**Achieving a Unified Theory of Child Heritage Language Acquisition: Evidence from Spanish Case and Mood**

**1 Introduction**

The past two decades have yielded considerable advances in generative approaches to heritage language (HL) acquisition. HLs have been of interest to the generative research paradigm because they represent a unique context of first language acquisition under reduced input and crosslinguistic influence from a more dominant language. A key question in research has related to determining whether the morphosyntactic patterns that heritage speakers (HSs) exhibit in their grammatical knowledge are attributable to differences in the rate and/or route of acquisition (e.g., Montrul 2008; 2013) or due to language loss (e.g., Hicks & Domínguez 2020; Polinsky 2011; Putnam & Sánchez 2013). How HLs develop or change over the childhood years is an open empirical question of high importance to theories of acquisition: Montrul (2018: 534) argues that school-aged bilingual children are the “missing link” in HL acquisition research, as they hold key information in distinguishing between differential and/or protracted processes of acquisition versus attrition. Theories of HL acquisition and maintenance must be able to account for the path of typical development in HSs from childhood to adulthood, so considering this age range is vital for achieving a more complete picture of development.

On one hand, differential acquisition (e.g., Montrul 2008, 2013) emphasizes that HSs present greater heterogeneity in the outcomes of language acquisition than other groups of bilinguals because of their early age of exposure to the majority language and sudden decrease in HL input when starting school. On the other hand, attrition highlights decreases in linguistic knowledge over HSs’ lifespan (e.g., Hicks & Domínguez 2020; Polinsky 2011). Differential acquisition and attrition represent two ends of a spectrum that describe differences that emerge when comparing HSs to other populations. While these accounts of acquisition describe opposite phenomena, they both refer to the route of HL acquisition and maintenance. In contrast to these two approaches, other studies have shown that HSs’ *rate* of morphosyntactic development differs from monolinguals (e.g., Cuza & Miller 2015; Daskalaki et al. 2023; Flores et al. 2017). Such an approach has come to be known as *protracted development*, as HSs’ mastery of morphosyntax continues in an upward trend well past periods in which monolinguals master the same structure. Common to all three theories presented so far is the comparison of HSs to other groups of speakers of the same language, thus emphasizing between-groups differences.

On the other hand, in recent years, the field has experienced a “paradigm shift” (Giancaspro et al. 2022: 484), through which there has been emphasis on the variables that can characterize the heterogeneity in HL acquisition by capturing differences at the individual and within-speaker levels. Putnam and Sánchez (2013) advance an approach to HL development and maintenance that follows Lardiere’s (e.g. 2009) seminal work in generative second language acquisition that builds on a feature-oriented approach. Putnam et al. (2019: 19) define these features as “Indices on lexical items and larger syntactic objects that allow generated structures to be interpreted at external interfaces.” Putnam and Sánchez (2013) describe that HSs experience a reassembly of features of their HL, as well as their mapping onto morphology, after periods of decreased input and use. Putnam and Sánchez (2013) argue that patterns of exposure to and use of the HL modulate individual HSs’ processing of input for intake that is necessary to conserve the featural inventory of that language.

Following this approach, speakers with low levels of processing and activation of linguistic features in the memory will experience greater crosslinguistic influence from the more dominant language, particularly in language production. Receptive knowledge may remain largely or wholly unaffected, such that crosslinguistic influence primarily results in difficulty mapping syntactic features onto morphology in production, akin to the well-researched mapping challenge for second language learners (e.g., Lardiere 2009). In this way, Putnam and Sánchez’s (2013) framework makes two novel contributions to HL acquisition theorizing: a focus on individual-level variability modulated by quantity of input and a focus on within-speaker variability separating syntax and morphology, which results in asymmetries between production and receptive knowledge. This framework provides a highly specific account of language maintenance and loss, although it does not explicitly reference the initial acquisition of these HL features by bilingual children. Consequently, the major advances that this theory makes do not yet describe how HSs engage in the initial acquisitional process of their HL that may differ both in the rate and route of acquisition when compared to other populations.

**Figure 1.** Levels of variability in HL acquisition theories and research.

**Within-speaker**

**Individual**

**Between-group**

Therefore, the existing theories concerning HL acquisition, maintenance, and/or loss concentrate on variability at different levels, as summarized in Figure 1: between-groups (comparisons of HSs to other groups of speakers of the same language), individual (comparisons of HSs to one another), and within-speaker (factors that can account for gradience in the use of a particular linguistic structure). These levels of variability each emphasize different degrees of granularity with which to represent the processes of HL acquisition in generative accounts. The lower levels of variability involve broader-level differences, while the highest level involves fine-grained analyses, all of which are critical for accounting for the HL acquisition process. Differential acquisition and protracted development largely emphasize between-groups differences, while Putnam and Sánchez (2013) emphasize differences between and within HSs. In this way, the theoretical models that make predictions at different levels may be largely complementary, and multiple frameworks are likely relevant (or even necessary) for accounting for the results of studies that address multiple levels.

