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Beyond the Suffix: Examining Imperfectivization strategies in L2 and Heritage BCMS in Italy

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ABSTRACT

The present study focuses on heritage speakers of BCMS in Italy and L2 learners of BCMS with Italian as their L1. We discuss the role of context in the use of imperfective forms by these types of speakers. Focusing on the difference between simplex/perfective/biaspectual and secondary/derived imperfectives formed with a *-va-* morpheme, our study has the primary goal of highlighting possible differences between the two groups of speakers, compared to a control group of monolingual speakers; additionally, we aim at showing possible effects of the Italian imperfect *-v-a-* morpheme on the distribution of the homophonous imperfective *-va-* morpheme in BCMS, in progressive and habitual contexts.

KEYWORDS heritage language · second-language acquisition · imperfectivization

1 INTRODUCTION

The aspectual distinction between perfective and imperfective extends throughout the entire verbal system and is applicable across the complete verbal paradigm of Slavic languages (Fortuin & Kamphuis 2015). Dickey (2000) suggests that Slavic languages can be grouped into two main categories when it comes to how they encode the meaning of aspect: Eastern (including Russian, Ukrainian, Belarusian, and Bulgarian) and Western (including Czech, Slovak, Slovenian and Sorbian). In the context of perfective aspect, Dickey (2000) introduces the concept of TEMPORAL DEFINITENESS, intended as a complete whole which has the condition of uniqueness,[1] for the Eastern group and TOTALITY or an indivisible whole, for the Western group. For the imperfective aspect, Dickey (2000) introduces QUALITATIVE TEMPORAL INDEFINITENESS as the central concept for the Eastern group, intended as the lack of assignment of an event to a single point in time, contrasting it with the QUANTITATIVE TEMPORAL INDEFINITENESS, intended as "the assignability of a situation to more than one conceptual point in time" (cf. Dickey & Kresin 2009), that characterizes the Western group.

Our study focuses on BCMS, which (together with Polish) is characterized by Dickey (2000) as a transitional area, in which the balance between totality and temporal definiteness varies depending on the context. In particular, we discuss the role of context in the use of imperfective forms in heritage speakers of BCMS in Italy and L2 speakers of BCMS with Italian as their L1. Focusing on the difference between simplex and secondary imperfectives formed with a *-va-* morpheme, our study has the primary goal of highlighting possible differences between the two groups of speakers; additionally, we aim at showing possible interference effects of the Italian imperfect *-va-* morpheme on the acquisition of the homophonous imperfective *-va-* morpheme in BCMS, in progressive and habitual contexts.

[1] The uniqueness condition refers to an event which is qualitatively different from the preceding and succeeding ones.

The article is structured as follows. §2 critically discusses current literature on aspect in heritage and L2 Slavic by focusing on the Slavic (and Romance) *-va-* suffix. §3 introduces our main research questions, along with additional previously existing hypotheses to test, and outlines the overall methodology , while §4 provides a quantitative analysis of the data. §5 gives a thorough discussion of the results and §6 provides the general conclusions.

2 THE STUDY OF ASPECT IN HERITAGE SLAVIC: STATE OF THE ART

Previous studies on Russian heritage speakers with English as their dominant language (Laleko 2008, 2010a,b, Mikhaylova 2011, Pereltsvaig 2004, 2008, Polinsky 1996, 1997, 2008, Polinsky & Scontras 2019, among others) show some notable differences in the aspectual system of heritage and non-heritage Russian speakers. Polinsky (2008) shows that in the realization of imperfective present forms, low-proficiency heritage Russian speakers overgeneralize the derived secondary imperfective (henceforth 'SI') *-va-* morpheme to most inflected forms, indicating a morphological operation that leads to a divergent distribution of the SI morpheme in their grammar.

(1) a. Eti doktory otmen-**iva**-jut appointments. (Heritage Russian)
these doctors cancel-SI-3PL appointments
'These doctors cancel appointments' (Polinsky 2008)

b. Eti doktory otmen-**ja**-jut naznačenija. (Expected baseline Russian)
these doctors cancel-IPFV-3PL appointments
'These doctors cancel appointments'

Instead of realizing the expected imperfective *-ja-* morpheme (1-b), heritage Russian speakers generalize the *-va-* morpheme (1-a) to the imperfective present form. It is likely the case that the low proficiency of speakers in Polinsky (2008)'s study plays a crucial role in the dramatic changes in the aspectual system and the distribution of aspectual morphemes.

Unlike Polinsky (2008), Mikhaylova (2011) focuses on the aspectual knowledge of high proficiency heritage speakers of Russian, compared with monolingual (L1) speakers and second language (L2) learners of Russian. The study specifically focuses on the expression of telicity and boundedness of events in Russian verbs. Mikhaylova (2011)'s results show that heritage speakers exhibit a clear advantage over L2 learners in expressing specific aspectual distinctions, with boundedness being particularly challenging for L2 learners in accomplishment verbs expressed with both a prefix and a suffix. Conversely, telicity contrasts in both activity and accomplishment verbs (expressed through prefixes only) and boundedness contrasts in achievement verbs (expressed via suffixes only) are generally less challenging for L2 learners. According to the author, the morphological complexity of aspectual marking (when it is signaled by both a prefix and a suffix) plays a significant role in the interpretation of forms by L2 learners of Russian. In particular, Mikhaylova (2011)'s study shows that HL and L2 learners exhibit divergent patterns for specific aspectual interpretations, despite reaching a high proficiency level.

Such divergent patterns are discussed in Laleko (2008), who argues that the distribution of aspectual forms in heritage Russian supports the idea that contextual factors (expressed in particular by internal arguments), influence the use of specific aspectual morphemes with verbs of variable telicity. In particular, when constructing sentences with specific NPs as objects, heritage speakers tend to strongly prefer perfective forms, whereas monolingual speakers do not show the same preference, producing nearly equal numbers of perfective and imperfective forms.

