***Abstract:***

The present study investigated the acquisition of the Spanish subjunctive mood in volitional clauses by 57 English-dominant heritage speakers in fifth, seventh, and eighth grades (ages 10-14), some of whom were enrolled in a dual-language immersion program, and a comparison group of 18 Spanish-dominant adults, who completed production and preference tasks. Adults used the subjunctive categorically, but all groups of heritage speaker children produced and selected the subjunctive more variably. Participants’ self-reported frequency of use of Spanish affected results across groups, but there were no differences in production or selection between children in the dual-language immersion and English-only schools. Children in the seventh and eighth grades had higher rates of subjunctive production and selection than the fifth grade participants, arguing for a facilitative role of age and against the attrition of this structure. Finally, participants were more likely to select the subjunctive on the preference task than to produce it. The role for frequency of use and asymmetrical performance between tasks support Putnam and Sánchez’s (2013) approach to heritage language acquisition, but the absence of an effect for bilingual schooling does not support theories that place a central emphasis on frequency of exposure.

Keywords: heritage language acquisition, dual-language education, subjunctive mood

**Home and School Exposure and Age Effects in the Heritage Language Acquisition of the Spanish Volitional Subjunctive**

**1. Introduction**

A central question in bilingual children’s development is how patterns of exposure characterize the acquisition of heritage languages (HLs). HLs are varieties spoken in situations of language contact where speakers frequently develop stronger competence in another, more socially-prevalent language. Consequently, HLs frequently develop in the home and are typically not present at school, which generally causes Spanish heritage speakers (HSs) in the United States to experience a shift in dominance towards English around the onset of the school period (i.e., Castilla-Earls et al., 2019; Hiebert & Rojas, 2021). Research on HLs has generally focused on young children and adults, yet the exploration of bilingualism during the school period represents what Montrul (2008, p. 434) has identified as the “missing link” in our understanding of their acquisition. Given the relative dearth of information about language development in this group, it is unclear what course bilinguals follow between early childhood, where research on dual first language acquisition is abundant, and adulthood, where studies have repeatedly shown that HSs differ from speakers dominant in the same language. Along these lines, comparisons of younger versus older children can distinguish between language loss (attrition) and protracted development.

Moreover, evaluations of HL development under different contexts of exposure and between tasks has implications for theories concerning their acquisition. In particular, Putnam and Sánchez (2013) have argued that HL acquisition and change are ongoing and dynamice. Their approach to HL acquisition takes the position that activation of language in the memory leads to processing input for intake, which strengthens the associations between lexical and formal features. These researchers claim that changes in patterns of language use (and its resultant activation in the memory) will affect production before receptive knowledge, positing that surface-level morphological errors may not reflect underlying representation. Therefore, this framework provides testable predictions for why children under different contexts of exposure would differ from one another, particularly in language production. Specifically, it would predict that bilingual children with greater exposure to and frequency of use of Spanish will show more consistent use of inflectional morphology, while those with lower levels of activation will show stronger receptive than productive knowledge.

There are multiple ways to empiricalize exposure. This study takes a novel approach by comparing two metrics of exposure – overall frequency of HL use *and* exposure to Spanish at school – to explore HS children’s acquisition of subjunctive mood in volitional clauses. To measure input at school, the present study compared Spanish HSs in a traditional English-only school that teaches its entire curriculum in English with age-matched peers in a dual-language immersion (DLI) program where 50% of academic instruction is offered in Spanish. Evaluating language acquisition in DLI is a critical yet underexplored avenue for understanding the impact of patterns of exposure in childhood, as HS children enrolled in these programs purportedly receive greater quantity and quality of input, both of which are tied to HL acquisition (see Pascual y Cabo & Rothman, 2012 and references within concerning the latter).

From the perspective of input quality, DLI supplements home exposure to Spanish at a time when comparable children in traditional schools have already begun to exhibit a shift in dominance towards English (Castilla-Earls et al., 2019; Hiebert & Rojas, 2021; Merino, 1983), and around when monolingual children master the structure tested here, the volitional subjunctive (Blake, 1983; Dracos et al., 2019). This provides HSs enrolled in these programs with opportunities to obtain additional input in and activation of their HL, which, following Putnam and Sánchez (2013), should result in stronger productive and receptive grammatical knowledge in Spanish. From the perspective of input quality, DLI schools purportedly offer their HS students with access to vocabulary that is specific to content areas taught in Spanish (larger lexicon) and to lengthier and more complex discourse (greater morphological and syntactic diversity). Furthermore, HS children in DLI programs may receive explicit instruction on Spanish grammar, which provides them with opportunities to refine their linguistic repertoire across the immersion years.

Ironically, only Gathercole (2002) has employed experimental methods to study the development of HSs’ Spanish language skills in DLI when compared to children of similar characteristics in a traditional monolingual school, but with elementary-aged children using a receptive task only. In her study, the researcher reported that all children experienced growth in their command of non-canonical grammatical gender by fifth grade, but that the rate of development was faster in HSs attending a DLI school. Furthermore, while bilingual education has previously been identified as a key factor in the acquisition of morphosyntax in German-dominant HSs (Kupisch et al., 2014; Kupisch and Rothman, 2018), these studies focused on adults who were not actively enrolled in school. Therefore, exploring the production and receptive knowledge of Spanish HSs with different levels of input in Spanish at home and school differs is a promising avenue for understanding the effects of exposure on language development.

To address each of these areas, the present study explores how age, frequency of HL use, morphosyntactic proficiency, and exposure to Spanish at school affect HS children’s and adolescents’ acquisition of subjunctive mood, a complex and late-acquired morphosyntactic structure that has been a frequent topic in past research, as reviewed in the following section. The research questions, hypotheses, and description of methodology follow. After presenting results, this article concludes with a discussion of findings, their implications, and their limitations.

