the conceptualization of each specific event picture. This, however, did not affect the overall effect of the event stage.

Our L1 Russian findings can also be considered from the angle of the use of *perfective* in event descriptions. As pointed out by Dickey, a key condition justifying the use of perfective is the relevance of an event's resultant state at the moment of the utterance (e.g., Dickey, 2018). In our design, pictures of completed events – i.e., pictures demonstrating their resultant state – could serve as cues pointing to the relevance of the resultant state. In other words, an alternative possibility is that the driving force behind the differentiation between event stages through aspectual forms was the depiction of the resultant rather than the ongoing state. However, this view is challenged by the analysis of the Aspectual VP Frequency effect on the choice of aspect in event descriptions.

An analysis of the effect of relative Aspectual VP Frequency showed that, for the L1 Russian group, higher Aspectual VP Frequency predicted a higher probability of imperfective in descriptions of completed event pictures (an increase from 48% to 74%). This puts into perspective the use of aspect to describe completed events: the likelihood of imperfective increased proportionally to the frequency of the VP in imperfective. That is, the marking of the visually perceived completed event (i.e., an event with a relevant resultant state) with a perfective verb was substantially

moderated by the higher frequency of the VP in imperfective. At the same time, higher Aspectual VP Frequency negatively correlated with imperfective use in descriptions of in-progress pictures, although the magnitude of this effect was smaller and the use of imperfective was still above chance-level (a decrease from 98% to 82%). Put simply, the L1 Russian group used imperfective to describe in-progress events even when the VP they used was less frequent in imperfective. Speculatively, this strengthens the case for specifically ongoingness, i.e., the absence of internal event boundaries, in the selection of aspect in Russian. Our data suggest that the attainment of completion may be not as restrictive for aspect selection as ongoingness. In other words, we show that in contrast with or rather in addition to former work on aspect, e.g., that by Dickey (1997, 2018), ongoingness (i.e., the processual component of the event) plays a non-trivial role for the use of Russian imperfective – and allegedly a stronger one than the resultant state for the selection of perfective – at least when describing visually presented events at distinct stages.

5.2. Grammatical aspect and event stage in L1 English

The L1 English group used a negligible amount of progressive to mark the event stage. A simplistic explanation could be that the L1 English group conceptualized all events as completed, consistent with the interpretation of the past simple as perfective. However, as previous literature has shown, aspectual interpretation of the past simple is not always straightforward. Thus, below, we entertain other possible explanations for this behavior in L1 English.

One issue worth discussing is why the L1 English group did not use progressive to describe in-progress events. The one grammaticalized aspectual form of English, progressive, is almost always associated with ongoingness (cf. 1.2). The negligible amount of progressive used in our study suggests that our experimental design was not sufficient to elicit progressive in English. This “insufficiency” could stem from event pictures or the structure of captions or both. With regard to pictures, we note that it is unlikely that the L1 English group did not perceive the in-progress pictures as ongoing. However, it is plausible that this ongoingness by itself was not sufficient to elicit progressive in descriptions that focused on one action. That is, in the absence of a context emphasizing the relevance of ongoingness – visual or lexical—L1 English speakers appear to be reluctant to use progressive. English progressive could be conceived of as a means of backgrounding events in narratives (e.g., Bardovi-Harlig, 1998). This observation suggests that single, i.e., by default foregrounded, events, such as those used in our study design, are unlikely to be described in progressive. Thus, we suggest that depicted ongoingness by itself is not a sufficient criterion to justify the use of progressive in L1 English.

The second consideration is the structure of the caption used to elicit the missing verbs. All captions in our study began with the temporal adverbial *yesterday* and contained only one gap corresponding to the verb phrase. Thus, the description task was not entirely open-ended. The use of an externally bounding temporal adverbial might, in principle, emphasize the completion interpretation. Such interpretation would suggest that externally imposed boundaries play a perfective-licensing role in English. If this line of reasoning is correct, it might well be that the L1 English group conceptualized events as eventually finished, even if they were presented in progress.

We also suggest an alternative explanation, which takes into account the aspectual ambiguity of the English past simple (e.g., Martin et al., 2020; Martin & Demirdache, 2020; Van Hout, 2018; Vos et al., 2022). English past simple is not a proper aspectual form and thus could be used for general-factual statements (Maslov, 1985) without regard to the temporal distribution of an event. In the absence of a more restrictive context, L1 English speakers might tend to underspecify the event stage – or, in fact, purport to not specify it. This, again, emphasizes that merely the visually presented event stage is not a sufficient factor in aspect selection in L1 English. The Aspectual VP Frequency analysis supports this reasoning: past simple was by far the most frequent form vs. progressive.

