

Article

Variation in Aspect Usage in General-Factual Contexts: New Quantitative Data from Polish, Czech, and Russian

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Abstract: This study aims to account for the variation in aspect choices in factual imperfective contexts in Polish, Czech, and Russian. A series of online questionnaires were conducted wherein the native speakers of the tested languages were asked to fill in the missing verbs for two types of existential contexts (neutral and resultative) and four types of presuppositional factual contexts (weakly and strongly resultative with a focus on the initiator or the result state of the past event). We show that neutral existential factual contexts generally elicited significantly more imperfective choices than resultative existential factual contexts. Additionally, there was a trend towards a higher usage of imperfective in weakly resultative presuppositional contexts as compared to strongly resultative presuppositional contexts, suggesting that the less emphasis is placed on the result state the more likely the choice of imperfective aspect is for the expression of the temporal indefiniteness of factual contexts. Russian showed a significantly higher proportion of imperfective uses than Polish and Czech, with Czech being intermediate. We argue that these observations result from the fact that in all types of factual contexts (both existential and presuppositional) there is an interaction between two types of TEMPORAL (IN)DEFINITENESS of the past event: (i) temporal (in)definiteness at the micro-level (first phase syntax-*vP*) (depending on the position of the time variable within the temporal event of the past complex event) and (ii) (in)definiteness of the past event at the macro-level (second phase syntax-*AspP* and *TP*) (related to the position of the past event relative to the utterance time). We show that both discourse-level information and verb-level information interact in determining these two types of (in)definiteness, and they do it differently in Polish, Czech, and Russian.

Keywords: factual imperfective; imperfective aspect; Elaboration; Polish; Czech; Russian; microvariation; scenario-based online questionnaire



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1. Introduction

This study is a contribution to a discussion related to the variation in the use of aspect in Slavic languages in general-factual contexts. Most research on Slavic aspect so far has been based on data from a single language. One of the first attempts to study the semantics of grammatical aspect in Slavic from a comprehensive comparative perspective was made by Dickey (2000) (see also Benacchio 2004, 2005, 2010; Dickey and Kresin 2009; von Waldenfels 2012; Sokolova et al. 2018; Dickey 2015, 2018a, 2018b, 2020). Dickey (2000, 2015, 2018a, 2018b, 2020) offers a theory of the semantics of Slavic aspect based on the evaluation of the data from Bulgarian, Czech, Polish, Russian, Bosnian/Croatian/Serbian (BCS), Slovak, Slovene, and Ukrainian. Among the contexts, which according to Dickey (2000 and subsequent works) are subject to cross-Slavic variation, are the so-called general-factual contexts, which are problematic for most theories of aspect because, in these contexts, imperfective aspect is used despite reference to a completed event. Dickey's research sets important trends but many of his generalizations are uncertain since they are based on random data. His theory deserves to be verified based on a more coherent, bigger set of data with replicable procedures. With this goal in mind, we conducted a series of scenario-based online questionnaires in which aspect choices were elicited from Polish, Czech, and

Russian native speakers in strongly and weakly resultative presuppositional general-factual contexts with a focus on the result or the initiator of the event, as well as in neutral and resultative existential general-factual contexts.

The structure of this paper is as follows: Section 2 presents background information on aspect with a particular focus on Slavic aspect. It also introduces Dickey's (2000, 2015) micro-typology of aspect in Slavic. Section 3 overviews the research related to the use of aspect in general-factual contexts in Slavic. Section 4 describes the reported scenario-based online study in Polish, Czech, and Russian. Section 5 accounts for the observed patterns of variation in the use of aspect in factual contexts in Polish, Czech, and Russian. Section 6 presents our conclusions.

2. Relevant Background on Aspect and the Research Problem

Aspect, being one of the three major verbal categories (next to tense and modality) in the languages of the world, expresses “ways of viewing the internal temporal constituency of a situation” (see Comrie 1976, p. 3). In research on aspect, scholars distinguish between lexical aspect and grammatical aspect. Lexical aspect is inherently encoded in the lexical meaning of verbal predicates, and it corresponds to Vendler's (1957) classification of lexical aspectual classes, also referred to as Aktionsart: states (e.g., *love*, *understand*), activities (e.g., *work*, *run*), accomplishments (e.g., *build a castle*, *eat a sandwich*), and achievements (e.g., *notice*, *find a solution*), which were later extended to a lexical aspectual class of semelfactives (e.g., *wink*, *sneeze*) by Smith (1991). Grammatical aspect (also referred to as viewpoint aspect) is explicitly coded by aspectual morphemes. According to Dahl (1985), grammatical aspect manifests itself most commonly as the perfective and imperfective opposition. In languages that have a deficient system of grammatical aspectual morphology, aspectual meaning is computed mainly based on lexical aspect, while in languages that possess a wide range of aspectual morphology, aspectual meaning is composed based on the interaction between lexical aspect (aspectual class), where perfective and imperfective aspectual operators act as eventuality description modifiers (see de Swart 1998). Germanic literature on aspect focuses primarily on lexical aspect because Germanic languages have a deficient system of aspectual morphology, with some Germanic languages possessing only the grammatical markers of progressive aspect. By contrast, in the Slavic linguistic tradition more attention has been paid to grammatical aspect because Slavic languages possess a wide range of aspectual markers (markers participating in aspect coding). In Slavic languages almost all finite and non-finite verb forms are either perfective or imperfective and most verbs have both aspectual variants, as shown in (1).

(1)				
UKRAINIAN	Ia čytala ^I	/pročytala ^P	tvoje	ese.
BELARUSIAN	Ia čytała ^I	/pročytała ^P	tvajo	ese.
RUSSIAN	Ia čitala ^I	/pročitala ^P	tvojo	esse.
SLOVAK	Čítala ^I	/prečítala ^P som	tvoju	esej.
CZECH	Já jsem četla ^I	/přečetla ^P	tvoji	esej.
POLISH	Czytałam ^I	/przeczytałam ^P	twój	esej.
SLOVENE	Brala ^I	/prebrala ^P sem	tvoj	spis.
SERBIAN	Čitala ^I	/pročitala ^P sam	tvoj	esej.
CROATIAN	Čitala ^I	/pročitala ^P sam	vaš	esej.
BULGARIAN	Četoh ^I	/pročetoh ^P	tvoeto	ese.
MACEDONIAN	Go čitav ^I	/pročitav ^P	tvojot	esej.
	(I) read.IPFV.1SG.F/read.PFV.1sg.f		your	essay
	'I was reading/read your essay.'			

According to Comrie (1976), perfective aspect describes an eventuality as a complete whole whereas imperfective aspect focuses on the internal temporal structure of an eventuality. The two most canonical readings of imperfective in Slavic are single ongoing and plural event one. In more formal semantic approaches, perfective aspect involves a temporal perspective that locates the temporal trace of an event within the reference time,

while the imperfective involves a temporal perspective that falls inside an event that, in turn, excludes the event endpoints from view (see also Reichenbach 1947; Comrie 1976; Kamp and Reyle 1993; Klein 1995; Smith 1991; Kratzer 1998; Borik 2006; Kazanina and Phillips 2003).

The use of perfective and imperfective aspect varies across Slavic. In order to understand the variation it is necessary to be aware of the basic classification of Slavic languages and their geographical distribution. The group of Slavic languages is divided into three subgroups: *South Slavic*, consisting of Bosnian, Croatian, Montenegrin, Serbian, Slovene, Bulgarian, and Macedonian; *West Slavic*, consisting of Czech, Slovak, Sorbian, Polish, and Kashubian; and *East Slavic*, consisting of Russian, Ukrainian, and Belarusian. The geographical distribution of the regions in which Slavic languages are spoken is shown in Figure 1.



Figure 1. A map showing the geographic distribution of Slavic languages (https://commons.wikimedia.org/wiki/File:Slavic_languages_map_en.svg, accessed on: 2 May 2022).

In spite of the considerable micro-typological variation in tense–aspect grammars of Slavic languages, most Slavic aspectologists have developed the semantics of aspect based on the data from a single language. One of the attempts to study the semantics of grammatical aspect in Slavic from a comprehensive comparative perspective was made by Dickey (2000, 2015, 2018a, 2018b, 2020), who offers a micro-typology of Slavic aspect based on the evaluation of data from Bulgarian, Macedonian, Czech, Polish, Russian, Bosnian/Croatian/Serbian (BCS), Slovak, Slovene, and Ukrainian. On the basis of the differences observed in the distribution of perfective and imperfective aspect in a range of contexts (habitual, general-factual, imperative, performative, deverbal nouns, running instructions), Dickey (2000) proposes the ‘East-West theory of Slavic aspect’. More precisely, he proposes a division of the Slavic languages into a western group consisting of Czech, Slovak, Sorbian, and Slovene, and an eastern group consisting of Russian, Ukrainian, Belarusian, and Bulgarian. BCS and Polish are claimed to belong to transitional zones, with Polish tending towards the eastern group and BCS patterning closer to the western group, while Bulgarian displays some deviations from the eastern group. Dickey (2015) revised his original view slightly and claimed that the extremes of the East–West opposition are to be found in North Slavic: (i) the western extreme includes primarily West Slavic languages (Czech, Slovak, Sorbian) and only one peripheral South Slavic language (Slovene) and (ii) the eastern extreme consists of East Slavic (Russian, Ukrainian, Belarusian). Polish and BCS occupy transitional positions between the eastern and western types (Polish and

Serbian are closer to the eastern type, whereas Croatian is closer to the western type). Macedonian is still closer to the eastern type than Serbian. Bulgarian matches the eastern type for the basic parameters, but it differs from the eastern extreme in some important ways (see Dickey 2015, p. 32). The East–West aspect division proposed by Dickey (2015) is schematically represented in Figure 2.



Figure 2. The East–West aspect division according to Dickey (2015).

Among the contexts, which according to Dickey (2000 and subsequent works) are subject to cross-Slavic variation, are the so-called general-factual contexts that constitute the biggest challenge for aspect theories because, in these contexts, completed events may be expressed by means of imperfective aspect.

3. Aspect Use in General-Factual Contexts in Slavic-Relevant Accounts

3.1. General Background

In Slavic languages, when a speaker talks about a completed event, he or she chooses a perfective form of a verb. In certain contexts, however, imperfective aspect is used despite reference to a completed event, as presented in (2), (3), and (4) for Polish, Czech, and Russian, respectively.¹

Polish

(2)	Marysia:	Jaki	piękny	kolor	ornamentu
	Mary:	what	nice	color	ornament.GEN
	na	ścianie.			
	on	wall			
	Chciałabym	mieć	taki	sam	w salonie.
	want.COND	have	such	same	in room
	Czy	możesz	mi	powiedzieć,	jaka
	Q	can.2SG	me	tell	which
	farbą	go	malowałaś ¹ .		
	paint.INSTR	it.ACC	painted.IPFV.2SG.F		

Czech

(3)	Marie:	To je	ale krásná	barva	ornamentu
	Mary:	It is	such nice	color	ornament.GEN
	na	stěně.			
	on	wall			
	Chtěla bych	mít	stejnou	ve svém obývacím.	
	want.COND	have	same	in my room	
	Můžeš	mi	říct,	jakou	barvou
	can.2SG	me	tell	which	paint
	jsi	ho	<i>malovala</i> ¹		
	be.2SG	it.ACC	painted.IPFV.F		

Russian

(4)	Maria:	Kakoj	krasivyy	cviet	ornamenta
	Mary:	what	nice	color	ornament.GEN
	na	stienie.			
	on	wall			
	Ja by	χotíela	imiet'	takoj že	v mojej gostinoj.
	I COND	want	have	such	in my room
	Podskaži,	kakoj	kraskoj	ty jeho	<i>risovala</i> ¹ .
	tell	wich	paint	you it.ACC	painted.IPFV.F

'Mary: What a beautiful color of an ornament on your wall.

I would love to have one in my living room.

Can you tell me which paint you *Painted* it with?'

In this context, the speaker expresses his or her appraisal of the beautiful color of the ornament on the wall and asks the hearer about the paint used to paint the ornament. It is evident that the past event of painting the ornament reached the result state and the event was completed because the holder of the result state is available in the current conversation. In spite of that, imperfective aspect can be used (interchangeably with perfective aspect). This use of imperfective is only attested in Slavic languages, but not in Spanish, French, or Italian (cf. [Cipria and Roberts 2000](#); [Hacquard 2006](#); [Deo 2009](#)). These contexts are called *general-factual* and they are challenging for all the semantic theories of perfective and imperfective aspect aiming at formulating its invariant semantics that will cover all of its possible uses and attempting to distinguish it from the semantics of perfective aspect. [Grønn \(2004, p. 81\)](#) points out that one of the criteria defining factual imperfective contexts is the use of telic events.² Following [Grønn \(2015\)](#), we treat complete events as those that produce a relevant result (though he admits that this assumption is a working hypothesis). Most scholars dealing with this issue state that in general-factual contexts, emphasis is shifted away from the result (see [Swan 1977](#); [Comrie 1976](#); [Grønn 2004](#); [Mueller-Reichau 2018](#)).

