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The Late(r) Bird Gets the Verb? Effects of Age of Acquisition of English on Adult Heritage Speakers' Knowledge of Subjunctive Mood in Spanish

David Giancaspro

Department of Latin American, Latino and Iberian Studies, University of Richmond, Richmond, VA 23173, USA; dgiancas@richmond.edu

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Abstract: Many previous studies have found that adult heritage speakers exhibit significant variability in their production and comprehension of mood morphology in Spanish. Nonetheless, it remains unclear what specific factors predict heritage speakers' likelihood of exhibiting such variability. The present study contributes to this question by testing the effect of both (a) age-of-acquisition of English and (b) Spanish proficiency on heritage speakers' productive and receptive knowledge of mood morphology. Seventeen "early" heritage speakers (age of acquisition of English: 0 to 3.5 years), 20 "late" heritage speakers (age of acquisition of English: 4 to 6 years), and 18 later childhood immigrants (age of arrival in the US: 8 to 12 years) completed a Contextualized Elicited Production Task and a Mood Preference Task. Results of the two experiments suggest that the later childhood immigrants, despite "overusing" subjunctive in +Presupposition adjectival relative clauses, are significantly more likely than "early" and "late" heritage speakers to produce and prefer subjunctive mood in expected subjunctive contexts (with *para que* and in -Presupposition adjectival relative clauses). Within the heritage speaker groups, however, Spanish proficiency was a stronger predictor of subjunctive knowledge than age of acquisition of English, a finding with implications for both heritage language research and pedagogy.

Keywords: heritage speakers; subjunctive mood; Spanish; inflectional morphology; age of acquisition; variability

1. Introduction

Broadly, the term heritage speaker (henceforth, HS) has both a cultural and a linguistic conceptualization, respectively. Though each of these conceptualizations relies upon contrasts between a majority/societal language, which is spoken by (almost) all members of a particular nation-state, and a minority/heritage language, which is spoken by a smaller subset of the population (e.g., immigrants and their children) in a more limited range of contexts (e.g., at home, in church), the two conceptualizations differ from one another in one critical respect.

To be considered a HS of heritage language X under the cultural conceptualization (e.g., Fishman 2001), it is only necessary that one feel a cultural connection to language X, usually (though not necessarily) due to family ties. In many cases, then, "cultural" HSs of a heritage language X are actually monolingual speakers of the majority/societal language Y whose acquisition of the minority/heritage language X, therefore, resembles that of traditional adult second language learners, rather than early childhood bilinguals.

Under the more restrictive, linguistic conceptualization of this term, on the other hand, early childhood experience with the minority/heritage language is a critical and defining trait. To be considered a "linguistic" HS, therefore, someone must "*grow up exposed to a minority language in*

the home" and the majority societal language (Montrul 2016, p. 16, emphasis mine). The present paper, which offers a detailed analysis of US Spanish speakers' linguistic knowledge—specifically, knowledge of subjunctive mood morphology in Spanish—necessarily adopts this second, more restrictive conceptualization of HSs.

Though more narrow (and in a sense, less inclusive) than the cultural conceptualization of HSs, the linguistic conceptualization still encompasses an enormous range of early bilingual language experience. Even linguistic HSs who meet Montrul's aforementioned definition differ from one another in a wide variety of ways, including, but not limited to, generational status (e.g., 2nd generation vs. 3rd generation: Alba et al. 2002; Portes and Rumbaut 2014; Silva-Corvalán 1994; inter alia), sibling status (e.g., older vs. younger siblings: Montrul and Sánchez-Walker 2013; Zentella 1997), heritage language proficiency (e.g., Montrul 2009; Montrul and Perpiñán 2011; inter alia) and access to formal education in the heritage language (e.g., Kupisch and Rothman 2018). Considering that they often differ from one another in these (and other) ways, it should come as no surprise that HSs exhibit a notoriously wide range of heritage language grammatical competence, especially in the realm of inflectional morphology, which, as noted by Benmamoun et al. (2013, p. 241), "is especially vulnerable in heritage languages."

At one end of the spectrum, some HSs, such as the HSs of Labrador Inuttitut reported in Sherkina-Lieber (2015), are passive bilinguals, demonstrating systematic comprehension of heritage language morphology but little capacity for producing it in speech. At the other end, other HSs, such as the HSs of French and German reported in Kupisch and van de Weijer (2016), produce heritage language morphology in ways that make them nearly indiscernible from dominant speakers of their respective heritage languages. In the face of such prominent differences in HSs' knowledge of inflectional morphology, it becomes critical for researchers to identify specific factors that make some HSs significantly more likely than others to exhibit target-like knowledge in this realm.

With this broader purpose in mind, the present study sets out to evaluate the role of two related factors—age of acquisition of the societal language (English) and heritage language proficiency—in shaping (adult) HSs' productive and receptive knowledge of mood morphology in Spanish. Though many recent studies (e.g., Giancaspro 2017, 2019, ; Montrul 2009; Montrul and Perpiñán 2011; Van Osch and Sleeman 2018; Perez-Cortes 2016; Torres 2018; Viner 2016, 2017, 2018; inter alia) have investigated HSs' production and comprehension of subjunctive mood in Spanish, none of these studies (to my knowledge) has compared the subjunctive mood competence of HSs with earlier and later ages of acquisition of the societal language, respectively. Furthermore, out of the few previous studies (Giancaspro 2019; Montrul 2009; Montrul and Perpiñán 2011; Perez-Cortes 2016) that have tested the impact of Spanish proficiency on HSs' subjunctive knowledge, none that I am aware of has controlled for participants' age of acquisition of English, raising questions about whether the proficiency effects that have been observed are driven (at least in part) by this second variable.

To test the role of age-of-acquisition of English—independently of proficiency—the present study compares the subjunctive mood knowledge of two proficiency-matched HS groups (EarlyHSs, who began acquiring English between birth and age 3.5, and LateHSs, who began acquiring English between age 4 and age 6) as well as a third group of later-childhood immigrants (LCIs, who began acquiring English between age 8 and age 12). To test the role of Spanish proficiency—independently of age-of-acquisition of English—the present study also compares the subjunctive mood knowledge of two age-of-acquisition-matched HS groups (AdvHSs, who scored 80% or above on the DELE Spanish proficiency test, and IntHSs, who scored between 60–79% on the same test). By evaluating each of these two potentially predictive variables, the present study contributes not just to our understanding of mood morphology in US Spanish but also to our understanding of age-of-acquisition and proficiency effects in heritage speaker populations more generally.

1.1. Subjunctive Mood in Spanish: Purpose Clauses and Adjectival Relative Clauses

Subjunctive mood morphology in Spanish is a set of morphological inflections used to mark modality on finite verbs (Bosque 2012). Typically, the subjunctive mood inflection of a given Spanish

verb is formed by changing that verb's thematic vowel from *-a* to *-e* (e.g., *visita* ('visit$_{Ind}$') to *visite* ('visit$_{Subj}$'), in the case of "*-ar* verbs," or *-e* to *-a* (e.g., *come* ('eat$_{Ind}$') to *coma* ('eat$_{Subj}$'), in the case of "*-er*/*-ir* verbs." Sometimes, however, subjunctive mood inflections are formed by shifting a verb's thematic vowel, as in the examples above, and changing the verb's root morpheme (e.g., from *tiene* ('have$_{Ind}$') to *tenga* ('have$_{Subj}$'). These doubly-marked forms are referred to as irregular.

Subjunctive mood morphology appears almost exclusively in non-matrix clauses and can be either lexically-selected or contextually-selected. For the sake of brevity, this section will focus exclusively on the two types of subjunctive mood selection tested in the present study: (i) lexically-selected subjunctive mood in *para que* ('so that') purpose clauses and (ii) contextually-selected subjunctive mood in non-presuppositional adjectival relative clauses.

In (1), the complementizer *para que* ('so that') obligatorily selects for subjunctive mood on the subsequent verb, *visitemos*. The default indicative mood form, *visitamos*, therefore, is ungrammatical.

1.	Michele$_i$ compra	dulces	para que	la$_i$	visitemos/*visitamos
	Michele buy-IND-3ps	sweets	for that	CL-3ps	visit-SUBJ-1ps/*visit-IND-1ps
	'Michele buys sweets so that we visit her'				

Not all Spanish complementizers, however, select for subjunctive mood, as shown in (2), where the complementizer *porque* ('because') obligatorily selects for the indicative mood form, *visitamos*, making the subjunctive mood variant, *visitemos*, ungrammatical.

2.	Michele$_i$ compra	dulces	porque	la$_i$	*visitemos/visitamos
	Michele buy-IND-3ps	sweets	because	CL-3ps	*visit-SUBJ-1ps/visit-IND-1ps
	'Michele buys sweets because we visit her'				

It is important to note that when mood morphology is lexically-selected, non-target verbal inflections, such as *visitamos* in (1), though ungrammatical, do not result in an alternative interpretation of the sentence. This, as we will see, is not the case in adjectival relative clauses.

Unlike in adverbial purpose clauses, such as (1) and (2), where only one type of mood morphology is grammatical, adjectival relative clauses (henceforth, ARCs), such as (3), permit the presence of either subjunctive or indicative, depending on the speaker's intended meaning.

3.	Busco	un robot que	hable/habla	tres idiomas
	look for-IND-1ps	a robot that	speak-SUBJ-3ps/speak-IND-3ps	three languages
	'I'm looking for a robot that speaks four languages'			

In isolation, the use of subjunctive mood in an ARC, according to Borgonovo et al. (2015), results in an attributive reading, implying, in this case, that the speaker does *not* presuppose the existence of the trilingual robot in question. The use of the indicative mood, on the other hand, triggers what Borgonovo et al. have called a referential reading, signaling that the speaker does, in fact, presuppose the existence of a particular trilingual robot (e.g., his own trilingual robot who tends to get lost a lot.)