Both the differential acquisition and feature reassembly approaches mention that education influences HL acquisition. From the perspective of input quantity, the start of education in the majority language usually represents a drastic reduction in input in the HL and, for many HSs, the onset of acquisition of the majority language. Bilingual education, however, provides more HL exposure during this developmental stage. Furthermore, bilingual education may provide HSs with qualitatively different input, including academic registers, that could impact HL acquisition. Nevertheless, this variable has not yet received sufficient attention in research on bilingual children, as only a small handful of studies have addressed this variable.

Few studies have considered the role of education in HL acquisition research. Firstly, in research with German-dominant bilinguals, Kupisch and Rothman (2018) documented that the acquisition of multiple structures in French as a HL was attributable to participants’ previous participation in a French education program when compared to Italian HSs without bilingual education. Moreover, Bayram et al. (2017) found that child HSs of Turkish with higher HL literacy exposure produced a greater amount of passive morphology. Most recently, Torregrossa et al. (2023) found that patterns of HL education influenced the production of multiple structures in child HSs of Portuguese. Those structures that were mastered late by monolingual children and that involved the semantic or pragmatic interfaces were most influenced by formal instruction (Rinke et al. 2022). Consequently, the very limited previous research evaluating the role of HL education demonstrates that it is a key variable that merits further attention in research that can capture individual-level differences in development.

To date, however, very limited work has involved all three levels of variability as well as the role of bilingual education in child HL acquisition. The present proposal revisits recently published data from Spanish HSs’ acquisition of mood and semantic case (AUTHOR, 1, 2, 3, 4). The following section provides an overview of both structures, which contextualizes the present article’s argument that components of each of the HL acquisition theories surveyed herein are essential for advancing a holistic and “unified” generative account for child HL development.

**2 Mood and Case in Heritage Spanish**

The Spanish subjunctive mood is acquired during the preschool years even by monolinguals, making it an excellent structure with which to test educational effects in HL acquisition. In contrast, DOM is an instance of semantic case. It is a structure situated at the syntax-semantics interface, which creates an opportunity for testing Torregrossa et al.’s (2023) claim regarding the role of bilingual education in mastering interface structures.

*2.1 Subjunctive Mood*

Spanish features three moods: the indicative, subjunctive, and imperative (Seco 1990). The subjunctive mood is a set of verbal inflections that occurs in only approximately 7% of finite verbs in Spanish (Biber et al. 2007). Fábregas (2014) argues that the subjunctive comprises a single set of morphophonological spell-outs for multiple syntactic structures. In volitional clauses, the subjunctive is lexically selected by a matrix phrase that requires an uninterpretable unreal worlds feature, selected and checked in the heads of Force and Fin in a subordinate clause with a distinct subject (Kempchinsky 2009). Previous research has demonstrated that monolingual children reach production rates of the volitional subjunctive upwards of 90% between ages 4;0 and 5;0, after the onset of preschool (Blake 1983; Dracos et al. 2019).

These factors make the subjunctive an ideal structure to test in contexts of reduced input for multiple reasons. Firstly, the subjunctive is infrequent even in monolingual acquisitional settings that do not imply a divided input space as in the case of HL acquisition. Secondly, and relatedly, although the volitional subjunctive represents an instance of core syntactic development, it is mastered later than several other inflectional structures. Since this structure reaches ceiling in monolinguals during the preschool years, its acquisition by HSs may be particularly impacted by bilingual education. Finally, while English does have a subjunctive mood, it has become largely redundant with the indicative (Iverson et al. 2008) and is not used in volitional clauses. Consequently, it is highly plausible that bilinguals with high exposure to English could obviate the use of subjunctive in volitional clauses.

