

## Event Completion, Not Ongoingness, Is Language Dependent: Crosslinguistic Evidence from ERPs in English and Russian



Verb aspect is a lexico-grammatical feature that defines the temporal distribution of an event. English past simple (perfective: *peeled*) is associated with completion, but is not morphologically marked for aspect and can refer to both completed and in-progress events. Aspectually marked past progressive (imperfective: *was peeling*) is restricted to unfolding events. Unlike English, Russian marks aspect obligatorily. Perfective carries a completed connotation, while imperfective can be used to refer to ongoing events and as a general past reference. Extant literature suggests that aspect serves to build a mental model of an event [1–4], but little is known about crosslinguistic differences.

We asked (1) whether differences in mapping between aspectual forms and temporal meanings influence mental representations of event stage (completed, in-progress); (2) whether aspect processing is semantic or morphosyntactic in languages with different degrees of aspect marking obligatoriness. Participants were native speakers of English (N=19) and Russian (N=20) who performed the task in English and Russian, respectively. The design was 2 Event (In-progress, Completed) x 2 Aspect (Perfective, Imperfective) (Table 1). The stimuli were 256 pictures and descriptions, presented in 4 blocks. In the two experimental blocks, events in pictures and verb stems in descriptions matched semantically. In the perfective block, all verbs were perfective. Half were preceded by completed events (congruent), and the other half, in-progress events (incongruent). Likewise in the imperfective block, all verbs were imperfective, and were preceded by completed events (incongruent) and in-progress events (congruent). The order of blocks was counterbalanced. In each trial, a picture was presented for 500 ms, followed by a description, word-by-word. Comprehension questions appeared after each trial.

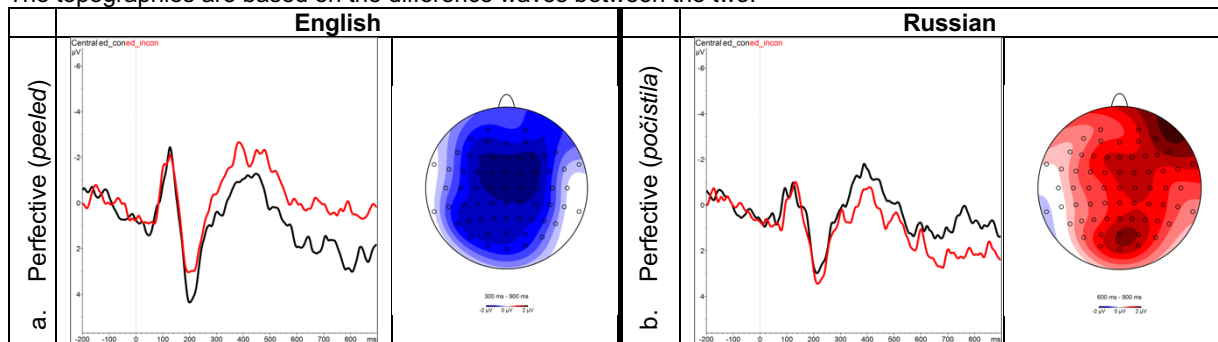
**In English**, perfective lexical verbs and the verb *was* in progressive preceded by semantically-matched but aspectually incongruent pictures (in-progress and completed, respectively) elicited a sustained negativity starting at 300 ms (300–600 ms:  $p < 0.001$ ; 600–900 ms:  $p = 0.007$ ) for perfective and 300–760 ms for progressive ( $p = 0.03$ ), compared to verbs preceded by semantically matched aspectually congruent events (Fig. 1a, 2a). This suggested recomputation of an event model to update a previously held assumption regarding event stage [5]. **In Russian**, only perfective aspect–picture mismatches resulted in an enhanced positivity between 600 and 900 ms ( $p = 0.02$ ) (Fig. 1b, 2b), consistent with morphosyntactic P600 effect for perfective violations in Slavic languages [6]. More semantically specific and less flexible in temporal interpretations, Russian perfective likely elicited greater attention to grammatical features.

**In conclusion**, English aspectual verbs were associated with completed (perfective) and in-progress (progressive) event stages, while in Russian only perfective was associated with a specific (completed) event stage. With obligatory aspect marking in Russian, specific verb morphology was associated with event stage. Less obligatory marking in English likely engaged semantic processing, suggesting that the match between verb form and event stage was processed at the level of the entire event model. We found crosslinguistic similarities in the association between aspect and mental representations of event stage, but the processes supporting this association differed based on aspectual system.

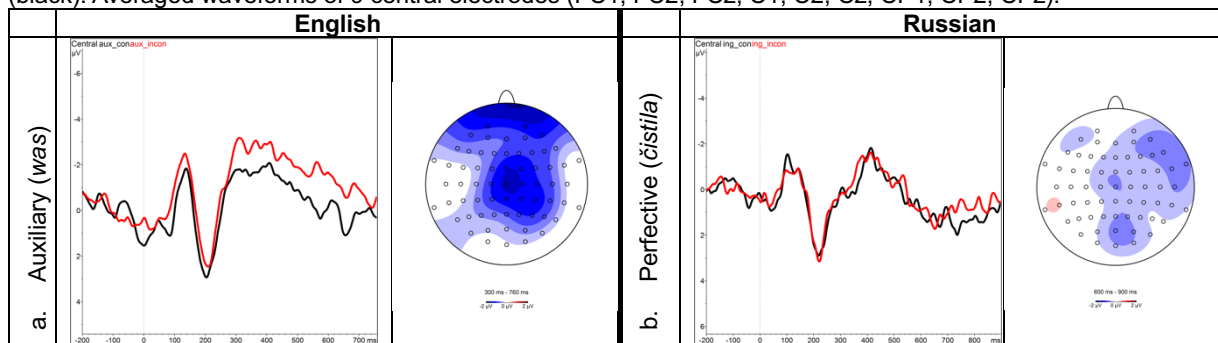
**Table 1. Design and Examples of Stimuli. Asterisk (\*) indicated violation.**

Picture	Condition	Sentence
 (in progress)	Exp (aspect) Ctrl (semantic)	She <b>*cleaned / was cleaning</b> the glasses. She <b>was *licking / cleaning</b> the glasses.
 (completed)	Exp (aspect) Ctrl (semantic)	She <b>*was shredding / shredded</b> the cabbage. She <b>*ate / shredded</b> the cabbage.

**Figure 1. Perfective Aspect Violations.** ERPs for the aspect violation conditions (red) and the aspect match conditions (black). Averaged waveforms of 9 central electrodes (FC1, FC2, FCz, C1, C2, Cz, CP1, CP2, CPz). The topographies are based on the difference waves between the two.



**Figure 2. Imperfective Aspect Violations.** ERPs for aspect violation conditions (red) and aspect match conditions (black). Averaged waveforms of 9 central electrodes (FC1, FC2, FCz, C1, C2, Cz, CP1, CP2, CPz).



**References**

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