# Preterit-imperfect acquisition in L2 Spanish writing: Moving beyond lexical aspect

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**Abstract** – While research on second language (L2) tense-aspect acquisition has flourished, most studies have focused on lexical aspect as an explanatory variable (Bardovi-Harlig and Comajoan-Colomé 2020). However, the role of the features of first language (L1) production in L2 Spanish preterit-imperfect acquisition has never been tested before. Prior research has found that the frequency and distinctiveness of verb forms in corpora of L1 English production predict L2 English learners' tense-aspect production (Wulff *et al.* 2009). The present study aims to replicate these findings and test the predictions of hypotheses of L2 tense-aspect acquisition in another group of learners: English-dominant, instructed Spanish learners. Analyses were performed on longitudinal data from the *Corpus of Written Spanish of L2 and Heritage Speakers* (COWS-L2H; Yamada *et al.* 2020) and cross-sectional data from the *Corpus Escrito del Español L2* (CEDEL2; Lozano 2021). Results indicate that L1 verb frequency and distinctiveness predict learners' emergent use of the preterit and the imperfect.

**Keywords** – tense-aspect acquisition; Spanish as a second language; preterit and imperfect; learner corpus research

## 1. INTRODUCTION[1]

The distinction between the preterit and imperfect is one of the most challenging Spanish grammatical concepts for learners whose first language (L1) does not mark aspectual differences through verbal morphology. For example, the difficulties experienced by L1 English learners of Spanish in accurately distinguishing between the perfective (preterit) and imperfective (imperfect) past have been repeatedly documented (cf. Bonilla 2013). In the context of Spanish language education in the United States, most instructors dedicate a substantial portion of their curriculum to explain and review these structures when teaching students how to tell stories in the past, share past experiences or talk about their weekends, vacations, etc. Given the difficulty and

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importance of the structures, it is necessary to understand which factors influence learners' acquisition. While the field of second language acquisition (SLA) has thoroughly researched the acquisition of tense and aspect, including the acquisition of the preterit and the imperfect in Spanish, studies have focused on lexical aspect as an explanatory factor (cf. Bardovi-Harlig and Bergström 1996; Domínguez *et al.* 2013; González and Quintana Hernández 2018). However, a complete account of tense-aspect acquisition still awaits accurate description as it should take a broader range of predictors into account, such as form frequency, regularity, and saliency (Bayley 1994). In order to contribute to a more complete description of tense-aspect acquisition in second language (L2) Spanish, the present study investigates a predictor that has been under-researched in the field of preterit-imperfect acquisition: learners' mirroring of the distributional biases attested in L1 Spanish production.

After a review of the literature, Section 2 discusses the objectives and research questions in the study. Section 3 provides information on the research methodology. Section 4 and 5 constitute the core of the analysis and provide the results and their discussion. Finally, Section 6 offers a summary and some conclusions.

## 1.1. Tense and aspect

Tense and aspect describe the temporal positioning of an event and the interpretation or view of the event, respectively (Comrie 1985: 9). Tense, a deictic class, situates an event in relation to speech time, or the time at which the utterance is occurring. Aspect clarifies the way in which the event is viewed. The event may be viewed as bounded or as having a clear endpoint, in which case it would have perfective aspect (e.g. *María tocó el violín en el concierto* 'Maria played the violin in the concert'). In contrast, the event might be viewed as unbounded, or not having a clear endpoint, in which case it would have imperfective aspect (e.g. *María tocaba el violín todos los días* 'Maria used to play the violin every day'). Tense and aspect can be conveyed through verbal morphology as well as through other linguistic resources. Spanish has a rich verbal morphological system and encodes tense-aspect primarily through inflectional suffixation. Although the present study focuses on verbal tense-aspect marking, it is worth noting that the expression of tense-aspect also uses resources beyond the verb, such as the arguments of the predicate or adverbials (Verkuyl 1972; Bardovi-Harlig 2000; Bardovi-Harlig and Comajoan-Colomé 2020).

Prior studies on aspect acquisition have distinguished between the grammatical and lexical aspect of the verbal predicate. While 'grammatical aspect' refers to the encoding of aspectual meaning in the form of the verbal predicate (for instance, *querer* 'want' is marked with imperfective grammatical aspect through the imperfect form *quería* 'I used to want'), 'lexical aspect' refers to the aspectual meaning that the inherent semantics of the verbal predicate conveys (Comrie 1976: 3). For example, the meaning of the verb *querer* 'want' conveys no clear input of energy from the subject, nor does it have a clear start and endpoint. In contrast, a verbal predicate like *summit a mountain* both requires energy to be dedicated to the action and has an inherent beginning and end (cf. Salaberry 2011: 187). These features of *querer* 'want' make it fall within the lexical aspectual category of 'states'*,* while *summit a mountain* falls within the lexical aspectual category of 'achievements', as seen below. The following lexical aspect classification (Comrie 1976) has been used frequently in studies of aspect acquisition (cf. Andersen and Shirai 1994):

1. State: [- dynamic] [- punctual] [- telic] (e.g. *want*).
2. Activity: [+ dynamic] [- punctual] [- telic] (e.g. *ride a bicycle*).
3. Accomplishment: [+ dynamic] [- punctual] [+ telic] (e.g. *write an article*).
4. Achievement: [+ dynamic] [+ punctual] [+ telic] (e.g. *summit a mountain*).

With respect to the acquisition of tense and aspect, three main hypotheses have emerged, especially in consideration of how lexical aspect affects grammatical aspect marking. These hypotheses are described in what follows.

*1.2. The Lexical Aspect Hypothesis*

The Lexical Aspect Hypothesis (LAH) is based on Andersen's (1991) seminal study on L1 English children's naturalistic acquisition of Spanish as an L2. Andersen noticed that learners began marking verbs in the preterit before they did so in the imperfect. He found that the first verbs marked in the preterit denoted punctual events, such as *se partió* 'something broke', whereas the first verbs marked in the imperfect represented states, such as *tenía* 'someone had' (Andersen 1991: 314). He expanded on these findings to predict a general developmental sequence for tense-aspect acquisition, which constitutes the LAH (Andersen 2002).

The LAH also postulates that lexical aspect influences learners' choice of tense-aspect morphology most when learners are in the first stages of acquisition. Andersen and Shirai (1994) based this claim on a prototype model of grammatical and lexical aspect. According to this model, grammatical aspectual categories, such as the preterit, have more and less prototypical members. Lexical aspect is considered to be a primary factor in determining prototypicality. Following this analysis, telic predicates are prototypically associated with the preterit, and stative predicates are prototypically associated with the imperfect. The LAH predicts that prototypicality influences learners the most when they are beginners and states that more advanced learners will use the preterit and imperfect less prototypically. For example, learners are expected to use the preterit more preferentially with telic predicates when they are beginning to learn Spanish relative to subsequent periods of acquisition. However, this prediction has been contested (cf. Salaberry 1999, 2011).