**2. Spanish Subjunctive Mood: Theory and Acquisition**

If patterns of exposure are deterministic in the acquisition of HLs as Putnam and Sánchez (2013) argue, a logical hypothesis is that structures that require extensive input and that emerge late in monolingual populations will be particularly susceptible to input effects. The subjunctive, which is one such structure, is one of three moods in Spanish alongside the indicative and imperative (Seco, 1990). Mood is a morphological realization of modality (Bosque, 2012), which is the evaluation of the truth value of propositions (Sánchez-Naranjo, 2014). All Spanish verbal inflections are marked for one of the three moods, although only approximately 7.2% of verbs carry subjunctive morphology (Biber et al., 2006), which points to its infrequence in the input that HSs receive, especially if this exposure is less in quantity compared to monolingual acquisition.

There are two morphological paradigms for the subjunctive mood, one in the present tense and the other in the imperfective past, both of which have forms for person and number agreement with the subject. In concert with most previous research, this study concerns the present subjunctive, so discussion is limited to this tense here. The present subjunctive is formed either through a shift in the verbal inflection or through both a morphophonological change in the verb stem and a shift in inflection from the more-frequent indicative. In this study, only the first of these patterns is tested in order to hold morphological regularity constant. Verbs whose infinitives end in –ar shift their thematic vowel to –e in the subjunctive (e.g., the verb *hablar*, ‘to talk,’ shifts from indicative *habla*-3PS to subjunctive *hable*-3PS), while those that end in –er and –ir shift their thematic vowel to –a (e.g., the verb *comer*, ‘to eat,’ shifts from indicative *come*-3PS to subjunctive *coma*-3PS).

The syntax and semantics of subjunctive mood have been the topic of considerable scholarship. Fábregas (2014) argues that subjunctive inflections comprise a single spell-out of multiple structures that differ in their syntax and semantics. These inflections occur almost exclusively in subordinate clauses whose subject differs from the main clause`, which is known as the disjoint reference effect. Some uses of the subjunctive result from lexical selection, whereby the lexical semantics of a constituent in the main clause subcategorizes for the subjunctive mood in tensed subordinate clauses with a distinct subject. Volitional clauses, such as with the verb *querer* (to *want*), as shown in (1), are the focus of the present study and exemplify lexical selection of subjunctive mood.

1. Rosa quiere que Carmen venga a su casa.

Rosa want-3PS-IND COMP Carmen come-3PS-SUBJ to her house.

*Rosa wants Carmen to come to her house.*

Following Kempchinsky (2009), the subjunctive inflections in volitional clauses such as (1) comprise an uninterpretable feature that is checked and deleted in the heads of Force and Fin in the subordinate clause; in these contexts, the meaning of the mood inflection is least transparent (Fábregas, 2014). Note that other instances of the subjunctive occur in contexts in which the indicative is also grammatical, which means that mood selection can be pragmatically dependent through a different syntactic realization. These contexts include relative clauses and adverbial clauses, not analyzed here.

In contrast to Spanish, English has a less-utilized subjunctive system (see Iverson et al., 2008 for a syntactic account). Acceptability judgment data have shown that the indicative exists as a grammatical alternative to subjunctive mood in English, such that this morphosyntactic contrast has largely been neutralized (Iverson et al., 2008; Rojas, 1998). English lacks a morphological paradigm that specifically marks mood (it is marked through past tense forms). Moreover, English requires control structures in many volitional contexts where subjunctive mood is expected (e.g., rather than sentence (1), English would require the infinitival construction *Rosa wants Carmen to come to her house*). As a result, the volitional subjunctive is a source of crosslinguistic difference between English and Spanish at both the syntactic and morphological levels. Therefore, HS children must acquire the syntax, semantics, and morphology of the Spanish mood system, which emerges late even in monolingual children, on the basis of less-frequent input than monolinguals and in the face of crosslinguistic influence from English.

***2.1. Monolingual Acquisition***

The first subjunctive inflections emerge in monolingual Spanish-speaking children before age three (Aguirre, 2003; López-Ornat et al., 1984). Blake (1983) and Dracos et al. (2019) revealed that the volitional subjunctive approached but did not reach categorical use in children between ages four and five, around the onset of schooling. Therefore, even though the subjunctive emerges in volitional clauses before other contexts, this structure is mastered later than many other inflections and therefore requires extensive input to develop, even in monolingual children.[[1]](#footnote-1) Since bilingual children may require longer than monolinguals to acquire a structure that differs in their two languages (i.e., Genessee & Paradis, 1996), HSs’ acquisition of subjunctive mood may extend past age five and into the school years, which makes studying the effects of sustained exposure to Spanish at school during this time period particularly relevant for the acquisition of this structure.

***2.2. Heritage Language Acquisition of Spanish Subjunctive***

To this effect, the available data on English-Spanish bilingual children affirm that patterns of exposure influence the acquisition of the Spanish subjunctive. Two case studies on English-Spanish simultaneous bilingual siblings with different levels of input reveal attrition of subjunctive mood around the start of the school period by the sibling with less exposure (Anderson, 2001; Silva-Corvalán, 2014). Similarly, Merino (1983) reported that 32 simultaneous English-Spanish bilingual children’s rate of subjunctive mood production decreased from 70% to 55% over a two-year period in a monolingual English elementary school. These longitudinal studies argue that the decreased exposure that Spanish HSs (typically) receive leads to attrition of subjunctive mood as they approach the school period.

Cross-sectional work on older children has also provided evidence for exposure effects. In a study with 50 bilingual children between ages four and fifteen, Dracos and Requena (2022) found that proficiency and frequency of exposure, but not age, affected rates of production of the subjunctive in volitional clauses, but the researchers note that their study lacked a large number of older children with which to clearly plot development into the adolescent years. Both proficiency and frequency of use have been interpreted as proxies for exposure (Giancaspro & Sánchez, 2021; Perez-Cortes et al., 2019); thus, these findings suggest that overall exposure may be more impactful on HS’ mood acquisition than age. In a study on the grammatical development of seventh and eighth grade bilingual children enrolled in a DLI program, Potowski (2007a) found that HSs produced more subjunctive across contexts than second language learners, but less than Spanish-dominant peers. These results call into question whether HS children without exposure to Spanish through DLI would show comparable rates of subjunctive knowledge. Furthermore, these experiments report production data only, which may not reflect the underlying syntactic competence that HSs possess (Putnam & Sánchez, 2013; Perez-Cortes et al., 2019).