Previous research on the subjunctive with children and adults has concentrated on all three of the levels of HL variability described previously, but not in a single study nor with multiple age groups. HSs, particularly those with lower proficiency levels (Montrul 2009; Giancaspro 2019), differ at the group level from monolingual or Spanish-dominant bilingual speakers. At the individual level, proficiency and patterns of exposure have been found to account for differences in child (Dracos & Requena 2022) and adult HSs’ (Perez-Cortes 2016) subjunctive mood knowledge. At the within-speaker level, research has shown that HSs recognize the subjunctive more frequently than they produce it (Giancaspro 2020; Perez-Cortes 2016). Moreover, HSs are more likely to produce subjunctive forms with verbs that are more frequent in the input (Giancaspro 2020) and morphologically irregular (Giancaspro et al. 2022; AUTHOR). With bilingual children ages 5-15, Dracos and Requena (2022) do not report age effects in the child HL acquisition of the subjunctive, but these researchers stated that their sample had few adolescent children. On the other hand, Castilla-Earls et al. (2018) found that older elementary school children produced more subjunctive mood than younger participants, and Castilla-Earls et al. (2013) report longitudinal growth in child HSs’ command of volitional subjunctive. Therefore, age appears to modulate development over the school period. Across these studies, it is evident that there is variability in HSs’ command of subjunctive mood at all three levels (between-groups, individual-level, and within-speaker), yet a single study with children and adults would be useful to support these findings and evaluate the role of age in mood development in late childhood.

*2.2 Differential Object Marking*

Turning to DOM, Spanish is one of approximately 300 languages that features a system through which certain direct objects are marked with case morphology depending on their semantic features (Bossong 1991). There are many nuanced semantic features of DOM in Spanish, but most prominently, the animacy and specificity of direct objects determine the use of the preposition *a* that is also used to mark dative case.[[1]](#footnote-1) In this way, Spanish DOM comprises an example of inherent case, through which direct objects that are [+animate] and [+specific] are marked with the dative preposition *a*. Torrego (1998) argues that DOM is realized through an interpretable D-feature in *spec,vP*, and direct objects that are animate and specific raise from VP-internal to check this feature. This disambiguates subjects from objects, which in turn facilitates freer word order in Spanish than languages such as English without a semantic case system.

DOM is mastered earlier than subjunctive, by approximately age 3;0 (Rodríguez Mondoñedo 2008), yet there are multiple reasons that it is ideal for researching the child HL acquisition process. Firstly, unlike in the case of the volitional subjunctive, children must develop both syntactic and semantic features to use DOM, situating this structure at the syntax-semantics interface, which Torregrossa et al. (2023) argue is most impacted by bilingual education. Secondly, the *a* preposition does not have high perceptual salience in Spanish, which may cause it to be less detectable in the input, as has been argued when comparing HSs of Spanish to those of other DOM languages (Montrul et al. 2015). Finally, English does not have a DOM system, such that Spanish HSs with low levels of HL use may reassemble the D-feature from their grammars in accordance with Putnam and Sánchez’s (2013) predictions.

Previous research on the acquisition of DOM in Spanish as a HL has exhibited that proficiency level (Arechabaleta-Regulez & Montrul 2023; Montrul & Bowles 2009; Montrul & Sánchez-Walker 2013) and patterns of HL exposure influence individual HSs’ acquisition of DOM. Additionally, Hur (2020) found that the lexical frequency of verbs affected HSs’ production of DOM, and Callen (2024) reported that the frequency with which individual verbs required animate direct objects modulated DOM production rates. These studies account for within-speaker variability. The role of age has been difficult to interpret in the acquisition of DOM: Montrul and Sánchez-Walker (2013) found that adults produced more instances of DOM than children between ages 6;0-17;11, but Cuza et al. (2019) and Guijarro-Fuentes et al. (2017) did not find age effects in their studies with children only.

**3 The Study**

Consequently, both the subjunctive and DOM are ideal areas of the Spanish inflectional system with which to study HL acquisition and its progression from childhood to adulthood. While the two structures differ in their timing of acquisition and degree of interface between syntax and semantics, both are prone to crosslinguistic influence from English. Furthermore, both structures – as well as their comparison – are useful for understanding the role of education in HL acquisition. Therefore, the present study revisits findings from recent studies addressing development of subjunctive mood (AUTHOR) and DOM (AUTHOR) that evaluate adolescent and adult HSs’ mastery of this structure through between-group, individual, and within-group differences. Data from both structures are analyzed together here for a more holistic discussion of results across previous studies and their implications for setting the agenda for a new theory of HL acquisition. Five research questions were addressed:

1. At the *between-groups* level, are there differences between Spanish HSs and Spanish-dominant bilingual adults regarding productive and receptive knowledge of subjunctive and DOM?

In line with extensive previous research, it was anticipated that HSs will show greater heterogeneity in production and selection rates of both structures than Spanish-dominant bilingual adults, who will produce and select both structures at ceiling.