Studies of L2 acquisition in different languages and contexts and with a variety of tasks have both supported and contradicted the LAH, as shown in Table 1.[2] Perhaps the most widely accepted tenet of the LAH is that lexical aspect plays a role in tense-aspect acquisition. While scholars have contested the specific route of tense-aspect development that the LAH proposes (Ayoun and Salaberry 2008) and the proposed effect of prototypicality on tense-aspect use at each proficiency level (Robison 1995), most scholars agree that lexical aspect affects grammatical aspect to some degree during L2 acquisition (Salaberry 2011). Based upon this consensus in the literature, the present study will not focus its research questions on testing lexical aspect as a factor but will rather focus on the impact of order of instruction and L1 distributional biases in the use of the preterit and imperfect.

| **Study** | **Focus** | **Participants** | **Task** | **Findings** |
|---|---|---|---|---|
| Bardovi-Harlig and Bergström (1996) | LAH | L2 English (ESL) and L2 French (FFL) instructed learners | Written film retell task | Supported LAH |
| Salaberry (1999) | LAH | L2 Spanish instructed university students | Oral film retell task | Contradicted route predicted by LAH; impetus for DPTH |
| Salaberry (2002) | LAH, DPTH | L2 Spanish instructed university students | Written discourse-based cloze task | Supported DPTH |

Table 1: Relevant studies on L2 tense-aspect acquisition

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[2] For reviews on the literature, cf. Shirai 2004, Bonilla 2013, Bardovi-Harlig and Comajoan-Colomé 2020.

| Study | Focus | Participants | Task | Findings |
|---|---|---|---|---|
| Wulff *et al.* (2009) | DBH/ distributional factors, lexical aspect | L2 English instructed university students and L1 English corpora | Oral interview task | Supported DBH and relevance of lexical aspect |
| Salaberry (2011) | LAH, DPTH | L2 Spanish instructed university students | Written discourse-based forced choice task | Supported DPTH |
| Collins *et al.* (2012) | Distributional factors, lexical aspect | Learner-directed speech corpus (for L2 English) | N/A | Supported DBH although did not explicitly test –English instructors– show distributional biases |
| Domínguez *et al.* (2013) | LAH, DPTH | L2 Spanish instructed high school and university students | Oral narration tasks and written sentence-context matching task | Supported DPTH |
| Thomas (2014) | LAH, distributional factors | L2 French instructed K-12 students, L1 French and learner-directed speech corpora | Oral conversations and narration tasks | Supported relevance of input frequency and lexical aspect to tense-aspect marking |
| González and Quintana Hernández (2018) | LAH, L1 influence | L2 Spanish instructed study abroad students | Written film retell task | Supported relevance of lexical aspect and L1 influence to tense-aspect marking |
| Tracy-Ventura and Cuesta Medina (2018) | DBH/ distributional factors | L1 Spanish corpora | N/A | Potentially supported DBH-L1 Spanish corpora show distributional biases, but did not consider L2 production |
| Daidone (2019) | DBH/ distributional factors | Learner-directed speech corpus and L1 Spanish corpora | N/A | Potentially supported DBH-Spanish instructors and L1 Spanish corpora show distributional biases, but did not consider L2 production |
| Izquierdo and Kihlstedt (2019) | Lexical aspect, L1 influence | L2 French instructed university students | Written film retell task | Supported relevance of lexical aspect and L1 influence to tense-aspect marking |

Table 1: Continuation

## 1.3. The Default Past Tense Hypothesis

The Default Past Tense Hypothesis (DPTH) results from Salaberry's (1999, 2002) studies on the applicability of the LAH to instructed SLA (cf. Table 1). Salaberry (1999) examines L1 English college students' acquisition of the preterit-imperfect in L2 Spanish through a film retell task. In contrast to the prediction of the LAH that students initially rely on prototypical associations between lexical and grammatical aspect in

marking the preterit and imperfect, the study shows that students make more prototypical choices as their proficiency increases. Salaberry also finds that lexical aspect is not a significant factor in shaping preterit-imperfect production at the first stages of acquisition, as students mark the preterit on verbs of all lexical aspectual categories at this level. Salaberry explains this deviance from the LAH by claiming that the preterit is the default past tense marker for beginner instructed learners of Spanish, meaning that learners will use the preterit automatically or by default when they seek to mark the past in Spanish. Additionally, Salaberry (2002) notes that an instructional preference for teaching the preterit before the imperfect (i.e. an instructional effect), as well as cross-linguistic influence from the English simple past on preterit use,[3] may contribute to the earlier emergence of the preterit. The DPTH thus postulates that L2 Spanish learners mark the past tense through the unmarked preterit form before they mark aspectual distinctions by introducing the imperfect into their linguistic repertoire (cf. Salaberry and Ayoun 2005; Salaberry 2008).

The DPTH has been most successful at predicting the development of instructed L2 learners, especially beginner learners whose L1 and L2 differ significantly in past tense-aspect marking, as is the case in L1 English learners of Spanish (cf. González and Quintana Hernández 2018; Bardovi-Harlig and Comajoan-Colomé 2020). In their study of L1 English acquisition of L2 Spanish, Domínguez *et al.* (2013) provide evidence supporting the DPTH. Their corpus and experimental data of spoken production and comprehension indicate that, in their study, beginner learners, who are year 10 high school students in the UK, mark verbal predicates of all lexical aspectual categories in the preterit. The beginner learners also show a preference for the preterit over the imperfect for every lexical aspectual category except states. Similarly, in a study of L2 writing, González and Quintana Hernández (2018) demonstrate that upper beginner L1 English learners of Spanish in a study abroad context show an overuse of the preterit. They attribute this pattern to cross-linguistic influence from the English simple past. As Salaberry (2002: 407) remarks, cross-linguistic influence may contribute to drive the initial preference for the preterit as predicted by the DPTH. The present study thus examines whether the DPTH's developmental sequence generalizes to a larger group of

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[3] The English simple past can be used both in perfective aspectual contexts and in imperfective aspectual contexts, as in *When I was a kid, I walked to school every day* which is the English equivalent of 'Cuando era niña, caminaba a la escuela cada día'. Thus, transfer from L1 English to L2 Spanish past tense-aspect marking may result from overextension of the preterit into imperfective aspectual contexts, based on analogy with the English simple past.

L1 English instructed Spanish language learners at beginner and intermediate proficiency levels.

## 1.4. *The Distributional Bias Hypothesis*

The Distributional Bias Hypothesis (DBH) does not solely consider verbs' lexical aspect but further explores how this verbal property may influence the distribution of verbs in the preterit and imperfect in the language of L1 speakers, and further considers how such a distribution may be replicated in L2 learners' production. The DBH (Andersen and Shirai 1994) is based on the finding that L1 speakers tend to use verbal predicates with a certain grammatical aspect category preferentially. Distributional biases occur in English as well as in Spanish (Tracy-Ventura 2007) and may occur in other languages. Andersen and Shirai (1994) claim that distributional biases are related to the effect of lexical aspect on grammatical aspect marking, as predicted by the LAH. For example, in the *EsPal Corpus*[4] of L1 Spanish writing (Duchon *et al.* 2013), *tener* 'have' is used approximately two times more frequently in the imperfect than in the preterit. According to the DBH and the LAH, L1 Spanish speakers prefer to use *tener* 'have' with the imperfect because it is a stative verb. As the stative lexical aspect category is prototypically associated with the imperfective grammatical aspect, speakers produce *tener* 'have' with a bias toward the imperfect over the preterit.

The DBH predicts that learners will notice the preferential use of certain verbs with certain grammatical aspect categories. The memory capacity and data-driven learning ability of adult second language learners may facilitate learning based on distributional biases in L1 production (Shirai 2004: 109). Andersen and Shirai (1994) claim that when learners are exposed to L1 production, they often overgeneralize the link between a particular verb and its prototypical association with the preterit or the imperfect as found in L1 frequency biases. According to Shirai (2004), this phenomenon may explain the increase in learners' prototypical use of past tense-aspect marking as proficiency increases, as observed by Robinson (1995) and Salaberry (1999). Salaberry (2011) also advances that distributional biases may work in tandem with lexical aspect and other factors in order to determine learners' choice of grammatical aspect (cf. also Bardovi-Harlig and Comajoan-Colomé 2008). The DBH

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[4] http://clic.ub.edu/corpus/es/espal

thus goes beyond the LAH to explain tense-aspect acquisition in terms of interconnected semantic and cognitive factors. While the DBH has been proposed as a hypothesis, it has not been thoroughly tested in L2 tense-aspect literature and even less so in the context of L2 Spanish, as shown in Table 1.