Critically, the fact that both subjunctive and indicative mood forms can, in principle, appear in ARCs does not imply that the two forms are interchangeable. Quite on the contrary, their usage is highly sensitive to the presuppositional status of the broader context. In a non-presuppositional context, e.g., if the speaker in (3) is looking for *any* robot that speaks three languages, an indicative form in the ARC would be considered either ungrammatical or infelicitous. Similarly, in a presuppositional context, e.g., if the speaker in (3) is looking for a *specific* trilingual robot (e.g., the robot that he owns already), a subjunctive form would be considered ungrammatical or infelicitous.

1.2. Subjunctive Mood in US Spanish: Stability and Variability

The judgments presented thus far, it must be noted, are derived from monolingual varieties of Spanish[1]. However, given that (a) first-generation immigrants—often bilingual—provide heritage speakers with the majority of their heritage language input and (b) the Spanish spoken by such immigrants is susceptible to language change in the US context (e.g., Otheguy and Zentella 2012), it is important to briefly outline previous research on US Spanish speakers' knowledge of subjunctive mood with *para que* and in non-presuppositional ARCs, respectively.

In the case of purpose clauses with *para que*, previous research suggests that first-generation US immigrants perform exactly as described above. Viner (2016), in a corpus analysis of spontaneous speech, reports that first-generation immigrants living in New York (age of arrival: 16+ years) produce subjunctive 100% of the time with *para que*. Giancaspro (2019), who tested subjunctive mood knowledge with *para que* via an elicited production task, reports equally categorical subjunctive mood production (100%) by first-generation immigrants (age of arrival: 12+ years) living in New Jersey. On the basis of these two studies, it seems fair to conclude that in first-generation varieties of US Spanish, *para que* continues to obligatorily select for subjunctive mood morphology, as outlined above.

In the case of non-presuppositional ARCs, however, previous research paints a cloudier picture of change and stability in first-generation US Spanish. Viner (2018), working with the same corpus described in the previous paragraph, reports that first-generation immigrants produce subjunctive only 84% of the time in non-presuppositional ARCs, suggesting that indicative mood morphology is gaining ground, even for first-generation immigrants, in this particular context. Unlike Viner (2018), however, Giancaspro (2019), finds that the New Jersey first-generation immigrants mentioned in the previous paragraph produce subjunctive mood categorically (100%) in non-presuppositional ARCs. Based on these two studies, then, it seems apparent that first-generation immigrants, despite occasionally producing indicative mood in non-presuppositional ARCs, continue to exhibit a sensitivity to mood that is consistent with, if not identical to, the description presented in Section 1.1.

When producing subjunctive mood in Spanish, as with many other HL grammatical properties, adult HSs in the US exhibit increased variability relative to first-generation speakers, a pattern that holds true in both *para que* purpose clauses and non-presuppositional ARCs.

In his (2016) paper, Viner reports that Spanish HSs, all of whom were either born in the US or moved to the US by age 3, produce subjunctive 90% of the time with *para que*, demonstrating a small increase in non-target indicative mood forms. Viner's study did not, however, test whether HSs' subjunctive production was affected by age-of-acquisition of English or Spanish-language proficiency, which was not tested independently. Giancaspro (2019), in the only other study to have tested HSs' knowledge of this property, reports similar variability, this time modulated by Spanish-language proficiency: Advanced-proficiency HSs, as classified by the DELE proficiency exam, produced subjunctive mood 88.9% of time with *para que* while intermediate-proficiency HSs produced subjunctive just 55.5% of the time in the same context, showing a markedly increased tendency to produce non-target indicative mood forms. Due to an unbalanced, and relatively small, sample size, Giancaspro (2019) was unable to evaluate potential effects of age-of-acquisition of English.

Non-presuppositional ARCs, as shown by Viner (2018) and Giancaspro (2019), are an even more prominent locus of variability in US heritage Spanish. Working with the same participant group described in the previous paragraph, Viner (2018) found that HSs amplify the variable input that they receive from first-generation immigrants, producing subjunctive mood in just 64% of non-presuppositional ARCs. Giancaspro (2019), in an analysis of the same HSs described above, also reports evidence of strong (and proficiency-modulated) HS variability in this context. Advanced-proficiency HSs, on one hand, produced subjunctive in 66.9% of non-presuppositional ARCs

[1] According to Viner (2016, 2018), there is no evidence of cross-dialectal variability with the two subjunctive mood types tested in the present study.

while intermediate-proficiency HSs, on the other hand, produced subjunctive in just 15.1% of these contexts. These results, which highlight the role of HL proficiency in shaping HSs' subjunctive mood variability, do not, however, take into consideration the role of age-of-acquisition of English. In two other studies that have tested HSs' knowledge of ARCs—this time via comprehension tasks—Montrul (2009) and Montrul and Perpiñán (2011) also report advantages for advanced-proficiency HSs, though, like Giancaspro (2019), their studies do not control for age-of-acquisition of English.

To summarize, HSs in the US exhibit substantial variability in mood production, often producing non-target indicative mood forms both (a) with *para que* and (b) in non-presuppositional ARCs. However, it is only in non-presuppositional ARCs, where first-generation immigrants have begun to produce (occasional) indicative mood forms, that this variability can (potentially) be tied back to first-generation input. In the case of purpose clauses with *para que*, where first-generation immigrants produce subjunctive mood categorically, any input-quality-based explanation for HSs' variability with mood (e.g., Pires and Rothman 2009) must revolve around the variable input that HSs provide to each other, which, of course, would require its own, independent explanation. (What leads *those* HSs to alternate between subjunctive and indicative where their parents seemingly do not?)

Putting aside the question of input quality, which is notoriously difficult to operationalize, the only factor that has been reliably shown to shape HSs' variable knowledge of these two types of subjunctive mood is HL proficiency, which, as I note above, has not been tested independently of age-of-acquisition of English, a factor that I now explore in the following section.

1.3. Age of Acquisition Effects in Heritage Language Inflectional Morphology

As highlighted in Section 2, no previous study of HSs and subjunctive mood has controlled for the role of age-of-acquisition of English (henceforth, AofAE). Nonetheless, given the importance of this variable in the present paper, it is important to outline previous work on AofAE and its impact on HSs' knowledge of other grammatical properties. For the sake of time, the present section will focus on three studies, all of which deal directly with inflectional morphology. (For other studies of AofAE in heritage language acquisition, see Lee 2011; Montrul and Potowski 2007; Pascual y Cabo and Gómez-Soler 2015; Torres et al. 2019; inter alia).

Silva-Corvalán (1994), in her seminal study of Spanish in Los Angeles, compared the morphosyntactic production of three groups of Spanish-English bilinguals. Group 1 speakers consisted of first-generation immigrants who came to the US at age 12 or later, at which point they began learning English. Group 2 speakers, on the other hand, consisted of what we would now call HSs, all of whom either (a) were born in the US to first-generation parents or (b) immigrated to the US before the age of 6. Group 3 speakers, like the Group 2 speakers, also consisted of what we would now call HSs. The only differences between these two groups, therefore, were that all Group 3 speakers were born in the US and, all Group 3 speakers had at least one parent who was a Group 2 bilingual, making them "third-generation" HSs (Portes and Rumbaut 2014). Across a number of grammatical domains, including verbal morphology, Group 2 and Group 3 speakers exhibited increased variability relative to Group 1 speakers, e.g., by producing "non-target" perfective ('preterite') morphology in contexts where imperfective ('imperfect') morphology is expected.

At a broad level, Silva-Corvalán's study shows that HSs who began learning English between birth and age six are more susceptible to variability in the realm of verbal morphology than first-generation immigrants, who began acquiring English at age 12 or later. Nonetheless, because Silva-Corvalán does not report information about the AofAE (or, for that matter, Spanish proficiency) of her Group 2 and Group 3 participants, respectively, it is not possible for her to determine whether AofAE predicts variability amongst HSs who begin learning English between birth and age 6.

Montrul (2002), following Silva-Corvalán, tested knowledge of tense and aspect morphology amongst three groups of Spanish-English bilinguals: simultaneous HSs (n = 16), who began acquiring English between birth and age 3; sequential HSs (n = 15), who began acquiring English between age 4 and age 7; and late childhood immigrants (n = 8), who began acquiring English between the

ages of 8 and 12. Across a variety of productive and receptive experimental tasks, strong AofAE effects emerged. Of the three groups, the simultaneous HSs were least accurate in the production and comprehension of tense and aspect morphology, while the late childhood immigrants, according to Montrul, "appear to have a more stable grammar in Spanish" (p. 59), performing almost identically to first-generation immigrant controls. However, because (a) proficiency in Spanish was not tested and (b) the late childhood immigrant group consisted of only eight total participants, the observation that later AofAE leads to decreased heritage language variability must be considered very tentative.

Both Silva-Corvalán (1994) and Montrul (2002) found that AofAE played a strong role in shaping Spanish-English bilinguals' knowledge of inflectional morphology. A third, and more recent study, however, shows that the effect of this variable is not robustly apparent in all studies of HSs' knowledge of inflectional morphology. Montrul and Sánchez-Walker (2013), in a large-scale investigation of differential object marking (DOM) in US Spanish, compared the production of DOM by two groups of adult HSs: "simultaneous HSs," who began acquiring English between birth and age 5 (M = 2.5 years), and "sequential HSs," who began acquiring English "later" (M = 7.8 years). Results of both a Story Retelling Task and a Picture Description Task revealed that both groups exhibited nearly identical morphological variability, specifically by omitting DOM in approximately 20–25% of obligatory DOM contexts. Despite this finding, which seems to cast doubt on an explanatory role for AofAE in the production of DOM, Montrul and Sánchez Walker do report circumstantial evidence for AofAE effects: within both the simultaneous and sequential HS groups, participants with older siblings, who may have exposed them to English slightly earlier, were more likely to omit obligatory DOM.

1.4. Research Questions and Hypotheses

RQ1: Does AofAE affect Spanish-English HSs' productive and receptive sensitivity to Spanish mood morphology?

It is hypothesized that late childhood immigrants and HSs with later AofAE will be more sensitive to Spanish mood morphology, specifically, by (a) producing (and preferring) subjunctive mood in expected subjunctive contexts (*para que* purpose clauses and in non-presuppositional ARCs) and (b) producing (and preferring) indicative mood in expected indicative contexts (in adverbial clauses with *porque* and presuppositional ARCs).