The choice of imperfective in these contexts is a strategy used to avoid perfective. In other words, even though reference is made to a completed event in general-factual contexts, something prevents the use of perfective aspect. The questions that arise are: *What prevents the use of perfective in general-factual contexts? If it is not the result that is stressed in general-factual contexts, what is stressed instead?* According to [Grønn \(2004\)](#), when the focus is on the existence of an event within an extended indefinite assertion time, the target state validity of telic predicates is less relevant, and imperfective is preferred (it comes to existential factual imperfective contexts) (see also [Mueller-Reichau 2014](#)). When the assertion time is narrow and specific, the target state validity of telic predicates is relevant and the perfective is more likely to win the competition. Finally, the most important question is how to differentiate between the semantics of perfective and imperfective aspect if both can be used to talk about completed events. A slightly different, though potentially related, explanation is given by [Śmiech \(1971, p. 44\)](#) who suggested that imperfective aspect can be used in place of perfective aspect in general-factual contexts when the result of an action is known or when it is possible to infer from the surrounding discourse that

the result of the action was achieved. It may be the case that there are different reasons for why imperfective is used in different types of general-factual contexts. In fact, [Padučeva \(1996\)](#) and [Grønn \(2004\)](#), in their discussion of factual imperfective contexts in Russian, distinguish between two kinds of factual imperfective contexts: (i) *existential* and (ii) *presuppositional*, which are exemplified for Russian in (5), (6), and (7), respectively.

- (5) Ja vaši očerki o Sibiri čital^I,
I your essays on Siberia read.IPFV.3SG
mne oni očen' *nравjatsja*^I.
me.DAT they very appeal. IPFV.3PL
'I have read your essays on Siberia. I like them a lot.'

- (6) A deti kričali: papa, papa!
and children cried dad dad
Za čto *umer*^P?
for what die.PFV.3SG
'And the children cried out: Dad, dad ... Why did you die?'
Pri, Tovarišči, no počemu že ko mne?
well friends why to me
Čem tut ja?
what did I
'Well, my friends, why are you asking me? I've nothing to do with it.'
Ja, čto li, *ubival*^I?
Me, what killed.IPFV
'Did I kill him?'

- (7) Zimnij Dvorec *stroil*^I Rastrelli.
winter.ACC palace.ACC built.IPFV Rastrelli
'It was Rastrelli who built the Winter Palace.'

[Grønn \(2004, p. 25\)](#) (Uppsala Corpus)

(example quoted by [Gehrke forthcoming a](#) from [Glovinskaja 1982](#))

In the existential factual context in (5), the existence of **at least one** event denoted by the verbal predicate is asserted (focused).³ In (5), it is asserted that the speaker has read essays on Siberia, which happened once or on several occasions, and on each of these occasions the event most probably reached its result state (was completed). In the presuppositional factual context in (6), children ask why their dad died using a perfective verb, *umer*^P 'die'. In a later context, someone responds by asking a rhetorical question, *Did I kill him?* using an imperfective verb, *ubival*^I 'kill', which refers to a completed event whose result state (the father's death) is contextually recoverable from the verb *die* used in the preceding sentence.^{4,5} Another example of a presuppositional factual imperfective context is given in (7), where the past event of building the Winter Palace is presupposed and the following context provides new information and states that it was Rastrelli who built it. Even though an imperfective verb is used, it refers to a completed event because the object is available in the current discourse. The temporal location of the past presupposed event is not necessarily specified.⁶ Presuppositional general-factual contexts are typically used in cleft structures or *wh*-questions. In both kinds of factual contexts (existential and presuppositional), imperfective verbs describe events that are understood as completed, but the focus is intuitively shifted away from the result of the event. In existential factual contexts, it is shifted to the event's indefinite temporal location, while in the presuppositional factual contexts the focus seems to be shifted to the process leading to a result state with the result state being contextually recoverable. In what follows, different approaches to the use of imperfective aspect in general-factual contexts will be discussed in order to create a proper background for the analysis of the results of our study.

3.2. Aspectual Competition in General-Factual Contexts

In order to account for the use of imperfective aspect to refer to completed events in general-factual contexts, [Grønn \(2004\)](#) assumes a very weak semantics of imperfective aspect where the event time overlaps the reference time ($e \circ t$) (in the spirit of [Klein 1995](#)),

and this underspecified semantics can be contextually strengthened to encode either $e \subseteq t$ (to refer to unbounded single ongoing or plural events) or $t \subseteq e$ (to refer to completed events when perfective aspect is for some reason inappropriate). Grønn (2004) accounts for it by resorting to aspectual competition between perfective aspect and the strengthened variant of imperfective, whose semantics are in fact analogous to perfective. He suggests that different factors underly this aspectual competition in existential and presuppositional factual contexts. In existential factual imperfective contexts, imperfective is preferred when the focus is on the existence of an event within an extended indefinite assertion time and the target state validity of telic predicates is less relevant. Existential factual imperfectives usually contain vague adverbs such as *earlier*, *once*, *never*, *ever*, which do not locate the event at a narrowly specified time. Grønn (2004, pp. 273–74) suggests that perfective aspect “explicitly requires the target state to be valid at the end point of the assertion time. Aspectual competition gives rise to a pragmatic implicature saying that factual IPFV is used by the speaker either in order to convey the message that the target state has been cancelled, or in case the validity of the target state is irrelevant in the discourse situation”.

3.3. Aspect and Rhetorical Relations in General-Factual Contexts

Similarly, Altshuler (2014) proposes a weak semantics of imperfective aspect, which can be contextually strengthened. He argues that aspectual operators are functions from a set of VP events to a set of VP-event-parts whose location is relative to: (i) temporal information and (ii) discourse connectivity. Regarding imperfective aspect, Altshuler (2014) describes it as a weak partitive operator referring to a partial event e' in world w^* that is part of (\sqsubseteq) the whole event e in world w , as defined in (8).

$$(8) \quad [[IPF]] = \lambda P \lambda e' \exists e \exists w [STAGE(e', e, w^*, w, P)]$$

A stage of an event is defined as in (9).

- (9) $[[STAGE(e', e, w^*, w, P)]]^{w,g} = 1$ iff a–d are satisfied:
- the history of $g(w)$ is the same as the history of $g(w^*)$ up to and including $\tau(g(e'))$
 - $g(w)$ is a reasonable option for $g(e')$ in $g(w^*)$
 - $[[P]]^{w,g} = 1$
 - $g(e') \sqsubseteq g(e)$

As a result of strengthening, imperfective may obtain a proper part reading $g(e') \sqsubset g(e)$ (in contexts which refer to unbounded eventualities) or whole event reading $g(e') = g(e)$ (in general-factual contexts referring to completed events). Moreover, Altshuler (2010, 2012) suggests that the choice of an aspectual form is determined by how it interacts with coherence relations in constraining the ordering of eventualities in discourse. He claims that Russian imperfective is incompatible with the Narration (his Occasion) relation, as illustrated in (10).

- (10) a. Roditeli *ispugalis'*^P, dumaja, čto s nix
 parents got.scared.PFV.3PL.RFL thinking that from them
 trebujut oplatu
 require payment
 ‘The parents *became scared*, thinking that they were required to pay.’
- b. V panike oni {pozvonili^P / nam ...
 #zvoni¹}
 in panic they called.PFV.3PL / us
 called.IPFV.3PL
 ‘Panicking, they *called* us ...’

Altshuler (2012, p. 38) (Russkij doctor v Amerike, Goljaxovskij)

In (10), there is a Narration (Occasion) relation between the event of the parents’ getting scared and them calling their children. The use of the imperfective in (10b) is infelicitous. However, as pointed out by Altshuler (2012), Russian imperfective can be used in contexts in which the described event precedes (under an Explanation relation) or

overlaps (under an Elaboration or Background relation) with the event mentioned in the previous utterance. An example of an Explanation relation in Russian is provided in (11).

- (11) a. Niedielju nazad Marija *pocelovala*^P Dudkina.
 week ago Maria kissed.PFV.3SG.F Dudkin
 'A week ago, Maria *kissed* Dudkin.'
 b. On *daril*^I jej cviety
 he gave.IPFV.3SG her flowers
 'He *had given* her flowers'
 c. i *priglašal*^I jejo v teatr.
 and invited.IPFV.3SG her to theater
 and *had invited* her to the theater.'

Altshuler (2012, p. 45)

In (11b), there is a causal relation between the flower-giving event and the kissing event. The kissing event expressed by means of perfective is situated in the result state of the flower-giving event, which is expressed by means of imperfective even though the linear order of the utterances describing these events is reversed.

An example of an Elaboration relation in Russian is in (12).

- (12) a. V ètoj posternoj ja *napisal*^P pervoe
 in this tavern I wrote.PFV.1SG Dudkin
 ljubovnoe pis'mo k Vere
 love letter to Vera
 'In this tavern, I *wrote* my first love letter to Vera.'
 b. *Pisal*^I karandaš-om. jej cviety
 wrote.IPFV.1SG pencil.INST
 'I wrote it in pencil.'
 c. i *priglašal*^I jejo v teatr.
 and invited.IPFV.3SG her to theater
 and *had invited* her to the theater.'

Forsyth (1970, p. 86)

In (12), the second event described by means of imperfective aspect is a sub-event of the first event that was expressed by means of perfective aspect. Altogether, imperfective aspect is suitable in contexts involving an Explanation, Elaboration, or Background relation, but not in Narration (Occasion) contexts.

3.4. Fake Imperfective in General-Factual Contexts

Grønn (2015) argues that imperfective aspect is ambiguous and it can express both imperfective (the reference time is part of the event time) and perfective semantics (the event time is part of the reference time), as shown in (13).

- (13) a. $[[PFV]] = \lambda t \lambda e. e \subseteq t$
 b. $[[IPFV_{ongoing}]] = \lambda t \lambda e. t \subseteq e$
 c. $[[IPFV_{factual}]] = \lambda t \lambda e. e \subseteq t$ 'fake IPFV'

The imperfective used under the interpretation analogous to perfective in (13c) is licensed in general-factual contexts and it is referred to by Grønn (2015) as a 'fake' imperfective, which may in some contexts win the competition with perfective aspect (for example, in contexts in which the narrative use of perfective is not justified). As Grønn (2015) himself admits, he does not make it clear why the speaker should prefer the imperfective over the perfective in contexts of aspectual competition. He also correctly states that the differences in the interpretation of perfective and imperfective aspect can be extremely subtle, especially in the case of the presuppositional imperfective, where perfective can be used almost interchangeably with imperfective.

Additionally, Grønn (2015) draws an analogy between the semantics of tenses and nouns. In most Slavic languages there is no overt $[\pm def]$ marking on nouns that are am-

biguous with respect to the $[\pm\text{def}]$ semantics. Grønn (2015) claims that such an ambiguity is present also in the temporal domain. In his account, Grønn (2015) builds on Partee (1973), who proposes that tenses in natural languages are not operators but pronouns and there is a division of labor between the English morphological tense (*-ed*), which is anaphoric (definite), and temporal auxiliaries (*have P-ed*, *will P*), which are indefinite. Concerning Russian, Grønn (2015) proposes that the deictic past tense has the following semantics $[[\text{PAST}^*]] = \lambda t. t < s^*$ (s^* = the speech time) and it comes with a covert indefinite or definite article. Both times and events may be definite (discourse old) or indefinite (discourse new) and an indefinite tense or event introduces a new discourse referent, while a definite tense is anaphoric to an old discourse referent. According to Grønn (2015), existential imperfective contexts display an indefinite tense and indefinite aspect, whereas presuppositional imperfective contexts display a definite tense and definite aspect.

3.5. The Anaphoric Nature of Aspect in General-Factual Contexts

Gehrke (forthcoming b) argues against the ‘fake’ imperfective view and shows that it is possible to account for the use of imperfective aspect to refer to completed events by using a standard, unified semantics of the imperfective. Regarding existential factual contexts, Gehrke (forthcoming b) claims that imperfective is preferred because the event is iterative and imperfective is used to refer to a plural event (see also Klimek-Jankowska et al. forthcoming; Klimek-Jankowska and Błaszczak 2021). This is compatible with the view that Russian perfective has to do with event uniqueness (see Mueller-Reichau 2018 and Gehrke (forthcoming a) this volume for a similar conclusion). Concerning presuppositional imperfective contexts, Gehrke (forthcoming b) proposes that in such contexts, imperfective is anaphoric to a completed event that is part of the common ground and the imperfective elaborates on it by zooming in on a narrower reference time. Gehrke (forthcoming b) discusses one of the examples from her joint corpus research with Olga Borik (Borik and Gehrke 2018) in which they focus on imperfective past passive participles (PPPs) in Russian, which are often claimed not to exist but, in spite of that, are attested in corpora under a factual imperfective meaning. The context in question is illustrated in (14).