Learners' emulation of distributional properties in L1 production has been considered as a pivotal factor in L2 tense-aspect acquisition, as exemplified by the postulation of the DBH (Andersen and Shirai 1994; Shirai 2004; Salaberry 2011; Ellis 2013; Thomas 2014). However, few studies have investigated the effect of this factor on tense-aspect acquisition at an empirical level (cf. Table 1). Wulff *et al.* (2009) are, to the best of our knowledge, the first to consider the role of features of L1 production in the acquisition of tense-aspect marking. The study compared beginner L2 English spoken production from a film retell task with two L1 English corpora of spoken production. Wulff *et al.* (2009) find that the frequency, distinctiveness, and prototypicality of the tense-aspect forms that are considered in the L1 English corpus predict the production of the forms in the L2 English corpus. The frequency of forms describes how often tokens occur in production. The 'distinctiveness' of forms refers to how closely a verb is associated with a particular tense-aspect category. Distinctiveness characterizes the frequency of a form contingent on its context of use and is therefore also referred to as 'contingent frequency' (cf. Wulff 2020: 177). The prototypicality of forms describes the extent to which a verb is a prototypical member of a tense-aspect category based on its inherent lexical aspect. Following Prototype Theory (Rosch and Mervis 1975), prototypical forms in any category hold the most integral features of a category and serve as a point of reference for category membership. For example, Wulff *et al.* (2009) report that the verb *run* is not only highly frequent in its progressive forms (e.g. *Someone is running*), but is distinctively associated with progressive aspect, and is a prototypical member of progressive aspect given its mid-range telicity score. The frequency, distinctiveness, and prototypicality that Wulff *et al.* find in the L1 English corpus is also mirrored in the L2 English corpus.

Several other studies have demonstrated the influence of L1 distributional properties on second language learning through a construction or usage-based grammar perspective. Ellis and Ferreira-Junior (2009), for instance, provide evidence that construction frequency, distinctiveness, and prototypicality may explain L2 English acquisition of verb-argument constructions, including the ditransitive construction (e.g.

*Pat faxed Tom the picture*). In alignment with findings from Wulff *et al.* (2009) and with constructionist theories (Goldberg 2003), Ellis and Ferreira-Junior (2009) find that the frequency of word types in a given construction follows a Zipfian distribution (Zipf 1935). In this type of distribution, the most frequent token occurs approximately two times more frequently than the second most frequent token, and three times more frequently than the third most frequent token (Wulff 2020: 178). Thus, the Zipfian distribution is characterized by an inverse relationship between token frequency and the token's relative order of frequency compared to the other tokens of the same construction. Ellis and Ferreira-Junior (2009) show that learners mirror the Zipfian distribution attested in L1 English production and employ the most distinctive and prototypical types of each verb-argument construction.

Investigations of L1 Spanish production have found distributional biases in the use of the preterit and imperfect (Tracy-Ventura and Cuesta Medina 2018; Daidone 2019). In oral texts from the *Corpus del Español* (Davies 2002), Tracy-Ventura and Cuesta Medina (2018) examine the frequency of past forms and show that both preterit and imperfect token frequency in the corpus follow a Zipfian distribution in which certain tokens represent a large percentage of the total preterit or imperfect tokens produced. A Distinctive Collexeme Analysis (henceforth DCA; Gries and Stefanowitsch 2004) shows that most of the tokens are also clearly associated with either the preterit or the imperfect. Tracy-Ventura and Cuesta Medina (2018) note that, in the texts analyzed, the verbs distinctly associated with the preterit are all telic, and those distinctly associated with the imperfect are all atelic. Their findings highlight that distributional biases occur in L1 Spanish production and that these biases relate to the lexical aspect of the verb, as proposed by Andersen and Shirai (1994).

Daidone (2019) catalogues the frequency of past forms in two corpora representing L1 Spanish and highly advanced L2 Spanish production, namely, learner-directed instructor speech from intermediate university classes, which is taken to represent classroom input, and oral texts from the *Corpus de Referencia del Español Actual* (CREA; *Real Academia Española*). A DCA demonstrates that the tokens in both corpora show biases toward the preterit or imperfect based on lexical aspect. The classroom input has greater biases toward the preterit, as the instructors rarely use imperfect forms; the preterit tokens represent 80 percent of the tokens analyzed. Daidone discusses instructors' preferential use of the preterit, as supporting Salaberry's

(2002) claim that the preterit may emerge before the imperfect in instructed learning because learners are exposed to a sufficient number of tokens in the preterit before they are exposed to a comparable amount of tokens in the imperfect. Daidone is the first to examine preterit-imperfect acquisition through a corpus of learner-directed classroom speech. Given that this corpus is not publicly accessible, studies on the role of L1 production properties in preterit-imperfect learning have primarily analyzed general L1 Spanish corpora (Tracy-Ventura and Cuesta Medina 2018). The present study adopts this approach with the understanding that future work will benefit from greater consideration of learner-directed classroom speech.

## 2. THE PRESENT STUDY

Bardovi-Harlig and Comajoan-Colomé (2020: 1128) describe LAH as "the single most influential hypothesis in second language acquisition (SLA) research regarding tense and aspect." As seen in Table 1, lexical aspect has been an explanatory factor in studies of L2 tense-aspect acquisition for more than two decades. In contrast, very few studies have addressed learners' mirroring of the frequency biases in L1 Spanish production as a factor while investigating learners' production of past tense-aspect, apart from a few isolated references here and there (cf. Wulff *et al.* 2009; Thomas 2014), and no studies to date have examined this factor in L2 Spanish preterit-imperfect acquisition. In order to model the complex process that L2 tense-aspect development implies, the field must examine more thoroughly the multitude of factors that influence this process, in addition to lexical aspect.

Given the recent advances in methods for Learner Corpus Research (LCR), studying distributional features of L1 Spanish production as an explanatory variable is currently more feasible and effective than it was when the LAH was proposed. To expand research on a multifactor account of tense-aspect acquisition, the present study considers two corpora of Spanish writing. As these corpora have never been considered in investigations of tense-aspect learning, the study tests the generalizability of findings in prior studies. Prior studies have also favored cloze tasks and film retell tasks (cf. Table 1), which limit the range of verb types that learners produce when compared to open-ended production tasks. This study examines production in open-ended writing tasks that are not scaffolded for preterit-imperfect elicitation in order to confirm that the results attested in more structured elicitation tasks apply generally. Finally, the

investigation deals with calls within LCR for greater linguistic description in addition to statistical testing (Larsson *et al.* 2022). Crucially, the study investigates preterit-imperfect development by employing infrequently used task types and following recommendations to highlight linguistic phenomena in learner texts.

The present study aims to nuance our current understanding of preterit-imperfect acquisition by expanding beyond the LAH to consider an understudied factor in tense-aspect acquisition: learners' emulation of the distributional biases in L1 Spanish production. The following research questions assess the predictions of each of the hypotheses (LAH, DPTH and DBH):

1. Does the LAH and DPTH's prediction[5] that instructed Spanish learners will produce the preterit before the imperfect correspond with the developmental trajectory of the preterit and the imperfect observed in the learner sample?

2. How closely is the token frequency of past forms in learners' production associated with the token frequency in L1 Spanish production?

3. How closely does the contingent frequency (distinctiveness) of past forms in learners' production reflect the contingent frequency in L1 Spanish production?

## 3. METHODS

### *3.1. Design*

In order to capture preterit-imperfect acquisition over time from a large and diverse sample of participants, the study is divided into two parts. First, a longitudinal study is conducted with beginner students from the University of California, Davis, a large, public university in the U.S. These students contributed writing samples to the corpus over the course of three academic terms, which constituted one academic year in total. The longitudinal study provides evidence of student development over time, which is contextualized through the curriculum of the language program. Learner writing samples from the longitudinal group exemplify how the preterit and the imperfect emerge in interaction with the essay genre. Secondly, a cross-sectional study has been

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[5] Certainly, the LAH and DPTH make different predictions about the route of emergence of the preterit-imperfect and attribute these routes to different factors (e.g. lexical aspect vs. a default past tense form). However, the hypotheses concur in their prediction that the preterit will emerge before the imperfect for L2 learners of Spanish. Therefore, the first research question tests this prediction in both hypotheses.

conducted with 1) a learner corpus representing a large and varied sample of students, and 2) a corresponding L1 Spanish reference corpus. The cross-sectional analysis has allowed for comparison between L1 and L2 use of the preterit and imperfect.