RQ2: Does Spanish proficiency, as measured by the DELE, affect Spanish-English HSs' productive and receptive sensitivity to Spanish mood morphology?

It is hypothesized that HSs with higher Spanish proficiency scores will be more sensitive to Spanish mood morphology, specifically, by (a) producing (and preferring) subjunctive mood in expected subjunctive contexts (*para que* purpose clauses and in non-presuppositional ARCs) and (b) producing (and preferring) indicative mood in expected indicative contexts (in adverbial clauses with *porque* and presuppositional ARCs).

2. Materials and Methods

2.1. Participants

A total of 75 adults, all native Spanish speakers (and Spanish-English bilinguals) living in the US, participated in the present study. In order to evaluate the roles of AofAE, as well as Spanish-language proficiency, participants were divided up in two different groupings, each of which I outline in Sections 2.1.1 and 2.1.2, respectively.

2.1.1. Age of Acquisition of English

On the basis of their self-reported AofAE, participants were divided into four AofAE groups: three experimental groups and one control group. These four groups will be used in the Results section to test the role of AofAE on HSs' productive and receptive knowledge of mood.

The EarlyHS group (n = 17) consisted of HSs who began learning English between birth and age 3.5 (M = 1.91 years; SD = 1.24 years), matching the age range of the "simultaneous HS" group in Montrul's (2002) study. Out of these 17 EarlyHSs, all were born in the US except for one participant who immigrated at age 2. 13 of the 17 Early HSs (76.4%) had taken, or were currently enrolled in, a college-level Spanish course. The LateHS group (n = 20) consisted of HSs who began learning English between age 4 and age 6 (M = 4.85 years; SD = 0.75 years), matching the age range of the "early child L2" group in Montrul's (2002) study. Out of these 20 LateHSs, 15 were born in the US, while the remaining five immigrated at two, four, five, five, and six years of age, respectively. Fourteen of the 20 LateHSs (70.0%) had taken, or were currently enrolled in, a college-level Spanish course. The LateChildhoodImmigrant group (n = 18; henceforth, LCIs) consisted of Spanish native speakers who immigrated permanently[2] to the US between the ages of 8 and 12 (M = 10.06 years; SD = 1.39 years), matching the age of arrival of the "late child L2" group in Montrul (2002). Because there is no clear consensus as to whether such participants' acquisition of the societal language is "early enough" for them to be considered HSs (Montrul 2016), I do not refer to them as HSs in this paper. Out of the 18 LCIs, 14 (77.8%) had taken, or were currently enrolled in, a college-level Spanish course.

In addition to these three experimental groups, the Spanish-dominant controls (n = 20; henceforth, SDCs), all of whom began learning English in the US at age 13 or later, served as the bilingual control group in the present study. (For more on the importance of bilingual control groups in heritage language acquisition research, see Pascual y Cabo and Rothman 2012; inter alia). The decision to include SDCs who began learning English at age 13 is informed by research on L1 attrition (e.g., Bylund 2009a, 2009b; Schmid 2012), which shows that bilinguals who begin learning an L2 at this point or beyond are substantially less susceptible to attrition (or emerging variability) in the L1.

A few steps were taken to control potentially confounding variables such as Spanish input quality and Spanish proficiency. Recall, as pointed out in Section 1.2., that first-generation immigrants produce subjunctive mood categorically with *para que* and almost categorically in non-presuppositional ARCs, meaning that with these particular types of subjunctive at least, they are unlikely to produce, and thereby expose their HS children to, significant mood variability (e.g., "low-quality input"). To ensure that all participants had at least some exposure to "high quality" input with the properties of interest, all participants in the study had at least one first-generation immigrant parent (e.g., who immigrated to the US at age 15 or later). The vast majority of participants, including 88.2% of EarlyHSs, 85.0% of LateHSs and 83.3% of LCIs, had two first-generation immigrant parents.

All participants in the four AofAE groups completed the DELE Spanish proficiency exam, a fifty-question proficiency evaluation commonly used in heritage Spanish research (e.g., Montrul 2009). Results of a one-way ANOVA revealed that there were no statistically significant differences between the DELE scores of the EarlyHSs (Range = 31–45, M = 39.18, SD = 4.17) and the LateHSs (Range = 31–45, M = 39.50, SD = 3.83), $p > 0.9$. Any differences in the experimental performance of these two groups, therefore, will not be attributable to differences in Spanish proficiency (at least as operationalized by the DELE). The LCIs, however, scored significantly higher (Range = 36–47, M = 43.94, SD = 3.70) on the DELE than both the EarlyHSs ($p = 0.002$) and the LateHSs ($p = 0.003$). Experimental differences between the LCIs and the HS groups, therefore, could, in fact, be driven by differences in either AofAE or Spanish proficiency. Interestingly, the SDCs, who serve as the control group, did not score higher on the DELE (M = 45.60, SD = 2.62) than the LCIs, $p > 0.9$.

Participants in each of the four AofAE groups provided self-ratings of their English and Spanish proficiencies (1 = beginner; 10 = native like), respectively, shedding light on their relative

[2] Four of the LCIs were born in the US but then moved to a Spanish-speaking country during very early childhood, specifically, at the ages of (a) 3 weeks old (Participant 61), (b) 2 months old (Participant 11), (c) 2 years old (Participant 75) and (d) 4 years old (Participant 75). Participant 11 and Participant 75 may have been exposed to some English early in childhood. However, given that both of these participants lived with monolingual, Spanish-speaking parents during these short stints in the US, it is unlikely that they received anything more than minimal English exposure at home.

language dominance and revealing further qualitative and quantitative between-group differences. Paired-samples *t*-tests revealed that the EarlyHSs rated their English proficiency (M = 9.94; SD = 0.24) significantly higher than their Spanish proficiency (M = 7.59; SD = 1.50), $t(16) = 6.305$, $p < 0.001$, $d = 1.53$, a common trend amongst HSs of Spanish in the US. Further *t*-tests revealed that the LateHSs, like the EarlyHSs, also rated their English proficiency (M = 9.40; SD = 1.31) significantly higher than their Spanish proficiency (M = 7.75; SD = 2.15), $t(19) = 4.134$, $p < 0.001$, $d = 0.92$. Notably, as reflected in the effect size measurement (Cohen's *d*), the EarlyHSs ($d = 1.53$) appear to be less balanced than the LateHSs ($d = 0.92$), given that their self-ratings differ more across English and Spanish.

Unlike the EarlyHSs and LateHSs, each of whom was "English-dominant," the LCIs were "Spanish-dominant," rating their English proficiency (M = 8.83; SD = 1.04) significantly lower than their Spanish proficiency (M = 9.56; SD = 0.78), $t(17) = -2.404$, $p < 0.05$, $d = 0.57$. Nonetheless, the LCIs were the most balanced of the three experimental groups, as indicated by the small effect size ($d = 0.57$) of their self-ratings differential. Not surprisingly, the SDCs, too, were Spanish-dominant, rating their English (M = 7.70, SD = 1.34) significantly lower than their Spanish (M = 9.95, SD = 0.22), $t(19) = 6.957$, $p < 0.001$, $d = 1.56$). The strong effect size of this comparison ($d = 1.56$) shows that the SDCs, despite their high English-language proficiency, are more Spanish-dominant than the LCIs.

2.1.2. Spanish Proficiency (DELE)

In order to test the role of Spanish proficiency on participants' subjunctive mood knowledge, the 37 HSs from the EarlyHS and LateHS groups, respectively, were divided a second time, this time into separate proficiency groups: advanced-proficiency HSs (henceforth, AdvHSs: $n = 21$), who scored 40 or higher on the DELE proficiency exam (M = 42.29, SD = 1.68), and intermediate-proficiency HSs (henceforth, IntHSs; $n = 16$), who scored between 30–39 (M = 35.50, SD = 2.37) on the DELE proficiency exam. The LCIs and SDCs were not included in this second, proficiency-based analysis because their presence would make it impossible to effectively ensure that both intermediate and advanced proficiency levels were statistically comparable in terms of AofAE.

Critically, there were no statistically significant differences between the AofAE of the AdvHSs (M = 3.5 years; SD = 1.68 years) and the IntHSs (M = 3.5 years; SD = 1.97 years), meaning that any experimental differences between the groups are not attributable to AofAE. In addition to being matched on this variable, the two proficiency-groups were also relatively similar to one another in other ways. Most of the AdvHSs (90.5%) and the IntHSs (81.3%) were the children of two first-generation immigrants. Similarly, most AdvHSs (16/21; 76.2%) and IntHSs (11/16; 68.8%) had taken, or were currently enrolled in, a college-level Spanish course at the time of the present study.

Paired samples *t*-tests on the two groups' Spanish and English self-ratings revealed that the IntHSs rated their English proficiency (M = 9.44; SD = 1.31) significantly higher than their Spanish proficiency (M = 6.62; SD = 1.93), $t(15) = 6.394$, $p < 0.001$, $d = 1.60$. The AdvHSs, who also rated their English proficiency (M = 9.81; SD = 0.68) significantly higher than their Spanish proficiency (M = 8.48; SD = 1.36), $t(20) = 4.513$, $p < 0.001$, $d = 0.98$, were less English-dominant than the IntHSs.

2.2. Procedure

After signing the informed consent forms (IRB Protocol #16-454M), all participants completed three experimental tasks, as well as the DELE proficiency exam and a Language Background Questionnaire. In the present paper, I report results from the first and third experimental tasks, respectively, which all participants completed in the same order.

2.2.1. Contextualized Elicited Production Task (CEPT)

The first experimental task was a Contextualized Elicited Production Task (henceforth, CEPT), based on Giancaspro (2019) and Pérez-Leroux (1998). The goal of this task was to test participants' productive knowledge of mood, that is to say, whether participants, when presented with lexical items

and contexts that trigger subjunctive or indicative mood, respectively, would be able to produce target mood forms in speech.

In the CEPT, which was completed using PowerPoint, participants were asked to imagine themselves in a department store, where they are shopping for friends and family members. For each experimental item, they listened to a brief context which described a product (e.g., a robot) with a given characteristic (e.g., the ability to speak four languages). After hearing each context (which also appeared on screen), participants were presented with a sentence fragment, which they (a) read word for word and then (b) completed (using a form of an infinitival verb given in parentheses, as well as any other words that they would like to add) to express their needs to a store clerk. Participants' responses to each item were recorded using an H4nZoom recorder.