Russian

- (14) Čto kasaetjsa platy deneg, to *plačeny*^I byli
 what concerns payment money.GEN so paid.IPFV were
 naličnymi šest' tysjač rublej
 in-cash six thousand Rubles
 ‘What concerns the payment: 6000 Rubles were *paid* in cash.’

In (14), the payment event (e_1) is introduced by means of a nominalisation, *plata* ‘payment’, and the imperfective past passive participle, *plačeny*^I ‘paid’, used in the main clause introduces the second event (e_2) that is anaphorically related to the already introduced payment event. Gehrke (forthcoming b) builds on Altshuler’s (2014) partitive semantics for the imperfective aspect where the reference time t is part of the run time of e_2 ($t \subseteq \tau(e_2)$). As pointed out by Gehrke (forthcoming b), the intuition that the payment event e_1 (and thereby also e_2) was ‘completed’ follows from the discourse structure. More specifically, event completion information is already given in e_1 (its run time falls within the first reference time t_1). Since e_2 is identical to e_1 , the event completion reading of e_2 follows from its anaphoric link with e_1 . The second reference time, t_2 , is part of the run time of e_2 , and, by identity with e_1 , it is also part of e_1 . As a result of this anaphoric link between e_1 and e_2 , the process of interpretation leads to zooming in on a narrower reference time within a bigger reference time. Consequently, imperfective used to express e_2 expresses a standard relation $[[\text{ipfv}]]: \lambda t \lambda e. t \subseteq e$ and the completion reading follows from the anaphoric relation of e_2 with e_1 , where e_1 is completed. This proposal allows Gehrke (forthcoming b) to maintain a uniform semantics of imperfective verbs. However, it is not clear how this solution would address the observation that in presuppositional imperfective contexts perfective is often freely interchangeable with perfective. If the anaphoric link is always there in

presuppositional factual contexts, why would some speakers opt for perfective aspect at all? It is also not clear how this analysis would capture the variation in the use of aspectual forms in factual contexts in different Slavic languages.

3.6. General-Factual Perfectives

Mueller-Reichau (2018) focuses on the contexts in which Czech displays general-factual perfectives, whereas the eastern language of Russian displays general-factual imperfectives and shares Polish patterns with Czech. His analysis is based on existential factual contexts with the temporal adverbial *ever*, wherein the imperfective is preferred in Russian when the reference is made to a completed past tense event vaguely located in time. In fact, imperfective is obligatory when achievement predicates are used in Russian, as shown in (15).

Russian

- (15) Ty kogda-libo *terial*^I / **poterial*^P kliuchi?
 you ever lost.IPFV lost.PFV keys
 ‘Have you ever *lost* keys?’

The same context strongly prefers the use of perfective in Polish and Czech, as shown in (16) and (17), respectively (see Dickey 2000).

Polish

- (16) Czy kiedykolwiek *zgubiles*^P / ??*gubiles*^I klucze?
 Q ever lost.PFV lost.IPFV keys

Czech

- (17) *Ztratil*^P /??*ztrácel*^I jsi kdykoliv klíče?
 lost.PFV lost.IPFV be.2SG ever keys
 ‘Have you ever *lost* keys?’

The punctual achievement *lose* can be assigned to a single (unique) point in time. According to Mueller-Reichau (2018), this contrast follows from the different semantics of Czech, Polish, and Russian perfective aspect. More precisely, Czech and Polish perfective is used whenever the speaker wants to refer to an event that is completed and unique in the relevant context, whereas Russian perfective more strongly encodes target state validity (which implies event completion and uniqueness), as follows from the semantics in (18) and (19).

- (18) $PFV_{Czech} \rightsquigarrow \text{completedness} + \text{uniqueness}$
 $[[PFV_{Czech}]] = \lambda P \lambda t \exists e [P(e) \wedge e \subseteq t \wedge \neg \exists e' [P(e') \wedge e' \neq e]]$
 (19) $PFV_{Russian} \rightsquigarrow \text{completedness} + \text{uniqueness} + \text{target state validity}$
 $[[PFV_{Russian}]] = \lambda P \lambda t \exists e [P(e) \wedge e \subseteq t \wedge \neg \exists e' [P(e') \wedge e' \neq e] \wedge f_{END}(t) \subseteq f_{TARGET}(e)]$

Mueller-Reichau (2018) argues that in (16) and (17) the speaker’s coding of the event as unique follows from accidentality. In Russian (15), the imperfective must be used because the expression of target state validity is not intended. The notion of target state validity is formally defined by means of the condition $f_{END}(t) \subseteq f_{TARGET}(e)$. To meet the condition of target state validity, the event has to have a specific reference time. This is incompatible with general-factuals, which require the event to be located in a reference time that is “big and floating”. Mueller-Reichau (2018) (quoted after Grønn 2004) focuses only on variation in aspect choices in existential factual contexts in Polish, Czech, and Russian.

3.7. Discourse-Level Information and Temporal (In)definiteness in General-Factual Contexts

Another recent study that addressed the issue of variation in the distribution of aspect in general-factual contexts is Klimek-Jankowska (2020), who investigated the preferences in aspect choices in existential and presuppositional factual contexts in eastern and western Poland. For this goal, she conducted an online questionnaire in which the participants from western and eastern Poland were asked to fill in the missing verbs in presuppositional and

existential factual contexts involving an Elaboration coherence relation (in which the result holder, i.e., the subject of the result sub-event, is available at the moment of speaking). An Elaboration coherence relation is explained in (20) in accordance with [Lascarides and Asher \(1997\)](#), who observed that temporal relations are calculated not only compositionally but also on the basis of defeasible rhetorical relations.

(20) **Elaboration (1,2):** 2's event is part of 1's event (perhaps by being in the preparatory phase or result state). 2's event is a sub-event of 1's event as in (21).

(21) The council built the bridge (e_1). The best architect drew up its project. (e_2).

In the Polish translation of this classic example of an Elaboration relation, it is possible to use imperfective aspect to refer to a complete event e_2 of drawing up the plans in the past, as shown in (22).

<i>Polish</i>					
(22)	Zarząd	wybudował ^P	most (e_1).		
	Council	built.3SG.PFV	bridge.ACC		
	Najlepszy	architekt	sporządził ^I	jego	projekt (e_2).
	best	architect	drew_up.3SG.IPFV	its	project.ACC
	'The council <i>built</i> the bridge. The best architect <i>drew up</i> its project.'				

[Klimek-Jankowska \(2020\)](#) shows that perfective aspect is preferred in presuppositional factual contexts and imperfective is preferred in existential factual contexts, but perfective is generally more often used in both types of factual contexts in western Poland than in eastern Poland. What is more, it seems to be the case that in presuppositional factual contexts involving an Elaboration relation the choice of imperfective aspect depends on whether the focus is on the initiator, the process, or the result sub-event. Imperfective is more often used when the focus is on the initiator or process sub-event.

In her account of the observed patterns of variation in aspect use, she relies on [Ramchand's \(2004, 2008a, 2008b\)](#) formal framework of aspect and temporality. Based on the central idea of the Distributed Morphology (DM) (see [Halle and Marantz 1993](#)), [Ramchand \(2004, 2008a, 2008b\)](#) postulates the existence of the event phase of the derivation (the first-phase syntax), which consists of three sub-events: a causing (initiation) sub-event, a process sub-event, and a sub-event corresponding to a result state. Each of these sub-events is represented as its own projection, ordered hierarchically, and each of them has an event participant projected in the specifier position. The initiation sub-event is a causal projection (*vP* in the recent literature) with an external argument referred to as the INITIATOR. The initiation sub-event e_1 leads to the process sub-event e_2 that is present in every dynamic verb. The process sub-event e_2 corresponds to the VP projection with the UNDERGOER in the specifier position. The process sub-event may optionally lead to the result phrase corresponding to the result state of the event with the RESULTEE (the holder of a 'result') in the specifier position. In this chain of events, e_1 causally implicates e_2 and e_2 causally implicates e_3 . [Ramchand's \(2004, 2008a, 2008b\)](#) first phase syntax is embedded under the second phase where temporal variables are introduced. The first phase introduces an event variable and the time variable is introduced at the level of AspP in the second phase of the derivation. The event variable and the temporal variable are related formally by a temporal trace function $\tau(e)$ that maps an event to the 'timeline' that it occupies. Next, the tense head of TP combines with AspP to bind the time variable and relate it with respect to the speech time. In [Ramchand's \(2008a\)](#) proposal, the reference time introduced in Asp is a time instant (not an interval). Her proposal is that perfective events introduce a definite reference time (a specific moment within the temporal trace of the event) while imperfective events introduce an indefinite reference time (an arbitrary moment within the temporal trace of the event). More precisely, when the result sub-event is present in the first phase syntax, the time variable t must be part of the process sub-event and part of the result sub-event, which boils down to the placement of the time variable at the single unique transition point between the two sub-events. By contrast, imperfective aspect in

Ramchand's (2008a) system specifies that the time variable is situated at an arbitrary point within the run time of the process part of the event.⁷

To sum up, in Ramchand's (2008a) system, there are two kinds of (in)definiteness of the temporal variable: (i) (in)definiteness with respect to the temporal trace of an event [INDEFINITENESS AT THE MICRO-LEVEL] and (ii) (in)definiteness of *t* with respect to the utterance time [INDEFINITENESS AT THE MACRO-LEVEL]. In her discussion of aspect choices in presuppositional factual contexts involving an Elaboration discourse relation, Klimek-Jankowska (2020) argues that when the event is complex in the first phase syntax and it consists of all the three sub-events, the placement of the temporal variable with respect to the temporal trace of an event depends on whether the focus is more on the initiation, process, or result sub-event. When the focus is on the result sub-events, it is more likely to lead to the placement of the temporal variable at the transition point between the process and result sub-event (leading to definiteness with respect to the temporal trace of an event), but when the focus is more on the initiation or process sub-events, it is more likely to lead to the placement of the temporal variable at an arbitrary point within these two sub-events (leading to indefiniteness with respect to the temporal trace of an event). In the latter case, even though imperfective is used, the result sub-event is understood to be a necessary consequence of the initiation and process sub-events due to the availability of the holder of the result state in the current conversation. This is how event completion reading is inferred in these special Elaboration presuppositional contexts.

Regarding existential factual contexts containing explicit markers of indefiniteness of the temporal variable such as *once*, *ever*, indefiniteness with respect to the utterance time may encourage language users to place the temporal variable at an arbitrary point within the temporal trace of an event, thereby leading to its indefiniteness with respect to the runtime of an event. This leads to more frequent choices of imperfective aspect in these special contexts. It appears that in existential factual contexts, the issue of the past event reaching the result sub-event is less relevant than the fact that the event happened at an indefinite time with respect to the utterance time, and the issue of whether the event was completed or not remains implicit during the interpretation process. Klimek-Jankowska (2020) suggests that in existential factual contexts, there is a competition between the choice of perfective and imperfective aspect and the ultimate choice depends on whether the speaker chooses to put more emphasis on the definiteness of the temporal variable with respect to the temporal trace of a decomposed complex event or on the indefiniteness of the temporal variable with respect to the moment of speaking. In Ramchand's (2008a) formalism, the spell-out domain is either vP or CP (see Chomsky 2004, 2005a, 2005b). Since both types of (in)definiteness are specified before CP (at the level of AspP and TP), the phonological realizations associated with them in the form of perfective and imperfective Vocabulary Items compete for insertion at the level of CP. The choice of the aspectual form may depend on very subtle nuances of context and on what kind of (in)definiteness is more relevant in a given scenario. According to Klimek-Jankowska (2020), in some Slavic languages the definiteness of the temporal variable with respect to the temporal trace of an event wins over the indefiniteness of the temporal variable with respect to the moment of speaking (leading to the choice perfective aspect), and in other Slavic languages it is the other way around. In Polish, there is a stronger preference to express the definiteness of the temporal variable with respect to the temporal trace of an event in western Poland than in eastern Poland.