*3.2. Corpora*

Current L2 Spanish corpora offer a variety of types of data that facilitate the study of L2 grammatical development. This study takes advantage of the unique characteristics of the two largest corpora of written L2 Spanish: 1) the *Corpus Escrito del Español L2* (CEDEL2; cf. Lozano 2009, 2021; Lozano and Mendikoetxea 2013) and 2) the *Corpus of Written Spanish of L2 and Heritage Speakers* (COWS-L2H; Yamada *et al.* 2020). CEDEL2 features a large L1 Spanish reference corpus, which has been taken as a representation of L1 Spanish writing. The written, not the spoken, L1 Spanish data has been used in order to control for modality and task effects, as the L1 and L2 data have been elicited from identical tasks. COWS-L2H offers a longitudinal student sample from one university setting, namely, the University of California, Davis, whereas CEDEL2 provides a cross-sectional learner sample from a wide variety of instructional settings (e.g. Denison University, Georgia State University, Pennsylvania State University). In order to control for the variables of textual genre and text length across corpora, only descriptive and narrative essays between 50 and 500 words in length have been analyzed. The use of tasks that were not explicitly intended to elicit preterit-imperfect production have allowed the study to capture L1 and L2 Spanish production in a more ecologically valid manner, without the greater potential for priming effects that may occur in more structured elicitation tasks, such as interviews (Izquierdo and Kihlstedt 2019).

3.2.1. CEDEL2

CEDEL2 includes essays written by L2 Spanish learners and L1 Spanish speakers representing several different varieties of Spanish. The tasks consist of unmonitored online writing assignments without time constraints. The volunteer sample of participants chooses to respond to one of 14 prompts that are proposed on the project's website. The cross-sectional analysis of CEDEL2 includes 820 L1 Spanish essays and 611 L2 Spanish essays, all of which are written by different participants. The mean

essay length is 231 words in the L1 Spanish group and 206 words in the L2 Spanish group. Only learners who reported their L1 as English and their age as between 17 and 26 years are included. Learners range from A1 to B2 on the scale of the Common European Framework of Reference for Languages (CEFR; Council of Europe 2001), as displayed in Table 2. Proficiency level is determined by students' scores on the University of Wisconsin (1998) college-level placement test, which they complete at the time of data collection.

| Proficiency | | CEDEL2 | |
|---|---|---|---|
| **Proficiency level** | **Proficiency level CEFR** | **Number of participants** | **Number of essays** |
| Lower beginner | A1 | 29 | 29 |
| Upper beginner | A2 | 186 | 186 |
| Lower intermediate | B1 | 192 | 192 |
| Upper intermediate | B2 | 204 | 204 |

Table 2: Participants, essays, and proficiency levels in the cross-sectional study

### 3.2.2. COWS-L2H

COWS-L2H includes essays written by students enrolled in Spanish classes at a large, public university in the United States. Students complete a Web-based Computer Placement Exam (WebCAPE 2.0) in order to be placed into a class. The placement scores corresponding to the course levels of the participants fall between A1 and A2 proficiency on the CEFR scale (Yamada *et al.* 2020; Fernández-Mira *et al.* 2021). Similar to CEDEL2, writing tasks are unmonitored, completed online, and without time constraints. All students respond to a descriptive prompt in the fourth week of each academic term and a narrative prompt in the eighth week of the ten week-long academic term. Participants who volunteer to participate in the corpus study, which is separate from their normal coursework, may do so during multiple academic terms and are compensated with course extra credit. The student sample does not constitute an intact class, as the students are not all enrolled in the same Spanish class. Several students participate repeatedly in different terms throughout the four years of data collection, thus providing a relatively large set of longitudinal data.

The longitudinal research in the study is conducted using the written samples of eight students who participate six times in the first three academic terms of the Spanish program (cf. course levels SPA 1, SPA 2, and SPA 3 in Table 3). The first-year Spanish

program (SPA 1-3) focuses on the development of basic communicative skills. In the CEFR scale, SPA 1 corresponds to the A1 proficiency level, SPA 2 to A1+, whereas SPA 3 relates to A2 (cf. Table 3; Fernández-Mira *et al.* 2021). The 48 essays analyzed have a mean length of 218 words.

| Course level | Proficiency level | Proficiency level CEFR | Number of essays | Number of participants |
|---|---|---|---|---|
| SPA 1 | Lower beginner | A1 | 16 | 8 |
| SPA 2 | Lower beginner | A1+ | 16 | 8 |
| SPA 3 | Upper beginner | A2 | 16 | 8 |

Table 3: Course, proficiency, essays, and participants in the longitudinal study

Only participants with no prior experience learning Spanish and who report their L1 as English do not produce the preterit-imperfect before they are taught the structures in SPA 2. As these students are real beginners, they do not a priori have classroom-based knowledge of the preterit-imperfect in SPA 1. Therefore, we assume that students who use the preterit-imperfect in SPA 1 have either 1) some exposure to Spanish at home or in their community or 2) do not follow the task's instructions which do not allow them to consult outside resources like online translators. For this reason, only true beginners who do not produce the preterit-imperfect in SPA 1 have been included. In order to demonstrate the emergence of the preterit and imperfect in students' writing over time, the study highlights samples from participants' essays. These samples facilitate the description of the linguistic features as they appeared in students' writing, which is an essential element of corpus analysis (Larsson *et al.* 2022).

## 3.3. Procedure

The corpora are tokenized and tagged for part-of-speech using *FreeLing 4.2* (cf. Padró *et al.* 2010; Padró and Stanilovsky 2012). *FreeLing* tags verbs for tense, aspect, and mood, among other features, with 97 percent accuracy (Padró and Stanilovsky 2012). For each essay in CEDEL2 and COWS-L2H, the tokens tagged with *FreeLing* as verbs in the preterit or imperfect indicative have been collected in their token and lemma forms in *Python 3.9*.[6] These forms have been analyzed in terms of their token, lemma, and contingent frequency. Contingent frequency has been measured using a DCA analysis (Gries and Stefanowitsch 2004). The DCA measures the strength of association

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[6] https://www.python.org/downloads/

between a verb and the preterit, or a verb and the imperfect, based on its frequency of use in the preterit/imperfect relative to its total frequency of use.

## 4. RESULTS

### 4.1. Longitudinal study

According to the LAH and the DPTH, the preterit should emerge before the imperfect among instructed L1 English learners of Spanish. The learners in this longitudinal study do not report prior experience learning Spanish; hence, their developmental trajectory is based on instruction at the university. The average of these students' preterit and imperfect token production at each data collection time is considered to gauge development over the course of three academic terms. The students' mean use (per 100 words) in each essay is reported in order to account for differences in text lengths. Variance is measured through the standard deviation, as shown in Table 4, and 95 percent confidence interval of the mean, as seen in the error bars of Figure 1.

| Data collection time | Mean preterit tokens per 100 words (SD) | Mean imperfect tokens per 100 words (SD) |
|---|---|---|
| SPA 1 midpoint | 0 (0) | 0 (0) |
| SPA 1 endpoint | 0 (0) | 0 (0) |
| SPA 2 midpoint | 3.42 (3.32) | 0.25 (1.29) |
| SPA 2 endpoint | 3.64 (2.54) | 2.64 (2.04) |
| SPA 3 midpoint | 1.04 (1.61) | 0.65 (1.41) |
| SPA 3 endpoint | 2.92 (2.07) | 2.98 (2.49) |