Finally, Pereltsvaig (2008) focuses on the fact that heritage Russian speakers are bilinguals (with English as their L2, in her study) and their aspect system may therefore be affected by their L2. She first discusses the Frequency Hypothesis, according to which

the more frequent aspectual form in the speakers' source language (English) would be retained in the heritage language (Russian): in other words, if an aspectual form is used more frequently in English, it is more likely to be retained in Russian too. Pereltsvaig (2008) also discusses the Interference Hypothesis, according to which interference from the speakers' ambient language (English) could influence the aspectual system in the heritage language (Russian): the way the ambient language encodes aspect may lead to attrition in the heritage language, leading speakers to adopt similar patterns in both systems. However, Pereltsvaig (2008)'s hypothesis cannot be confirmed: the study shows that heritage Russian speakers in the US do not consistently adopt aspectual patterns similar to those exhibited by American English. For instance, they do not always use perfective aspects to encode result states, as one might expect based on the interference hypothesis. Furthermore, the author argues that the lack of support for the Interference Hypothesis may be generalized across different ambient languages: for instance, heritage Russian speakers with German and Swedish as ambient languages still exhibit the same aspectual patterns as American Russian speakers, despite the different configuration exhibited by the ambient languages.

Unlike the case of Russian, the literature on aspect in BCMS heritage speakers is scarce. A relevant study is described in Županović Filipin et al. (2021); it is observed that BCMS heritage speakers exhibit a preference for perfective verbs over imperfective verbs in some specific contexts. In particular, the preference becomes more evident when the verb conveys continuous or habitual events typically associated with imperfective verbs in monolingual BCMS. Despite the habitual nature of these events, contextual cues suggest that they are not perceived as completed actions.

(2) a. Ja opet se vratim na ovo od prije. (Heritage BCMS)
I again REFL return.PFV to this from before
'I am coming back again to this from before' (Županović Filipin et al. 2021:351)

b. Ja se opet vraćam na ovo od prije. (Expected baseline BCMS)
I REFL again return.IPFV to this from before
'I am coming back again to this from before'

Županović Filipin et al. (2021) identified a generalized problem with the use of imperfective forms in heritage BCMS, in that perfective forms of verbs are employed in situations where imperfective forms would otherwise be expected in monolingual BCMS varieties. Conversely, there are no instances where imperfective forms are used in contexts where perfective forms would be anticipated.

Finally, the literature on aspect in L2 BCMS is still very limited. One relevant study, presented in Cvikić & Jelaska (2007), discussed the acquisition of verbal aspect and showed that L2 learners of the language are familiar with the concept of aspectual pairs, but generally associate the lexical meaning of a verb with a single form of the verb (usally the perfective). In other words, L2 learners of BCMS correctly acquire the category of aspect, but the use of pairs of verbs is often reduced to one single form, expressing a variety of aspectual distinctions.

In sum, previous literature on heritage Slavic showed that speakers often tend to diverge in the intepretation and morphological realization of imperfective: the contexts of use of imperfective forms are reduced in heritage BCMS (Županović Filipin et al. 2021) or the morphology associated with imperfective is reduced to a single morpheme (Polinsky 2008). Besides, a striking difference emerges between proficient and non-proficient heritage speakers. Finally, heritage speakers and L2 learners of Slavic languages may diverge in the way they encode and realize aspectual distinctions: this was discussed for L2 BCMS in Cvikić & Jelaska (2007), who showed that learners of the language exhibit a tendency to assign different aspectual meanings to a single form of the verb.

2.1 SLAVIC (BCMS) IMPERFECTIVE VS. ROMANCE (ITALIAN) IMPERFECT

Our study focuses on the use of imperfective forms by heritage speakers of BCMS in Italy and by L2 learners of BCMS with Italian as their L1; the study is motivated by different factors. First, as shown above, imperfective forms are more prone to change in heritage speakers; secondly, the bilingual setting involving BCMS and Italian is particularly interesting, in that both languages employ a *-v(a)-* morpheme: BCMS uses it to derive secondary imperfective forms, while Italian uses it in the imperfect. In the remainder of this section, we will briefly sketch the use and distribution of the morpheme in the two languages.

2.1.1 THE SLAVIC IMPERFECTIVE *-VA-*

All Slavic languages employ a *-va-* suffix to derive secondary imperfective forms. This morpheme has been discussed in previous works, such as Dickey (2000), Gehrke (2003), Filip (2004, 2005), Dvořák (2010), Laleko (2010a), Arsenijević (2018), Arsenijević & Simonović (2018), Biskup (2020), Klimek-Jankowska & Błaszczak (2023), Klimek-Jankowska et al. (2025). In the present section, we will highlight some uses associated with this morpheme that will become relevant in our study of heritage BCMS.

As discussed in Gehrke (2003), the Slavic *-va-* morpheme is generally associated with a variety of meanings typically involving imperfective forms, such as repetition, iterativity, distributivity, and habituality. While the *-va-* morpheme is historically employed to derive iterative verbs, it is now employed to derive secondary imperfectives more generally. However, Czech still actively uses the *-va-* suffix to derive iterative verbs from imperfective simple verbs.

Arsenijević (2018) argues that the morpheme *–va* consistently functions as a categorical verbal suffix, with interpretational variations linked to the diverse bases to which it is attached. When added to perfective verbs, *-va-* introduces a new categorical head, overwriting aspect specifications (e.g., *raz-prod-a-va-ti*, 'to sell out'), while on loan verbs, it integrates into the native conjugation system (e.g. *pelc-o-va-ti*, 'to vaccinate').

More uses of the *-va-* morpheme are discussed for Polish in Klimek-Jankowska & Błaszczak (2023). The authors note that specific verbs can be rendered as secondary imperfective forms through the addition of the *-ywa-* suffix or by altering the verb stem. Klimek-Jankowska & Błaszczak (2023) also discuss the presence of the habitual suffix *-ywa-*, which is homophonous to the secondary imperfective *-ywa-*. However, the habitual suffix exclusively attaches to a specific class of imperfective verbs, as in *czytać* ('to read') into *czytywać* ('to read from time to time').

Filip (2004, 2005) treats the imperfectivizing suffix *-va-* as a manifestation of a higher aspectual operator (IPFV) aligning with a specific reference time and imposing the condition that this reference time must fall within the ongoing duration of the event or action, often referred to as the "running time of the eventuality." Filip (2004) also argues that the generic suffix *-va-* mandates a generic/habitual interpretation for the entire sentence.