5.3. Grammatical aspect in L1 Russian and L1 English: general discussion (RQ1)

Our first research question was: *Does the visually presented event stage predict grammatical aspect in Russian and English event descriptions?* Our findings outright suggest that the visually presented event stage plays drastically different roles in English and Russian. In L1 Russian, the event stage played a paramount role in the selection of aspect, overpowering even the effect of Aspectual VP Frequency when imperfective was used to describe in-progress events. Completed events decreased the likelihood of imperfective and gave way to Aspectual VP Frequency effects. Overall, this suggests that event ongoingness served as a stronger cue to elicit imperfective than completion to elicit perfective in L1 Russian.

In L1 English, the visually presented event stage did not affect aspect selection. Arguably, our experimental design, where events were framed as occurring in the past and the focus was placed on a single foregrounded event, served as a source of overwhelming bias for the use of past simple. We find it unlikely that the L1 English group conceptualized all events as specifically finished. Rather, we suggest that the L1 English group treated event descriptions as a general-factual reference to past happenings encompassed within a finished time period. Investigating conditions licensing the use of progressive and past simple to mark a visually presented event stage in English would be an interesting avenue for future research.

5.4. Grammatical aspect and event stage in L2 Russian

Although descriptively, the L2 Russian group used more imperfective with in-progress than completed events, this difference did not reach statistical significance. On one hand, the L2 Russian group used a substantial amount of imperfective, which is in contrast with the pattern found in the L1 English group. On the other hand, the group did not seem to use imperfective to mark the depicted event stage, in contrast with the L1 Russian group.

Aspect is an obligatory and unavoidable characteristic of Russian verbs. Thus, it is hardly surprising that the L2 Russian group did not resort to only one aspectual form. Yet, would it be fair to conclude that the L2 Russian group did not differentiate between event stages because of the conceptual transfer from L1 English? As seen in L1 results, the mapping between the visually perceived event stage and grammatical aspect is drastically different in Russian and English.

We suggest that the L2 Russian group did not acquire the relevance of a visually presented event stage for aspect selection in Russian. One possibility is that the L2

Russian group acquired wider semantics of imperfective (hence the use of imperfective with both event stages), but not the weights of contextual cues favoring one aspect over another. For example, while imperfective can be and often is used to describe both completed and in-progress events, it is particularly preferred in descriptions of events that are visually presented in progress, as follows from our L1 Russian data (cf. Section 5.1). Furthermore, the L2 Russian data also suggest that this group did not pick up on the relevance of the resultant state as a cue licensing the use of perfective (cf. Dickey, 2018). The importance of the event stage seems to evade the L2 Russian group in our study.

The exploratory analysis of Aspectual VP Frequency indicated in both event stage conditions, the L2 Russian group's use of imperfective was substantially guided by Aspectual VP Frequency: higher imperfective frequency predicted an increase in the use of imperfective from 36% to 60% with completed events and from 48% to 70% with in-progress events. This correlation casts some doubt on the L2 Russian group using imperfective merely based on its wider temporal semantics. The observed Aspectual VP Frequency effect is consistent with Wulff et al. (2009) who pointed out that the acquisition of grammatical aspect in L2 can be predicted by the association between perceived resultativeness of events denoted by the lexical verbs and the frequency of their occurrence in perfective and imperfective. Our findings extend this observation to L2 Russian: the only factor that significantly predicted aspect use in this group was Aspectual VP Frequency.

5.5. Grammatical aspect and event stage in L2 English

Although the L2 English group overwhelmingly used past simple across event stage conditions, this group also used progressive more than the L1 English group did. Descriptively, L2 English participants used more progressive with in-progress than completed events. This pattern might suggest an effect of L1 transfer where ongoingness is associated with progressive, similarly to past imperfective in L1 Russian. However, this trend did not achieve statistical significance. We suggest that the L2 English group successfully acquired the broad temporal semantics of the English past simple and the effect of L1 transfer was negligible.

Although the exploratory Aspectual VP Frequency analyses suggested that lower Aspectual VP Frequency predicted a higher likelihood of imperfective, this observation is confounded with the overall significantly lower frequency of progressive VPs. That is, in those few instances when L2 English participants used progressive, the VPs that they used had lower frequency in progressive, as was the case for all English VPs used by the participants in our study. Accordingly, one might conclude that a higher frequency of past simple could underpin the L2 English results. This suggestion is generally consistent with Wulff et al. (2009) and observations in González and Quintana Hernández (2018) and Domínguez et al. (2013).