1. At the *individual* level, does age facilitate the HL acquisition of subjunctive and DOM in late childhood through adulthood?

Previous research has documented the protracted development of morphosyntax in multiple HLs (e.g., Cuza & Miller 2015; Daskalaki et al. 2023; Flores et al. 2017). Therefore, it was hypothesized that older HSs (adults) would produce and select more subjunctive and DOM than adolescent peers, who would do so more than pre-adolescent peers.

1. At the *individual* level, do bilingual education and frequency of HL use influence the production and selection of subjunctive and DOM?

In line with Putnam and Sánchez (2013), it was predicted that both bilingual education and patterns of use of Spanish across contexts would favor HSs’ production and selection of both the subjunctive and DOM. Following Torregrossa et al. (2023), it was anticipated that HSs with bilingual education have an advantage in the production and selection of both structures.

1. At the *within-speakers* level, are there differences between HSs’ productive and receptive knowledge of subjunctive and DOM?

Following Putnam and Sánchez’s (2013) predictions, it was anticipated that HSs would select both structures more frequently on a receptive task than they would produce them, arguing for a dissociation between syntactic representation and morphology.

1. At the *within-speakers* level, does education impact HSs’ command of core syntactic and interface structures equally?

In line with Torregrossa et al. (2023) and Rinke et al. (2022), it was predicted that the effect of bilingual education would be more noticeable for DOM, an interface structure, than the volitional subjunctive, a core syntactic structure, as measured using productive and receptive tasks.

*3.1 Participants*

The data presented source from a project evaluating the production and receptive knowledge of 128 Spanish-English bilinguals: 18 Spanish-dominant bilingual adults (SDBA), 34 HS adults (HSA), 34 child HSs in seventh and eighth grade (ages 12-14; HS7/8), and 41 child HSs in fifth grade (ages 10-11; HS5). The SDBA group was comprised of adult participants who were raised and educated in a total of 13 Spanish-speaking regions but who were residing in the United States at the time of testing. These participants represent the bilingual input to which the HSs, who studied and lived in the same communities as those as the SDBA, were exposed. Within the HSA group, there was also extensive dialectal diversity, but child participants were primarily speakers of Mexican varieties. A more principled account of speaker groups is provided in AUTHOR.

57 of the 75 child HSs were also evaluated depending on their attendance at either a monolingual school with instruction in English only or a bilingual school with 50% of instruction in Spanish during the first six years (through fifth grade). The two schools were matched for the percentage of students receiving free and reduced-price lunch and of Spanish-speaking families, as detailed at length in AUTHOR. 18 children were excluded from this analysis because they had joined the bilingual school within three years of the study, and as such would have received less than half of their education in the immersion setting.[[2]](#footnote-2) Table 1 summarizes the breakdown of child HS participants according to age group and method of education.

|  |  |  |  |
| --- | --- | --- | --- |
| **School** | **5th grade** | **7th/8th grade** | **Total by school** |
| Bilingual | 19 | 13 | **32** |
| Monolingual | 14 | 11 | **25** |
| **Total by age** | **33** | **24** | **57** |

**Table 1.** Summary of child HSs by education and age group.

*3.2 Methods*

Participants carried out three computer-based tasks in Spanish. The child HSs carried out the experiment on their school laptops with the researcher present, and adults conducted the study asynchronously online. The first task involved participants self-reporting the frequency in which they used Spanish across six contexts on 1-5 Likert scales: with parents, with family members, at school, with friends, in public, and while watching television (AUTHOR: 11). This task facilitated a 30-point language use score for each participant with which to address their use of Spanish.

The second task elicited the production of volitional subjunctive and DOM following a sentence completion format. Participants read a preamble about a mother and her three children traveling to sleepaway camp. Eight sentences elicited the production of subjunctive mood following the phrase *la mamá quiere que las hermanas…* (‘the mother wants for the sisters to…’), and eight elicited the indicative mood following the phrase *la mamá cree que las hermanas…* (‘the mother believes that the sisters…’). 10 of these 16 sentences elicited DOM (including all eight sentences that elicited the subjunctive and two that elicited the indicative). All sentences eliciting DOM had *Juanito* as their direct object, therefore maximizing the animacy and specificity of the referent through a proper noun. Participants needed to complete each sentence orally using any form of the verb whose infinitive appeared on the screen, as well as any words that were missing. Example sentences of the stimuli targeting subjunctive and DOM can be found in AUTHOR.