Finally, Dickey (2000) suggests that in standard Serbian, it is possible to form verbs expressing habituality via suffixation from biaspectual verbs, such as *kršćavati* (derived from biaspectual *krstiti*, 'baptize'); *noćivati* (derived from biaspectual *noćiti*, 'spend the night'); *ručavati* (derived from biaspectual *ručati*, 'eat lunch'); *večeravati* (derived from biaspectual *večerati*, 'eat dinner').

2.1.2 THE ROMANCE IMPERFECT *-V-*

Before introducing our study, a short presentation of the Italian imperfect *-v-* morpheme is needed. While our analysis and discussion will focus on BCMS imperfectivization patterns, the presence of a comparable *-v-* morpheme in Italian (heritage speakers' second

language and L2 learners' first language) may have an effect on the use of secondary imperfective forms in heritage and L2 BCMS.

However, it is not possible to fully assimilate Italian *-v-* to Slavic *-va-*. While many Romance languages (Italian, Spanish, Catalan, Portuguese, Italo-Romance varieties) employ a *-v-* morpheme in the imperfect, its formal resemblance[2] with the Slavic aspectual morpheme *-va-* does not translate into an exact correspondence at the level of aspectual interpretation; the Romance imperfect *-v-* is defined in Giorgi & Pianesi (1997:173) (focusing specifically on Italian) as a morpheme characterizing "a past, anaphoric, continuous verbal form, unmarked with respect to the opposition perfectivity/imperfectivity." By *anaphoric*, the authors imply that Romance *-v-*marked forms are specified as past with respect to Speech time and that the temporal argument of the predicate must be overtly specified; in other words, Romance imperfect forms need a temporal reference, overtly realized somewhere in the context. When embedded under another past tense, the imperfect may express simultaneity or continuity.

3 THE STUDY: RESEARCH QUESTIONS, HYPOTHESES AND METHODOLOGY

3.1 RESEARCH QUESTIONS

This study aims to investigate several key aspects of the grammar of heritage speakers of BCMS in Italy and L2 learners of BCMS with Italian as their L1. Specifically, we will address the following research questions:

1. **Distribution Patterns**: Do the distribution patterns of heritage and L2 learners of BCMS match those of their monolingual counterparts? We aim at understanding whether the use of non-suffixal and *-va-* forms in heritage speakers and L2 learners align with those observed in monolingual speakers.

2. **Interpretation of the *-va-* morpheme**: Is there a progressive interpretation available, in addition to the habitual one, in both heritage and L2 BCMS speakers? This question examines the range of interpretations associated with the -va- morpheme and whether both progressive and habitual readings are accessible in these bilingual grammars.

3. **Language contact effects**: Does the presence of the *-v(a)-* morpheme in Italian affect the use of the BCMS imperfectivizing *-va-* by heritage and L2 speakers? In line with Pereltsvaig (2008) and the Interference Hypothesis, we investigate whether Italian, as the dominant or first language, influences the use and interpretation of *-va-* forms in BCMS among heritage and L2 speakers.

4. **Sensitivity to Linguistic conditions**: Is verbal aspect sensitive to conditions belonging to different areas of language (syntax, semantics, morphology)?

3.2 ADDITIONAL HYPOTHESES TO TEST

In addition to the above-listed research questions, we will test the validity of different hypotheses on bilingual and L2 acquisition in the field of Slavic aspect. We will primarily focus on the Interface Hypothesis (Sorace 2011), the Feature-Reassembly hypothesis (Lardiere 2008) and the Bottleneck Hypothesis (Slabakova 2008, 2014). We introduce the hypotheses below and discuss them in detail in section 5.

The Interface Hypothesis (Sorace 2011) predicts that syntactic structures that are sensitive to conditions belonging to other language modules (pragmatics, semantics,

[2]As noticed by an anonymous reviewer, the French imperfect does not contain any *-v-* morpheme, while Spanish imperfect exhibits it only in some verbal conjugations; such cross-linguistic evidence suggests that Romance *-v-* does not represent an exact parallel of Slavic imperfective *-va-*.

morphology, lexicon...) may present speakers with additional processing load at particular stages of bilingual development. The interface between syntax and pragmatics is predicted to exhibit more instability than the interface between syntax and semantics; the former combines linguistic and extra-linguistic information, while the latter involves only formal properties of language and is therefore more easily processed by bilingual speakers.

The Feature-reassembly hypothesis (Lardiere 2008) and the Bottleneck hypothesis (Slabakova 2008, 2014) focus on the association of certain morphemes with formal features. L2 learners may exhibit a divergent distribution of certain morphological features, in that the association of semantic and syntactic features with functional morphemes is subject to language-specific conditions; L2 learners may therefore associate features and morphemes in a non-target way.

3.3 METHODOLOGY

For the purpose of this study, we designed an online survey combining a short sociolinguistic questionnaire with the relevant personal information of the participant (i.e. age, schooling level, age of arrival in Italy,[3] amount of usage of BCMS in daily life,[4] and a self-assessed level of proficiency[5]) and a test of 18 examples. Each stimulus provides a brief context and requires the participant to choose between a *-va-* and a non-*-va-* verb. Specifically, the test is composed of 6 stimuli providing the PFV-derived *-va-* IPFV pairs (e.g. *Lagao me je toliko puta da više nisam sigurna da mogu da mu verujem. Često mi je* ***dao/davao*** *povoda da sumnjam u njega.* 'He lied to me so many times that I am not sure I can trust him anymore. He often gave me reason to doubt him.'), 6 biaspectual-derived IPFV pairs (e.g. *Prošle nedelje se je održao G7. Za vreme glavnog sastanka ministar Gašić je* ***večerao/večeravao*** *sa kolegama iz Litvanije.* 'The G7 took place last week. During the main meeting, Minister Gašić had/was having dinner with colleagues from Lithuania.') and finally, 6 IPFV-SI pairs (e.g. *Mali Perica je jako nevaspitan. U nedelju ujutru je* ***kucao/zakucavao*** *eksere dok su svi spavali.* 'Little Perica is very ill-mannered. On Sunday morning he hammered/was hammering nails while everyone was sleeping.'). We included 3 conditions in each group and furnished no context (NO_ADV), a frequency adverb (HAB) and an adverb triggering the progressive reading (TEMP), with 2 stimuli for each condition in every group. All the stimuli are composed in the past tense, as the present tense often neutralizes the ambiguity between the two options, particularly when it comes to the derived imperfectives, whereas the equivalent future stimuli are not natural and productive on a daily basis, specifically when it comes to expressing future habituality. The selected verbs were extracted from the bs/hr/srWaC corpora,[6] by carefully choosing minimal pairs with the closest possible meaning,[7] but with no specific frequency requirements due to the heterogeneity of the target groups of participants. In total, the following number of speakers took part in the study: 29 L1 BCMS speakers currently living in the Balkans in the control group (hereafter CTRL; mean age = 23y), 21 heritage speakers (hereafter HRT; mean age = 22.5y; mean age of moving = 3.6y, 62% of speakers were born in Italy) of BCMS living in Italy having the completion of mandatory Italian schooling as the minimal requirement for participation, 17 L2 BCMS speakers with L1 Italian (hereafter L2; mean age = 28.2y; average self-assessed level = B1).