3.8. Motivation for the Planned Study

All these studies agree that the choice of imperfective aspect in general-factual contexts that refer to completed events is determined by discourse-level information (information structure and rhetorical relations) and the extent to which the result state of the past complex event is relevant in the current discussion. This is consistent with the results of a recent psycholinguistic study conducted by Hye-yeon and Kaiser (2021). They pose an independent set of questions that appear to be very relevant to the discussion of the use

of imperfective aspect to refer to event completion in general-factual contexts. [Hye-yeon and Kaiser \(2021\)](#) investigated how discourse-level information interacts with verb-level information to guide the representation of object states, which builds on the central ideas of the Question Under Discussion (QUD) framework (see e.g., [Beaver et al. 2017](#); [Hye-yeon and Kaiser 2021](#)). According to the QUD framework, utterances are interpreted relative to the question being part of the interlocutors' current communicative exchange (the so-called Question Under Discussion). [Hye-yeon and Kaiser \(2021\)](#) ask whether the QUD related to the subject or object of the event affects the mental representation of object states and, if so, how this information interacts with the lexical semantic information encoded on the verb. More precisely, they studied how comprehenders represent objects depending on whether the QUD relates to the result of manner verbs such as *hit*, *wash*, *pour* (which do not entail change-of-state) as compared to result verbs such as *clean*, *break*, *melt* (which describe situations with a clear result entailed by the action). In the case of manner verbs, a potential change-of-state of the object can be inferred but is not semantically required, as shown in (23a). By contrast, in the case of result verbs, the object has to undergo a change-of-state (it is not defeasible), as shown in (23b).

- (23) a. Mary hit the window, but it didn't break. [manner verb]
 b. # John shattered the window, but it didn't break. [result verb]

In their self-paced reading experiment, [Hye-yeon and Kaiser \(2021\)](#) examined how rapidly comprehenders read linguistic material associated with potential change-of-state inferences in contexts with change-of-state oriented vs. subject-oriented QUDs, as well as with result verbs and manner verbs. In conditions with change-of-state oriented QUDs, participants read the target word equally quickly in the manner verb and the result verb conditions. This suggests that, even if the verb does not semantically entail a change-of-state, the presence of a change-of-state oriented QUD makes participants more likely to construct a representation where the object undergoes a change-of-state. In other words, when the QUD indicates that the inquiry is about the (changed) result state of the object, the event representation can be enriched to include a notion of a changed state, even though this is not included in the lexical semantics of manner verbs. This shows that discourse-level information exerts an influence on the mental representation of object states during event comprehension. An interesting question to be addressed regarding general-factual contexts is how QUDs that are related or unrelated to the result state of the past complex event affect the choice of perfective or imperfective aspect referring to completed events.

[Klimek-Jankowska \(2020\)](#) provides preliminary evidence that imperfective is more frequently used in presuppositional factual contexts when the QUD is agent-oriented, and hence associated with its initiation sub-event (the emphasis is shifted away from the result subevent), as compared to when it is result-oriented, and hence potentially makes the change of state of the past event more relevant. Analogously to [Hye-yeon and Kaiser \(2021\)](#), we may ask whether discourse-level information interacts with verb-level information to guide the representation of past complex events. More specifically, do creation verbs such as *build*, *bake*, *embroider*, *sew*, which lead to the existence of the object make the result state more relevant than verbs that only affect the object, e.g., *iron*, *water*, *comb*, *wash*, *repair*. If so, does it depend on whether the QUD is agent-oriented or result state-oriented? Regarding existential factual contexts, are aspect choices affected by whether the current QUD relates more to the outcome of the past event rather than its indefinite temporal location? Finally, will these factors influence aspect choices to the same extent in Polish, Czech, and Russian? As argued by [Dickey \(2000, 2015\)](#), East Slavic languages license more uses of imperfective aspect in general-factual contexts than west Slavic languages, with Polish, Serbian, and Croatian being in an intermediate zone. [Mueller-Reichau \(2018\)](#) in his study of the aspectual behavior of Polish, Czech, and Russian in general-factual contexts argues that Polish is not 'in between', but rather follows the Czech pattern. [Dickey's \(2000, 2015\)](#) and [Mueller-Reichau's \(2018\)](#) research set new important trends, but many of their generalizations are made based on random data. Our goal in this study is to verify the micro-typology of aspect proposed by [Dickey \(2000, 2015\)](#) based on more data and replicable procedures.

With this goal in mind, we conducted a study in which we constructed scenarios eliciting aspect choices in existential and presuppositional factual contexts in Polish, Czech, and Russian.

4. The Study

In order to elicit aspect choices in the tested general-factual contexts, an online scenario-based elicitation questionnaire was conducted where respondents were asked to fill in the missing verbs in Polish, Czech, and Russian.

4.1. Participants

125 respondents from Poland, 135 respondents from Czech, and 86 respondents from Russia filled in the questionnaire.

4.2. Procedures

The experiment was uploaded to the survey platform <https://www.google.pl/intl/pl/forms/about/> (accessed on 2 May 2022) and it was sent to different colleagues in Poland, Czech Republic, and Russia with the request to distribute them among their students, friends, and further colleagues. Additionally, in order to reach a high number of participants, the links were made available on Facebook. Participants were asked to fill in the missing verbs using contextual information and English infinitival verb forms⁸ given in the brackets as cues, as shown in Figure 3.

Figure 3. A sample question in the reported online questionnaire.

The following instruction was used:

Dear participant, in the contexts below, please write the correct form of the verb (the first form that comes to mind after reading the whole context). The verbs should be written in Polish. The missing word in English is given in brackets as an indication of the word in question. Sometimes there is a note next to the English word (past), which means that the verb has to be used in the past tense. Thank you very much for your time.

The instruction was written in the native language of the respondents.

4.3. Material

The questionnaire consisted of 30 experimental scenarios and 22 filler scenarios (see Appendix A for all the contexts tested in the study). The original version of the tested contexts was created in Polish and it was translated to Russian and Czech. The translations were corrected by native speakers of these languages. The fillers contained time-span adverbials, durative adverbials, or phase verbs like 'begin' or 'finish', which elicited specific aspect choices. The fillers were used to mislead the respondents as to the purpose of the experiment and to make aspect choices in factual contexts as unconscious as possible. The

tested contexts and the distractors were pseudo-randomized. There were six types of factual contexts, all of which contained accomplishment verbs (see Table 1).⁹

Table 1. The types of contexts tested in the study.

EXISTENTIAL FACTUAL CONTEXTS	
Condition 1: EXIST-NEUT	existential neutral
Condition 2: EXIST-RES	existential resultative
PRESUPPOSITIONAL FACTUAL CONTEXTS	
Condition 3: SRP-INIT	strong resultative, focus on the initiator
Condition 4: SRP-RES	strong resultative, focus on the result
Condition 5: WRP-INIT	weak resultative, focus on the initiator
Condition 6: WRP-RES	weak resultative, focus on the result

The questionnaire was anonymous. Additionally, information about the age group and the region of origin was elicited from the respondents. The mean age in Czech was 30.4 with an age range from 19 to 72. The mean age in Russian was 39.2 with an age range from 18 to 67. The mean age in Polish was 29.2 with an age range from 20 to 67. In the cover letter to the participants, we specified that we want the questionnaire to be filled in by a native speaker of the tested languages.

Below the tested types of contexts are presented and discussed in more detail.

4.3.1. Existential Factual Contexts

An example of a *neutral existential factual* context is provided in (24).

Polish

- (24) a. To nie jest wielki wyczyn
 it not is big achievement
 użyć nowoczesnej kosiarki do trawnika.
 use.INF modern mower to lawn
 Ciekawe, czy Jan kiedyś
 interesting if John ever
kosił¹ trawnik prawdziwą
 mowed.IPFV.3SG.M lawn.ACC real.INST
 kosą.
 scythe.INST

Czech

- b. Použit moderní sekačku na trávu
 using modern mower to lawn
 Není žádný velký výkon.
 is not any big achievement
 Zajímalo by mě, zda někdy Jan
 interest COND me if ever John
sekal¹ trávu opravdovou
 mowed.IPFV.3SG.M lawn.ACC real.INST
 kosou.
 scythe.INST

Russian

- c. Ispol'zovaniye sovriemiennoj gazonokosilki
 using modern lawn-mower
 – eto nie podvig.
 – it not achievement
 Intieriesno, *kosil*^l
 interesting mowed.IPFV.3SG.M
 li Jan
 Q John
 kogda-nibud' travu.ACC
 ever lawn nastojaščej real.INST
 kosoj?
 scythe.INST
 'It's no great feat to use a modern lawn mower. I wonder if John has ever
mowed a lawn with a real scythe?'

In this context, the existence of the past event of *mowing*, denoted by the verbal predicate, is focused (it is not backgrounded). The use of the adverbial *ever* requires that there is at least one instantiation of the past event within some interval that extends from some point in the past until now. The adverb also requires that the temporal location of the past event(s) is arbitrary (non-specific). The location of the past event is vague (non-specific, indefinite). The QUD is whether the event *ever* happened, hence the indefiniteness of the past event is under discussion. Previous discourse is neutral, and it does not make the result state of the past event relevant for the current discussion in contrast to the resultative existential factual contexts in (25). In fact, these contexts match Padučeva's (1996) "general-factual resultative contexts".

An example of a *resultative existential factual* context is provided in (25):

Polish

- (25) a. Widzę, że kwiatki na parapecie
 see.1sg that flowers on ceiling
zwiędły^P. Czy ty na pewno
 wilted.PFV.3PL Q you for sure
 je dzisiaj *podlewales*^l?
 them.ACC today watered.IPFC.2SG.M

Czech

- b. Vidím, že kytká na římse *zvadla*^P.
 see.1SG that flowers on ceiling wilted.3PL.PFV
 Určitě jsi je dnes *zalíval*^l?
 sure be.2SG them today watered.IPFV.2SG.M

Russian

- c. Ja vižu, čto cviety na podokonníkie *zasoxli*^P.
 I see.1SG that flowers on ceiling wilted.PFV.3PL
 Ty uvierien, čto *políval*^l ix
 you certain that watered.IPFV.2SG.M them
 segodnia?¹⁰
 today
 'I can see that the flowers on the window-sill have wilted. Are you
 sure you *watered* them today?'

In (25) the existence of the past event, denoted by the verbal predicate *water*, is focused (it is not backgrounded). There is potentially at least one instantiation of the past event within the interval that extends from some point *today* until now. The adverb *today* does not locate the event at a specific point on the time axis but, in contrast with (24), the result of the past event in (25) is causally related to the speaker's earlier observation that the flowers wilted. This is expected to facilitate the choice of perfective aspect in these contexts

even though the past event can be located relative to some indefinite time point within a broad time span provided by the adverb *today*.

4.3.2. Presuppositional Factual Contexts

The presuppositional factual scenarios used in the current study start from a sentence outlining a topic situation held at the moment of speaking, followed by a *wh*-question presupposing the existence of a past event and asking about some details related to either the object or the initiator of the past event. The presupposed past event is in an Elaboration relation with the event or state introduced in the preceding sentence.

Two factors were manipulated:

- **Discourse-level:** the QUD was related either to the holder of the result state or to the initiator of the event. When the QUD is related to the initiator of the past event, the emphasis is shifted away from the result state, and hence we may expect more choices of imperfective.
- **Verb-level:** the use of creation verbs and non-creation accomplishment verbs where only the former guaranteed that the reaching of the result state was a necessary (strong) epistemic precondition for the existence of the holder of the result state.

This resulted in four types of presuppositional factual contexts: (i) strong resultative presuppositional factual context focusing on the initiator (SRP-INIT), (ii) strong resultative presuppositional factual context focusing on the result (SRP-RES), (iii) weak resultative presuppositional contexts (WRP-INIT), and (iv) weak resultative presuppositional factual context (focusing on the result) (WRP-RES).

In strong resultative presuppositional contexts, creation verbs leading to the existence of the object were used, e.g., *sew, build, paint, draw, cook, bake, sculpt*, as exemplified in (26) and (27). In (26), the focus is on the result sub-event, and in (27), the focus is on the initiation sub-event.

STRONG RESULTATIVE PRESUPPOSITIONAL FACTUAL CONTEXT, FOCUS ON THE RESULT

Polish

- (26) a. Jaki pyszny placek Marysiu.
 how cake Mary
 delicious
 Z jakich składników go *piekłaś*?
 with which ingredients it.ACC baked. IPFV.2SG.F

Czech

- b. Ta placka je skvělá, Maryšo.
 this cake is delicious Mary
 Z jakých ingrediencí jsi ji *pekla*?
 with which ingredients be.2SG it.ACC baked.IPFV.2SG.F

Russian

- c. Kakož vkusnyj pirog Marysia!
 how delicious cake Mary
 Iz čego ty jeho *pekla*?
 with what you it.ACC baked.IPFV.2SG.F
 'What a delicious pie Mary. What ingredients did you *bake* it from?'

In (26), the object of the past creation event (a delicious pie) is available at the moment of speaking. In (26), the QUD is related to the object (the holder of the result state), and, more precisely, to the ingredients used to bake it. In (27), the object of the past event of building (the beautiful house) is available at the moment of speaking and the QUD is related to the initiator of the past event of building.