The final task involved distinguishing between a grammatical and an ungrammatical sentence. This selection task required that participants again review a preamble, which ended with a question. Participants needed to select which of two written sentences that answered the question sounded best. For mood, the two sentences differed only in the presence of subjunctive and indicative. For case, sentences differed in the presence or absence of DOM between the phrase “tienen que + infinitive” (‘*they have to*’ + infinitive) and the proper noun *Juanito*.

Concerted effort was made to make the two tasks maximally comparable, such that any differences reported between productive and receptive knowledge were not due to conspiring factors such as verb type or token frequency. The same disyllabic, transitive subordinate verbs with canonical –ar inflections, the most frequent in Spanish, were used on each task. Therefore, differences between the production and selection tasks could not be attributable to type of verbal inflection, vocabulary frequency, or syllable count.

**4 Results**

All responses were awarded a score of 1 if the subjunctive and/or DOM were produced or 0 if any alternative structure was produced. In instances where participants did not respond or produced sentences that did not follow the prompt, responses were left uncoded. From this coding procedure, item-level data were available for the multivariate analyses. Descriptive results are based on ratios where the number of expected responses was divided by the total number of responses provided by each participant. All analyses took place using RStudio (R Core Team 2022) with the *emmeans* (Lenth 2021), *lme4* (Bates et al. 2015), *lmerTest* (Kuznetsova et al. 2017), and *tidyverse* (Wickham et al. 2019) packages. Descriptive findings of percentages of production and selection of both structures by age group (HS5, HS7/8, HSA, and SDBA) are summarized in Figure 2 and Table 2. The role of instruction on children’s development of subjunctive and DOM is summarized in Figure 3 and Table 3. The role of Spanish use on individual differences in the production and selection of both structures is summarized in Figure 4.

Beyond these findings, the present project integrates multivariate analyses incorporating both the subjunctive and DOM in a single model; however, readers interested in subjunctive-specific results are referred to AUTHOR concerning its acquisition from childhood to adulthood and AUTHOR concerning its acquisition in monolingually versus bilingually educated children. Relatedly, statistics regarding the acquisition of DOM across child and adult HSs are reported in AUTHOR, with data concerning the role of HL education in DOM acquisition in AUTHOR.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | **Subjunctive** | | | | **DOM** | | | |
| **Production** | | **Selection** | | **Production** | | **Selection** | |
| **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| HS5 | 37.8% | 48.6% | 56.0% | 49.8% | 34.7% | 48.7% | 70.3% | 45.8% |
| HS7/8 | 58.8% | 49.3% | 76.5% | 42.5% | 43.6% | 49.7% | 83.8% | 36.9% |
| HSA | 60.2% | 49.0% | 73.5% | 44.2% | 55.5% | 49.8% | 88.2% | 32.7% |
| SDBA | 100.0% | 0.0% | 97.9% | 1.4% | 98.1% | 13.7% | 100.0% | 0.0% |

**Table 2.** Rates of subjunctive and DOM production and selection by age group.



**Figure 2.** Percentages of production and selection of subjunctive DOM by group of child HS.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group** | **Subjunctive** | | | | **DOM** | | | |
| **Production** | | **Selection** | | **Production** | | **Selection** | |
| **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| MLS-5 | 39.1% | 48.9% | 56.8% | 49.7% | 30.7% | 46.3% | 69.9% | 46.0% |
| DLI-5 | 36.0% | 48.2% | 55.3% | 49.9% | 39.5% | 49.0% | 73.7% | 45.2% |
| MLS-7/8 | 60.6% | 49.0% | 76.1% | 42.8% | 34.5% | 47.7% | 81.5% | 38.9% |
| DLI-7/8 | 55.3% | 50.0% | 77.3% | 42.1% | 60.6% | 49.1% | 88.6% | 31.9% |

**Table 3.** Rates of subjunctive and DOM production and selection in children by age and education.



**Figure 3.** Percentages of production and selection of subjunctive DOM by age and education.



**Figure 4.** Production and selection of subjunctive and DOM by frequency of Spanish use.

*4.1 Multivariate Analyses*

The present project incorporates two generalized linear mixed effects binomial logistic regression models including both the subjunctive and DOM data. The binary independent variable for both models was the expected use of subjunctive/DOM, and participant and item were included as random effects. The first model incorporated all participants’ data and analyzed group (SDBA as reference level, HSA, HS7/8, HS5), structure (subjunctive as reference level, DOM), task (production as reference level, selection), frequency of use of Spanish, and the task by frequency of use interaction. The interaction was included due to its significance in AUTHOR accounting for variability in the production, but not selection, of DOM.