L2 English findings are in opposition to previous L2 studies that suggested an effect of L1 transfer in conceptualizations of native Russian speakers (Schmiedtová & Sahonenko, 2008; Gilboy-Rubio & Cortès-Colomé, 2019). First, these inconsistencies could be attributed to different study designs: unlike these previous studies, we investigated conceptualizations of non-motion events. Second, our focus was on the relationship between event stage and grammatical aspect, rather than event conceptualization patterns more generally. Our participants' conceptualizations

were constrained by the captions. Thus, our findings contribute further evidence to this severely under-researched area. We have shown that the effect of L1 transfer in event stage conceptualizations may be reduced when the L2 has a form with less constrained aspectual semantics (i.e., past simple) and higher overall frequency in usage.

5.6. Grammatical aspect in L2 Russian and L2 English: general discussion (RQ2)

Our second research question was: *Do L2 English and Russian speakers transfer the relevance of event stage for aspect from L1 when conceptualizing events in L2?* To sum up L2 results, our findings paint a more complex picture rather than one general pattern applicable to L2 aspect use. Although both L2 groups used imperfective/progressive at least to some extent, the event stage did not reliably predict its use. In L2 Russian, this suggested the failure to acquire the weight of event stage for Russian aspect usage. In L2 English, in contrast, the absence of the event stage effect patterned with L1 English. That is, within the context of our study, the L2 English group's conceptualizations indicated that this group successfully acquired the pattern where the visually presented event stage alone is not a sufficient contextual cue for using progressive.

Our L1 results indicated that while the event stage predicted aspect usage in Russian, it did not affect aspect usage in English. Thus, during L2 aspect acquisition, L2 Russian learners whose L1 is English are faced with a complex task of, first, acquiring a broader temporal scope of Russian imperfective in comparison with English progressive and, second, increasing the importance of event stage for aspect selection. Importantly, though, the use of aspect in Russian is not categorically predicted by event stage. Following our L1 Russian data, there is a complex interplay between the subjectively perceived relevance of internal and external event boundaries and the event stage, where in-progressiveness ultimately has a greater weight. Our findings suggest that in L2 Russian, the broader semantics of imperfective might obscure this greater weight of the event stage. Yet another possible explanation is, in fact, conceptual transfer from L1 English: given that the L2 Russian group generally preferred the more frequent aspectual version of the VP, we find it plausible that this group assumed an external view of events, describing them without regard for event stage. This hypothesis, however, needs further empirical investigation.

L2 English learners whose L1 is Russian, in contrast, need to learn that the event stage by itself does not affect the use of progressive and that the past simple is applicable to both in-progress and completed events. Intuitively, the latter task seems less challenging than that facing L2 Russian learners. Taken together, our findings suggest that L2 learners generally succeeded at acquiring “wholesale” patterns of aspect use.

In response to RQ2, we conclude that native-like L2 aspect usage seems to be predicted by the directionality of the degree of nuance in L1/L2 aspect systems: the system that relies more on a “wholesale” aspect applicability seems to exert a stronger influence. Thus, in L2 English, native Russian speakers successfully acquired the general applicability of past simple in labeling past events regardless of the stage at which they are presented. In L2 Russian, however, native English speakers persisted in labeling past events without regard for their visually presented stage and using aspect in accordance with frequency distributions. That is, when going from a less

nuanced L1 aspectual use pattern (English) to a more nuanced L2 aspectual use pattern (Russian), the acquisition appears to be more challenging and results in a hybrid pattern of less nuanced categorization combined with Aspectual VP Frequency effects.

5.7. Grammatical aspect and the effect of aspectual VP frequency: general discussion (RQ3)

Our third exploratory research question was: *To what extent are the choices of grammatical aspect in event descriptions by L1 and L2 speakers of English and Russian affected by the frequency of a given VP in each grammatical aspect?* Our analyses have shown that Aspectual VP Frequency affected aspect selection differently for each group.

The L1 Russian group demonstrated two distinct patterns with respect to the effect of Aspectual VP Frequency on descriptions of in-progress and completed events. In this group, the descriptions of completed events were more likely to be in the imperfective with the VPs that were most frequent in the imperfective according to corpus data. This was in contrast to descriptions of in-progress events where imperfective was especially common with VPs that were less frequent in imperfective. We take these two distinct findings as evidence of the importance of the visually depicted event stage – particularly ongoingness – for aspect selection in L1 Russian.