There were four experimental conditions in the CEPT: two that targeted lexically-selected mood and two that targeted contextually-selected mood, as shown in Table 1. In addition to these four experimental conditions, the CEPT also included two unrelated filler conditions (k = 9 each), both of which targeted tense and aspect morphology (and neither of which will be discussed further here.)

Table 1. Experimental conditions of the contextualized elicited production task.

Condition	MoodSelection	Target Mood	# of Items
para que	Lexical	Subjunctive	12
porque	Lexical	Indicative	6
−PRE ARC	Contextual	Subjunctive	12
+PRE ARC	Contextual	Indicative	6

In the lexically-selected mood conditions, where the target mood form was not dictated by the presence or absence of presupposition, all contexts consisted of two-sentence descriptions of a product that participants were buying for a friend or family member. Though all of these contexts were presented to participants in Spanish, I translate them into English here for the sake of brevity.

In the *para que* condition (k = 12), the sentence fragment that followed this initial context always ended with one of two structures (both k's = 6), each of which finished with *para que* (and a subject). Examples of each of these structures can be seen in (4a,b). Regardless of the structure, participants were expected to produce subjunctive mood, given that subjunctive is obligatory after *para que*.

4. Context: Your cousin is a biologist. She needs new binoculars for observing tropical birds.
   You tell the store clerk:

   a.

Busco	unos	binoculares	nuevos	para	que	mi	prima	(OBSERVAR)
Look for-1ps	some	binoculars	new	for	that	my	cousin	(OBSERVE)

   'I am looking for some new binoculars so that my cousin (observe)'

Expected Response:	para	que	mi	prima	*observe*	los pájaros
	for	that	my	cousin	*observe-3ps-SUBJ*	the birds

   'so that my cousin observes the birds'

Originally, the goal of testing *both* of these structures was to see if participants were more likely to produce subjunctive mood after exposure to a structural prime (*para que...vaya* 'so that (she) goes' in (4b)) than after no such exposure. However, because participants' probability of subjunctive production was not different across these two sub-conditions (AofAE Model: EarlyHSs: $p = 0.60$; LateHSs: $p = 0.81$; LCIs: $p = 0.76$; SDCs: $p = 0.60$; Proficiency Model: IntHSs: $p = 0.87$; AdvHSs: $p = 0.54$)), I collapse them into one condition in all subsequent statistical analyses.

In the *porque* condition (k = 6), on the other hand, the post-context sentence fragment always ended with *porque* (and a subject), as in (5). Given that *porque* obligatorily selects for indicative mood, participants in this condition were expected to produce indicative mood morphology on the verb.

5. Context: You need a fun movie for your friend. His girlfriend left him yesterday, and now he seems to be very upset. You tell the store clerk:

Busco	una	película	de	humor	porque	ahora	mi	amigo	(ESTAR)
Look for-1ps	a	movie	of	humor	because	now	mi	friend	(BE)

'I am looking for a comedy movie because now my friend (be)...'

Expected Response:	Porque	ahora	mi	amigo	*está*	muy triste
	Because	now	my	friend	*be-3ps-IND*	very sad

'because now my friend is very sad'

In the contextually-selected mood conditions, where the target mood form was dictated by the presence or absence of presupposition, contexts were different in the non-presuppositional ARC condition and presuppositional ARC conditions, respectively. (Notably, all contexts in the + and −Presupposition conditions were presented in Spanish. I present them in English here for the sake of brevity.)

In the non-presuppositional ARC condition (k = 12), contexts consisted of two-sentence descriptions, always following the same format. In the first sentence, participants heard about a product that they were looking for, e.g., a robot that speaks four languages. Then, participants heard that they are only able to find a product with a slightly different characteristic (e.g., that speaks two or three languages only), thereby establishing a lack of presupposition. After hearing and reading this context, participants completed a sentence fragment which always appeared in one of two possible structures. Examples of each of these two structures are presented below in (6a-b). Regardless of the structure, participants were expected to produce subjunctive mood morphology, given the lack of presupposition in context.

The original intention of testing these two structures was to probe for structural priming effects, e.g., to see if participants were more likely to produce subjunctive after a coordinate prime (*que sea*$_{SUBJ}$ *verde* 'that is green' in (6a)) than after a non-coordinate prime (que *le traiga*$_{SUBJ}$ 'that brings him' in (6b)). However, because participants' probability of subjunctive production was not different across these two-sub conditions (AofAE Model: EarlyHSs: $p = 0.85$; LateHSs: $p = 0.24$; LCIs: $p = 0.56$; SDCs: $p = 0.33$; Proficiency Model: IntHSs: $p = 0.34$; AdvHSs: $p = 0.87$)), I collapse them in all subsequent analyses.

6. Context: You need a green robot with the ability to speak four languages. You find one with the capacity to function in two languages and another with the capacity to function in three. You say to the store clerk:

a.

Busco	Un	robot que	*sea*	verde	y	que	that	
look for-1ps	A	robot that	*is-3ps-SUBJ*	green	and	that	(SPEAK)	

'I am looking for a robot that is green and that (speaks)...'

Expected Response:	que	*sea*	verde	y	que	*hable*	4	idiomas
	that	*be-3ps-SUBJ*	green	and	that	*speak-3ps-SUBJ*	four	languages

'that is green and speaks four languages'

b.

Mi jefe$_i$	quiere	que	le$_i$	*traiga*	un	robot que	(HABLAR)
My boss	want-3ps	that	Cl-3ps	*bring-1ps-SUBJ*	a	robot that	(SPEAK)

'My boss wants me to bring him a robot that (speaks)...'

Expected Response:	que	*hable*	4	idiomas
	that	*speak-3ps-SUBJ*	four	languages

'that speaks four languages'

In the presuppositional ARC condition (k = 6), contexts consisted of 2–3 sentence descriptions, always following the same format. In the first sentence, participants hear about a product that they are looking for (e.g., a remote control car with the ability to go more than 40 mph). Then, they hear that they were able to find the product, thereby establishing presupposition. After hearing and reading this context, participants completed a sentence fragment with the following structure (exemplified in (7)),

designed to further reinforce the presence of presupposition. Because of the presence of presupposition, participants were expected to produce indicative mood morphology.

7. Context: You need a remote-control car with the ability to go more than 40 mph. It's for your grandson. After 5 min, you find one in the toy section. You say to the store clerk:
Gracias, pero no necesito ayuda. Ya encontré[3] un carrito que (IR)
Thanks, but NEG need-IND-1ps help. Already find-PST-1ps a car that (GO)
'Thanks, but I do not need help. I already found a car that (goes)...'

Expected Response:
que *va* a más de 40 millas por hora
that *go-3ps-IND* at more of 40 miles for hour
'that goes more than 40 miles per hour'

All item contexts were voiced by a first-generation immigrant from Colombia (Age of Arrival: 15 years). After hearing the recording of the context, which played automatically at the beginning of each experimental item, participants were able to replay the audio file as many times as they chose. For a list of the verbs used in the CEPT, as well as a screenshot of a sample item, please see Appendix A.

2.2.2. Mood Preference Task (MPT)

The second experimental task was a Mood Preference Task (henceforth, MPT). The goal of this task was to test participants' *receptive* sensitivity to mood, that is to say, whether participants, when presented with a context followed by target and non-target mood morphology, could recognize (and then select) target mood forms. Like the CEPT, the MPT, which was presented via PowerPoint, took place in a shopping context, this time involving two identical twin sisters (Gabriela and Elena) who were shopping for various family members and friends.

On each slide of the experiment, participants first listened to a brief description, the text of which was also presented on screen. (Though these descriptions were always in Spanish, I present them in English in the sample items below.) After listening to each description, participants then heard two follow-up sentences, one from Gabriela and one from Elena, both of whom appeared (in animated form) at the bottom of the slide. Participants' job in the task was to listen to each sister's follow-up sentence (always minimal pairs) and then decide which of the two sentences sounded better. Participants indicated their choice by circling one of the sisters on the experimental answer sheet.

The MPT included four experimental conditions (k = 5 each): two that targeted lexically-selected mood and two that targeted contextually-selected mood, as shown in Table 2. In addition to these four experimental conditions, the MPT also included two unrelated filler conditions (k = 5 each), neither of which will be discussed during the remainder of this paper.

Table 2. Experimental conditions of the mood preference task.

Condition	MoodSelection	Target Mood	# of Items
para que	Lexical	Subjunctive	5
porque	Lexical	Indicative	5
−PRE ARC	Contextual	Subjunctive	5
+PRE ARC	Contextual	Indicative	5

[3] A reviewer suggests that it would have been better for the sentence fragments in the presuppositional ARC condition, such as (7), to begin with the verb, *busco* ('I look for'), as in the -Presupposition items. While doing so would make the items in the presuppositional ARC and non-presuppositional ARC conditions more similar structurally, it is not necessary to have structurally identical items, respectively, in order to show that HSs are sensitive to mood in ARCs. If HSs produce more subjunctive mood in sentences like (6a-b) than in sentences like (7), then it is clear that their production of mood is modulated by the presence or absence of presupposition.

In the two lexically-selected conditions, where the target mood was not driven by presupposition in the context, the description at the beginning of each slide always consisted of the same sentence structure. Specifically, Gabriela uses a command (*mira*, 'look') to direct the participants' attention to a particular product that the twin sisters have purchased for someone, e.g., *la bicicleta que le compramos a nuestro papá* ('the bike that we bought for our dad').

In the *para que* condition (k = 5), the follow-up sentences are minimal pairs, always including an adverbial clause headed by the complementizer *para que.* The only difference between the two follow-up sentences in this condition, therefore, is the mood morphology on the verb after *para que*. Because *para que* obligatorily selects for subjunctive mood morphology, participants who are sensitive to mood are expected to prefer the subjunctive mood follow-up sentence (e.g., (8a) instead of (8b)).