STRONG RESULTATIVE PRESUPPOSITIONAL FACTUAL CONTEXT, FOCUS ON THE INITIATOR

Polish

- (27) a. Widzę, że twój dom jest idealny.
 see.1SG that your house is ideal
 Czy podasz mi namiar na ekipę,
 Q give.PRES.PFV.2SG me contact to crew
 która go *budowała*¹?
 which it.ACC built.IPFV.3SG.M

Czech

- b. Vidím, že tvůj dům je moc povedený.
 see.1SG that your house is ideal
 Dáš mi prosím kontakt na partu,
 give.PRES.PFV.2SG me please contact to crew
 která ho *stavěla*¹?
 which it.ACC built.IPFV.3SG.F

Russian

- c. U tebia otličnyj dom!
 by you ideal house
 Ty možeš dať mnie
 you can give me
 informaciju o brigadie, kotoraja jeho
 information about crew which it.ACC
*stroila*¹?
 built.IPFV.3SG.F
 'I can see that your house is perfect. Can you give me the contact details of the team that **built** it?

In weakly resultative presuppositional factual contexts, accomplishment verbs expressing a change-of-state of the object, but not leading to the existence of the object, were used, e.g., *iron*, *repair*, *water*, *wash*—as illustrated in (28) and (29).

WEAK RESULTATIVE PRESUPPOSITIONAL FACTUAL CONTEXT, FOCUS ON THE RESULT

Polish

- (28) a. Moja koszulka pięknie pachnie
 my T-shirt nicely smells
 po praniu.
 after washing
 Czy możesz mi powiedzieć,
 Q can.2SG me tell
 jakim proszkiem go *pralaś*¹?
 which.INSTR powder.INSTR it.ACC washed.IPFV.2SG.F

Czech

- b. Moje tričko voní pěkně
 My T-shirt smells nicely
 po vyprání.
 after washing
 Můžeš mi říct,
 can.2SG me tell
 v jakém prášku jsi Ho *prala*¹.
 in which powder be.2SG it.ACC washed.IPFV.2SG.F

Russian

c.	Moja my poslie stírki. after washing Podskaži, tell jego.ACC it.ACC 'My shirt smells lovely after washing. Can you tell me what powder you <i>washed</i> it with.'	futbolka T-shirt kakim which.INSTR <i>stírala</i> ¹ ? washed.IPFV.2SG.F	priekrasno nicely poroškóm powder.INSTR	paχniet smells ty you
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In (28), the object of the past event of washing, i.e., the nicely smelling T-shirt, is available at the moment of speaking. In (28), the QUD is related to the object (the holder of the result state), and, more precisely, to the washing powder used to wash the T-shirt.

WEAK RESULTATIVE PRESUPPOSITIONAL FACTUAL CONTEXT, FOCUS ON THE INITIATOR

Polish

(29) a.	Widzę, że see.1SG that rower. bike szukam look_for.1SG Czy Q kto who	masz have.2SG Ja I fachowców. specialists możesz can.2SG ci you.DAT	w końcu eventually też also mi me go it.ACC	sprawny working właśnie just powiedzieć, tell <i>naprawiał</i> ¹ ? repaired.IPFV.3SG.M
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Czech

b.	Vidím, že see.1SG that funkční. working Právě just Můžeš can.2SG ti you.DAT	tvé your také also mi me ho it.ACC	kolo je bike is hledám look_for.1SG říct, tell <i>opravoval</i> ¹ . repaired.IPFV.3SG	nakonec eventually odborníky. specialists kdo who
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Russian

c.	Ja vížu, I see.1SG počinili repaired Ja I Podskaži, tell jego it.ACC 'Oh, you finally have a working bike. I am also looking for professionals. Can you tell me who <i>repaired</i> it for you.'	čto that vielosiplied. bike tože too kto who <i>činil</i> ¹ ? repaired.IPFV.3SG	tiebie you išču look_for.1SG tiebie you.DAT	nakonec-to eventually mastiera. specialist
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In (29), the object of the past event of repairing—that is *the working bike*—is available at the moment of speaking. However, the QUD is related to the initiator of the past event of repairing.

4.4. Predictions

Prediction 1

Based on Dickey's (2000, 2015) micro-typology of aspect, in all of the tested contexts more choices of the imperfective are expected in Russian than in Czech and Polish, with Polish being transitional between Russian and Czech.

Prediction 2

More choices of the imperfective are expected in neutral existential factual contexts, EXIST-NEUT, than in the remaining conditions:

- EXIST-RES
- SRP-INIT
- SRP-RES
- WRP-INIT
- WRP-RES

This is expected because the QUD in EXIST-NEUT contexts focuses on the adverb *ever*, which enforces the indefinite temporal location of the past event given that *ever* imposes a restriction that the event should happen at least once at some arbitrary (non-specific) temporal interval. Additionally, the rhetorical discourse structure remains neutral as to the relevance of the result state of this event for the current discussion. Additionally, these contexts refer to a past event that is possibly, but not necessarily, complete. This aspect of their meaning is underspecified, as it is not addressed in the QUD. All these factors make imperfective aspect strongly preferred. In the remaining conditions, QUDs are either related to the result of the past event or the past complex event is presupposed to exist, hence it is anchored to the timeline.

Prediction 3

More choices of the imperfective are expected in weak resultative presuppositional contexts than in strong resultative presuppositional contexts. The relevant planned comparisons are between:

WRP-INIT vs. SRP-INIT
and
WRP-RES vs. SRP-RES

This is expected because in weak resultative presuppositional contexts (with non-creation accomplishment verbs), the backgrounded past event might have consisted of a process sub-event that did not necessarily reach the result sub-event, thereby leading to more choices of imperfective aspect than in strong resultative presuppositional contexts with creation verbs.

Prediction 4

More choices of the imperfective are expected in presuppositional contexts focusing on the initiator than in the ones focusing on the result sub-event. The relevant planned comparisons are between:

SRP-INIT vs. SRP-RES
and
WRP-INIT vs. WRP-RES

This is motivated by the fact that in the contexts in which the existence of the past complex event is presupposed and the object (holder of the result state) is available at the moment of speaking—making the information that the past event reached the result state recoverable—the imperfective may be preferred when the QUD is related to the initiation sub-event than when it is related to the result subevent.

4.5. Results

In order to determine the presence of the differences in choice between imperfective (set as reference level) and perfective forms between the experimental conditions within and

across Polish, Czech, and Russian, and to determine the existence of the overall difference between those languages, a general linear mixed effect model with binomial response using the *glmer* function from the *lme4* (Bates et al. 2015) package was fitted. The best model fit was obtained with participants and items set as random intercepts. The significance of the main effects of LANGUAGE and CONDITION and the interaction effect of LANGUAGE x CONDITION was based on the comparison of the model with no effects and main effects only, respectively. Pairwise comparisons using Z-tests, which were corrected with Holm's sequential Bonferroni procedure, were obtained using the *glht* function from the *multcomp* package. A statistical analysis of aspect choices revealed a significant main effect for CONDITION ($\chi^2(5) = 41.6897$; $p < 0.0001$) and LANGUAGE ($\chi^2(2) = 6.6467$; $p = 0.03603$). However, no significant interaction effect between CONDITION and LANGUAGE was found ($\chi^2(10) = 14.8559$; $p = 0.13740$). Pairwise comparisons with respect to the main effect of CONDITION revealed significant differences between EXIST-NEUT and other experimental conditions only. EXIST-NEUT stimuli show a significantly greater probability of being completed with an imperfective form of the verb (rather than the perfective one) than stimuli in other experimental conditions. Pairwise comparisons with respect to the main effect of LANGUAGE revealed only marginally significant differences between Polish and Russian and Czech and Russian.

4.5.1. The Main Effect of LANGUAGE

A statistical analysis of aspect choices revealed a significant main effect for CONDITION ($\chi^2(5) = 41.6897$; $p < 0.0001$) and LANGUAGE ($\chi^2(2) = 6.6467$; $p = 0.03603$). Pairwise comparisons with respect to the main effect of LANGUAGE revealed the following results (graphically represented in Figures 4 and 5):

- for the pairwise comparison between Polish and Czech, the estimated p -value = 0.6307
- for the pairwise comparison between Polish and Russian, the estimated p -value = 0.0575 (significant)
- for the pairwise comparison between Czech and Russian, the estimated p -value = 0.0692 (marginally significant)

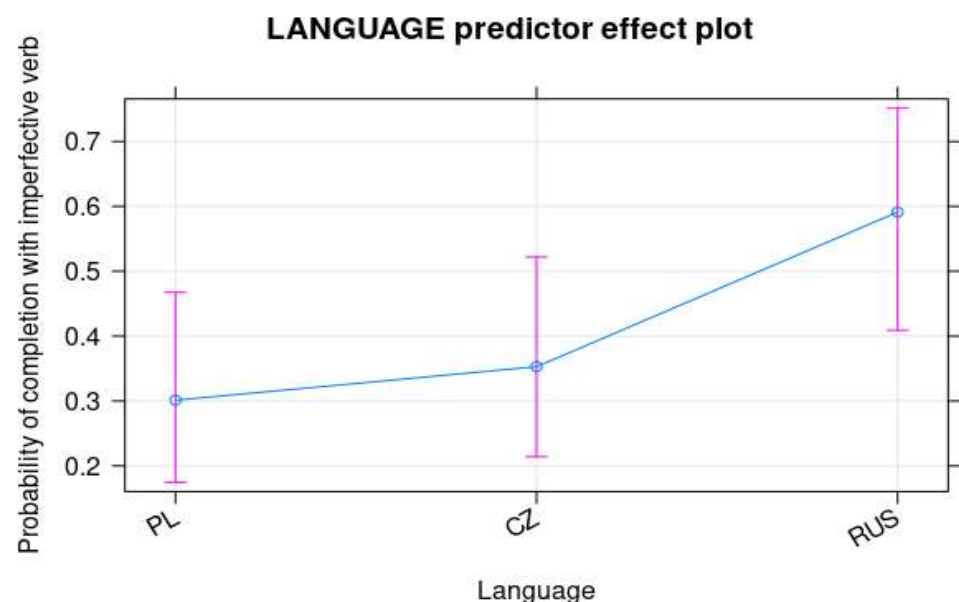


Figure 4. Language effect plot.

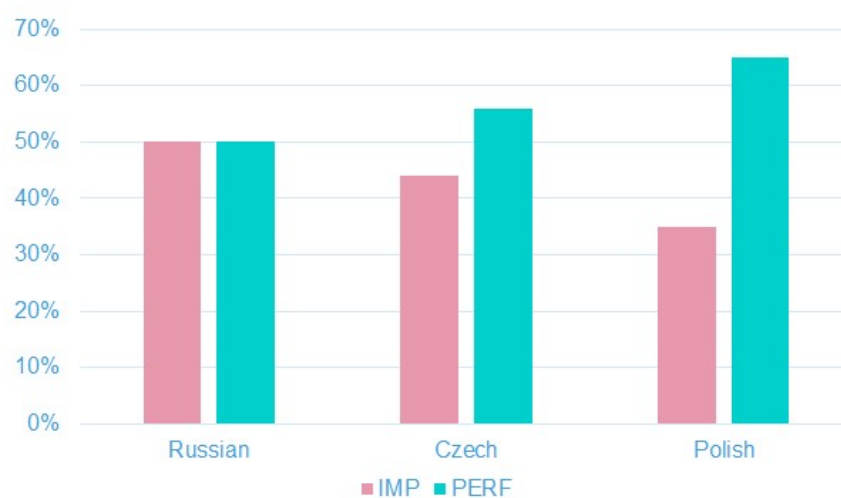


Figure 5. Percentages of aspect choices in factual contexts in Russian, Czech, and Polish.

4.5.2. The Main Effect of CONDITION

Pairwise comparisons with respect to the main effect of CONDITION revealed significant differences between EXIST-NEUT and other experimental conditions ($p < 0.001$), as shown in Figure 6. Only EXIST-NEUT stimuli showed a significantly greater probability of being completed with an imperfective form of the verb (rather than the perfective one) than stimuli in other experimental conditions.