Finally, Flores et al. (2017) found that German-dominant children who were HSs of Portuguese and who spoke their HL with both parents and did not have older siblings showed considerable growth in subjunctive production rates between ages eight and twelve, while children with one Portuguese-speaking parent showed comparable growth after age thirteen only. These data suggest that age and exposure are interconnected, such that children with less exposure require longer to obtain the requisite amount of input with which to master this structure. However, there is not yet an experiment comparing productive and receptive knowledge in bilingual children, particularly one that controls for both home and educational exposure to Spanish. Since growth transpired during the late childhood and adolescent years, these findings argue that bilinguals continue to acquire subjunctive late into childhood.

Research on bilingual adults has been largely consistent. Despite van Osch and Sleeman’s (2018) finding that volitional clauses comprise the most stable context of subjunctive mood in adult HSs, this group shows variability in their command of this structure. Adult HSs are more precise in their command of subjunctive mood at higher proficiency levels (Giancaspro, 2019; Montrul, 2009; Perez-Cortes, 2016). Moreover, Perez-Cortes (2016) found that an interaction between proficiency and frequency of use of Spanish affected subjunctive mood production, acceptability judgment, and interpretation. She reported that at intermediate proficiency levels, adult HS were more likely to show more precise interpretation and acceptability judgments than production of subjunctive mood, particularly when they reported less-frequent use of Spanish. Furthermore, factors such as the morphological regularity (Giancaspro et al., 2022; Perez-Cortes, 2022) and lexical frequency (Giancaspro, 2020) of the subordinate verb have been shown to affect HSs’ production and interpretation of subjunctive mood.

To summarize, patterns of exposure influence both the acquisition and attrition of this structure by Spanish HSs, both children and adults. It has been difficult to interpret the role of age in its acquisition, primarily because of the lack of a study that incorporates a large number of older participants. Adult HSs with lower levels of exposure to Spanish recognize the subjunctive more consistently on receptive tasks than they produce it, which has not yet been tested with children. Therefore, since subjunctive development is affected by patterns of exposure and is late-acquired in monolingual children, bilingual schooling and frequent use of and exposure to Spanish should provide a key benefit for HSs in the acquisition and maintenance of this structure.

**3. The Study**

To date, there is not yet a study on the acquisition of the subjunctive mood by bilingual children that has incorporated productive and receptive tasks with multiple age groups. Furthermore, only one previous study has compared Spanish-speaking children in bilingual schools with age-matched peers without bilingual education (Gathercole, 2002), which incorporated receptive data only with elementary school participants. Kupisch and Rothman (2018) argue that literacy development and bilingual education positively influence the acquisition of HLs, a claim that has not yet received attention with Spanish HSs or with children who are actively enrolled in DLI and monolingual English programs. In order to address each of these areas with a single population, a study that measures proficiency and exposure with multiple groups of HSs and that incorporates productive and receptive tasks is necessary. Four research questions (RQs) were proposed:

1. With regards to volitional subjunctive production and selection, how do HSs in DLI schools compare to…
   1. SDBAs?
   2. Age-matched HSs without bilingual education?

Firstly, it was predicted that these bilinguals’ knowledge of subjunctive mood production and selection would be lower than those of SDBAs, in accordance with previous research (Potowski, 2007a). However, there are no previous available data comparing adolescent HSs’ command of the Spanish subjunctive in and out of DLI programs. However, in accordance with theories of acquisition that emphasize quantity of HL exposure and activation (Putnam & Sánchez, 2013), it was predicted that HSs in an immersion program and who therefore have sustained HL exposure would produce and select more volitional subjunctive than age-matched HSs who had only been exposed to English at school.

1. Do proficiency in and overall frequency of use of Spanish affect individual HSs’ rates of volitional subjunctive production and selection?

Previous studies on bilingual children (Dracos et al., 2022; Flores et al., 2017) and adults (Montrul, 2009; Montrul & Perpiñán, 2011; Perez-Cortes, 2016) have found that HL proficiency and frequency of use are deterministic variables in rates of subjunctive mood production, acceptability judgment, and interpretation. Therefore, the same effect was predicted in the present study, whereby HSs who obtain higher scores on a proficiency test and who report using Spanish more frequently would also produce and select the subjunctive more often in volitional clauses.

1. Do older HSs show increased production of and preference for the volitional subjunctive?

Since previous studies on subjunctive mood in Spanish HSs have lacked a substantial group of late-childhood and adolescent participants, understanding the role of age in the acquisition of the subjunctive has been challenging. Consistent with the closest available data on older children and adolescents from Flores et al.’s (2017) study on Portuguese HSs, it was posited that the older participants in this study (7th/8th grade; ages 12-14) would produce and prefer the volitional subjunctive and select it on a preference task more frequently than the youngest participants (5th grade; ages 10-11).

1. Do HS children select more volitional subjunctive on a preference task than they produce this structure?

Previous research on the acquisition of subjunctive mood has shown that bilinguals with less-frequent HL use and activation recognize and comprehend morphological and syntactic structures more consistently than they produce them Putnam & Sánchez, 2013; Perez-Cortes et al., 2019). Following these researchers, this asymmetrical knowledge is most pronounced when HSs have low HL activation. Therefore, task asymmetries should emerge more noticeably for participants with less exposure and in the English-only school. Therefore, it was predicted that HSs in the DLI program, as well as those who reported frequent use of Spanish, would not show differences in rates of volitional subjunctive production and selection, but that those who report lower activation and who were enrolled in a monolingual English school would select more volitional subjunctive than they would produce it.