The L1 Russian pattern stands in stark contrast to the remaining three groups, as only in this group did the Aspectual VP Frequency interact with the event stage. The L2 Russian group's aspect selection positively correlated with Aspectual VP Frequency regardless of event stage. While this tendency is consistent with L2 acquisition literature reporting frequency effects on aspect use (Domínguez et al., 2013; González & Quintana Hernández, 2018; Wulff et al., 2009), it also points to this group's apparent failure to associate the Russian aspect with the visually presented event stage.

Lastly, the two English datasets showed patterns that were strongly affected by nearly exclusive use of past simple and an overwhelmingly higher frequency of all used VPs in past simple relative to past progressive, according to corpus data. As a result, the L1 English group did not show any effects of Aspectual VP Frequency – statistically, merely because this group used a negligible amount of past progressive. In the L2 English group, which used slightly more progressive in event descriptions, the correlation between progressive and Aspectual VP Frequency was negative: when this group used past progressive, it did so despite the overwhelmingly lower frequency of the corresponding VPs in past progressive. If we consider this pattern separately from an overpowering preference for past simple overall, it resembles a transfer from L1 Russian, where imperfective is acceptable with both event stages.

To answer RQ3, our data indicate that Aspectual VP Frequency affected aspect selection most strongly in L2 Russian, where it dictated aspect choice. It also substantially affected aspect selection in L1 Russian when this group described completed events, but not in-progress events, a pattern that we believe points to a stronger effect of the visually presented in-progress, relative to completed, event stage for aspect selection in Russian. Lastly, the effect of Aspectual VP Frequency could be described as overwhelming in L1 and L2 English groups, as the past simple was both

the most frequent in corpus data and the most common in event descriptions. At the same time, the mere fact that on several occasions L2 English participants did use the past progressive in spite of its relative infrequency suggested some L1 transfer from Russian. We continue the discussion of Aspectual VP Frequency effects in the next section.

5.8. Telicity and morphological complexity considerations

An anonymous reviewer raised a question related to event telicity. It has been observed in literature that in Russian, there appears to be a relationship between telicity and morphological complexity of verbs (e.g., Slabakova, 2003, 2005), such that telic verbs tend to have a morphologically simpler perfective form and atelic verbs, a simpler imperfective form. It was suggested that such an association between telicity and the morphological aspectual form might explain the patterns in our Russian data. To address this possibility, first, we consider the telicity of events used to elicit event descriptions in our study. Due to design considerations, specifically, the goal of eliciting descriptions of the same events depicted at two distinct stages – in progress and completed – we selected experimental items that were depictable at both stages. Most importantly, this means that all events included in the study had to have a predictable and visualizable end-state. Therefore, all depicted events in the study were, by design, telic. Following this line of reasoning, one might expect the perfective to be the most common form used by Russian task language groups. This was not the case: in L1 Russian, the most common form overall was imperfective ($M = 76\%$ with in-progress events and $M = 52\%$ with completed events), while in L2 Russian, the use of perfective and imperfective was around chance level with both event stages and did not statistically differ between them (imperfective with in-progress events: $M = 53\%$, perfective with completed events: $M = 56\%$).

The second consideration regarding the relationship between telicity and morphological complexity is related to the lexical verbs used by participants to describe the events. Indeed, the variety of verbs used in descriptions suggested that there was variability in conceptualizations of depicted events. The same event could be conceptualized as telic (Example 7a) or atelic (Example 7b).

- (7) a. *za-vari-l-a čaj*
 brew_{PFV.SIMPLEX-PST-F.SG}
 ‘she brewed tea’
 b. *gotovi-l-a čaj*
 cook_{IPFV.SIMPLEX-PST-F.SG}
 ‘she was making tea’

The possibility that the choice of aspect was influenced by the telicity of the VP used to describe an event can be addressed with the findings of the effect of Aspectual VP Frequency. This analysis, which answers our RQ3, was included to account for the possibility that, when describing the events, the participants’ aspect selection could be affected by the corresponding VPs’ frequency in a given aspect. For example, some VPs, such as *zavarit’ čaj* ‘to brew_{PFV.SECONDARY} tea’ are more frequent in perfective (61.86%) relative to their imperfective counterpart (*zavarivat’ čaj* ‘to brew_{IPFV.SECONDARY} tea’) (38.14%). A possible scenario was that participants would be simply

inclined to use the more frequent aspect version, regardless of the stage of the depicted event. If this were the case, we would see a positive correlation between aspect and Aspectual VP Frequency, regardless of event stage.