Results revealed main effects for the HSA group (*β* = –4.54, SE = 0.68, *p* < .001), the HS7/8 group (*β* = –4.84, SE = 0.68, *p* < .001), the HS5 group (*β* = –5.80, SE = 0.67, *p* < .001), DOM (*β* = –0.29, SE = 0.12, *p* = .017), the selection task (*β* = 1.62, SE = 0.27, *p* < .001), and frequency of use (*β* = 0.36, SE = 0.15, *p* = .013). These results suggest that all groups of HSs use fewer instances of subjunctive and DOM than Spanish-dominant adults at the between-groups level, that frequency of use influences individual-level differences, and that HSs select these structures more than they produce them at the within-speakers level. Task effects were not modulated by frequency of exposure (*β* = –0.13, SE = 0.10, *p* = .165).

To determine if the differences between age groups of HSs reached significance, Tukey post-hoc pairwise comparisons were carried out. Beyond the previously described differences with the SDBA group, results revealed statistically significant differences at the *p* > .05 level between the HSA and HS5 groups (*β* = 1.29, SE = 0.37, *p* = .003) and between the HS7/8 and HS5 groups (*β* = 0.97, SE = 0.36, *p* = .037). However, the difference between the HSA and HS7/8 groups was not significant at the *p* < .05 level (*β* = 0.30, SE = 0.39, *p* = .868).

The second model included the data from the subgroup of 57 bilingual children. For this analysis, education (monolingual school as reference level versus bilingual school), task (production as reference level versus selection), and structure (subjunctive as reference level versus DOM), as well as all interactions between them, were categorical predictors. The model reported effects for the selection task (*β* = 0.83, SE = 0.32, *p* = 0.10), DOM (*β* = –1.61, SE = 0.25, *p* < .001), the bilingual education by DOM two-way interaction (*β* = 1.89, SE = 0.34, *p* < .001), and the selection by DOM two-way interaction (*β* = 1.89, SE = 0.42, *p* < .001). The role of bilingual education was not significant at the *p* < .05 level (*β* = –0.25, SE = 0.45, *p* = .572).

**5 Discussion**

The present project expands upon findings in AUTHOR by comparing data from both the subjunctive mood and DOM in Spanish HSs. Five questions are addressed, and findings underscore the need to integrate components from each of the theories of HL acquisition reviewed to develop a complete panorama of the course of child HL development. By evaluating all three levels of variability in HL acquisition, data from the present project indicate that an account of HL acquisition in childhood must consider some tenets of each of the existing theories.

The first research question addressed *between-groups* variability, specifically whether there are differences between Spanish HSs and the SDBA group regarding their command of subjunctive and DOM. In alignment with the hypothesis as well as most generative research on HL acquisition, group-level differences were revealed, suggesting that HSs’ heterogeneous acquisitional outcomes are more varied than those of the SDBA, who represent a key source of their input. However, this finding does not represent the individual-level data that reveal that approximately 25% of HSs in AUTHOR performed within the range of the SDBAs in the production and selection of each structure. These findings support differential acquisition as a viable account for group-level differences, rather than a process of language loss or restructuring over the childhood years. However, they also illustrate that these differences are not sufficient for fully understanding the heterogeneity of HSs’ results.

The second research question addressed *individual* variability, evaluating the role of age in the acquisition of subjunctive and DOM from childhood through adulthood. In partial alignment with the hypothesis, the HSA and HS7/8 had similar production and selection tendencies that exceeded those of the HS5 group. As a result, the acquisition of HL inflection continues into early adolescence, at which point it appears to converge on the adult HS system by this age range. Data from AUTHOR suggest that, in the specific instance of DOM, the developmental process extends into the early adult years. These findings support previous accounts of protracted development, and imply that the rate of HL development extends well beyond the milestones of typically developing monolingual children. When considering the first and second research questions together, it is evident that bilingual children differ in both their *rate* (i.e., protracted development) and *route* (i.e., differential acquisition) of development. These findings argue against a group-level trend of HL attrition during the late childhood period, yet there are additional opportunities for considering the factors that influence individual and within-speaker differences. It should be noted, however, that protracted development and attrition are also individual-level phenomena, as Castilla-Earls et al. (2023: 15) demonstrate in longitudinal development of multiple structures.