***3.1. Participants***

57 English-dominant children who were Spanish HSs, as well as 18 SDBAs, participated in this experiment. Each child was placed into two groups depending upon age and school exposure to Spanish, as summarized in Table 1. Creating two sets of groups addressed age and school exposure to Spanish as separate variables,[[2]](#footnote-2) although all descriptive data reported four HS groups: HSs in DLI in 5th grade (DLI-5; *n* = 19), HSs in DLI in 7th/8th grades (DLI-7/8; *n* = 13), HSs in a monolingual English school in fifth grade (MLE-5; *n* = 14), and HSs in a monolingual English school in 7th/8th grades (MLE-7/8; *n* = 25). All participants in 5th grade were 10-11 years old, and those in seventh and eighth grade were between 12 and 14 years old. The comparison of groups of HSs to other one another can isolate how certain factors related to language experience, such as bilingual schooling, affect the acquisition of Spanish morphosyntax, which moves away from conventional HS-versus-monolingual comparisons (Rothman et al., 2023).

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

**Table 1.** Division of participants by grade and school.

In the DLI school, HSs received 50% of instruction in Spanish from Kindergarten through fifth grade, and daily Spanish as a HL instruction from sixth to eighth grade. In order to participate, children needed to have attended the DLI school for at least half of the primary years (since second grade or earlier). The fifth graders purportedly represent the “finished product” of elementary DLI programs, while the seventh and eighth graders enable facile comparisons with Potowski’s (2007a) study on subjunctive development in DLI and address the absence of bilingual children of this age range in previous studies.

In contrast, the children enrolled in the monolingual school did not receive bilingual instruction, but were matched for age, socioeconomic status, and family background with those in the DLI school. Both schools’ demographic reports indicated matching percentages (within 1%) of Latinx families, English language learners, and students with low socioeconomic status; Spanish was the home language for the majority of participants in each school. While only some children’s parents spoke English, all spoke Spanish, and all HSs who participated were exposed predominantly to Spanish at home since birth (see Table 2). Children in both schools were primarily of Mexican descent, although there were also participants who spoke Guatemalan and Dominican varieties of Spanish.

Finally, the 18 SDBAs represented the input that Spanish HSs receive to their HL at home and, where relevant, at school. These bilinguals were from a total of seven Spanish-speaking countries and had an average of 9.5 years living in an English-speaking environment. Results of an additional proficiency measure typically used with adult populations (Montrul & Slabakova, 2003) revealed that these individuals had retained proficiency in Spanish, averaging 47.7/50. These participants were included in the study to verify that the tasks elicited the volitional subjunctive as expected, and because they represent a source of input for the groups of HSs summarized above. Table 2 provides a summary of each group’s proficiency, frequency of use, and number of monolingual Spanish-speaking parents.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **SDBA**  **(*n* = 18)** | | **DLI-7/8**  **(*n* = 11)** | | **MLE-7/8**  **(*n* = 13)** | | **DLI-5**  **(*n* = 19)** | | **MLE-5**  **(*n* = 14)** | |
| **μ** | **SD** | **μ** | **SD** | **μ** | **SD** | **μ** | **SD** | **μ** | **SD** |
| Frequency of use of Spanish  (max. 30 points) | 15.2 | 5.9 | 15.7 | 4.7 | 14.0 | 4.6 | 15.5 | 6.2 | 13.7 | 4.2 |
| Proficiency score  (max. 18 points) | 12.1 | 2.0 | 12.0 | 2.3 | 11.5 | 2.2 | 9.3 | 3.3 | 9.0 | 2.4 |
| Number of monolingual Spanish-speaking parents | 1.9 | 0.2 | 1.0 | 0.9 | 1.4 | 0.8 | 0.9 | 0.9 | 1.4 | 0.9 |

**Table 2.** Participant group averages with standard deviations.

***3.2. Method and Tasks***

All tasks were administered using laptop computers over Qualtrics software in students’ schools with the researcher present; the SDBAs carried out the study asynchronously online. As in many previous studies, the prompts were displayed on a screen, but their responses were oral. A computerized software known as Phonic was embedded into the Qualtrics survey to record participants’ responses on the production task. Prior to the study, participants’ parents signed a consent form.

***3.2.1 Language background tasks.*** Before completing the experiment, participants completed a language use questionnaire. Since the youngest children in this study were aged ten, it was determined that these individuals were able to complete this brief questionnaire independently, which provides a more direct approximation of their use of Spanish beyond family settings. The questionnaire asked participants to indicate when they began attending their school, as well as to rate how frequently they used Spanish in six contexts: with parents, with family members, at school,[[3]](#footnote-3) with friends, in public, and while watching television. Participants indicated how often they used Spanish in each context using 1-5 Likert scales with fixed descriptors (0: never, 1: hardly ever, 2: 3-4 times per week, 3: 1-2 times per day, 4: every day/almost always, 5: always). The sum of these Likert scales comprised each participant’s 30-point frequency of use scale, which was used to generate a global score for exposure to Spanish that served as a continuous variable.

Subsequently, all participants completed a subset of the Bilingual English-Spanish Assessment (BESA; Peña et al., 2018) to diagnose their morphosyntactic proficiency in Spanish. This portion of the BESA includes eighteen stimuli testing inflectional morphology, although 4/18 questions were not reported here because they evaluated subjunctive mood, whose inclusion would be tautologous. The remaining questions targeted determiner–noun gender/number agreement (4), verbal agreement (4), preterit aspect morphology (2), and clitic gender (4). The sum of the number of correct responses comprised each participant’s proficiency score, which also formed a continuous variable.