Such positive correlation between aspect and Aspectual VP Frequency was present in the L2 Russian group but not the L1 Russian group. In the L1 Russian group, collapsed across event stage, the effect of Aspectual VP Frequency did not predict aspect use. Therefore, we find it improbable that morphological complexity could explain the pattern of aspect use in this group. However, the pattern in L2 Russian data could, in principle, be accounted for by morphological simplicity as much as it can be explained by frequency effects. Most relevantly for our main research questions (RQ1 and RQ2), this pattern indicated that visual information did not play a role in aspect selection for the L2 Russian group as much as it did for the L1 Russian group. The stronger influence of linguistic cues, be it Aspectual VP Frequency or morphological simplicity, in aspect selection resembles the patterns observed in English task language groups.

Relatedly, the anonymous reviewer suggested that the effect of morphological simplicity might be the driving force behind the preference for past simple in English task language. It is difficult to argue to the contrary given the ubiquitous use of past simple in our English datasets. While we offered several possible accounts for this pattern in Section 5.3, we also concede that morphological simplicity might be another potential explanation. This explanation would also align with a possible shortcoming of our study design, specifically, the provision of a single write-in field for the missing aspectual verb. It is possible that at least some of the participants could have interpreted it as requiring one word rather than two, as would be necessary for past progressive. We note, however, that the instructions clearly stated that participants could write in as many words as they deemed necessary. Moreover, multiple participants in all groups did benefit from this instruction by writing in more than one word, be it a past progressive form or a verb together with an alternative direct object.

Lastly, our study had a number of limitations. First, our design did not allow for fully open-ended descriptions of events: our participants were provided with captions that lacked the verb, while the rest of the sentence, including the direct object, had been provided. Fully open-ended descriptions would have produced more naturalistic data, which might have been a more loyal reflection of aspect use in all groups. Second, each image stayed on the screen while participants described it. This way, our participants were not forced to rely on their working memory for conceptualizations. If our participants had been forced to rely on working memory, their conceptualizations would have been more likely to reflect the most salient event characteristics that they focused on during the processing of each event. Third, all of our captions included the word *yesterday*. Previous research suggests that temporal adverbials help establish a temporal frame of an event (e.g., Flecken et al., 2015). We used the word *yesterday* to implicitly prompt our participants to use the past tense. However, we admit that such imposed temporal frame may have forced a more holistic view of events and called for the choice of aspectual forms that reflect such a holistic view. Fourth, L2 proficiency effects were not the focus of our study and were not meticulously accounted for beyond including self-reported proficiency as a covariate. Nevertheless, the proficiency and experience with L2 could affect aspect production. Future research should incorporate objective measures to account for potential effects of L2 proficiency.

6. Conclusion

Linguistically, the grammatical aspect encodes event stage, among other event characteristics. We tested the role that event stage plays for native and non-native speakers of two languages that grammaticalize aspect differently – Russian and English. The event stage played a decisive role for aspect use in Russian native speakers when they described events in L1 Russian but not in L2 English. For native speakers of English, the event stage did not predict aspect selection whether they conceptualized events in L1 English or L2 Russian. An exploratory Aspectual VP Frequency analysis indicated that higher imperfective frequency predicted the use of imperfective only with completed events in L1 Russian and with both event stages in L2 Russian. In L1 Russian, visually presented ongoingness was the strongest cue for aspect selection. In L2 Russian, Aspectual VP Frequency, rather than event stage, was the best predictor of aspect use. Aspectual VP Frequency did not meaningfully interact with event stage in L1 and L2 English. Overall, our findings show that the visually presented event stage is relevant for aspect selection in Russian but not in English. L1 English speakers struggle with the acquisition of this relevance in L2 Russian. By contrast, L1 Russian speakers successfully acquire the pattern of not marking the visually presented event stage with aspect in L2 English.

Supplementary material. The supplementary material for this article can be found at <http://doi.org/10.1017/langcog.2025.14>.

Data availability Statement. All materials related to this study, including anonymized raw data files, the R script for data analysis, visualization, the stimuli are made available through the Open Science Framework (<https://tinyurl.com/48u4m8h7>).

Acknowledgements. We thank anonymous reviewers of the manuscript for their helpful comments and insights.

Competing interests. The authors declare none.

Ethics and consent. All procedures performed in studies involving human participants were conducted in accordance with the ethical standards of the Institutional Review Board.

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Cite this article: Kamenetski, A., & Lai, V. T. (2025). Dual aspectual opposition sensitizes speakers to event stage in conceptualization: Evidence from Russian and English native and non-native speakers, *Language and Cognition*, 17, e46, 1–30. <https://doi.org/10.1017/langcog.2025.14>