8. Context: Look at the bicycle that we bought for our dad!

a.	Se	la	compramos para que él	*haga*	más ejercicio
	Cl-3ps	Cl-3ps	buy-1ps	for that he *do-3ps-SUBJ*	more exercise
b.	Se	la	compramos para que él	**hace*	más ejercicio
	CL-3ps	Cl-3ps	buy-1ps	for that he **do-3ps-IND*	more exercise

'We bought it (the bicycle) for him so that he would exercise more'

In the *porque* condition (k = 5), the follow-up sentences are also minimal pairs, this time always including an adverbial clause headed by the complementizer *porque*. The only difference between the two follow-up sentences in this condition, then, is the mood morphology on the verb after *porque.* Given that *porque* obligatorily selects for indicative mood morphology, participants who are sensitive to mood are expected to prefer the indicative follow-up sentence (e.g., (9a) instead of (9b)).

9. Context: Look at the big notebook that we bought for our mom!

a.	Se	lo	compramos porque ella	*necesita*	cuadernos para su poesía
	Cl-3ps	Cl-3ps	buy-1ps because she	*need-3ps-IND*	notebooks for her poetry
b.	Se	lo	compramos porque ella	**necesite*	cuadernos para su poesía
	Cl-3ps	Cl-3ps	buy-1ps because she	**need-3ps-SUBJ*	notebooks for her poetry

'We bought it (the notebook) for her because she needs notebooks for her poetry'

In the two contextually-selected conditions, where the target mood was driven by presupposition in the context, the description at the beginning of each slide differed in the -Presupposition and +Presupposition conditions, respectively.

In the non-presuppositional ARC condition (k = 5), Gabriela begins by describing something (e.g., *algo dulce*, 'something sweet') that they need to buy for a particular person. In the sentence that follows, Gabriela makes it clear that they do not know whether the store will have such a product, specifically by stating, *no hemos visto nada* ('we have not seen anything'). This second sentence establishes that they do not presuppose the existence of the product in question. The follow-up sentences in this condition, as in the previous conditions, are minimal pairs, always including ARCs headed by *que*. The only difference between the two follow-up sentences, therefore, is the mood morphology on the verb in the ARC. Given the lack of presupposition, participants who are sensitive to mood are expected to prefer the subjunctive mood follow-up sentence (e.g., (6a) instead of (6b)).

10. Context: We need something sweet for our dad, but we haven't found anything.

a.	Buscamos	un postre	que *tenga*	chocolate y arándanos
	Look for-1ps	a dessert	that	*has-3ps-SUBJ* chocolate and blueberries
b.	Buscamos	un postre	que **tiene*	chocolate y arándanos
	Look for-1ps	a dessert	that	**has-3ps-IND* chocolate and blueberries

'We are looking for a dessert that has chocolate and blueberries'

Finally, in the presuppositional ARC condition (k = 5), Gabriela begins by stating that she and her sister needed to find something for a particular person. Then, she clarifies a particular store (e.g., *una tienda de deportes* 'a sports store') where they went (past tense) to find that product. The follow-up sentences begin by stating (using the telic verb, *encontrar* 'find') that the sisters have found a particular product that they were looking for (e.g., *una maleta*, 'a bag') with a particular characteristic (e.g., *que lleva muchísimos balones de fútbol*, 'that carries lots of soccer balls'), always expressed via an ARC headed by *que*. The only difference between the two follow-up sentences, therefore, is the mood morphology on the verb in the ARC. Given the clear presupposition in context, participants who are sensitive to mood are expected to prefer the indicative mood follow-up sentence (e.g., (7a) instead of (7b)).

11. Context: We needed something for our dad. We went to a sporting goods store and:

a.	Encontramos	una maleta	que *lleva*	muchísimos	balones de fútbol
	Find-1p-pl	a bag	that *carry-3ps-IND*	lots of	balls of soccer
b.	Encontramos	una maleta	que **lleve*	muchísimos	balones de fútbol
	Find-1p-pl	a bag	that **carry-3ps-SUBJ*	lots of	balls of soccer

'We found a bag that carries lots of soccer balls'

A few steps were taken to ensure that participants' responses in the MPT were not impacted by extraneous factors. First, all of Gabriela and Elena's follow-up sentences were voiced by the same speaker, namely, a first-generation immigrant (age of arrival: 13 years) from Colombia. Consequently, participants' responses (e.g., a tendency to accept more of Gabriela's follow-up sentences) cannot reflect bias towards a particular characteristic of one sister's speech. Second, Gabriela and Elena each produced 50% "target" follow-up sentences and 50% "non-target" follow-up sentences, ensuring that participants could not be biased towards one of the two speakers for reasons of grammaticality. Finally, two versions of the experiment were created, each with the same items presented in the exact opposite order, thereby mitigating potential effects of participant fatigue. For a list of the verbs used in the MPT, as well as a screenshot of a sample item, see Appendix A.

3. Results

Before presenting the results of the CEPT and the MPT, it is important to first outline the statistical analyses that will be used in this paper. In both the CEPT and the MPT, the dependent variables (SubjunctiveProduction and SubjunctivePreference) are binary. In data sets with a binary response variable, such as SubjunctiveProduction (1 = yes; 0 = no), as well as multiple responses per participant, the appropriate statistical approach is to use a logistic mixed effects model. (For recent examples of such statistical models in heritage language research, see Giancaspro 2019; Kupisch and van de Weijer 2016; Van Osch and Sleeman 2018; inter alia.)

Logistic mixed effects models, which take into account random differences across participants (e.g., that some participants produce more subjunctive than others) and items (e.g., that some items of an experiment elicit more subjunctive responses than others), generate predicted probabilities of the binary outcome variable (e.g., producing subjunctive), which can be calculated for specific groups in specific conditions. In addition, these statistical models also generate *p*-values (for determining the statistical significance of between-group or within-group differences in predicted probabilities) and odds-ratios (henceforth, ORs), which measure effect size (Durlak 2009)[4].

In the analyses presented below, I will focus exclusively on the three-way interaction effects of each logistic mixed effects model. (That is to say, I will not comment on main effects or two-way

[4] An odds-ratio (OR), as the name suggests, is simply the ratio between two odds. If a group's probability of producing subjunctive in Condition A is 80 percent—which can be expressed in odds as '4' (80/20 = 4)—and their predicted probability of producing subjunctive in Condition B is 50 percent—which can be expressed in odds as '1' (50/50 = 1)—then the odds ratio between these two conditions is 4 (4/1 = 4).

interactions. For a list of these main effects and interactions, see Appendix B.) The rationale behind this decision is twofold. First, presenting all main effects and two-way interactions takes up substantial space. Second, only three-way interactions generate the outcome of primary interest, namely, predicted probabilities for each group in each condition.

Because the present paper focuses on differences between the three experimental groups, I will (generally) refrain from presenting statistical comparisons that involve the control group (SDCs). Nonetheless, in order to provide readers with an idea of how first-generation immigrants respond in each of the experimental conditions, I include the SDCs in all graphs/figures.

3.1. Contextualized Elicited Production Task (CEPT)

3.1.1. Coding and Data Exclusion

Of the participants' 2700 total responses, 140 (5.19%) were excluded, primarily when participants (a) made a recording error (e.g., recording over a previous response), (b) misread a sentence fragment (e.g., replacing *un* ('a') with *el* ('the')), or (c) added lexical items (especially the modal verb, *pueda* 'can') before the verb provided in parentheses. Other types of eliminated responses include infinitival forms (e.g., not inflecting the verb provided in parentheses), non-present finite forms (e.g., future or preterite inflections) and ambiguously mood-marked forms (e.g., *hague*, 'do'; because this verb consists of a subjunctive root *hag-* and an indicative inflection *-e*, it is not possible to determine whether this response is subjunctive or indicative). Each of the remaining 2560 responses was coded for mood: subjunctive responses were coded as '1' and indicative responses were coded as '0.'

3.1.2. Statistical Model 1: AofAE

Participants' 2560 responses were analyzed using a logistic mixed effects model. The model included the fixed effects Group (EarlyHSs, LateHSs, LCIs and SDCs), MoodSelectType (Lexical Selection, Contextual Selection), ExpectedMood[5] (Subjunctive, Indicative), and all interactions between these variables, as well as random intercepts for both subject and item.

3.1.3. Model Results

The logistic mixed effects model revealed that the Group*MoodSelectType*ExpectedMood interaction was not statistically significant, F (3, 2544) = 0.61, p = 0.61. Nonetheless, exploring this interaction, shown in Figure 1, allows us to shed light on the research questions of the present study. (For tables with all interaction effects, see Appendix B.)

If participants are sensitive to lexically-selected mood, they would be expected to produce significantly more subjunctive mood with *para que*, which selects for subjunctive, than with *porque*, which does not. Results of post-hoc comparisons indicate that the EarlyHSs ($p < 0.001$, OR = 203.16), LateHSs ($p < 0.001$, OR = 652.62), and LCIs ($p < 0.001$, OR = 102,539.15) all (clearly) make this distinction, demonstrating strong sensitivity to the mood selection requirements of these two complementizers.

The fact that all groups make this distinction, however, does not preclude potential effects of AofAE on lexically-selected mood production. To explore the potential impact of AofAE, and in doing so, begin answering RQ #1, I now turn to between-group comparisons. In the *porque* condition, where subjunctive mood is not expected, the three groups did not differ from one another (all p's > 0.69). In the *para que* condition, however, where subjunctive mood is expected, the LCIs were significantly more likely to produce subjunctive mood than both the EarlyHSs ($p < 0.001$, OR = 321.18) and the LateHSs ($p < 0.001$, OR = 113.18), indicating strong AofAE effects. Within the HS groups, however,

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[5] The variable ExpectedMood simply refers to the mood morphology that is expected in a given context, based on what is known about mood selection in monolingual and first-generation immigrant varieties of Spanish. Because *para que*, for example, obligatorily selects for subjunctive mood in these varieties, the *para que* condition is coded as '1': SubjunctiveExpected.

AofAE played a far less important role, given that the LateHSs were only marginally more likely to produce subjunctive mood than the EarlyHSs, $p = 0.076$, OR = 2.84.