[3] This question was only required for heritage speakers.
[4] Only required for heritage speakers.
[5] Only required for learners of BCMS as their second language.
[6] Ljubešić & Klubička (2014).
[7] For instance, SI verbs with the distributive *po-* suffix were excluded.

4 DATA ANALYSIS

4.1 CONTROL GROUP

The analysis focuses on contextual and/or verb-related variables, including the presence of adverbs (NO_ADV, TEMP, HAB) and type of minimal verbal pairs (PFV-derived, BIASP-derived, SIMPLEX-SI) and their relation to the suffixal vs. non-suffixal verbal forms on the basis of the observed, gathered data. For all three groups we performed the Logistic Regression and the Chi squared test for independence.

In the logistic regression analysis, we first aimed to identify the most suitable model to predict the choice between two types of verbs, "suff", i.e. the presence of the suffix *-va-* and "no_suff", i.e. the non suffixal simplex or derived counterpart, based on various contextual and verb-related factors. This stepwise procedure was employed to adapt the model and select the combination of variables that optimally balances goodness of fit and model complexity, as it is crucial to avoid overfitting the data, which occurs when a model is too complex and captures noise, rather than the underlying pattern. It is indicated by the Akaike Information Criterion (AIC),[8] which precisely indicates how good a specific model is for a given dataset. The initial model included all predictor variables, namely, the presence of adverbs (NO_ADV, TEMP, HAB) and verbal pairs (PFV-derived, BIASP-derived, SIMPLEX-SI). This preliminary analysis resulted in providing NA (non-available) values for the variables HAB and SIMPLEX-SI due to their high correlation with "suff". Upon conducting the stepwise procedure, the model without the variable NO_ADV was found to have a slightly lower AIC, suggesting that excluding NO_ADV improved the model fit without significantly increasing complexity. Therefore, in the final selected model, the predictors TEMP, PFV-derived, and BIASP-derived were retained, resulting in the lowest AIC of 646.32. This combination of variables was deemed to offer the best compromise between explaining the observed choices and avoiding unnecessary complexity in the model leading to convergence issues.

Finally, the logistic regression, which was performed on TEMP, PFV-derived and BIASP-derived exclusively is summarized in Table 1.

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.009575	0.166652	-0.057	0.954
TEMP	-0.847787	0.199436	-4.251	2.13e-05
PFV-derived	1.445569	0.238564	6.059	1.37e-09
BIASP-derived	0.956132	0.225947	4.232	2.32e-05

Table 1: The Logistic regression model for TEMP, PFV-derived and BIASP-derived variables

Such values reveal insightful findings on the impact of different variables on the choice of suffixal verbs. Specifically, the variable TEMP exhibits a statistically significant negative effect (Estimate = -0.847787, p-value < 0.01), suggesting a decreased likelihood of choosing a suffixal verb in the presence of temporal adverbs triggering a progressive reading. In other words, when presented with a *-va-* option on the one hand and a non-suffixal option on the other hand in the TEMP condition (e.g. *Mali Perica je jako nevaspitan. U nedelju ujutru je* ***kucao/zakucavao*** *eksere dok su svi spavali.* 'Little Perica is very ill-mannered. On Sunday morning he hammered/was hammering nails while everyone was sleeping.'), the speakers are likely to opt for the non-suffixal option (e.g. *kucao*). Conversely, the variable PFV-derived has a significant positive effect (Estimate = 1.445569, p-value < 0.001), indicating a higher likelihood of selecting suffixal verbs in cases involving perfective-derived pairs, i.e. in examples such as *Darko je voleo da jede bombone, posebno kada je bio dete. Majka ga je* ***kažnjavala/kaznila*** *zbog previše poje-*

[8] Crucially, the Akaike Information criterion provides a value indicating the level of quality of a statistical model on the basis of entropy. A lower AIC value indicates a better-fitting model, as it suggests less information loss.

denih slatkiša. 'Darko loved eating candies, especially when he was a child. His mother would punish him for eating too many sweets', speakers statistically opt for forms such as *kažnjavala*. Likewise, we observe a significant positive effect (Estimate = 0.956132, with a very low p-value) for the BIASP-derived variable, indicating a strong preference for suffixal verbs in such contexts. For instance, in examples such as *Prošle nedelje se je održao G7. Za vreme glavnog sastanka ministar Gašić je* ***večeravao/večerao*** *sa kolegama iz Litvanije.* 'The G7 took place last week. During the main meeting, Minister Gašić had/was having dinner with colleagues from Lithuania', speakers are more likely to opt for forms such as *večeravao*.