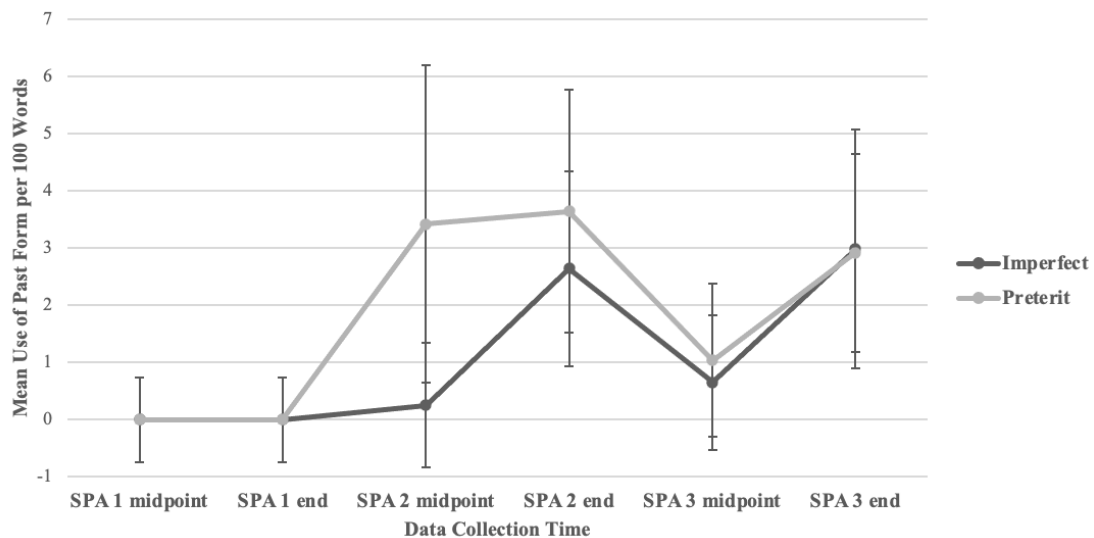Table 4: Preterit and imperfect number of tokens per 100 words



Figure 1: Longitudinal development of preterit and imperfect token production

The instructional effect of students learning the preterit at the beginning of SPA 2 is clearly seen, as the students make a more frequent use of the preterit on average: 3.42 times per 100 words at the midpoint of SPA 2. Meanwhile, the students do not frequently use the imperfect at the midpoint of SPA 2: mean use of 0.25 (cf. Table 4). The following excerpts, (1)–(2), exemplify how these students start to use the preterit, often in contexts where the imperfect would be more acceptable. For example, in (1), the student uses the preterit (e.g. *comimos* 'we ate', *compró* 'he/she bought') to describe habitual actions in the past, which would typically be marked in the imperfect:

(1) En su coche [de mi padre], nosotros **cantamos** PRET muchos canciones y **reímos** PRET porque mi padre **estuvo** PRET fuerte cuando él **cantó** PRET. Nosotros **comimos** PRET pan tostado todas las mañanas y los sábados, **montamos** PRET nuestras bicicletas y **fuimos** PRET al parque. Mi padre siempre me **compró** PRET helado en el parque. (Female, 21, prompt: describe a special person)

'In his car [of my father], we **sang** many songs and **laughed** because my father **was** loud when he **sang**. We **ate** toast every morning and on Saturdays, we **got on** our bikes and **went** to the park. My father always **bought** me ice cream at the park.'

(2) El ano pasado, ella [Beyonce] **hizo** PRET Lemonade, los discos compactos. Ella **tuvo** PRET gemelos el ano pasado tambien, por lo que ella <u>es</u> PRES trabajadora. Ella <u>canto</u> PRES en Coachella. **Estuve** PRET muy celosa de mis amigos que la *vieron* PRET, pero <u>**voy a**</u> FUT verla cantar en Septiembre en Santa Clara. (Female, 20, prompt: describe a famous person)

'Last year, she [Beyonce] **made** Lemonade, the albums. She **had** twins last year too, she is so hardworking. She <u>sang</u> in Coachella. I **was** very jealous of my friends who saw her, but I <u>**am going to**</u> see her sing in September in Santa Clara.'

The instruction of the imperfect in the latter half of SPA 2 corresponds with an increase in the average usage of the imperfect to 2.64 times at the end of SPA 2. The preterit is still more frequently used than the imperfect at this level, on average 3.64 times. As can be noticed in (3)–(4), the students begin to use the imperfect for long stretches of text, often alternating with the preterit. The more recent instruction of the imperfect even leads to an overuse of the imperfect when the preterit is necessary as, for instance, with the use of *veíamos* (first person plural imperfect past form of *ver* 'see') in (3).

(3) Una día, mi y mi amiga ***caminábamos*** IMP en mi ciudad. La día *estaba* IMP muy soleado. Cuando nosotros ***íbamos*** IMP a la tienda, nosotros ***veíamos*** IMP nuestra otra amiga. ¡Hola ellas!, nuestra amiga **habló** PRET. Nosotros **hablamos** PRET a juntos por dos horas. Después la tienda, nosotros ***íbamos*** IMP a él café… (Female, 18, prompt: tell a terrible story)

'One day, me and my friend were *walking* in my city. The day *was* very sunny. When we *were going to* the store, we were *seeing* our other friend. Hi [girls]! our friend **spoke**. We *spoke* together for two hours. After the store, we *were going to* the café…'

(4) Pero la mejor parte de estas vacaciones *era* IMP la selva. **Condujimos** PRET a la selva temprano en el manana. *Estaba* IMP muy lejos. **Caminamos** PRET por la selva todo el dia. *Estaba* IMP muy caliente y humido. **Vimos** PRET muchos animales como serpientes, aranas y pajaros. (Female, 20, prompt: narrate your perfect vacation)

'But the best part of this vacation *was* the rainforest. We **drove** to the rainforest early in the morning. It *was* very far away. We **walked** through the rainforest all day. It *was* really hot and humid. We **saw** many animals like snakes, spiders, and birds.'

An effect of textual genre on past tense use is especially visible in SPA 3. Here students respond to descriptive prompts at the midpoint, and narrative prompts at the end of each term. As evidenced by the difference between the midpoint and end of SPA 3, students produce more past tense tokens in the narrative genre relative to the descriptive genre. Interestingly, on average, students produce similar amounts of imperfect (2.98) and preterit tokens (2.92) at the end of SPA 3. This demonstrates that the preterit is no longer the default by the end of SPA 3.

In sum, in this sample students do not produce the preterit and imperfect until the structures are taught. When each structure is taught, students greatly increase their use of the structure, sometimes overextending it to encompass more past functions than what is grammatically acceptable. This result provides additional evidence to support the role of the order of instruction in preterit-imperfect production (Salaberry 2002).