To this end, the third research question investigated whether frequency of HL use and bilingual education could influence the production and selection of subjunctive and DOM at the individual level. In the overall data presented here, use of Spanish modulated production and selection, which supports Putnam and Sánchez’s (2013) feature reassembly approach as well as the hypothesis here. Contrary to the predicted role of bilingual education, however, there is no effect of immersion schooling that emerges as significant at the *p* > .05 level on the aggregated dataset combining both mood and case data. In line with AUTHOR, which evaluates children’s mastery of DOM only, the present findings reported an interaction between immersion education and DOM. AUTHOR reported that the oldest children who had previously attended the immersion program had an advantage in the production and selection of DOM, implying a “lagged” bilingual education effect. These findings, together with the absence of an overall effect in the present study, do not line up with the anticipated quantitative and qualitative input advantage that has been presupposed in previous literature (e.g., Kupisch & Rothman 2018).[[3]](#footnote-3) These findings *need not* be considered a counterargument to the effectiveness of immersion education; the myriad linguistic and extralinguistic benefits of this method of schooling are synthesized in AUTHOR. Rather, they present a call to action for establishing an interdisciplinary research agenda that would involve both acquisitionists and pedagogues in determining the best strategies for facilitating HL morphosyntactic development in instructional contexts.

The fourth research question addressed whether at the *within-speakers* level, there are differences between HSs’ productive and receptive knowledge of subjunctive and DOM. The data in AUTHOR and the present study indicate stronger receptive knowledge than production, which supports Putnam and Sánchez’s (2013) approach to HL acquisition and maintenance. That HSs’ receptive knowledge appears to exhibit less morphological optionality can be interpreted as evidence of a dissociation between syntactic representation at the underlying receptive level and morphological realization in production. It should also be noted that there was an interaction between DOM and the selection task, arguing that the dissociation between syntax and morphology is greater for this structure than the volitional subjunctive. A possible explanation for this finding is that DOM is situated at the interface between syntax and semantics, and the integration of both syntactic and semantic information may be harder to map onto morphology in real-time production (see Chamorro and Sorace 2020 or Montrul 2011 concerning the role of interfaces in bilingual acquisition and attrition). The volitional subjunctive, on the other hand, is an example of core syntax that does not have a semantic component, which might involve a less-complex mapping process of representation onto morphology.

Finally, the fifth research question, also situated at the *within-speakers* level, concerned whether the impact of bilingual education affected HSs’ acquisition of core syntactic and interface structures equally. The interaction between DOM and immersion, as well as a comparison of the results of AUTHOR (1, 2), suggests that education influences semantically-determined case more than core syntactic instances of subjunctive mood. This finding lends support to Torregrossa et al.’s (2023) and Rinke et al.’s (2022) claim that interface structures are among those that are most influenced by HL education. It is useful to recognize that the present study only incorporated two structures – one at the syntax-semantics interface and one with core syntactic properties – and future work would benefit from a broader array of linguistic forms to support this claim. While a logical implication is that HL education programs are particularly important for the acquisition and maintenance of structures that involve more than core syntactic properties, it should be noted that all groups showed considerable optionality with the subjunctive regardless of educational experience. Therefore, core syntactic development may not come “for free,” even if it is less complex than mastering interface structures, and the bilingual education setting represents a promising context to facilitate development through instruction and literacy exposure.

By evaluating HL acquisition and development at all three levels of variability, it becomes evident that the present data support some components of three of the generative accounts of HL acquisition surveyed above. That HSs differ at the group level from the SDBA group aligns with differential acquisition, yet not all bilinguals exhibit differences from an adult baseline from whom they receive input (see AUTHOR). Therefore, it is crucial that work evaluating group-level differences also consider the heterogeneity across and within HSs. That HSs continue to master both structures into adolescence provides evidence of protracted development. Finally, the between-speaker and within-speaker results support Putnam and Sánchez’s (2013) approach, yet the effect of age is not in alignment with the feature reassembly hypothesis predicting increasing crosslinguistic influence over time. That is, the data herein do not depict a *reassembly* of features, but rather imply a less rapid yet steady mastery of these structures. As a result, future work should focus on a “unified” approach to joining the tenets of these theories into a model that can account for between-group, individual, and within-speaker variability in child HL development.

A possible account that could be useful for future research could be that Putnam and Sánchez’s (2013) feature reassembly approach is bidirectional, and can run in reverse in the initial acquisition of Spanish HSs’ morphosyntactic knowledge. Speakers with high HL exposure may not present differences from other populations of speakers of the same languages, while those with lower exposure may experience greater crosslinguistic influence. Specifically, in the face of crosslinguistic influence, HSs may master structures at the receptive level gradually before they consistently map these features onto surface-level morphology. Patterns of exposure may modulate the rate as well as route of development, that is how and to what extend to certain features are activated in HL grammars when compared to monolingual or bilingual speakers. This approach aligns with data in Portuguese HSs (Flores et al. 2017; Torregrossa et al. 2023), in which rates of development are tied to experiences speaking and learning the HL. It also aligns with Lohndal and Putnam’s (2021) claim that variable form-function mappings are a typical characteristic of mature heritage grammars.