***3.2.2. Experimental tasks.*** In addition to the questionnaire and proficiency test, there were two experimental tasks: a sixteen-item production task and a 23-item preference task. These two tasks were centered around the same communicative context, in which a mother shared how she wanted her twin daughters to care for their younger brother, Juanito, while they were away at sleepaway camp. The same eight verbs, as listed in Table 3, were used once per task. All verbs pertained to the most-frequent first conjugation class (–ar) and were disyllabic and transitive.

|  |  |
| --- | --- |
| **Spanish** | **English** |
| amar | to love |
| cuidar | to care for |
| llamar | to call |
| llevar | to take, to carry |
| mirar | to look at |
| peinar | to comb |
| pintar | to paint |
| tratar | to treat, to try |

**Table 3.** List of verbs used across tasks.

The production task contained a trial and sixteen experimental items and followed a sentence completion format. There was a brief written prompt before each sentence about the mother’s desires for her children while at the summer camp. Eight items tested the volitional subjunctive following the matrix verb *querer* (*to want*), as in (2). In addition, four stimuli tested knowledge of the more-frequent indicative mood following the matrix verb *creer* (*to believe*), and four prompts were fillers. Only the eight subjunctive items were analyzed, but the additional sentences were included to prevent the responses from becoming predictable. In the adult version, there were also 25 additional distractors targeting infinitival complements. Participants needed to complete the final sentence of each prompt using any form of the word in parentheses, as well as any other necessary words. Participants could not change or move any of the words in the prompt.

1. A veces Juanito se pone triste si sus hermanas dicen que no quieren hablar con él. ¿Qué quiere la mamá? Quiere que las hermanas \_\_\_\_\_\_\_\_\_ (LLAMAR) Juanito cada noche.[[4]](#footnote-4)

Sometimes Juanito gets sad if his sisters say that they don’t want to talk with him. What does the mother want? She wants the sisters \_\_\_\_\_\_\_\_\_ (CALL) Juanito every night.

In the preference task, participants again read prompts related to the mother’s desires for her children while they are away at sleepaway camp. There was a total of 23 items in the task. Eight items targeted the subjunctive in volitional clauses following *querer*, as in (3), three targeted the indicative mood with *creer*, and the remaining twelve were fillers. The adults’ experiment contained an additional 31 stimuli inserted between the target items.

1. La mamá sabe que las hermanas no siempre hablan con Juanito. ¿Qué quiere la mamá?
2. \*Quiere que las hermanas lo miran cuando hablan con él.
3. Quiere que las hermanas lo miren cuando hablan con él.

*The mother knows that the sisters don’t always talk with Juanito. What does she want?*

1. *She wants the sisters to look at (\*IND) him when they talk with him.*
2. *She wants the sisters to look at (SUBJ) him when they talk to him.*

In this exercise, participants needed to select which one of two answers that described each prompt they felt sounded best. The two sentences were minimal pairs that differed only in the use of either the subjunctive or indicative. Therefore, this task tapped participants’ underlying knowledge of mood, as it required that they discern between the indicative and subjunctive without requiring HL production.

**4. Results**

All data were anonymized and uploaded to a public GitHub repository (<https://github.com/pthane/DLI-Morphosyntax-2023>). Data analysis took place in RStudio (R Core Team, 2022) using the *emmeans* (Lenth, 2021), *lme4* (Bates et al., 2015), *lmerTest* (Kuznetsova et al., 2017), *sjPlot* (Lüdecke, 2021), and *tidyverse* (Wickham et al., 2019) packages. Production or selection of mood was the binary dependent variable, whereby responses in the subjunctive received a score of *1*, and all others received a score of *0*. Note that forms with correct mood inflections but with verbal agreement morphology that did not match the subject were accepted as correct. There were 37 instances in the production experiment where there were errors with participants’ audio recording or in which participants’ responses were not related to the stimuli, leaving 563/600 (93.8%) observations for analysis. There were 600 observations in the preference task. The rates of subjunctive production and selection are summarized in Figures 1 and 2 below. In the EPT, the HS children produced the subjunctive in a total of 131/426 instances (30.7%), and alternative forms in the remaining 295 instances (69.2%). While indicative substitution was by far the most frequent alternative to subjunctive, followed by infinitival forms, there were also alternative structures used in the HSs’ data, as summarized in Table 4.



**Figure 1.** Percentages of subjunctive production and selection by group and task.



**Figure 2.** Statistical summary of number of subjunctive sentences produced or selected by group and task.

|  |  |
| --- | --- |
| **Structure** | **Observations** |
| Indicative mood | 224 (75.9%) |
| Infinitive | 41 (13.8%) |
| *Ir a* (*going to*) periphrastic future | 13 (4.4%) |
| Modal verbs in indicative | 11 (3.7%) |
| Uncategorizable forms[[5]](#footnote-5) | 5 (1.6%) |
| Imperfect subjunctive | 3 (1.0%) |
| Preterit | 1 (0.3%) |

**Table 4.** List of alternative structures (total 298) to subjunctive mood in HSs’ data.

To evaluate these data further, two Generalized Linear Mixed Methods (GLMM) binomial logistic regression models were necessary. In both models, the suppliance of the expected mood inflection was incorporated as the dependent variable, with participant and item as random effects. The first model incorporated a five-way categorization of group (SDBA, DLI-5, MLE-5, DLI-7/8, MLE-7/8), with SDBA as the baseline, to determine the differences between each. The resulting model, summarized in Figure 3 below, revealed significant main effects at the *p* > .05 level for all groups: DLI-5 (*β* = –5.98, SE = 0.93, *p* < .001), MLE-5 (*β* = –6.29, SE = 0.97, *p* < .001), DLI-7/8 (*β* = –4.61, SE = 1.00, *p* = < .001), MLE-7/8 (*β* = –4.34, SE = 0.97, *p* = < .001). Since this model only compared the HS groups to the SDBA, Tukey post-hoc comparisons between all groups were necessary. Only the differences between the SDBAs and the four groups of HSs were significant at the p < .05 level; none of the differences between the HS groups were significant at this level.