We now turn to the Chi-square test, provided in Table 2.

	suff	no_suff
NO_ADV	122 (105.67)	52 (68.33)
TEMP	83 (105.67)	91 (68.33)
HAB	112 (105.67)	62 (68.33)
Total responses	317	205

Table 2: The contingency table for the chi-squared test and the expected results, suffixal (*-va-*) vs. non-suffixal forms

The chi-square analysis is: X-squared = 19.7763, p-value = 0.000051, showing some degree of significance. The expected values are based on the null hypothesis, i.e. they refer to the numbers we would expect if the variables were independent. The result is therefore significant and provides evidence to conclude that there is a significant relationship between the presence or absence of the suffix ("Suff" and "No_suff" dependent variables) and the contextual independent variables NO_ADV, TEMP, and HAB. The higher expected values for the variable TEMP, as opposed to the observed ones, confirm the tendency of the speakers to prefer the non-suffixal counterpart when triggered by a temporal adverb. Conversely, the observed values for the variables NO_ADV and HAB are higher than the expected ones, indicating the speakers' preference for the suffixal verb in contexts with no specific temporal marker and with a habitual adverbial element. These findings bear substantial theoretical significance concerning the interpretation of the *-va-* suffix, as well as the aspectual theory with particular reference to habituality. However, due to the scope limitations of this article, an in-depth discussion of these implications will not be undertaken herein.

4.2 HERITAGE GROUP (HRT)

For the Heritage group data we performed once again the Logistic regression analysis, along with the Chi-square test. The initial model included the following independent variables in addition to the usual dependent variable with a binary outcome ("suff" vs. "no_suff"): NO_ADV, TEMP and HAB (the contextual variables), PFV-derived, BIASP-derived and SIMPLEX-SI (the offered verbal pairs), age_of_moving and perc_of_use (intended as the percentage of use of BCMS on a daily basis). We then performed the stepwise variable selection method to refine our logistic regression model because of singularities, which indicate perfect collinearity, and carried out the logistic regression on the basis of NO_ADV, TEMP, PFV-derived and BIASP-derived. The coefficients obtained are presented in Table.3.

The model suggests that TEMP is a statistically significant predictor for "no_suff", since the log-odds of the response variable decreases by 0.9557 for a one-unit increase in the variable TEMP. This entails that when presented with a choice between a suffixal and non-suffixal option, for instance, *Tokom novogodišnjih praznika ljudi su ispalili mnogo vatrometa, životinje su se zaista uplašile. Vatrogasci su za Novu Godinu* ***spasavali/spasili*** *uplašene mačiće sa drveta.* 'During the New Year's holidays, people set off a lot of fireworks, and the animals were really scared. On New Year's Eve, firefighters rescued (were rescuing)

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	0.5551	0.2425	2.290	0.022039
NO_ADV	0.5392	0.2800	1.926	0.054147
TEMP	-0.9557	0.2618	-3.651	0.000261
PFV-derived	0.3752	0.2749	1.365	0.172335
BIASP-derived	-0.2484	0.2668	-0.931	0.351837

Table 3: The Logistic regression model for NO_ADV, TEMP, PFV-derived and BIASP-derived variables

frightened kittens from a tree', participants statistically opted for *spasili*, regardless of the verb pair type. However, NO_ADV, PFV-derived, and BIASP-derived are not significant predictors, as demonstrated by the high p-value in Table 3. Such results are particularly interesting and relevant if compared to the CTRL group of speakers, as both groups share a high correlation between the use of suffixal verbs and HAB and SIMPLEX-SI, but fail to converge in the remaining predictors. Indeed, both PFV-derived and BIASP-derived turned out to be statistically significant predictors for *-va-* verbs, whereas there is no statistical evidence for the same predictors within HRT. Both groups, however, converge in a relatively strong tendency towards correlating the TEMP variable with non-suffixal verbs. Unlike CTRL, the intercept in HRT is statistically significant, indicating a minor difference in the baseline log-odds compared to zero.

As a follow-up analysis, we performed the Chi-square test in order to examine observed and expected results for the contextual variables. The results are the following:

	suff	no_suff
NO_ADV	95 [76.00]	31 [50.00]
TEMP	52 [76.00]	74 [50.00]
FREQ	81 [76.00]	45 [50.00]
Total responses	228	150

Table 4: The expected and obtained values in relation to the context - HRT group

The chi-square statistic is 31.8979 and the p-value of 0.00001. This indicates that there is strong evidence to reject the null hypothesis of independence between the two categorical variables. The observed pattern in the contingency table (the distribution of responses across categories) is unlikely to have occurred by random chance if the variables were truly independent and follows the pattern identified for the CTRL group, indicating no substantial distinction in both the actual use and the expectations related to the contextual variables.

4.3 L2 LEARNERS OF BCMS WITH L1 ITALIAN

Once again, logistic regression and chi-squared tests were carried out for the L2 learners data as well. The final logistic regression model was performed on the variables NO_ADV, TEMP, PFV-derived and BIASP-derived due to the high correlation between HAB, SIMPLEX-SI and suffixal verbs. The coefficients obtained are summarized in Table 5.

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	1.791e-01	2.606e-01	0.687	0.49197
NO_ADV	-3.945e-02	2.809e-01	-0.140	0.88831
TEMP	-1.156e+00	3.023e-01	-3.826	0.00013
PFV-derived	-3.011e-01	2.939e-01	-1.025	0.30560
BIASP-derived	5.812e-16	2.908e-01	0.000	1.00000

Table 5: The Logistic regression model for NO_ADV, TEMP, PFV-derived and BIASP-derived variables

Just as for the HRT group, TEMP results in the only statistically significant predictor and its negative coefficient suggests that higher values of TEMP are associated with a decrease in the log-odds of the response variable, i.e. the odds of the response being "no_suff" (coded as 0) are higher compared to the odds of it being "suff" (coded as 1).

The chi-square statistic, on the other hand, is 18.7671 and its p-value is .000084. The observed and expected (in brackets) results are the following:

	suff	no_suff
NO_ADV	52 [43.67]	50 [58.33]
TEMP	26 [43.67]	76 [58.33]
FREQ	53 [43.67]	49 [58.33]
Total responses	131	175

Table 6: The expected and obtained values in relation to the context - L2 group

The results indicate that there is a statistically significant association between the variables being analyzed (NO_ADV, TEMP, HAB) and the outcome variable (Suff/No_suff), i.e. the observed differences in frequencies are unlikely to be purely due to random chance. In general, the numbers related to the L2 group suggest a change in the tendency in terms of a general preference for "no_suff" verbs, in contrast to the findings within the CTRL and HRT groups. Furthermore, the observed values related to each contextual variable indicate a very small, if any preference for suffixal verbs in NO_ADV and HAB, but a strong preference for non suffixal verbs in TEMP contexts, unlike what is predicted by the model.