*4.2. Cross-sectional study*

4.2.1. Emergence of the past

The predictions of the LAH and DPTH have also been tested in the CEDEL2 cross-sectional data to assess the generalizability of the hypotheses across learner groups. Figure 2 visualizes the mean preterit-imperfect usage per 100 words in each essay with error bars denoting the 95 percent confidence interval. As seen in Figure 2 and Table 5, corpus data show a preference for the preterit at all proficiency levels under investigation. At the A1 level, on average, students produce 1.08 preterit and 0.78 imperfect tokens per 100 words. The mean use increases for the preterit but decreases

for the imperfect at the A2 level. This is likely due to students writing longer essays at the A2 level than at the A1 level, without a corresponding increase in imperfect use. From the A2 to the B1 level, the mean number of imperfect tokens increases slightly to almost 1 and the mean number of preterit tokens jumps to almost 3. Mean use of the imperfect shows a dramatic increase at the B2 level: up to 1.65 tokens. Students produce preterit tokens on average 3.11 times at the B2 level.

| Proficiency level | Mean preterit tokens per 100 words (SD) | Mean imperfect tokens per 100 words (SD) |
|---|---|---|
| A1 | 1.08 (2.20) | 0.78 (2.36) |
| A2 | 1.61 (2.78) | 0.58 (1.36) |
| B1 | 2.87 (3.35) | 0.99 (1.85) |
| B2 | 3.11 (3.25) | 1.65 (2.18) |

Table 5: Mean number of preterit-imperfect tokens per essay: A cross-sectional study
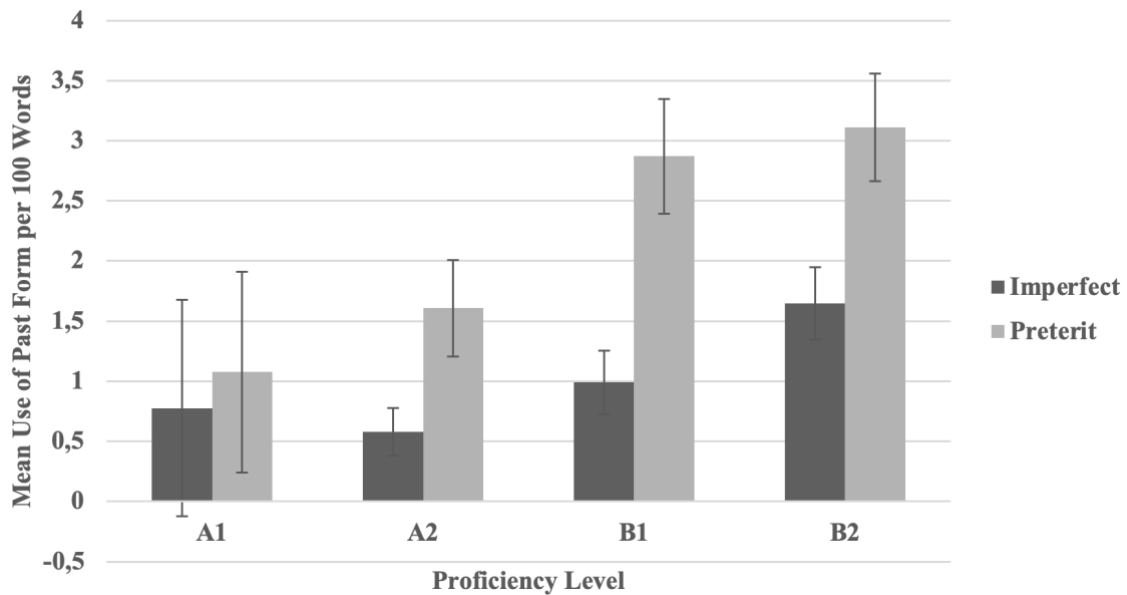


Figure 2: Cross-sectional development of preterit and imperfect token production

## 4.2.2. The Distributional Bias Hypothesis (DBH)

Having confirmed that the LAH and the DPTH accurately predict the prevalence of the preterit in early stages of L2 development, the question stands: are all verbs equally prone to being used in the preterit or the imperfect? Or, as proposed by the DBH, are L1 biases in the use of specific verbs in specific tenses also reflected in L2 writing? To answer our second research question, the study investigates the distributional biases in L1 Spanish and how these biases are reflected in L2 Spanish production, comparing the

CEDEL2 learner sample with the CEDEL2 L1 sample. Both groups complete the same writing task, and the comparison of essays from the same task control for the effects of differences in textual genre on writing.

4.2.3. Token Frequency Distribution

Prior studies on construction learning have demonstrated that the frequency of tokens in a construction typically follows a Zipfian distribution (Wulff 2020) which is characterized by an inverse relation between token frequency and rank order of frequency among the tokens. The present study considers the 27 most frequent verbs in the preterit and imperfect in the L1 and L2 CEDEL2 corpora to determine whether their frequencies fit a Zipfian distribution.

As seen in Figure 3, the CEDEL2 L1 Spanish sample follows a Zipfian distribution. *Ser* 'be', which has been the verb most frequently attested in the preterit, is approximately 2.5 times more frequent than *ir* 'go', the second most frequent verb in the preterit. Following *ir* 'go' and the third most frequent preterit verb, *encontrar* 'find', the frequency of preterit verbs decreases gradually. In the imperfect, *haber* 'have', *ser* 'be', and *estar* 'be' are the three most frequent verbs. These verbs are approximately two times more frequent than *tener* 'have', the fourth most frequent verb.
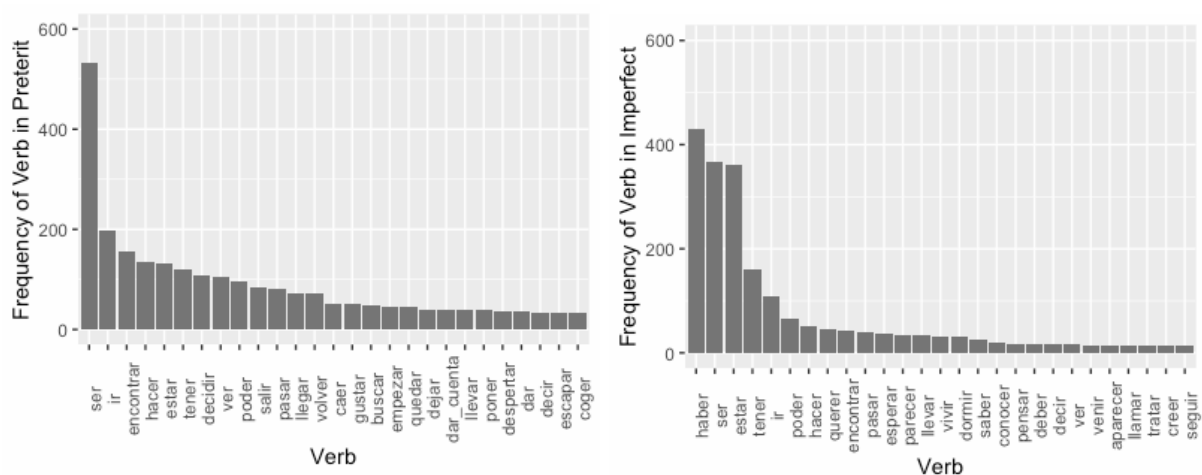


Figure 3: Frequency distribution of verbs in preterit (left) and in imperfect (right) in CEDEL2-L1

As seen in Figure 4, the CEDEL2 L2 Spanish sample follows a slightly more distinctive Zipfian distribution than the L1 Spanish sample. *Ser* 'be' and *ir* 'go' are still the two most frequent verbs in the preterit, and *ir* 'go' is approximately three times more

frequent than *ver* 'see', the third most frequent preterit verb. In the imperfect, *ser* 'be' is the most frequent verb and is approximately 1.5 times more frequent than *estar* 'be', the second most frequent verb. The decrease in the frequency of both preterit and imperfect verbs is slightly less marked in the L2 corpus when compared to the L1 corpus.
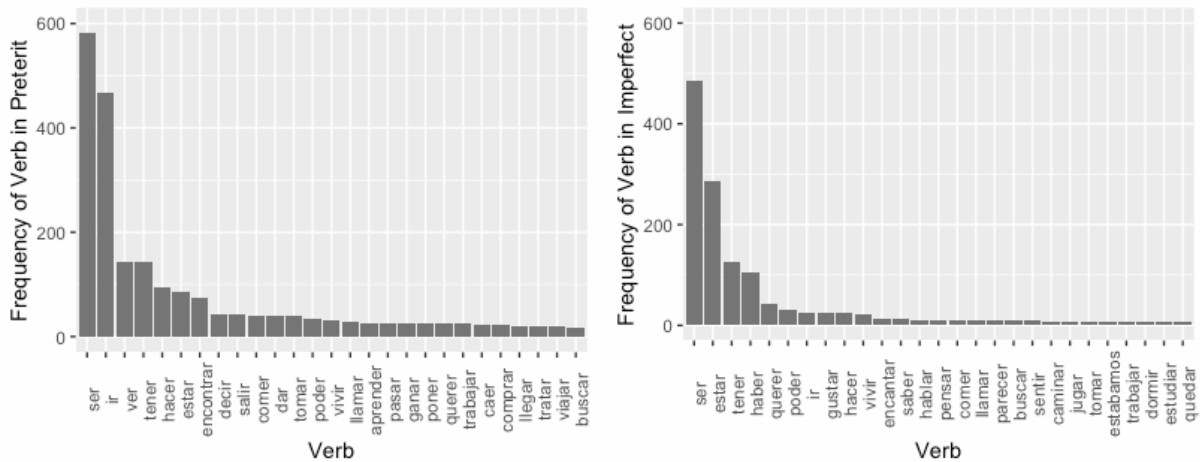