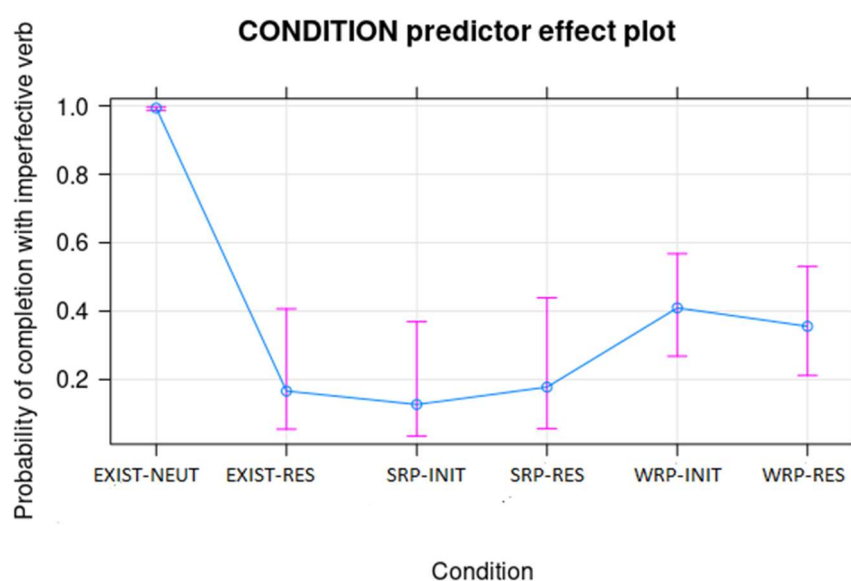


Figure 6. Condition plot.

4.5.3. Interaction between LANGUAGE and CONDITION

No significant interaction effect between CONDITION and LANGUAGE was found ($\chi^2(10) = 14.8559$; $p = 0.13740$), as shown in Figure 7.

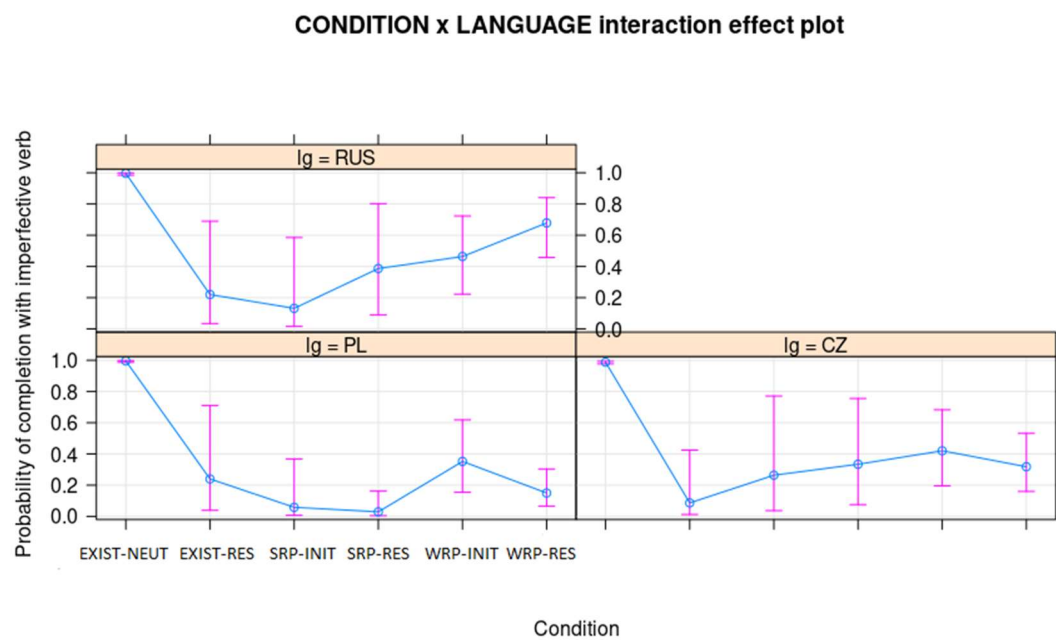


Figure 7. Language and condition plot.

In Figure 8, we additionally show the percentage of uses of imperfective and imperfective aspect in each condition in Russian, Polish, and Czech.

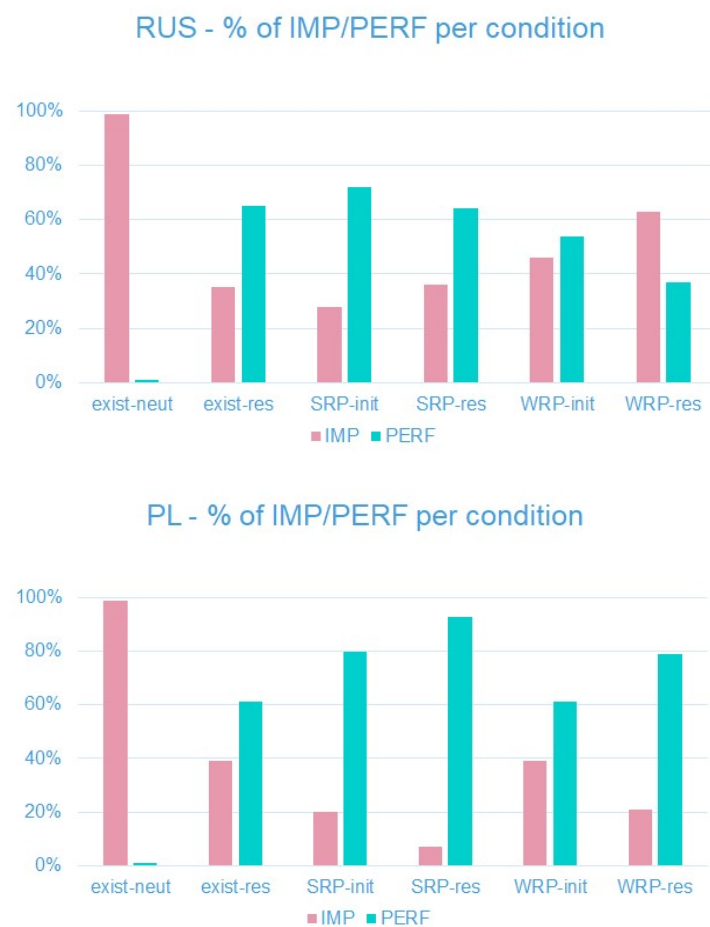


Figure 8. Cont.

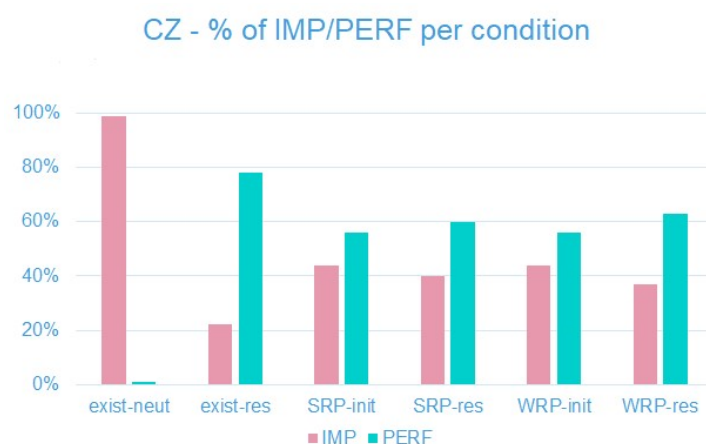


Figure 8. The percentage of perfective and imperfective aspect choices in Russian, Polish, and Czech in all the conditions.

5. Discussion

Russian scored more uses of imperfective aspect in all the tested factual contexts than Czech and Polish (this effect was statistically marginally significant). The obtained result is in line with Dickey's (2000, 2015) micro-typology of aspect in Slavic (partly confirming Prediction 1). However, Polish and Czech did not turn out to differ significantly, but, contrary to what Dickey (2000, 2015) proposed (but in line with Mueller-Reichau 2018), it was not Polish that turned out to occupy an intermediate position between Russian and Czech, rather Czech turned out to be the intermediate between Russian and Polish (contrary to what was expected in Prediction 1).

In all the tested languages, there was a significantly higher proportion of imperfective usage in neutral existential contexts (in which the emphasis is put on the temporal indefiniteness of the past event and it is shifted away from its result state) as compared to all the remaining tested conditions (confirming Prediction 2). In resultative existential contexts, where the result state is causally related to earlier discourse, the rate of perfective choices increased significantly as compared to neutral existential contexts. Additionally, there is a visible trend towards a higher usage of imperfective in weakly resultative presuppositional contexts as compared to strongly resultative presuppositional contexts (though this difference did not reach significance). This trend is compatible with Prediction 4, but more items would have to be independently tested to confirm this prediction statistically. Prediction 3, under which more choices of the imperfective were expected in weak resultative presuppositional contexts (WRP-INIT and WRP-RES) than in strong resultative presuppositional contexts (SRP-INIT and SRP-RES), was not confirmed. This may be related to the fact that the contexts focusing on the result state in fact mentioned the means that led to obtaining the result. It is worth considering better ways of focusing on the result.

Even though it is not standard practice to interpret the results that are not statistically significant but only appear to form a trend, we think these trends may gain significance in further experiments using more focused designs with more collected data. This approach is additionally motivated by the fact that the tested phenomena are subtle and some factors we are not aware of may play an important role. One firm conclusion we should draw is that aspect choices in existential and presuppositional contexts should be addressed separately. Another important conclusion is that both discourse-level information and verb-level information affect aspect choices in general-factual contexts, and they do it differently in existential and presuppositional contexts. We will first address the results related to aspect choices in two types of existential contexts and then we will address aspect choices in four types of presuppositional contexts. We will relate the results to relevant aspects of the theories presented in Section 2.

In neutral existential contexts with the adverb *ever* and accomplishment verbs, Polish, Czech, and Russian show a clear preference for imperfective aspect (close to 100% choices).

Why is imperfective aspect so strongly preferred in these contexts? As suggested by Grønn (2004), in existential factual imperfective contexts, imperfective is preferred in the absence of a temporal adverbial narrowly restricting the assertion time. For example, in existential factual imperfective contexts, imperfective occurs with an extended assertion time where the focus is on the existence of an event and the target state validity of telic predicates is irrelevant. By contrast, Gehrke (forthcoming b) argues that imperfective is preferred in existential factual contexts because the event is potentially iterative (refers to a plural set of events). Recall also that, according to Mueller-Reichau (2018), perfective has to do with event uniqueness. All these approaches seem to face a problem when confronted with the data from Russian presented in (30).

- (30) Eto byla vešč lučšaja iz vsieχ
 it was thing best of all
 vieščeĭ kotoryje ja kogda-libo sozda^P.
 things which.3PL I ever created.PFV.3SG.M
 'It was the best thing of all the things I had ever created.'

In (30), there is an extended assertion (reference) time and there is a plural event of *creating things* (*kotoryje* 'which' agrees in terms of person and number with the plural noun *vieščeĭ* 'things', and there is an implicature that the events of creating them happened on different occasions), but the perfective aspect is used contrary to what we could expect. What characterizes this context is that the plural set of objects (*vieščeĭ* 'things') in the domain of quantification of the universal quantifier *all* is presupposed to exist. Consequently, the events of creating these objects as well as the temporal intervals to which they are anchored are also presupposed to exist in the past. As such, they can be anchored to specific past intervals. This suggests that the temporal specificity of the past event seems to be a facilitating factor in the choice of the perfective aspect in general-factual contexts in Russian. From this, we can draw a preliminary conclusion that backgrounded events are temporally specific (whether singular or plural) (see Grønn 2015 for a similar view).

Additionally, we should keep in mind that imperfective co-varies with perfective in neutral existential contexts such as EXIST-NEUT with the adverb *ever* only in Polish and Czech. In Russian, imperfective is the only possible option in these contexts. Additionally, when achievement verbs such as *win* or *lose* are used in such contexts in Russian, imperfective is still the only option, while in Polish and Czech, perfective is obligatory (or at least strongly preferred)—as shown in (15), (16), and (17). In accounting for these observations, we rely on Ramchand's (2008a) tense-aspect theory and her distinction between (in)definiteness at the macro- (second phase syntax) and micro-level (first phase syntax), where the former means the (in)definite temporal location with respect to the utterance time and the latter with respect to the temporal trace of an event. Temporal (in)definiteness at the macro-level should be understood in terms of temporal specificity (being anchored to a particular, non-arbitrary interval) on the timeline. Definiteness at the micro-level means that the time variable is situated at the transition point between the process sub-event and the result state in Ramchand's (2008b) first phase syntax (leading to the choice of perfective forms during spell-out). Indefiniteness at the micro-level means that the time variable is situated as an arbitrary point within the temporal trace of an event (leading to the choice of imperfective during spell-out). We suggest that EXIST-NEUT contexts are temporally indefinite at the macro-level and underspecified for definiteness (+/− definite) at the micro-level in the case of accomplishments. In EXIST-NEUT, the result state of the past event is not relevant in the current conversation, hence nothing prevents the time variable from being placed at an arbitrary point relative to the temporal trace of an accomplishment event, thereby making imperfective aspect preferred in Polish, Czech, and Russian. Additionally, the temporal indefiniteness of the past event in EXIST-NEUT is explicitly expressed by means of the adverb *ever* stating that the past event could be potentially located at an arbitrary interval before the utterance time. Moreover, the QUD is directly related to the temporal indefiniteness of the past event with respect to the utterance time. This appears

to significantly facilitate the placement of the time variable at an arbitrary point both with respect to the utterance time and within the temporal trace of an accomplishment event in Polish, Czech, and Russian. Why is imperfective obligatory in these contexts only in Russian? It appears to be the case that in Russian, when the QUD addresses the temporal indefiniteness of the past event, perfective is avoided, making imperfective obligatory. Russian perfective has to be anchored to a specific temporal location on the timeline, hence it is incompatible with contexts in which temporal indefiniteness is explicitly addressed. Why is perfective obligatory in Polish and Czech when achievement verbs are used in EXIST-NEUT contexts? We would like to propose that in the case of achievements, the time variable is definite with respect to the temporal trace of an event. Achievements describe an instantaneous change-of-state, and the time variable can only be located at a unique time instant at which the change-of-state happens. This suggests that perfective in Polish and Czech (in contrast to Russian) does not require that the time variable is placed at a specific temporal location before the utterance time.