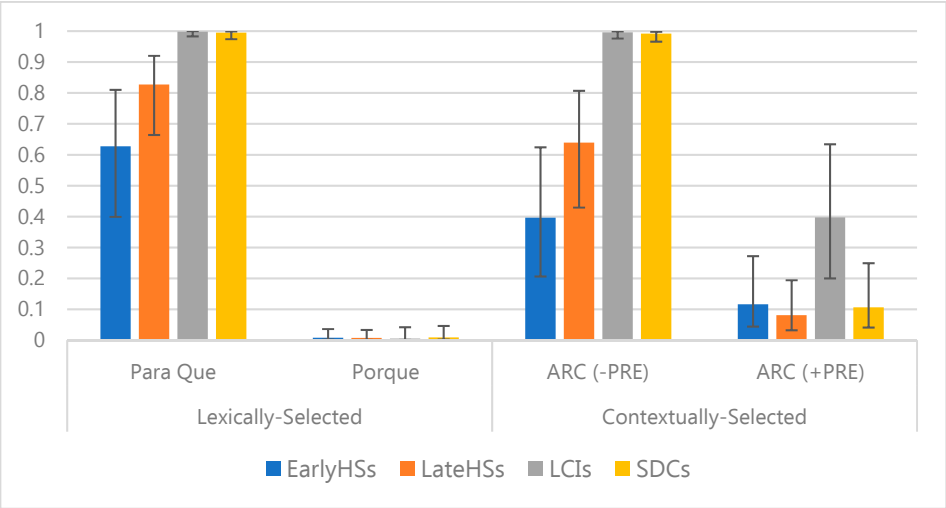

Figure 1. Participants' predicted probability of subjunctive production by Group, MoodSelectionType and ExpectedMood (Condition). Error bars indicate 95% confidence intervals.

If participants are sensitive to contextually-selected mood, they would be expected to produce significantly more subjunctive in non-presuppositional ARCs, which select for subjunctive mood, than in presuppositional ARCs, which do not. Results of post-hoc comparisons reveal, as in the case of lexically-selected mood, that the EarlyHSs ($p < 0.01$, OR = 4.98), LateHSs ($p < 0.001$, OR = 19.99), and LCIs ($p < 0.001$, OR = 360.68) all exhibit clear sensitivity to mood distinctions in ARCs.

To test whether AofAE affects participants' production of contextually-selected mood, thereby concluding our response to RQ #1, we now turn to between-group comparisons. In the presuppositional ARC condition, where subjunctive mood is not expected, a surprising trend emerged. The LCIs, whose predicted probability of subjunctive production in this condition reached nearly 40%, were significantly more likely to produce subjunctive here than the EarlyHSs ($p < 0.05$, OR = 5.00), LateHSs ($p < 0.01$, OR = 7.43), and SDCs ($p < 0.05$, OR = 5.53). The fact that this curious tendency is not attested in the SDC group points to the possibility that it is a subjunctive mood innovation specific to late childhood immigrants. In the non-presuppositional ARC condition, where subjunctive mood is expected, AofAE once again shaped participants' mood production, albeit less so for the HS groups. As with lexically-selected mood, the LCIs' predicted probability of subjunctive was significantly greater than that of the EarlyHSs ($p < 0.001$, OR = 362.77) and LateHSs ($p < 0.001$, OR = 134.02). The LateHSs, however, were only marginally more likely to produce subjunctive than the EarlyHSs, $p = 0.085$, OR = 2.70.

3.1.4. Statistical Model 2: DELE Proficiency

To test the effects of proficiency on HSs' production of subjunctive mood, a second statistical model was run. As in Statistical Model 1, participants' 1281 responses were analyzed using a logistic mixed effects model. This time, the model included the fixed effects Group (AdvHSs, IntHSs), MoodSelectType (Lexical Selection, Contextual Selection), ExpectedMood (Subjunctive, Indicative), and all interactions between these variables, as well as random intercepts for both subject and item.

Results of this second logistic mixed effects model (Statistical Model 2) revealed that the Group*MoodSelectType*ExpectedMood interaction was not statistically significant, F (1, 1273) = 1.205,

p = 0.272. Nonetheless, exploring this interaction, shown in Figure 2, offers important insights. (For tables with all interaction effects, see Appendix B.)

In the *para que* condition, where the previous model revealed only marginally significant differences between the LateHSs and EarlyHSs, the AdvHSs' predicted probability of subjunctive production was significantly higher than that of the IntHSs, $p < 0.01$, OR = 5.91. In the non-presuppositional ARC condition, where the previous model once again only showed marginally significant differences between the LateHSs and EarlyHSs, the AdvHSs' predicted probability of subjunctive production once again was significantly higher than that of the IntHSs, $p < 0.01$, OR = 7.09.

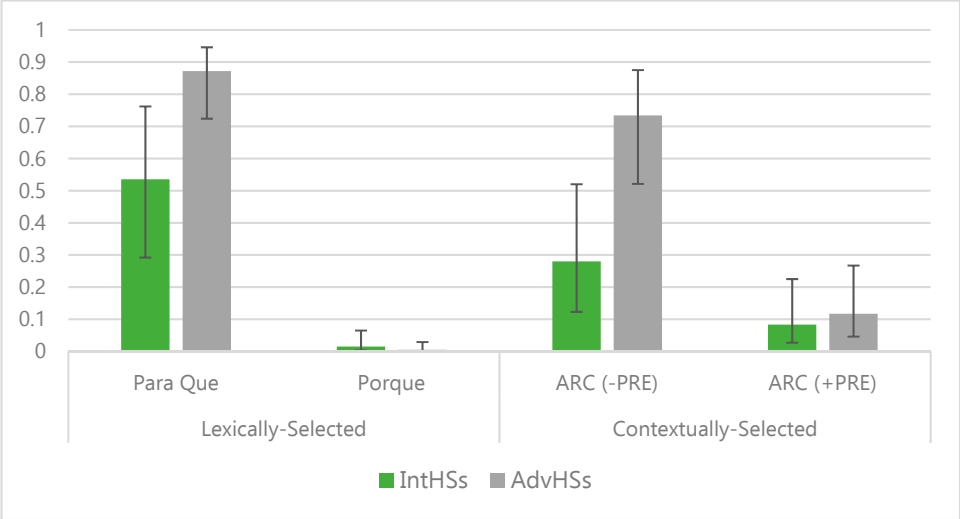

Figure 2. Heritage speakers' predicted probability of subjunctive production[6] by Group (Proficiency), MoodSelectionType and ExpectedMood (Condition). Error bars indicate 95% confidence intervals.

Based on these results, it is apparent that grouping HSs by DELE proficiency score, rather than AofAE, is a more effective way of predicting their patterns of subjunctive mood production. To illustrate this point, I now conclude this section with a brief presentation of the individual data from the 37 HSs who completed the CEPT. Figure 3 depicts each individual heritage speaker's proportion of subjunctive production—as a function of AofAE—with *para que* (blue dots) and in non-presuppositional ARCs (orange dots). What stands out about Figure 3 is the enormous range of variability, most apparent for HSs who began acquiring English at age 1 or age 5. At both of these ages of acquisition of English, there are participants who almost never produce either type of subjunctive and participants who produce both subjunctive types categorically.

Figure 4, on the other hand, shows each individual heritage speakers' proportion of subjunctive production as a function of DELE proficiency score. With minimal exceptions, the lowest-proficiency HSs produce less subjunctive mood than the highest proficiency HSs, respectively. The individual data, then, seem to corroborate the finding that for HSs who begin learning English between birth and age 6, Spanish proficiency is a better predictor of subjunctive production than AofAE.

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[6] In Section 2.2.1, I presented statistics showing that participants were no more likely to produce subjunctive in the "prime conditions" ((4b) and (6a)) than in the baseline conditions. Despite this finding, it is conceivable that participants, as a result of seeing target subjunctive forms in some experimental sentence fragments, may have produced more subjunctive with *para que* and in -PRE ARCs than what has been observed in previous studies. A quick comparison with the results of Giancaspro (2019), whose production task did not expose participants to any subjunctive primes, shows that this is not the case. The 12 IntHSs (55.5% with *para que* and 15.1% in -PRE ARCs) and 17 AdvHSs (88.9% with *para que* and 66.9% in -PRE ARCs) in Giancaspro (2019) produced very similar rates of subjunctive as compared to the IntHSs (53.5% with *para que* and 28.0% in -PRE ARCs) and AdvHSs (87.2% with *para que* and 73.4 in -PRE ARCs) in the present study.

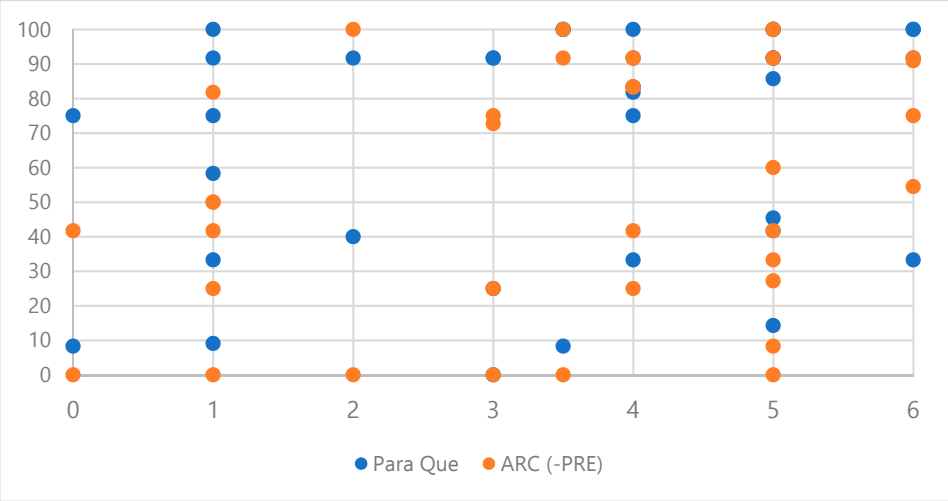

Figure 3. Heritage speakers' raw proportion (%) of subjunctive production by AofAE (Years).