Figure 4: Frequency distribution of verbs in preterit (left) and imperfect (right) in CEDEL2-L2

## 4.2.4. Association between L1 and L2 production

A linear regression (*stats* 4.0.2 in R)[7] has been conducted to assess the relation between L1 Spanish speakers' and learners' frequency of past tokens. As may be observed in Figure 5, results show an $R^2$ value of 0.78 ($r = 0.88$, $p < 2.2e\text{-}16$) for the relation between L1 and L2 frequency regarding the 300 verbs in the preterit. The relation for the 129 verbs in the imperfect shows an $R^2$ value of 0.70 ($r = 0.83$, $p < 2.2e\text{-}16$), denoting a slightly stronger correlation in the preterit than in the imperfect. The main effect of L1 frequency is marginally weaker in the imperfect ($t = 17.14$) than in the preterit ($t = 32.36$). However, tokens that are highly frequent in the L1 corpus, such as *fue* 'someone went/was' in the preterit and *tenía* 'someone had' in the imperfect, have almost equivalently high frequencies in L1 corpus as in the L2 corpus. In sum, the correlation between L1 and L2 token frequency is large for both the preterit and the imperfect.
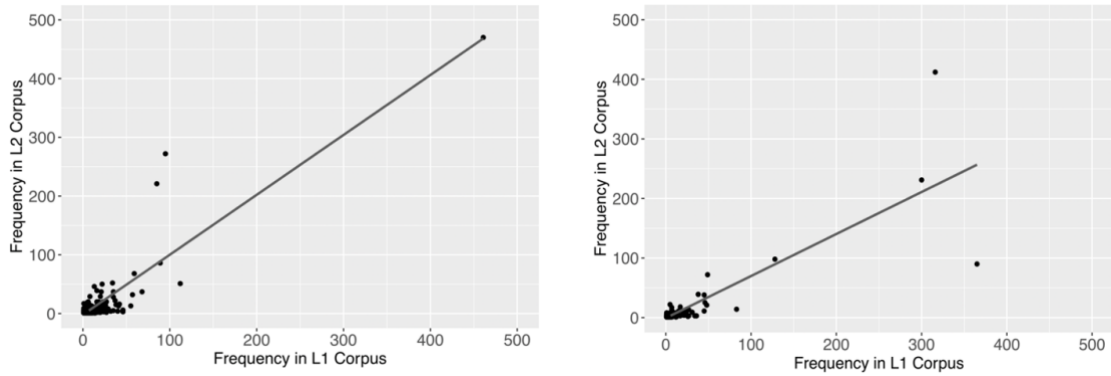
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[7] https://stat.ethz.ch/R-manual/R-devel/library/stats/html/00Index.html

Figure 5: Relation between frequency of tokens in the preterit (left) and the imperfect (right) in CEDEL2 L1 and L2

## 4.2.5. Contingent frequency

The contingent frequency analysis considers the association between verbs and the preterit or imperfect. We have conducted a DCA (Gries and Stefanowitsch 2004) which yields results for the association between lemmas and the constructions with which they occur, such as the preterit and the imperfect. The *R-script coll.analysis* (Gries 2014) has been used to measure the association strength through binomial tests. The script calculates the observed and expected frequency of lemmas with each construction and returns the log likelihood, labeled as collostructional strength. Collostructional strength values above 1.3 indicate a significant *p*-value at the 95 percent confidence level ($p <$ 0.05). Verbs with the largest collostructional strength values are considered the most distinctive verbs in the preterit or imperfect.

As seen in Tables 6 and 7, L1 and L2 Spanish speakers show distinctive associations at the 95 percent confidence level for at least ten verbs in the preterit and the imperfect. The distinctive verbs for the L1 and L2 speakers do not entirely overlap; 40 percent are the same in the preterit, and 50 percent are the same in the imperfect.

| | | Preterit | | | | Imperfect | | |
|---|---|---|---|---|---|---|---|---|
| Verb rank | Verb | Imperfect token frequency | Preterit token frequency | Collostruction strength | Verb | Imperfect token frequency | Preterit token frequency | Collostruction strength |
| 1 | *Decidir* 'decide' | 1 | 109 | 21.35 | *Haber* 'have' | 431 | 18 | 161.87 |
| 2 | *Llegar* 'arrive' | 6 | 73 | 9.32 | *Estar* 'be' | 362 | 132 | 60.03 |
| 3 | *Ver* 'see' | 16 | 105 | 9.06 | *Tener* 'have' | 160 | 120 | 10.38 |
| 4 | *Volver* 'return' | 7 | 73 | 8.67 | *Querer* 'want' | 46 | 11 | 10.28 |
| 5 | *Salir* 'go out' | 11 | 85 | 8.39 | *Esperar* 'wait' | 36 | 7 | 9.01 |
| 6 | *Darse cuenta* 'realize' | 0 | 38 | 7.96 | *Dormir* 'sleep' | 30 | 6 | 7.49 |
| 7 | *Caer* 'fall' | 3 | 52 | 7.69 | *Saber* 'know' | 25 | 5 | 6.32 |
| 8 | *Coger* 'catch' | 0 | 33 | 6.91 | Tratar 'try' | 14 | 1 | 4.88 |
| 9 | *Encontrar* 'find' | 44 | 157 | 6.37 | *Deber* 'must' | 17 | 3 | 4.65 |
| 10 | *Escapar* 'escape' | 1 | 34 | 5.97 | *Necesitar* 'need' | 10 | 0 | 4.19 |

Table 6: DCA Results for CEDEL2-L1

| | | Preterit | | | | Imperfect | | |
|---|---|---|---|---|---|---|---|---|
| Verb rank | Verb | Imperfect token frequency | Preterit token frequency | Collostruction strength | Verb | Imperfect token frequency | Preterit token frequency | Collostruction strength |
| 1 | *Ir* 'go' | 25 | 467 | 51.64 | *Estar* 'be' | 287 | 87 | 77.52 |
| 2 | *Ver* 'see' | 2 | 144 | 21.16 | *Haber* 'have' | 105 | 11 | 40.38 |
| 3 | *Encontrar* 'find' | 5 | 75 | 7.53 | *Ser* 'be' | 486 | 582 | 26.72 |
| 4 | *Salir* 'Go out' | 2 | 44 | 5.24 | *Querer* 'want' | 44 | 25 | 7.48 |
| 5 | *Decir* 'say/tell' | 3 | 44 | 4.52 | *Tener* 'have' | 125 | 143 | 7.04 |
| 6 | *Aprender* 'learn' | 0 | 26 | 4.31 | *Gustar* 'like' | 24 | 11 | 5.13 |
| 7 | *Caer* 'fall' | 0 | 23 | 3.81 | *Encantar* 'love' | 14 | 3 | 4.63 |
| 8 | *Dar* 'give' | 4 | 39 | 3.27 | *Saber* 'know' | 14 | 7 | 3 |
| 9 | *Ganar* 'win' | 1 | 25 | 3.19 | *Poder* 'can' | 31 | 35 | 2.2 |
| 10 | *Hacer* 'do' | 24 | 93 | 2.33 | *Sentir* 'feel' | 9 | 5 | 1.92 |

Table 7: DCA results for CEDEL2-L2

## 5. DISCUSSION

The longitudinal and cross-sectional data in the study demonstrate that learners generally produce the preterit more frequently than the imperfect. In the study, learners show an earlier increase in usage, which is characteristic of the emergence of a tense-aspect form, for the preterit rather than for the imperfect. The longitudinal data from COWS-L2H has also exemplified the influence of textual genre on preterit-imperfect production. Narrative essays, which students wrote at the end of each academic term, consistently elicit more preterit and imperfect tokens than the descriptive essays written at the midpoint of the term. This is in line with prior findings on the effect of genre on tense-aspect production (Bardovi-Harlig and Comajoan-Colomé 2020). Future studies would benefit from keeping textual genre constant at all stages in the longitudinal study. Nonetheless, the data from the end of each term in the longitudinal study and the data of mixed textual genre in the cross-sectional study clearly show that the emergence of the preterit precedes that of the imperfect.