At this point, one can reasonably ask why perfective aspect can be used in EXIST-RES contexts in Russian even though the temporal adverb *today* is rather vague as to the temporal location of the past event on the time axis. The QUD in *Have you watered flowers today?* asks whether the past event of watering flowers happened within the interval specified by the adverb *today*. Recall, however, that in EXIST-RES contexts, the result state of the past event is causally related to earlier discourse. In this case, earlier discourse states that *the flowers wilted*. This implies that the QUD is whether the past event of watering happened before the flowers wilted. This makes the temporal location of the past event of watering flowers pragmatically specific, plus the result state of watering flowers is very relevant to the current discourse. This suggests that the temporal location of the past event is indefinite only at the sentence level, but that the surrounding discourse makes it pragmatically and temporally specific. This may explain why even in Russian, perfective aspect, which has to be anchored to a specific temporal location, is acceptable in this context. In fact, perfective aspect is preferred in EXIST-RES in Russian, Polish, and Czech. This preference is stronger in Czech than in Russian and Polish. Why does perfective co-vary with imperfective in EXIST-RES contexts? It appears to be the case that when the result state of the past event is relevant, as it is causally related to some event in earlier discourse, some speakers prefer to place a temporal variable at the transition point between the process sub-event and the result state (definiteness at the micro-level), leading to the choice of perfective aspect. However, some speakers may choose to place the time variable at an arbitrary point within the temporal trace of the past event when they consider sentential indefiniteness more relevant. The former option seems to be more likely in Czech and the latter option appears to be more frequent in Polish and Russian.

In presuppositional general-factual contexts, the presupposed events are temporally definite (specific) as they can be anchored to a particular interval on the timeline that is also presupposed to exist (the exact temporal location does not have to be specified). At the micro-level, the contexts with accomplishment predicates are underspecified (+/– definite) as to the location of the time variable with respect to the temporal trace of an event. The results of our study show a trend (which did not reach significance) indicating that, in the case of weakly resultative accomplishments with non-creation accomplishment verbs such as *iron* and *water*, the result state of the past event relates to some property of the object of this event, e.g., its being *watered* or *ironed*. Therefore, the fact that the object of the past event is available in the current conversation does not guarantee that the past event reached a result state. For this reason, speakers are more likely to place the time variable at an arbitrary point of the temporal trace of an event (definite), thereby facilitating the choice of imperfective. By contrast, in the case of a strongly resultative aspect (creation verbs), the existence of the object of the past event in the current discussion guarantees that the past complex event reached its result state, hence speakers are more likely to place the time variable at the transition between the process and result state sub-events (+ definite), thereby leading to a more frequent choice of perfective aspect. Based on that,

we would like to suggest that the positioning of the time variable relative to the temporal trace of a complex past event depends on the interaction of discourse-level and verb-level information. Concerning the question why Russian makes more choices of imperfective aspect in presuppositional general-factual contexts than Polish and Czech (even though in all the three languages perfective is preferred), we would like to suggest a similar conclusion as [Altschuler \(2010, 2012\)](#), which supposes that perfective in Russian is more strongly associated with the Narration discourse relation, thereby making it less preferred in Elaboration contexts. This is also related to the fact that perfective in Russian “wants” to be anchored to a specific time interval and the Narration relation makes the temporal location of the past event very specific.

Altogether, we propose that in general-factual contexts, there is a competition between the choice of perfective and imperfective aspect and the ultimate choice depends on whether the speaker chooses to put more emphasis on the (in)definiteness of the temporal variable with respect to the temporal trace of a complex event or on the (in)definiteness (specificity) of the temporal variable with respect to the utterance time. In [Ramchand’s \(2008a\)](#) formalism, the spell-out domain is either vP or CP (see [Chomsky 2004, 2005a, 2005b](#)). Since both types of (in)definiteness are made before CP (at the level of AspP and TP), the phonological realizations associated with them in the form of perfective and imperfective Vocabulary Items compete for insertion at the level of CP. The choice of the aspectual form may depend on very subtle nuances of context and on what kind of (in)definiteness is more relevant in a given scenario.

We also claim that Russian perfective is more strongly associated with temporal specificity (being anchorable to a specific interval on the time axis), as compared to Polish and Czech. Perfective cannot be used in contexts that explicitly state that the past event may have happened at an arbitrary moment in time. In contexts in which the past event is presupposed to exist, the interval to which it is anchored is also presupposed to exist (it is specific), hence perfective is not banned. The placement of the time variable with respect to the temporal trace of an event in the first phase syntax is determined by how relevant the result state is in the current conversation. When the result state is very relevant, the time variable is placed at the transition between the process sub-event and the result sub-event, leading to the choice of perfective aspect. Otherwise, it is placed at an arbitrary point within the temporal trace of an event, leading to the choice of imperfective aspect. Both discourse-level information and verb-level information may affect speakers’ choices as to whether the time variable should be positioned at the transition point or at an arbitrary point within the temporal trace of an event.

6. Conclusions

The goal of this study was to account for the variation in aspect usage in factual imperfective contexts in Polish, Czech, and Russian. In the online questionnaire that was conducted, native speakers of the tested languages were asked to fill in the missing verbs in two types of existential (neutral and resultative) and four kinds of presuppositional factual contexts (weakly resultative with a focus on the initiator, weakly resultative with a focus on the result state, strongly resultative with a focus on the initiator, strongly resultative with a focus on the result state). We observed in our study that Russian scored significantly more uses of imperfective aspect in all the tested factual contexts than Czech and Polish which was consistent with Dickey’s 2000, 2015 micro-typology of Slavic aspect. Contrary to [Dickey \(2000, 2015\)](#), it was not Polish that turned out to be intermediate but Czech (though the difference between Polish and Czech did not reach significance). Our results show clearly that aspect choices in existential and presuppositional general-factual contexts should be addressed separately. We have also shown that existential general-factual contexts are not uniform. In all the tested languages, neutral existential contexts (in which the emphasis was put on the temporal indefiniteness of the past event and it was shifted away from its result state) scored a significantly higher proportion of imperfective usage than all the remaining tested conditions. In resultative existential contexts, where the

emphasis is put both on the temporal indefiniteness of the past event and on its result state, the rate of perfective choices was significantly higher than in neutral existential contexts. We also observed a trend towards a higher usage of imperfective in weakly resultative presuppositional contexts as compared to strongly resultative presuppositional contexts, suggesting that the less emphasis is placed on the result state (in weakly resultative presuppositional contexts), the more likely the choice of imperfective aspect is for the expression of the temporal indefiniteness of factual contexts. We attribute these observations to the fact that, in factual contexts (both existential and presuppositional), there is an interaction between two types of TEMPORAL (IN)DEFINITENESS of the past event understood as in Ramchand (2008b): temporal (in)definiteness at the micro-level (first phase syntax (*vP*)) (depending on the position of the time variable within the temporal event of the past complex event) and (in)definiteness of the past event at the macro-level (second phase syntax (*AspP*) and (*TP*)) (related to the position of the past event relative to the utterance time). The latter is understood more in terms of temporal specificity, i.e., being able to anchor the past event to a specific (non-arbitrary) temporal interval on the time axis. In Russian, perfective aspect is banned from contexts that are obligatorily temporally indefinite (non-specific). We have shown that discourse-level and verb-level information play a role in the interaction of the temporal (in)definiteness both at the micro- and macro-level.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki. Ethical review and approval were waived since the online questionnaires were fully anonymous and they did not concern any sensitive issues such as gender, ethnicity, race, age, religion, political views.

Informed Consent Statement: Patient consent was waived as the participants were informed about the purpose and procedures of the experiment and their participation was voluntary.

Data Availability Statement: Data supporting reported results can be found here: <https://drive.google.com/drive/folders/1NJlx7CCZvvZX5U6cLEBvPCzREOeeH1Rm?usp=sharing> (accessed on: 2 May 2022). The linguistic material tested in the questionnaires is available in the Appendix A.

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Conflicts of Interest: The author declares no conflict of interest.

Abbreviations

IPFV	imperfective (also imp in plots)
PFV	perfective (also perf in plots)
PST	past
V	verb
bcs	Bosnian/Croatian/Serbian
acc	accusative
gen	genitive
dat	dative
pl	plural
sg	singular
f	feminine
m	masculine
cond	conditional
q	question word
inf	infinitive
inst	instrumental

w	possible world
e	event
P	predicate
t	time
g	assignment function
def	definite
s	speech time
vP	little verb phrase
VP	verb phrase
TP	tense phrase
AspP	aspect phrase
CP	complementizer phrase
QUD	question under discussion
RUS	Russian
PL	Polish
CZ	Czech
exist-neut	existential neutral
exist-res	existential resultative
srp-init	strong resultative presuppositional, focus on the initiator
srp-res	strong resultative presuppositional, focus on the result
wrp-init	weak resultative presuppositional, focus on the initiator
wrp-res	weak resultative presuppositional, focus on the result

Appendix A. Polish, Russian and Czech Data Used in the Study

POLISH

EXISTENTIAL-NEUTRAL (EXIST-NEUT)

1. Wydaje mi się, że Piotrek zrobił obrzydzoną minę na widok mojego egzotycznego dania. Czy Piotrek kiedykolwiek (eat-past) ananasa?
2. To nie jest wielki wyczyn użyć nowoczesnej kosiarki do trawnika. Ciekawe, czy Jan kiedyś (mow-past) trawnik prawdziwą kosą?
3. Widzę, że macie małe doświadczenie budowlane. Czy ktoś z was (renovate-past) kiedyś dom?
4. Widzę, że nie za bardzo umiesz obsłużyć wiertarkę. Czy ty kiedykolwiek (drill-past) dziurę w ścianie?
5. Janek umył wannę szamponem. Zastanawiam się, czy on kiedykolwiek wcześniej . . .
. (clean-past) łazienkę.

EXISTENTIAL-RESULTATIVE (EXIST-RES)

1. Widzę, że zwiędły kwiatki na parapecie. Czy ty na pewno je dzisiaj (water-past)?
2. Widzę, że nasz pies stoi pod drzwiami i wyje. Czy Ty go dzisiaj na pewno (take out-past) na spacer?
3. Szef dzwonił wściekły, że brakuje mu dokumentów. Czy jesteś pewny, że wszystkie dokumenty mu dzisiaj (bring-past)?
4. Widzę, że nasza krowa jest jakaś niespokojna. Jesteś pewna, że ją dzisiaj (milk-past)?
5. O, jaki czysty dywan. Kto go dzisiaj (vacuum-clean-past)?

STRONG RESULTATIVE PRESUPPOSITIONAL-FOCUS ON THE INITIATOR (SRP-INIT)

1. Jan: Ta zupa jest przesolona. Kto ją (cook-past)?
2. Poszukuję ekipy budowlanej. Widzę, że twój dom jest idealny. Czy podasz mi namiary na ekipę, która go (build-past)?
3. Muszę przyznać, że wykonanie tej rzeźby nie jest najlepsze. Czy wiesz może, który student z mojej grupy to (sculpture-past)?
4. Ta wiadomość w skrzynce ofiary może nam wiele wyjaśnić. Musimy ustalić, kto to (write-past).

5. Wszystkie moje pierniczki, które upiekłam zniknęły. Muszę ustalić, kto je (eat-past).

STRONG RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE RESULT (SRP-RES)

1. Jaki cudny portret kobiety. Ciekawe, jaką techniką Janek tak pięknie ten portret (paint-past).
2. Ale masz piękną bluzkę. Bardzo miła w dotyku. Czy możesz mi powiedzieć, z jakiego materiału ją (sew-past)?
3. Marysia: Jaki piękny kolor ornamentu na ścianie. Chciałabym mieć taki sam w swoim salonie. Czy możesz mi powiedzieć, jaką farbą go (paint-past)?
4. Jakie cudne ornamenty na obrusie. Czy możesz mi powiedzieć z jakiej nici twoja mama je (embroider-past)?
5. Jaki pyszny placek Marysiu. Z jakich składników go (bake-past)?