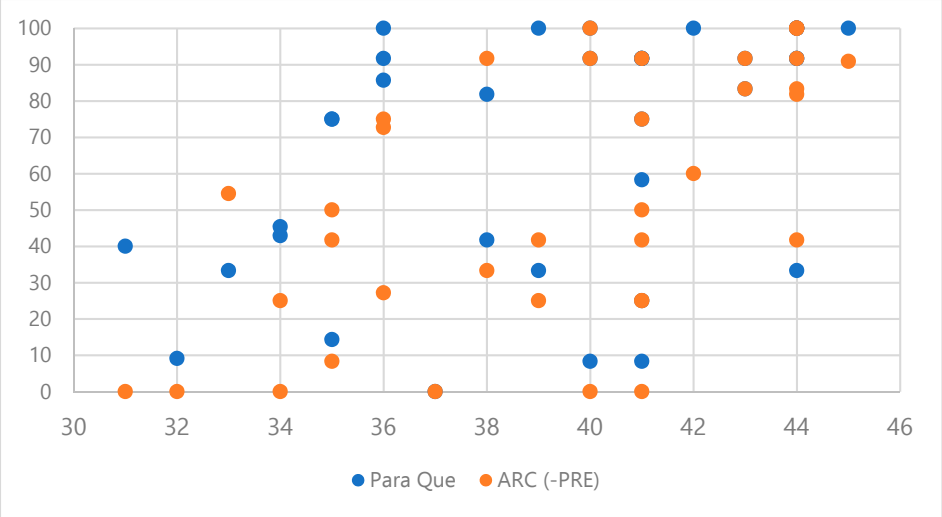

Figure 4. Heritage speakers' raw proportion (%) of subjunctive production by DELE score.

3.2. *Mood Preference Task (MPT)*

3.2.1. Coding

Each of the participants' 1500 responses in the MPT was coded as follows: when participants preferred the subjunctive mood sentence of a given minimal pair, their response was coded as '1.' When they preferred the indicative mood sentence, on the other hand, their response was coded as '0.' Coding for mood preference (rather than accuracy) allows for the possibility of important cross-condition within-group comparisons. (For example, are the EarlyHSs more likely to prefer subjunctive mood in non-presuppositional ARCs or presuppositional ARCs? Note that comparing a group's accuracy across these two conditions cannot shed light on this particular distinction.)

3.2.2. Statistical Model 3: AofAE

Participants' 1500 responses were analyzed using a logistic mixed effects model. The model included the fixed effects Group (EarlyHSs, LateHSs, LCIs and SDCs), MoodSelectType (Lexical Selection, Contextual Selection), ExpectedMood (Subjunctive, Indicative), and all interactions between these variables, as well as random intercepts for both subject and item.

3.2.3. Model Results

The logistic mixed effects model revealed that the Group*MoodSelectType*ExpectedMood interaction was not statistically significant, F (3, 1484) = 1.357, $p = 0.254$. Nonetheless, exploring this interaction, as shown below in Figure 5, offers critical insights into RQ #2. (For tables with all interaction effects, see Appendix B.)

If participants have (receptive) sensitivity to lexically-selected mood, they would be expected to prefer subjunctive significantly more often in the *para que* condition than in the *porque* condition. Post-hoc within-group comparisons reveal that the EarlyHSs ($p < 0.001$, OR = 30.24), LateHSs ($p < 0.001$, OR = 183.46) and LCIs ($p < 0.001$, OR = 995.26) clearly make such a distinction, demonstrating strongly target-like knowledge of the mood selection requirements of these two Spanish complementizers.

The fact that each of these three groups distinguishes between subjunctive and indicative mood, however, does not rule out the possibility that AofAE significantly impacts participants' subjunctive mood preferences. To explore the role of AofAE in the MPT, thereby responding to RQ #2, I now turn to between-group comparisons. In the *porque* condition, where subjunctive mood should not be preferred, there are no statistically significant differences between the three experimental groups' predicted probabilities of subjunctive preference. (The EarlyHSs, though, are marginally more likely than the LCIs ($p = 0.079$, OR = 2.66) to prefer subjunctive mood.) In the *para que* condition, on the other hand, where subjunctive mood should be preferred, AofAE plays a strong predictive role. Not only are the LCIs more likely to prefer subjunctive than the EarlyHSs ($p < 0.001$, OR = 12.39) and LateHSs ($p < 0.001$, OR = 3.87), highlighting the same broad AofE effect observed in the CEPT, the LateHSs are more likely to prefer subjunctive than the EarlyHSs ($p < 0.05$, OR = 3.20), demonstrating that this variable exerts influence amongst earlier bilinguals, too.

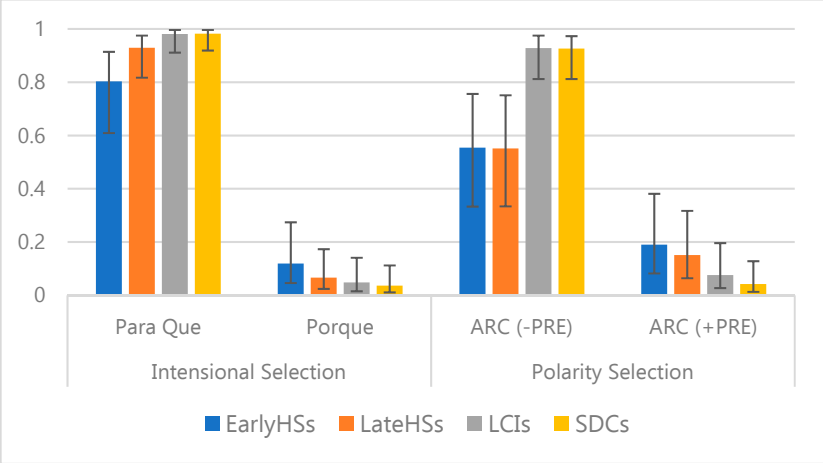

Figure 5. Heritage speakers' predicted probability of subjunctive preference by Group, MoodSelectionType and ExpectedMood (Condition). Error bars indicate 95% confidence intervals.

If participants have (receptive) sensitivity to contextually-selected mood, they would be expected to prefer subjunctive significantly more often in non-presuppositional ARCs than in presuppositional ARCs, respectively. Post-hoc within-group comparisons reveal that the EarlyHSs ($p < 0.05$, OR = 5.30), LateHSs ($p < 0.01$, OR = 6.92) and LCIs ($p < 0.001$, OR = 156.96) clearly make such a distinction, once again demonstrating systematic knowledge of mood selection in ARCs.

The fact that each of these three groups distinguishes between subjunctive and indicative mood in ARCs, however, says nothing about whether the three groups' mood preferences are affected by AofAE. Between-group comparisons reveal that in presuppositional ARCs, where subjunctive should not be preferred, the EarlyHSs are more likely to prefer subjunctive than the LCIs ($p < 0.05$, OR = 2.83). No differences, however, were found between the EarlyHSs and LateHSs ($p = 0.50$, OR = 1.32) or the LateHSs and the LCIs ($p = 0.12$, OR = 2.15). In the non-presuppositional ARCs, where subjunctive

should be preferred, AofAE effects take a different shape. This time, though the LCIs' predicted probability of subjunctive preference was significantly higher than that of the EarlyHSs ($p < 0.001$, OR = 10.44) and the LateHSs ($p < 0.001$, OR = 10.57), the LateHSs' likelihood of subjunctive preference was no different from that of the EarlyHSs ($p = 0.95$, OR = 1.04), unlike in the *para que* condition presented above.

Once again, as in the CEPT, the variable AofAE appears to clearly differentiate the LCIs (AofAE: 8–12 years) from the EarlyHSs and LateHSs (AofAE: 0–6 years) and much less clearly differentiate the EarlyHSs (AofAE: 0–3.5 years) from the LateHSs (4–6 years). (Recall, however, that in the MPT, the LateHSs were significantly more likely than the EarlyHSs to prefer subjunctive with *para que*.) To see if Spanish proficiency, as measured by the DELE, better predicts participants' receptive sensitivity to lexically- and contextually-selected mood, I now conclude this section by grouping the 37 HSs into the same advanced- and intermediate-proficiency subgroups presented in Section 3.1.4. and testing whether such a grouping better accounts for participants' subjunctive mood preferences.

Results of a logistic mixed effects model run on this subset of the data (740 total responses) revealed that the Group*MoodSelectType*ExpectedMood interaction was not statistically significant, F (1, 732) = 0.380, $p = 0.538$. Nonetheless, I conclude this section by presenting some critical between-group comparisons, illustrated below in Figure 6. (For tables with all interaction effects, see Appendix B.)

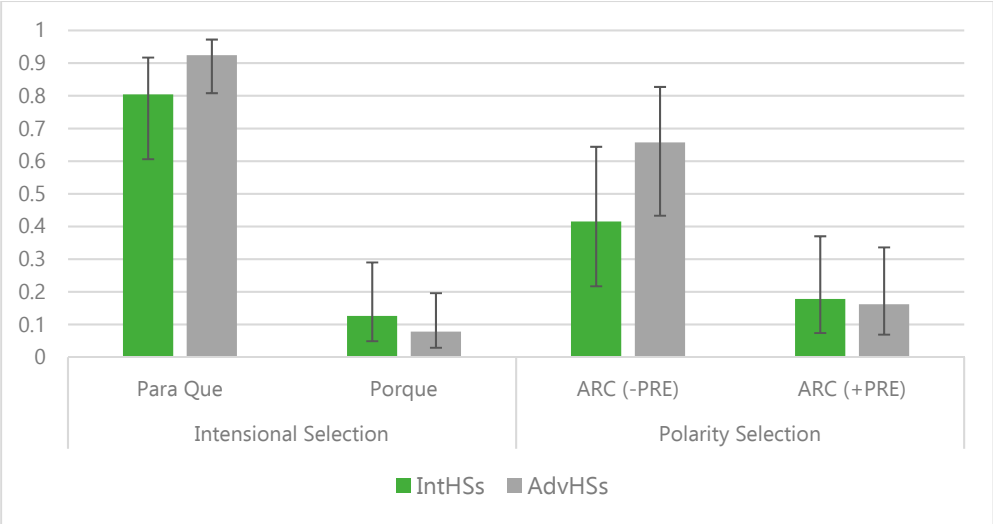

Figure 6. Heritage speakers' predicted probability of subjunctive preference by Group (Proficiency), MoodSelectionType and ExpectedMood (Condition). Error bars indicate 95% confidence intervals.