The results related to the three groups can therefore be summarized as follows:

1. CTRL
   General preference for "suff";
   HAB and SIMPLEX-SI have a high correlation with *-va-* verbs;
   Other predictors for "suff" are PFV-derived and BIASP-derived;
   TEMP is the only predictor for "no_suff";

2. HRT
   General preference for "suff";
   HAB and SIMPLEX-SI have a high correlation with *-va-* verbs;
   TEMP is the only predictor for "no_suff";

3. L2
   General preference for "no_suff";
   The internal partition follows the patterns of CTRL and HRT, but there is no strong preference;
   TEMP correlated with a strong preference for "no_suff".

	CTRL	HRT	L2
General preference	suff	suff	no_suff
NO_ADV	x	x	x
TEMP	no_suff	no_suff	no_suff
HAB	high correlation	high correlation	high correlation
PFV-derived	suff	x	x
BIASP-derived	suff	x	x
SIMPLEX-SI	high correlation	high correlation	high correlation

Table 7: Overview of the results (x indicates the lack of statistically significant data)

5 DISCUSSION

The discussion will build on the general preference exhibited by the three different groups of speakers: our data evidenced a difference in the use of *-va-* verbs by heritage speakers and L2 learners of BCMS. While the results for the former show a pattern of use of *-va-* imperfectives that is compatible with that of the control group, the latter displayed a divergent pattern with respect to both heritage and control speakers. Specifically, both the control and heritage speakers exhibited a preference for *-va-* imperfective forms, while L2 learners exhibited a preference for non-suffixal imperfective forms. The two patterns are exemplified in (4) and (5).

(3) Context:
Ana je dosta putova-l-a tokom mladosti.
Ana be.3SG enough travel-PST-SG.F during youth
'Anna traveled a lot during her youth.'

(4) Heritage/control pattern:
U svakoj novoj zemlji je **proba-va-l-a** najčudnija jela.
in every new country be.3SG taste-SI-PST-SG.F strangest dishes
'In every new country she tasted the strangest dishes.'

(5) L2 pattern:
U svakoj novoj zemlji je **proba-l-a** najčudnija jela.
in every new country be.3SG taste-PST-SG.F strangest dishes
'In every new country she tasted the strangest dishes.'

In the remainder of the paper, we will show that the different preferences that emerged in heritage and L2 speakers depend on the interaction of different factors at the interfaces between syntax and semantics or morphology.

5.1 PROFICIENT HERITAGE SPEAKERS BEHAVE AS TARGET-LIKE MONOLINGUALS

We propose that the target-like use of secondary imperfective forms by heritage speakers is captured by the version of the Interface Hypothesis discussed in Sorace (2011). The concept of interfaces refers to syntactic structures that are sensitive to conditions belonging to other language modules (pragmatics, semantics, morphology, lexicon...). The hypothesis presented in Sorace (2011) additionally predicts that language processing plays a role in defining which types of interface-related phenomena are more likely to be problematic in bilingual acquisition. In other words, structures that require a combination of syntax and other cognitive domains may present speakers with additional processing load at particular stages of bilingual development.

Building on Tsimpli & Sorace (2006), Sorace (2011) distinguishes EXTERNAL and INTERNAL interfaces. The author draws a distinction between the syntax-pragmatics and

the syntax-semantics interface. The former is an external interface, it combines linguistic and extra-linguistic information from context and discourse, presenting bilingual speakers with additional processing costs. Conversely, the syntax-semantics interface is an internal interface: in a minimalist syntactic perspective, formal features convey specific semantic meanings and are defined as formal properties of languages; therefore, the syntax-semantics interface only involves formal properties of language, resulting in a reduced computational load for bilinguals.

Our study confirms that semantic values are extremely resilient in bilingual heritage speakers: our informants assigned aspectual values to specific secondary imperfective forms in a way that is consistent with target-like control speakers. Besides, secondary imperfective *-va-* morphemes receive the correct semantic interpretation: heritage speakers have no problem in computing morphosyntactic information at the interface with LF. In other words, they display a target-like pattern in the way they associate lexical items (the aspectual morpheme *-va-*) with specific formal features and the way they realize them at a morphosyntactic level.

5.2 PROBLEMS AT THE SYNTAX–MORPHOLOGY INTERFACE IN L2 LEARNERS

According to Sorace (2011), the interface between syntax, lexicon and morphology may equally be problematic for bilinguals. This is the case of our L2 learners, who diverge from the heritage and control groups in the general frequency of use of secondary imperfectives, regardless of the declared level of langauge proficiency. This suggests a fundamental difference between the L2 (BCMS) and the L1 (Italian) in the way aspectual values are associated with morphemes.

As shown in Montrul (2005), L2 learners are expected to display non-target behaviour for those semantic distinctions that have an overt impact on the morphosyntactic behaviour of verbs. In the case under analysis, the readings associated with secondary imperfective forms are restricted in interpretation; such restrictions are overtly marked in morphosyntax by the *-va* morphemes. L2 learners are therefore presented with the additional computational load of associating a morpheme with a specific aspectual interpretation, carried by a specific aspectual head in syntax.

We propose that the reason for the reduced use of secondary imperfectives depends on L1 input. In Pereltsvaig (2008)'s terms, the presence of a homophonous *-va-* morpheme in both the L1 and L2 provides some marginal support for the Interference Hypothesis. Despite possessing identical *-va-* morphemes, the input for secondary forms is missing in L1: the Italian imperfect *-va-* is not interpreted as an independent aspectual morpheme. Previous studies on the acquisition of Romance imperfect (mainly Spanish, Montrul & Slabakova 2002), showed that tense and aspect features are bundled together within a single morpheme.[9] Italian exhibits a parallel property: at the syntactic level, Italian *-va-* carries a bundle of tense and aspect features, which are interpreted together at the interface with LF. We propose the following structure for Italian imperfect forms:

(6) da-va-no (Italian)
give-PST-3PL
[*root* [TNS,ASP [ϕ]]]
'they used to give'

This property does not hold universally cross-linguistically: Giorgi & Pianesi (1997) showed that, when it comes to the interpretation of tense and aspect, the interface between morphosyntax and semantics exhibits language-specific behaviours, because the

[9]We assume Late Insertion (Halle & Marantz 1993), according to which morphemes are represented within syntactic computation by bundles of semantic features that are attached to roots. The spell-out of abstract morphemes is provided by Vocabulary Insertion, which pairs each phonological exponent with the feature bundle.

relevant morphemes may convey different temporal and aspectual properties in different languages.