**Figure 3.** Results of GLMM model #1.

The second GLMM model compared the HSs to one another on the basis of exposure, proficiency, and age, and therefore did not incorporate data from the SDBAs. This model included frequency of use, school (MLE versus DLI), BESA proficiency score, age group (5th grade versus 7th/8 th grade), and task (production versus preference) as independent variables, with two-way interactions between frequency of use and task, school and age group, and school and task. The monolingual school, 5th grade age group, and production task were set as baselines for these respective variables; BESA proficiency score and frequency of use were continuous variables that were standardized prior to analysis. Results from this GLMM model, summarized in Figure 4, revealed significant main effects at the p > .05 level for frequency of use (*β* = 0.58, SE = 0.25, *p* = .017), the 7th/8th grade age group (*β* = 1.58, SE = 0.66, *p* = .017), and the preference task (*β* = 0.95, SE = 0.27, *p* < .001).



**Figure 4.** Summary of GLMM model #2.

Finally, individual analyses were conducted by calculating the total number of subjunctive forms in production and on the preference task for each participant. Figure 5 illustrates that all HSs produced or selected the subjunctive in at least two contexts total. This argues against the altogether absence of this structure from their grammar, but rather revealed that HS had gradient knowledge of subjunctive mood.



**Figure 5.** Individual rates of production and selection of subjunctive by participant.

Six participants produced and selected the subjunctive at ceiling. These participants’ characteristics are listed in Table 5. That 5/6 of the participants were in the seventh and eighth grade group reaffirms the effect for age observed in the statistical modeling. Aside from age, there are no clear developmental trends, as there were an equal number of children from each school, as well as some who showed great variability on the proficiency test and who reported infrequent use of Spanish both in and outside of school. In fact, three of these participants, one of whom attended the DLI program, reported never using Spanish at school.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Part.** | **Group** | **Freq. of use[[6]](#footnote-6)** | **School use** | **BESA** | **Parental languages** |
| H5B10 | DLI-5 | 5/25 | 0/5 | 7/14 | 1 Spanish only, 1 bilingual |
| H7B03 | DLI-7/8 | 8/25 | 1/5 | 8/14 | 1 Spanish only, 1 bilingual |
| H8B04 | DLI-7/8 | 19/25 | 3/5 | 11/14 | Both Spanish only |
| H8M02 | MLE-7/8 | 11/25 | 0/5 | 14/14 | 1 Spanish only, 1 bilingual |
| H8M06 | MLE-7/8 | 15/25 | 0/5 | 14/14 | Both Spanish only |
| H8M13 | MLE-7/8 | 13/25 | 2/5 | 12/14 | Both bilingual |

**Table 5.** Characteristics of HS children who produced and selected subjunctive mood at ceiling.

In comparison, there were three children, whose characteristics are summarized in Table 6, who selected the subjunctive in two instances and did not produce it. Contra the data summarized in Table 5, all three of these children were in the younger age group, which is consistent with the inferential statistics. Furthermore, these participants reported using Spanish outside of school in less than half of their interactions, which also aligns with the finding that exposure to and use of Spanish modulates individual rates of subjunctive mood production and selection.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Part.** | **Group** | **Freq. of use[[7]](#footnote-7)** | **School use** | **BESA** | **Parental languages** |
| H5B18 | DLI-5 | 9/25 | 2/5 | 9/14 | Both Spanish only |
| H5M01 | MLE-5 | 10/25 | 2/5 | 14/14 | Both Spanish only |
| H5M02 | MLE-5 | 12/25 | 1/5 | 7/14 | Both Spanish only |

**Table 6.** Characteristics of HS children who produced and selected the fewest instances of subjunctive mood.

**5. Discussion**

The present study is the first to compare productive and receptive knowledge of subjunctive mood across multiple age groups of school-aged Spanish HSs, and also adopted a novel approach by evaluating HL exposure through different methods of schooling. DLI programs provide children with a greater quantity of input, as well as a quality of input that may have a wider spectrum of vocabulary and grammatical structures necessary for academic discourse. Therefore, a logical yet largely untested assumption is that children enrolled in these programs would experience greater growth than HSs in traditional schools in their command of structures such as the subjunctive mood that are late-acquired in monolingual children and appear to be highly variable in heritage Spanish. This prediction aligns with theories of HL acquisition that emphasize frequency of exposure (Putnam and Sánchez, 2013), but has not yet been tested with both productive and receptive tasks. Differences in performance on these tasks are also an important component of Putnam and Sánchez’s (2013) framework, and therefore, this study was well-positioned to test these authors’ predictions with children and adolescents, who have been largely absent from bilingualism research.

The first RQ investigated whether HSs in a DLI program differed from other HSs in a monolingual, English-only school and from SDBAs in their command of the subjunctive mood in volitional clauses. This method of comparison allows HSs to be compared to one another, rather than only to bilinguals dominant in the same language or to monolinguals (see Rothman et al., 2023). It was predicted that SDBAs would produce and select the subjunctive at ceiling, more than HSs, and that HS children from the DLI school would recognize this structure more consistently than those without bilingual education. The SDBAs produced and selected the volitional subjunctive at ceiling, consistent with previous studies (Giancaspro, 2020; Martillo-Viner, 2016), and in line with this prediction. This argues that this group does not experience attrition of the volitional subjunctive and that it is still present in the input that HSs receive from this population. However, contra the predictions, there were no differences observed between the HSs in the DLI program and those in the monolingual school regarding their production or selection of subjunctive mood. In fact, the MLS-7/8 group produced more subjunctive than the DLI-7/8 group, although this difference was not significant in the statistical modeling. On the surface, this finding does not support theories of language acquisition that posit a central role for exposure and activation (Putnam and Sánchez, 2013), a result that merits further discussion below.