Concerning the three research questions in the study, the first of them has tested the LAH and DPTH and the result confirms the predictions of the LAH and DPTH, namely, that the preterit generally emerges before the imperfect in students' writing in the COWS-L2H longitudinal study. The DCA also reveals that certain verbs are distinctly associated with the preterit and the imperfect in both corpora. Based on this finding, it seems clear that lexical aspect plays a role in the distributional biases. The verbs retrieved in the study which are highly distinctive of the preterit, such as *encontrar* 'find', *salir* 'go out', and *caer* 'fall', are primarily telic verbs. The verbs that are highly distinctive of the imperfect, such as *haber* 'have', *estar* 'be', and *tener* 'have', are primarily stative verbs. The contingent frequency analysis therefore provides indirect evidence of the role of prototypicality, as predicted by the LAH, in learners' use of the preterit and the imperfect.

The results are in line with Daidone's (2019) and Salaberry's (2002) conclusions in that the sequential instruction of the preterit and imperfect, as well as cross-linguistic influence from English, may contribute to an early preference for the preterit. As attested in the text samples, the longitudinal participants greatly increase their production of preterit and imperfect forms during the period directly following the instruction of each construction. The temporal alignment between the increase in the use

of the preterit and the introduction of the constructions in the curriculum highlights the relevance of explicit instruction in the acquisition of these constructions.

The second and third research questions have tested the DBH. In line with prior studies on the distribution of past tense-aspect forms in L1 corpora (Tracy-Ventura and Cuesta Medina 2018), the frequency of preterit and imperfect verbs in the L1 corpus follows a Zipfian distribution. The L2 data seems to fit the Zipfian distribution more closely than the L1 data; the most frequent verbs in each construction in the L2 data constitute a larger portion of the total preterit and imperfect verbs produced. Learners' limited lexicon is likely responsible for this skewed distribution. While learners may use highly frequent verbs like *ser* 'be' at the same, or greater, frequency relative to L1 speakers, they do not use less frequent verbs as often as L1 speakers. Overall, the distributional analysis proves that both L1 and L2 speakers show distributional biases in their production of the preterit and the imperfect.

Research question 2 has evaluated L1 token frequency as a factor in L2 preterit-imperfect production. The strong main effects in both the preterit ($t = 32.36$) and the imperfect ($t = 17.14$) provide evidence that learners are clearly attuned to token frequency in L1 production. Learners' exposure to L1 speakers using certain verbs in the preterit and imperfect plays a role in the relative frequency with which they mark certain verbs in the preterit and imperfect in their own writing. In our study, L1 token frequency has been a stronger predictor of L2 token frequency in the preterit ($R^2 = 0.78$) than the imperfect ($R^2 = 0.70$), which is likely due to the greater irregularity of preterit morphology. As there are more morphologically irregular forms in the preterit, learners are likely to acquire the preterit in a more item-based manner than the imperfect (MacWhinney 2016). This may result in learners more closely mirroring L1 Spanish frequency in the preterit than in the imperfect. While the association between L1 and L2 frequency demonstrates that L1 token frequency is a pivotal factor in shaping L2 production, explaining 70–78 percent of the variance in L2 preterit-imperfect token frequency, other factors likely account for the remaining variance. These factors may include distinctiveness and prototypicality as well as form regularity, saliency, and explicit instruction (Salaberry and Ayoun 2005).

Research question 3 has evaluated L1 contingent frequency (distinctiveness) as a factor in L2 preterit-imperfect production. In the study, several verbs have been distinctly associated with the preterit or the imperfect in both corpora, which provides

further evidence for the existence of a distributional bias. Only 40–50 percent of the ten most distinctive verbs were the same in the L1 and L2 corpora. Many of these verbs do not have a significant association with the preterit or the imperfect in the other corpus. For example, *esperar* 'wait', *dormir* 'sleep', *deber* 'must'*,* and *necesitar* 'need' were distinctly associated with the imperfect in the L1 but not in the L2 corpus. Learners' limited lexicon and their uncertainty about the conditions for the use of the preterit or imperfect may explain this difference. While the L1 group produces *esperar* 'wait' 43 times in the preterit or imperfect, the L2 group produces the verb only five times. The fact that the L2 learners produce the verb so few times in the past may indicate that the learners lack familiarity with the verb, its contexts of use in the past, and/or its grammatical marking in the past. It seems clear that both L1 and L2 Spanish speakers are attentive to contingent frequency in their use of the preterit and imperfect. The differences between the groups in their distinctive associations reflect additional factors in acquisition, including vocabulary development.

In sum, all three hypotheses (LAH, DBH, and DPTH) of past tense-aspect acquisition accurately predict facets of the L2 Spanish learners' development and production of the preterit and imperfect. The LAH and DPTH highlight the earlier emergence of the preterit, which may be caused by the order of instruction of the structures and cross-linguistic influence from English, as well as by prototypical lexical-grammatical aspect associations. The DBH explains the role of learners' mirroring of properties of L1 Spanish production, including the distributional biases that result in certain verbs having stronger contingent frequencies with a past tense-aspect form than others. The contingent frequencies in the L1 and L2 corpora show differences in part because learners' lexicons are limited when compared to L1 Spanish writers. As learners acquire more lexical items, it is anticipated that their frequency distributions of preterit-imperfect marking will further approach L1 writers' distributions. Given that this is the first study to empirically test the DBH for L2 Spanish, the strength of L1 frequency as a predictor of L2 preterit-imperfect production demonstrates a need for greater consideration of the DBH in explanations of past tense-aspect learning.

## 6. SUMMARY AND CONCLUSIONS

In research on tense-aspect acquisition, there is a need for studies in a wider variety of typologically different languages that consider factors beyond lexical aspect, such as

learners' emulation of distributional properties of L1 production, in order to achieve a more conclusive picture on the acquisition of these constructions. The present study is a first step in that direction and fills a gap in the literature by evaluating the predictions of three hypotheses of tense-aspect acquisition for L2 Spanish learning of the preterit and the imperfect. The predictions of the DPTH and LAH about learners' early preference for the preterit generalized to longitudinal and cross-sectional learner data in two Spanish learner corpora. In accordance with the DBH, the token frequency in the preterit and the imperfect followed a Zipfian distribution in both groups, indicating that both use certain verbs with a bias toward the preterit or the imperfect. In our data, learners mirror the token and contingent frequency of verbs in the L1 corpus, providing evidence that learning based on the properties of frequency and distinctiveness in L1 Spanish production occurs for the L2 Spanish acquisition of the preterit and the imperfect. This finding proves that Wulff *et al.*'s (2009) conclusion for L2 English oral production generalizes to L2 Spanish writing. Our study is the first to establish that L1 Spanish token and contingent frequency are strong predictors of L2 Spanish preterit-imperfect marking. Future research would benefit from examining accuracy of production and learners' mirroring of other distributional properties in L1 production, including regularity and phonological saliency.

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