In the case under analysis, analyses of BCMS (and Slavic in general) secondary imperfective morphemes have shown that they are merged as separate aspectual heads, which contribute to the interpretation solely with aspectual features. Similarly, the temporal interpretation is expressed by dedicated morphemes.

(7) da-va-l-i (BCMS)
give-SI-PST-PL.M
[*root* [ASP [TNS [ϕ]]]
'they used to give'

This difference is crucial in the definition of the input for L2 acquisition: the Italian *-va-* morpheme cannot represent evidence learners can use in the association of BCMS *-va-* with an aspectual interpretation.

At a representational level, we can say that the interpretation of BCMS secondary imperfective forms remains ambiguous for L2 learners: the ambiguity between the temporal and aspectual interpretation cannot be solved based on input from L1. According to Sorace (2011), when speakers are presented with a choice between two items - the first displaying some level of interpretive ambiguity, the second allowing for an unambiguous interpretation - they tend to select the less ambiguous one. In the case under analysis, L2 learners choose simplex imperfective forms, where temporal information is univocally represented and no additional aspectual morphemes are realized.

5.3 GENERAL DISCUSSION

Our results allow us to formulate two relevant generalizations with respect to the use of secondary imperfective forms by heritage BCMS speakers in Italy and L2 learners of BCMS whose native language is Italian.

With respect to heritage speakers, our data showed that they exhibit a target-like use of secondary imperfective forms. We proposed that this depends on the fact that semantic features associated with aspectual interpretation are formal linguistic properties and do not involve an interface with extra-linguistic components such as context and discourse. Besides, the target-like processing of semantic information favors the target-like association of such information with secondary imperfective morphemes.

Our data suggest that the extreme resistance of formal features in bilingual acquisition can be interpreted in a slightly different way in L2 acquisition. Specifically, the morphological realization of formal semantic features is not easily acquired by L2 learners at a target level, in that they will often apply rules and constraints from L1. Such a situation has been widely discussed in the literature on L2 acquisition and it led to the formulation of two hypotheses: the FEATURE-REASSEMBLY HYPOTHESIS (Lardiere 2008) and the BOTTLENECK HYPOTHESIS (Slabakova 2008, 2014).[10] To summarize these two hypotheses: morphology is argued to be the *bottleneck* of second language acquisition, in that it reflects syntactic and semantic differences between L1 and L2. While operations inside the narrow syntactic component are universal (so readily available for L2 learners, as input from their L1), the association of formal features with functional morphemes is subject to language-specific conditions. Therefore, L2 learners may not assemble formal features in functional morphemes in a target-like way, giving rise to *feature-reassembly*.

This hypothesis captures the preference of L2 learners of BCMS in our study. They assemble BCMS tense and aspectual features in a divergent way (intended as a different, but not necessarily incomplete competence in the language, as proposed in Kupisch &

[10] Lohndal & Putnam (2024) recently challenged the feature-reassembly and bottleneck hypotheses, arguing for an exoskeletal approach to the syntax-morphology interface. While we do not argue against this approach, we maintain that the feature-reassembly hypothesis readily captures the availability of different imperfectivization strategies in L2 and heritage speakers.

Rothman 2018); crucially, the way tense and aspect information is assembled closely resembles the Italian bundle of tense and aspect in a single morpheme in imperfect forms.

We argue that L2 learners assign imperfective as a default aspectual specification to unprefixed forms. Therefore, the unprefixed past forms in our experiment were semantically interpreted as [PST.IPFV], with tense-aspect information being realized on the same morpheme, on par with Italian:

(8) proba-l-a (BCMS)
taste-PST.IPFV-SG.F
[*root* [TNS,ASP [ϕ]]
'she used to taste'

The structure in (8) shows that the root is followed by two morpheme: the first encoding temporal and aspectual featuers and the second encoding ϕ (agreement) features. Since the form already receives an aspectual value, which is assembled together with tense on the same functional morpheme, additional imperfectivizations are dispreferred: the imperfective value is already assigned as a default to the bare form, so the purely aspectual morpheme *-va-* remains semantically empty and unable to be assigned an independent imperfective (habitual or progressive) value.

(9) *proba-va-l-a (BCMS L2)
taste-???-PST.IPFV-SG.F
[*root* [??? [TNS,ASP [ϕ]]]
'she used to taste'

The structure in (9) shows that the specialized SI morpheme *-va-* is added before *-l-*, which already encodes temporal and aspectual information in the L2 representation; therefore, the SI morpheme cannot be assigned an additional aspectual value, and remains uninterpretable.

The significance of additional factors (in particular, the role of adverbs and the habitual reading) is a matter of current research.

6 CONCLUSION

The present study discussed the use of simplex and secondary imperfective forms in heritage speakers of BCMS in Italy and L2 learners of BCMS with Italian as their L1. The study compared the use of such forms in habitual and progressive contexts with their use by a target group of monolingual speakers of BCMS (the control group).

We tested the hypothesis that verbal aspect is sensitive to conditions belonging to different areas of language (syntax, semantics, morphology) and therefore presents bilingual speakers and learners of a language with additional processing load (the Interface Hypothesis, Sorace 2011); we also tested the hypothesis that L2 learners in particular may exhibit a divergent association of the *-va-* morpheme with formal (semantic) features (the Feature-reassembly hypothesis, Lardiere 2008).