The second RQ evaluated whether proficiency and frequency of use would affect individual participants’ rates of subjunctive mood production and selection on the preference task. Consonant with Dracos and Requena (2022), it was predicted that both variables would affect production and selection of the subjunctive, although only frequency of use emerged as a significant predictor at the *p* < .05 level in this study. Therefore, participants’ overall patterns of language use, which included school, home, and public contexts, predicted their degree of command of the volitional subjunctive, but proficiency did not, which partially supports the hypothesis for this RQ. The finding that overall frequency of use was predictive of individual differences in subjunctive production and preference does align with the predictions of Putnam and Sánchez’s (2013) hypothesis.

The third RQ evaluated the role of age in the bilingual acquisition of subjunctive mood. Based upon findings reported with German-dominant Portuguese HSs (Flores et al., 2017), it was predicted that older children would have higher rates of volitional subjunctive production and preference in the present study.[[8]](#footnote-8) The findings in this experiment support this prediction, as the 7th/8th grade group used the volitional subjunctive more frequently than the 5th grade children. This is consistent with some studies on other areas of the Spanish inflectional system (i.e., Corbet & Domínguez, 2020; Cuza & Miller, 2015; Martinez Nieto & Restrepo, 2022; Montrul & Potowski, 2007), although counterevidence has also been reported (i.e., Goebel-Mahrle & Shin, 2021; Guijarro-Fuentes et al., 2017). This finding is particularly intriguing when considering that the children in the DLI-7/8 group, who represented more than half of the 7th/8th grade age group, had experienced a drop in exposure to Spanish at school, as their instruction in this language decreased from 50% to one class per day after the fifth grade. The positive effect for age also argues against the attrition of this structure as children grow older, which has been documented in previous studies with younger children (Anderson, 2001; Merino, 1983; Silva-Corvalán, 2014). Therefore, these findings suggest that HS’ command of mood grows during the early adolescent years, which may not have been capturable in Dracos and Requena’s (2022) study with predominantly younger participants. This does not preclude early attrition and subsequent reacquisition of subjunctive mood, but testing this possibility would require younger participants who may have found this experiment to be unwieldly lengthy.

The fourth and final RQ evaluated whether HS children would show asymmetrical knowledge between production and receptive knowledge of subjunctive mood. Putnam and Sánchez’s (2013) theory posits stronger receptive than productive knowledge for speakers who report less-frequent exposure to and activation of Spanish, so it was predicted that HSs with lower reported frequencies of use and who attended the monolingual, English-only school would select this structure more than they would produce it. However, HSs as a whole recognized the subjunctive more frequently on the preference task than they produced it, regardless of patterns of exposure. Here again, this finding aligns with Perez-Cortes et al.’s (2019) and Putnam and Sánchez’s (2013) claim that bilinguals show stronger underlying syntactic knowledge as assessed with receptive tasks when compared to optionality that may emerge under the online pressures of language production, but this was not modulated by patterns of exposure. These task asymmetries with subjunctive mood are also consistent with Perez-Cortes’ (2016) study with adult HSs with intermediate proficiency in Spanish, which suggests that the adolescents in the present study are adult-like in this regard.

It should be noted that while Putnam and Sánchez’s (2013) framework correctly predicted asymmetrical knowledge between tasks, the HSs in this study were not at ceiling in production nor selection of the volitional subjunctive. The older children had subjunctive selection rates of 77% (DLI-7/8) and 76% (MLE-7/8), while younger children were around chance level, at 55% (DLI-5) and 51% (MLE-5). This supports theories of HL acquisition that argue that at the group level, HSs develop quantitatively different knowledge of morphosyntactic structures such as subjunctive mood (i.e., Montrul, 2008, 2009, 2013), such that differences between HSs and other populations of Spanish speakers cannot be attributed solely to morphological variability, nor to differences in the input provided by SDBAs.

However, the individual analysis shows that all HSs produced and recognized the subjunctive in at least two contexts, which suggests that this structure is not completely absent from their grammar. On one hand, this finding highlights the importance of receptive data, as these trends could not be captured in previous experiments on subjunctive mood with HS children, but on the other, it raises questions of how to model this gradient knowledge of the volitional subjunctive more systematically. A possibility for future research is to explore the lexical frequency and morphological regularity of the subordinate verb, both factors that have been shown to affect production and receptive knowledge of the subjunctive in adult HSs (Giancaspro, 2020; Giancaspro et al., 2022; Perez-Cortes, 2022).

Turning to production data, the rates from the oldest participants in the present study are lower than those reported in Potowski (2007a) with similarly-aged children. In her experiment, 81% of the HSs in seventh and eighth grade produced the subjunctive in a volitional clause. Although this was only a single stimulus in a larger experiment, the participants in this study attended a DLI school where 80% of academic content was taught in Spanish, rather than 50%, and the greater HL input for these children may have conferred an advantage in acquiring the volitional subjunctive at the group level. Moreover, it should be noted that both groups of fifth grade children had lower rates of subjunctive mood production than those in Merino’s (1983) longitudinal study on HL attrition in monolingual schools; in fact, even the HSs in the DLE-7/8 group produced the same percentage of subjunctive mood (55%) as those in Merino’s (1983) data. Lastly, the oldest children in the present study had similar levels of production of subjunctive mood as intermediate-proficiency participants in Montrul’s (2009) morphological recognition task (60.9%), which suggests that the adolescents in this study were adult-like in their rates of subjunctive production.

In sum, the data from this study show that HS children differ from SDBAs, as in previous research. These children also show increased command of subjunctive mood between fifth and seventh grades, although the role of education – DLI versus monolingual schooling – did not account for the acquisition of the subjunctive in this study. Participants were more likely to select the subjunctive than to produce it, and children who reported higher frequency of use across six contexts had higher rates of production and selection. Individual analyses revealed that all HSs recognized the volitional subjunctive in at least some of the stimuli, arguing against the total absence of modal contrasts in any of their grammars. These findings largely support the predictions advanced by Putnam and Sánchez (2013), as (A) HSs with more exposure to and resulting activation of Spanish had stronger command of the volitional subjunctive and (B) the bilingual children in this study patterned more similarly to SDBAs on a receptive task when compared to production, as in past studies (i.e., Giancaspro & Sánchez, 2021; Perez-Cortes, 2016; Sherkina-Lieber, 2015). However, the predicted interaction between these variables was not evident.