This approach has a number of advantages. Firstly, since the approach is bidirectional, it obviates the need for separate frameworks of HL acquisition (e.g., Montrul 2008, 2013) and attrition (e.g., Hicks & Domínguez 2020; Polinsky 2011). By this account, fluctuations in exposure are expected, and decreased access to HL input and/or output could also explain a gradual process of feature reassembly. Furthermore, it is possible that these decreases in exposure could account for emergent optionality by populations who provide input to HSs, leading to qualitative differences in the input that HSs receive. Alternatively, recent proposals (Montrul 2024) have argued that HSs enact change in the linguistic systems of their caretakers, a possibility that can be accommodated within this framework: lower levels of language activation as well as contact with other speakers who experience crosslinguistic influence could result in incipient reassembly of features by adults dominant in the HL. This could result in increased optionality of morphosyntactic features in production by adults who transmit input to HSs. In fact, Montrul and Sánchez-Walker (2013) demonstrate such a tendency in some of the Spanish-dominant adults who provide input to HSs in their study on the acquisition of DOM. This claim is also consistent with Hicks and Domínguez’s (2020) approach to emergent optionality in contexts of HL attrition (i.e., attrition is set into motion by the acquisition of other “competing” linguistic forms).

If this approach is along the right lines, it presents a number of testable questions for future research. The first is if HLs are continually vulnerable to the influence of crosslinguistic influence, or if there are particular developmental stages or a “threshold” of input that prevent language differential acquisition or feature reassembly. A related question is if the protracted development of the HL in childhood is maintained across the adult years, or if this is a time period where feature reassembly is more likely (see Montrul 2022, 2024). Finally, it is not clear at which point in the developmental process within-speaker variables such as lexical and type frequency influence gradience in HL knowledge, although recent research such as studies cited previously (e.g., Giancaspro, 2020; Giancaspro et al., 2022; Hur, 2020; AUTHOR) has found that these variables influence HSs’ linguistic knowledge. Each of these questions presents opportunities for future studies that aim to sketch out a more holistic approach to child HL development evaluating all levels of research.

Before concluding, it is vital to acknowledge limitations of the present work. Firstly, verb regularity was held constant, as all stimuli used morphologically-regular –ar verbs. However, recent research (Giancaspro et al., 2022; AUTHOR) has shown that both child and adult HSs are more likely to produce the subjunctive with irregular verbs, such that this study may not have maximized the likelihood of subjunctive use. Secondly, perhaps the primary challenge in the establishment of a theory of child HL acquisition is the overall absence of longitudinal data. This project adopts an approach that compares groups of HSs who share many sociolinguistic characteristics but who differ in age, yet it is not possible to make direct conclusions about language growth or loss in the absence of data from a single set of participants at multiple time points. Future work, such as the findings reported with school-aged children in Castilla-Earls et al. (2023), are essential for elucidating the path of HL acquisition and maintenance over time.

These limitations notwithstanding, this paper brings together findings from AUTHOR (1, 2, 3, 4) that emphasize the need for a “unified” account of HL acquisition and maintenance in the childhood and adolescent years. Differential acquisition (Montrul, 2008, 2013), protracted development (Cuza & Miller 2015; Daskalaki et al. 2022; Flores et al. 2017), and feature reassembly (Putnam & Sánchez, 2013) are all essential frameworks for accounting for the findings of the results synthesized here, and reveal a need for a comprehensive account for HL acquisition and maintenance. This paper aims to present possible ways to bring these frameworks together that facilitate testable predictions for future research.

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1. Montrul (2011) describes additional characteristics of Spanish DOM. These characteristics are not relevant to the present study and as a result are not described further here. [↑](#footnote-ref-1)
2. Children were learning remotely during the COVID-19 pandemic during much of the three years prior to the study, and may have been in an environment where they heard greater amounts of Spanish at home. This could complicate the finding that bilingual schooling was at the root of the advantages that these bilinguals had in their mastery of morphosyntax. [↑](#footnote-ref-2)
3. Kupisch and Rothman (2018) also recognize that the sociolinguistic context of the United States may not be conducive to high levels of HL attainment, which could affect the generalizability of their findings. [↑](#footnote-ref-3)