The general preferences exhibited by L2 learners confirmed our hypothesis on the role of morphology as a "bottleneck" of language acquisition (Slabakova 2008, 2014), while heritage speakers exhibited a general behaviour that matches that of the control group. Specifically, heritage speakers preferred the secondary imperfective *-va-* forms in contexts that are directly comparable to those in which such forms were selected by the monolinguals in the control group; conversely, L2 learners exhibited a general preference for simplex forms without the *-va-* morpheme, a fact that highlights the possible role played by the imperfect *-va-* morpheme in Italian (their L1).

ABBREVIATIONS

AIC	Akaike Information criterion	IPFV	imperfective
ASP	aspect	M	masculine
BCMS	Bosnian/Croatian/Montenegrin/Serbian	PL	plural
BIASP	biaspectual	PFV	perfective
CTRL	control (group)	PST	past
F	feminine	SG	singular
HL	heritage language	SI	secondary imperfective
HRT	heritage (group)	TNS	tense

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APPENDIX

1. *Lagao me je toliko puta da više nisam sigurna da mogu da mu verujem. Često mi je* ***davao / dao*** *povoda da sumnjam u njega.*[11]
   'He lied to me so many times that I'm not sure I can trust him anymore. He often gave me reasons to doubt him.'

2. *Darko je voleo da jede bombone, posebno kada je bio dete. Majka ga je* ***kažnjavala / kaznila*** *zbog previše pojedenih slatkiša.*
   'Darko loved to eat candy, especially when he was a child. His mother punished him for eating too many sweets.'

3. *Tokom novogodišnjih praznika ljudi ispale mnogo vatrometa i životinje se jako uplaše. Vatrogasci su na veče Nove godine* ***spasavali / spasili*** *uplašene mačiće sa drveta.*
   'During the New Year holidays, people set off a lot of fireworks and the animals get very scared. On New Year's Eve, firefighters rescued frightened kittens from a tree.'

4. *Kada sam počela da radim u novoj firmi, primetila sam nešto što mi se uopšte nije svidelo. Da bi ih zaposlila, firma je* ***uslovljavala / uslovila*** *radnike učlanjivanjem u partiju.*
   'When I started working in a new company, I noticed something that I didn't like at all. In order to hire them, the company conditioned the workers to join the party.'

5. *U bolnici je svako znao da je Jasna najbolja u komunikaciji s pacijentima. Jasna je pacijentima često* ***saopštavala / saopštila*** *najgore vesti.*
   'At the hospital, everyone knew that Jasna was the best at communicating with patients. Jasna often delivered the worst news to the patients.'

6. *Više od 1000 dece je učestvovalo u ovogodišnjoj manifestaciji "Čitalačka značka". Žiri je tek na završnoj svečanosti* ***odlučivao / odlučio*** *o nagradama za čitalačku značku.*
   'More than 1,000 children participated in this year's "Reader's Badge" event. The jury only decided on the awards for the reader's badge at the final ceremony.'

7. *Prošle nedelje se održao G7. Za vreme glavnog sastanka ministar Gašić je* ***večeravao / večerao*** *sa kolegama iz Litvanije.*
   'The G7 took place last week. During the main meeting, Minister Gašić dined with colleagues from Lithuania.'

8. *Mali Mokri Lug je jedno jako malo naselje, a čak i tamo, komšije su se često* ***sukobljavale / sukobile*** *oko malo zemlje koja ih deli.*
   'Mali Mokri Lug is a very small settlement, and even there, neighbors often clashed over the bit of land that separates them.'

9. *Ana je dosta putovala tokom mladosti. U svakoj novoj zemlji je* ***probavala / probala*** *najčudnija jela.*
   'Anna traveled a lot during her youth. In every new country she tasted the strangest dishes.'

10. *Moj mlađi brat se rodio prošle srede. Deda je ceo dan* ***čašćavao/častio*** *pićem sve ljude u kafani i slavio.*
    'My little brother was born last Wednesday. The grandfather spent the whole day offering drinks to all the people in the tavern and celebrating.'

11. *Ranije su mnogi ljudi imali predrasude prema nekrštenim ljudima. Na primer, sveštenik je* ***venčavao / venčao*** *samo parove koji su bili vernici.*

[11] The first sentence of each example presents the context. The provided options are in bold, here and elsewhere.

'In the past, many people were prejudiced against unbaptized people. For example, the priest married only couples who were believers.'

12. Pre nekoliko godina je izašlo dosta novih udžbenika o vaspitanju. Roditelji su i pored kontraindikacija decu **vaspitavali / vaspitali** patrijarhalno.
'A few years ago, a lot of new textbooks on education were published. Despite the contraindications, the parents educated the children in a patriarchal manner.'

13. *Slikar nimalo nije bio zadovoljan svojim delom. Svakog jutra je crnom bojom* ***odrađivao / radio*** *ivice slike.*
'The painter was not at all satisfied with his work. Every morning he worked out the edges of the picture with black paint.'

14. *Tokom devedesetih je u Beogradu bilo dosta kriminalnih klanova. Policija je često* ***izvršavala / vršila*** *pretres stanova mogućih osumnjičenih.*
'During the nineties, there were a lot of criminal clans in Belgrade. The police often searched the apartments of possible suspects.'

15. *Maja i Pera su igrali Monopol u sredu uveče i puno se svađali. Pera je* ***sakrivao / krio*** *Majine kućice i hotele.*
'Maja and Pera played Monopoly on Wednesday night and argued a lot. Pera hid Maja's houses and hotels.'

16. Đoka je pravio probleme na radnom mestu. Svoje nepromišljene postupke je **opravdavao / pravdao** neispavanošću.
'Đoka caused problems at the workplace. He justified his reckless actions with lack of sleep.'

17. *Fondacija 'Vuk Drašković' nije imala velikih finansijskih mogućnosti. Uprkos tome, tokom godišnje večere konobari su* ***posluživali / služili*** *najbolje vino i morske plodove.*
'The "Vuk Drašković" foundation did not have great financial opportunities. Despite this, during the annual dinner, the waiters served the best wine and seafood.'

18. *Mali Perica je jako nevaspitan. U nedelju ujutru je* ***zakucavao / kucao*** *eksere dok su svi spavali.*
'Little Perica is very ill-mannered. On Sunday morning, he was hammering nails while everyone was sleeping.'