Furthermore, as stated previously, the absence of the predicted advantage for students enrolled in DLI schools on the basis of increased exposure to Spanish is dissonant with Putnam and Sánchez’s (2013) predictions. A widespread assumption across research on DLI is that this method of schooling guarantees the continued acquisition of the HL (i.e., Lindholm-Leary and Genesee, 2014, p. 169; Potowski, 2007b, p. 188). The absence of an effect for immersion need not be interpreted as an argument against the importance of exposure for HL acquisition and maintenance, particularly considering that a global self-reported rating of frequency of use did account for variance in this same study.

Alternatively, a possible interpretation is that factors beyond input quantity are necessary to support HL acquisition and maintenance. It is possible that Spanish does not have equal status in DLI classrooms and thus that HS respond in English even when input is provided in Spanish, which has been documented previously (Potowski, 2004) and is consistent with the finding that some HSs in the DLI program reported never using Spanish at school. If this is the case, this highlights that input alone is not enough to assure the continued development of inflectional structures such as the subjunctive mood, which is consistent with recent research on young schoolchildren that has found that rates of output affect speakers’ performance on both productive and receptive tasks (Goldin, 2021; Sánchez et al., 2023). The consequence for acquisition theory would be that, much like in second language acquisition (Swain, 1993), output might also be an essential component of HL acquisition and maintenance. Moreover, Montrul and Perpiñán (2011) argue that explicit instruction provided advanced proficiency second language learners with an advantage in subjunctive knowledge over proficiency-matched HSs. This implies that school is an important venue for learning less-frequent structures such as the subjunctive, but that form-focused learning may be necessary for this structure.

An additional consideration is the role of input quality in DLI programs. Although the SDBAs in the present study produced the subjunctive mood at ceiling, it is possible that teachers in some immersion programs are HSs or second language learners of Spanish themselves. Since these populations have been demonstrated to show variable knowledge of subjunctive mood, as reviewed previously, HSs may receive qualitatively different mood system in the input that they receive at school from teachers or one another.

These findings differ from those reported by Kupisch and Rothman (2018; see citations within), in which the HSs who have received bilingual education patterned similarly with bilinguals dominant in the same language in their command of morphosyntax. These researchers argue that their findings may not be replicable in U.S. contexts, due to the absence of extensive bilingual education or social support for multilingualism more generally, a claim that receives support from this study. Furthermore, these findings suggest that not all contexts of exposure are equal, such that a global score across multiple contexts of language use may be more predictive of HSs’ grammatical knowledge, and that input in the HL at school alone may not be sufficient to sustain HL acquisition.

While the present study makes important contributions to theories concerning exposure in HL acquisition, namely Putnam and Sánchez’s (2013) activation-oriented approach, there are multiple limitations. Firstly, this experiment did not consider the possible sources of *intra*-speaker variability, that is, what factors can account for children’s gradient production and selection of the subjunctive mood in the contexts analyzed. Additionally, while these data provide useful information on language development in late childhood, it may have been helpful to incorporate a comparable group of bilingual children dominant in Spanish to most fruitfully compare these populations. Most importantly, this study had a limited sample of bilingual children from only two schools, so the absence of a statistically-significant effect for school type need not be taken as an argument against the effectiveness of DLI.

**6. Conclusion**

The present study concentrated on Spanish HSs’ acquisition of the subjunctive mood in volitional clauses using production and preference tasks. The finding that children improve in their command of subjunctive knowledge with age during the secondary school years and into adolescence is novel in research on the acquisition of this structure. Furthermore, the findings that patterns of HL use and HSs’ asymmetrical knowledge between production and comprehension align with Putnam and Sánchez’s (2013) activation-oriented account of HL acquisition and maintenance, although many participants displayed optionality in both domains. However, the finding that DLI did not have an impact on children’s acquisition of the Spanish subjunctive raises questions about the role of input and output quantity and quality and suggests that variables such as home exposure are more deterministic in the acquisition of this structure. Future work with other grammatical structures would be useful to substantiate this claim.

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1. Take, for instance, the acquisition of differential object marking or gender agreement morphology, which appear to be at ceiling in Spanish monolingual children by ages three to four (i.e., Mariscal, 2009; Rodríguez-Mondoñedo, 2008), rather than five. [↑](#footnote-ref-1)
2. This approach is consistent with that employed by Montrul and Potowski (2007) in their study of the acquisition of grammatical gender in a DLI school. [↑](#footnote-ref-2)
3. Since previous research has shown that children in DLI programs frequently respond in English despite receiving 100% of their input in Spanish (Potowski, 2004), it is plausible that even those children enrolled in bilingual schools would show variability in their use of Spanish in this context. [↑](#footnote-ref-3)
4. Note that in all of these sentences, the differential object marker *a* was missing, as this experiment also tested HSs’ knowledge of DOM in each of these sentences; these data are not reported here. [↑](#footnote-ref-4)
5. These forms were innovative inflections that are not a part of the Spanish inflectional system, and therefore, could not be categorized using existing categories. [↑](#footnote-ref-5)
6. This measurement refers to the five contexts of language use targeted on the language questionnaire except for “at school.” The sum of this and school language use formed the frequency of use score in the statistical modeling. [↑](#footnote-ref-6)
7. See footnote #5. [↑](#footnote-ref-7)
8. Flores et al. (2017) do not report receptive data, but in alignment with RQ4, it was predicted that children who produced this structure more frequently would also select it more consistently on the preference task. [↑](#footnote-ref-8)