WEAK RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE INITIATOR (WRP-INIT)

1. W mojej koszuli jest wypalona dziura. Niech się przyzna ten, kto ją (iron-past).
2. Widzę, że masz w końcu sprawny rower. Ja też właśnie szukam fachowców. Czy możesz mi powiedzieć, kto ci go (repair-past).
3. Na wszystkich dokumentach w tej sprawie widnieje podrobiony podpis. Ciekawe, co za oszust je (sign-past).
4. Ale masz cudną fryzurę. Czy możesz podać mi namiar na fryzjerkę, która cię (comb-past).
5. Moje rabatki w ogrodzie są pokryte po kostki wodą. Muszę ustalić, który sąsiad (water-past) moją część ogrodu.

WEAK RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE RESULT (WRP-RES)

1. Ściany tego budynku były pomalowane przez wandalę. Teraz są idealnie czyste. Ciekawe jakim środkiem firma czyszcząca je (clean-past).
2. Moja koszulka pięknie pachnie po praniu. Czy możesz mi powiedzieć, jakim proszkiem ją (wash-past).
3. Jaki ładny i efektowny kolor komody. Czy możesz zdradzić, jaką farbą ją (paint-past).
4. Jestem zaskoczona, bo karoseria mojego auta bardzo się świeci po wizycie w myjni samochodowej. Jestem ciekawa, jakim środkiem ją (wash-past).
5. widzę, że wszystkie okna są idealnie czyste. Czy możesz mi powiedzieć, jakim płynem je (wash-past).

RUSSIAN (the data were presented to the participants of the questionnaire in the Cyrillic alphabet)

EXISTENTIAL–NEUTRAL (EXIST-NEUT)

1. Мне казется, что Piotrek počuvstvoval otvraščeniye pri vidie mojego ekzotičeskogo bliuda. Piotrek kogda-nibud' (eat-past) ananas?
2. Ispol'zovaniye sovremennoj gazonokosilki–eto nie podvig. Intieriesno, (mow-past) li Jan kogda-nibud' travu nastojaščej kosoj?
3. Vižu, što u vas malo stroitel'nogo opyta. Kto-nibud' iz vas kogda-nibud' (renovate-past) dom?
4. Ja vižu, ty nie očeň xorošo obraščaješsia s driel'liu. Ty kogda nibud' (drill-past) takuju stienу?
5. Janek počistil vannu šampuniem. Intieriesno, on kogda-nibud' do etogo..... (clean-past) vannuju?

EXISTENTIAL–RESULTATIVE (EXIST-RES)

1. Ja vižu, što cviety na podokonniki zasoxli. Ty uvierien, što (water-past) ix segodnia?

2. Ja vižu, čo naša sobaka, stoit u dverej i vojet. Ty navierno nie (take out-past) jeho siegodnia na progulku?
3. Zvonil načal'nik, i on v jarosti iz-za togo, čo niet dokumentov. Ty uvierien, čo (bring-past) jemu siegodnia vsie dokumenty?
4. Ja vižu, čo naša korova kakaja-to biespokojnaja. Ty uvieriena, čo (milk-past) jeho siegodnia?
5. Ax, kakoj čistyj kovior! Kto jeho siegodnia (vacuum-clean-past)?

STRONG RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE INITIATOR (SRP-INIT)

1. Jan: Etot sup pieriesolien. Kto jeho (cook-past)?
2. U tiebia otlíčnyj dom! Ja kak raz išču stroitel'nuju firmu. Ty možeš dať mnie podrobnuju informaciju o brigadie, kotoraja jeho (build-past)?
3. Nado priznať, čo ispolnienije etoj skulptury nie samoje lučšeje. Vy znajetie, kto iz studentov mojej gruppy (sculpt-past) jeho?
4. Eto pis'mo iz počtovogo jaščika žertvy možeš mnogoje objasniť. Nam nužno uznať, kto jeho (write-past).
5. Vsie prianiki, kotoryje ja ispiekla, isčezli. Mnie nužno uznať, kto ix (eat-past).

STRONG RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE RESULT (SRP-RES)

1. Kakoj priekrasnyj ženskij portriet! Intieriesno, kak nazyvajetsia tieχnika, v kotoroj Janek (paint-past) etot portriet.
2. Kakaja u tiebia krasivaja koftočka! Očeň prijatnaja na oščup'. Možeš skazať, iz kakogo materiala ty jeho (sew-past)?
3. Marysia: Kakoj krasivyj cviet ornamenta na stienie. Ja by χotela imieť takoj že v mojej gostinoj. Podskaži, kakoj kraskoj ty jeho (paint-past).
4. Kakije čudiesnyje ukrašenijia na skatierti! Podskaži, kakimi nitkami tvoja mama ix (embroider-past)?
5. Kakoj vkusnyj pirog, Marysia! Iz čego ty jeho (bake-past)?

WEAK RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE INITIATOR (WRP-INIT)

1. Na mojej rubaškie vyžžena dyra. Pust' tot, kto jeho (iron-past), priznajsia v etom.
2. Ja vižu, čo tiebie nakoniec-to počinili vielosipied. Ja tože išču mastiera. Podskaži, kto tiebie jeho (repair-past)?
3. Na vsieχ etix dokumentax stoit poddieľnaja podpis'. Intieriesno, čo za mošennik ix (sign-past).
4. Kakaja u tiebia krasivaja pričioska! Ty nie mog by dať mnie informaciju o parikmaχerie, kotoryj (cut/style-past) tiebie volosy?
5. Moi griadki zality vodoj po ščikolotku. Mnie nužno uznať, kto iz sosiediej (water-past) moj ogorod.

WEAK RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE RESULT (WRP-RES)

1. Stieny etogo zdaniya razrisovali vandaly. Tjepier' oni sovieršenno čistyje. Intieriesno, kakim mojuščim sriedstvom ix (clean-past) kliningovaja firma.
2. Moja futbolka priekrasno paχniet poslie stirki. Podskaži, kakim poroškom ty jeho (wash-past)?
3. Kakoj krasivyj i nieobyčnyj cviet komoda! Ty možeš pokazať, kakoj kraskoj ty jeho (paint-past)?
4. Ja udivilas', čo poslie avtomojki kuzov mojej mašiny očeň siľno blietit. Intieriesno, kakimi sriedstvami jeho (wash-past).
5. Oj, ja vižu, čo vsie okna idieal'no čistyje. Podskaži, kakoj židkostiu ty ix (wash-past).

CZECH**EXISTENTIAL–NEUTRAL (EXIST-NEUT)**

1. Zdá se mi, že Petr udělal zhnusený obličej na to, jak vypadá mé exotické jídlo. (eat-past) už Petr někdy ananas?
2. Použít moderní sekačku na trávu není žádný velký výkon. Zajímalo by mě, zda někdy Jan (mow-past) trávu opravdovou kosou?
3. Vidím, že máte malé stavební zkušenosti. Už někdo z vás (renovate-past) dům?
4. Vidím, že moc neumíš obsluhovat vrtačku. Už jsi někdy (drill-past) díru do stěny?
5. Janek umyl vanu šamponem. Zajímalo by mě, jestli už někdy v koupelně (clean-past).

EXISTENTIAL–RESULTATIVE (EXIST-RES)

1. Vidím, že kytky na římsě zavadla. Určitě jsi je dnes (water-past)?
2. Vidím, že náš pes stojí u dveří a vyje. Určitě jsi ho dnes (take out-past) na procházku?
3. Volal šéf a byl našťvaný, že mu chybí dokumenty. Jsi si jistý, že jsi mu dnes všechny dokumenty (bring-past) ?
4. Vidím, že naše kráva je nějaká neklidná. Jsi si jistá, že jsi ji dnes (milk-past)?
5. Ó, jaký čistý koberec. Kdo ho dnes (vacuum-clean-past)?

STRONG RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE INITIATOR (SRP-INIT)

1. Jan: Ta polévka je přesolená. Kdo ji (cook-past)?
2. Hledám partu zedníků. Vidím, že tvůj dům je moc povedený. Dáš mi prosím kontakt na partu, která ho (build-past)?
3. Musím říct, že provedení této sochy není nejlepší. Víš, který student z mé skupiny ji (sculpt-past)?
4. Ta zpráva ve schránce důvěry nám může hodně vysvětlit. Musíme zjistit, kdo ji (write-past).
5. Všechny mé perníčky, které jsem upekla, zmizely. Musím zjistit, kdo je (eat-past).

STRONG RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE RESULT (SRP-RES)

1. Ten portrét ženy je úžasný. Zajímalo by mě, jakou technikou Janek tento portrét tak krásně (paint-past).
2. Máš pěknou halenku. Je velmi příjemná na dotek. Můžeš mi říct, z jakého materiálu jsi ji (sew-past).
3. Marie: To je ale krásná barva ornamentu na stěně. Chtěla bych mít stejnou ve svém obýváku. Můžeš mi říct, jakou barvou jsi ho (paint-past).
4. To jsou ale skvělé výšivky na ubrusu. Můžeš mi říct, jakou nití je tvá mamka (embroider-past).
5. Ta placka je skvělá, Maryšo. Z jakých ingrediencí jsi ji (bake-past)?

WEAK RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE INITIATOR (WRP-INIT)

1. V mé košili je vypálená díra. Ať se přizná ten, kdo ji (iron-past).
2. Vidím, že tvé kolo je nakonec funkční. Právě také hledám odborníky. Můžeš mi říct, kdo ti ho (repair-past).
3. Na všech dokumentech v této věci je vidět padělaný podpis. Zajímalo by mě, který podvodník je (sign-past).
4. Ty máš ale skvělý účes. Můžeš mi dát kontakt na holičku, která tě (cut/style-past).
5. Moje záhonky na zahradě jsou po kotníky zalité vodou. Musím zjistit, který soused (water-past) mou část zahrádky.

WEAK RESULTATIVE PRESUPPOSITIONAL–FOCUS ON THE RESULT (WRP-RES)

1. Stěny této stavby pokreslili vandalové. Ted' jsou perfektně čisté. Zajímalo by mě, jakým prostředkem je čisticí firma (clean-past).
2. Moje tričko voní pěkně po svěže vypraném prádle. Můžeš mi říct, v jakém prášku jsi ho (wash-past).
3. Ta barva komody je pěkná a efektní. Můžeš mi prozradit, jakou barvou jsi ji (paint-past).
4. Jsem překvapená, protože karosérie mého auta se po návštěvě automyčky velmi leskne. Zajímalo by mě, jakým prostředkem ho (wash-past).
5. Ach, vidím, že jsou všechna okna perfektně čistá. Můžeš mi říct, jakým prostředkem jsi je (wash-past).

Notes

- ¹ Importantly, in most tested factual contexts, both perfective and imperfective forms are possible. Hence, this study is mainly about preferences in aspect choices in factual contexts.
- ² Following Padučeva (1996); Gehrke (forthcoming a) points out that there are also general factual imperfective with atelic events which are ignored in the literature related to the distribution of aspect in general factual contexts as the main focus is on the question of why imperfective aspect is used to refer to past completed events.
- ³ Heim (1987) analyzed *ever* as meaning 'at least once', and having alternatives meaning 'at least n times', where $n > 1$.
- ⁴ Pragmatic presupposition is understood as in Stalnaker (1973).
- ⁵ See also Zinova and Filip (2014) and Frąckowiak (2015) for a related discussion on the pragmatics of aspect in Slavic.
- ⁶ It is possible to use imperfective aspect to refer to completed events in presuppositional *when*-questions which suggests that their temporal location may be focused (part of new information).
- ⁷ Klimek-Jankowska (2020) assumes following Tatevosov (2011, 2015, 2020) that the aspectual operators IPFV and PFV act at the level of AspP (and are phonologically null) and their morphological exponents merge lower in the hierarchy.
- ⁸ English infinitival verb forms were used as cues in the brackets. Polish infinitives could not be used as cues since they would be themselves marked for either perfective or imperfective aspect which could prompt aspect choices in the tested scenarios. We did not want to prime the participants as to the choice of an aspectual form.
- ⁹ All the verbs used in the study pass positively the following test: *I V.ipfv.pst, V.ipfv.pst till I V.pfv.pst* as in form example *Jadlem, jadlem až zjždlem* (*I ate.ipfv, I ate.ipfv till I ate.pfv*) suggesting that they consist of a durative event nucleus and a result subevent.
- ¹⁰ This is an instance of a cyclic general-factual (see Chaput 1990). In this context, there is a background expectation of regularly watering the flowers.

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