In the *para que* condition, the AdvHSs' predicted probability of subjunctive preference was significantly higher than that of the IntHSs ($p < 0.05$, OR = 2.96). Though statistically significant, this between-group comparison cannot tell us whether Spanish proficiency is more predictive of receptive subjunctive mood sensitivity than AofAE because, as highlighted above, LateHSs showed a significantly stronger subjunctive mood preference than EarlyHSs in the AofAE analysis. In the non-presuppositional ARC condition, however, it becomes clear that Spanish proficiency is a better predictor of HSs' performance than AofAE, since the AdvHSs' probability of subjunctive preference was significantly higher than that of the IntHSs ($p < 0.01$, OR = 2.70), while the previous analysis revealed no statistically significant differences between the LateHSs and EarlyHSs in this same condition.

Based on these results, it is apparent that grouping HSs by DELE proficiency score, rather than AofAE, is a more effective way of predicting their patterns of subjunctive mood preference. To illustrate this point, I now conclude this section with a brief presentation of the individual data from the 37 HSs who completed the MPT. Figure 7 depicts each individual heritage speaker's proportion of subjunctive preference—as a function of AofAE—with *para que* (blue dots) and in non-presuppositional ARCs (orange dots). One notable pattern in Figure 7 is the variability within certain ages-of-acquisition

of English. At an AofE of 5 years, for example, participants' raw proportions of subjunctive mood preference range from 0% to 100%.

Figure 8, on the other hand, shows each individual heritage speakers' proportion of subjunctive preference as a function of DELE proficiency score. With minimal exceptions, the lowest-proficiency HSs produce less subjunctive mood than the highest proficiency HSs, respectively. The individual data, then, seem to corroborate the finding that for HSs who begin learning English between birth and age 6, Spanish proficiency is a better predictor of subjunctive preference than AofAE.

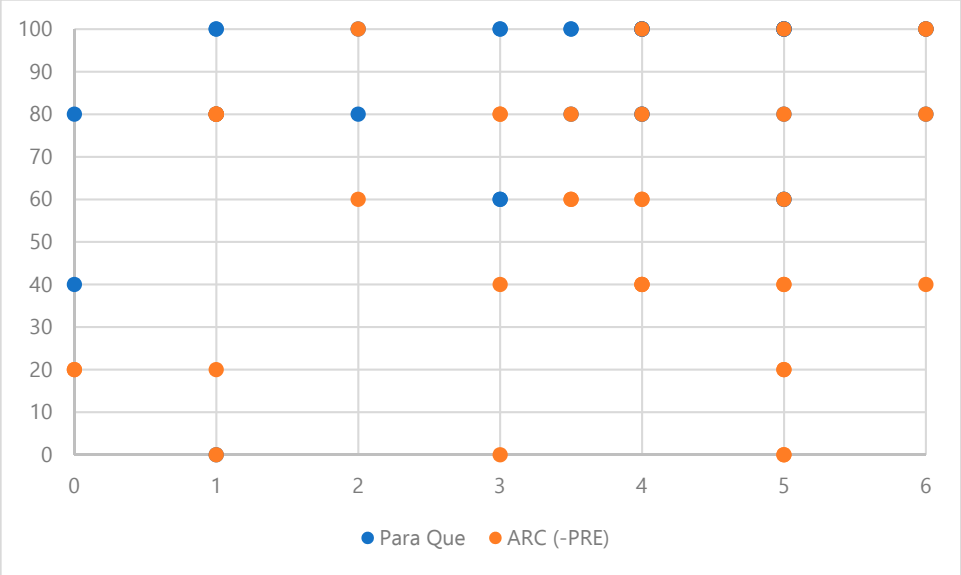

Figure 7. Heritage speakers' raw proportion (%) of subjunctive preference by AofAE (Years).

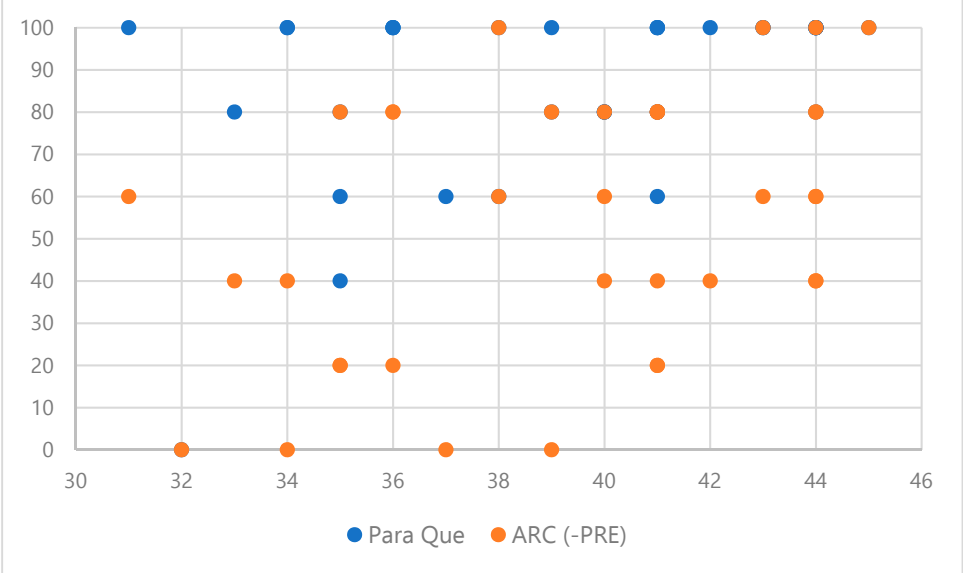

Figure 8. Heritage speakers' raw proportion (%) of subjunctive preference by DELE score.

4. Discussion

The present study has provided novel evidence for effects of age-of-acquisition of the societal language (in this case, English) on bilinguals' knowledge of mood morphology in Spanish. In two experimental tasks—one productive and one receptive—late-childhood immigrants (age of arrival: 8–12 years) were more likely than HSs (age of acquisition of English: birth to age 6) to produce, and prefer, subjunctive mood in expected subjunctive mood contexts, specifically, with *para que* ('so that') and in

non-presuppositional adjectival relative clauses. On the basis of such broad, between-group differences, it appears clear that age-of-acquisition of the societal language impacts bilinguals' knowledge of inflectional morphology in the L1 (heritage language).

One possible reason why the late-childhood-immigrants (LCIs) produce—and prefer—subjunctive mood more than the HSs in expected subjunctive contexts is that they had more time for their system of mood morphology to stabilize prior to learning English. Evidence from child L1 acquisition indicates that monolingual Spanish-speaking children—like the LCIs were prior to immigrating to the US—begin acquiring subjunctive mood with *para que* before age 3;0 (e.g., Montrul 2004). Consequently, it is possible (and perhaps even likely) that the LCIs in the present study had already been producing subjunctive mood (categorically) with *para que* for multiple years prior to arriving in the US, making their knowledge of this form particularly stable. In the case of subjunctive mood in ARCs, which monolingual children are still acquiring at age 6;11 (Pérez-Leroux 1998), the LCIs' morphological knowledge was likely less stable (and perhaps, not even adult-like) when they came to the US. Consistent with this possibility is the LCIs' tendency to "overuse" subjunctive in presuppositional ARCs, which require indicative mood forms. Because this strong pattern of "overuse" has not, to my knowledge, been documented in the Spanish of first-generation immigrants in the US, it may, in fact, be an innovation specific to later-childhood immigrants. Nonetheless, the fact that the SDCs in the present study—who are, of course, first-generation immigrants—produce these forms in 10.6% of presuppositional ARCs has two important implications. First, the LCIs' seemingly innovative subjunctive mood "overuse" may be an amplification of a pattern that they hear in the input from first-generation immigrants. Second, if first-generation immigrants are exhibiting this "overuse" pattern, it may be conceptually incoherent to classify it as "non-target-like."

Putting their pattern of "overuse" aside, the LCIs' productive and receptive knowledge of subjunctive mood, especially in expected subjunctive contexts, can only be described as highly target-like. Does this bilingual group's nearly-categorical command of subjunctive mean that their later age of acquisition of English has made them invulnerable to variability or attrition? Evidence from one recent study suggests that this is clearly not the case. Montrul (2011) tested the morphosyntactic knowledge of an adult Guatemalan immigrant who moved to the US at age 9 (under traumatic circumstances) and largely stopped speaking Spanish. Results from a series of experimental tasks indicate that this adult, despite speaking exclusively Spanish until age 9, experienced difficulty understanding inflectional morphology, including mood morphology in ARCs. Unlike speakers whose "age at reduced [L1] contact" (Bylund 2009b) is 13 years or greater, who appear to be (largely) invulnerable to morphological variability (e.g., Schmid 2012), the LCIs in this study, in principle, were young enough when they began learning English to have experienced major L1 attrition.

The LCIs' maintenance of subjunctive, then, must have other underlying (or at least reinforcing) causes in addition to their later age of acquisition of English. All participants in the present study lived in a northeastern state with a very high proportion of Spanish speakers. Given that later childhood immigrants often prefer to socialize with other L1-dominant speakers (e.g., Jia and Aaronson 2003), it is likely that the LCIs in the present study sought out—and found—many chances to use their Spanish, strengthening (or helping to preserve) their knowledge of mood morphology.

The impact of AofAE, however, is far less clear when we narrow our focus to include only HSs, that is to say, early childhood bilinguals who began acquiring English between birth and age 6. Though the HSs, too, exhibited highly systematic sensitivity to mood morphology in Spanish, as shown in both experimental tasks, HSs with later AofAE (ages 4–6) were only marginally more likely than heritage speakers with earlier AofAE (birth to age 3) to produce and prefer subjunctive mood in expected subjunctive contexts, suggesting that other between-group factors must be shaping their variable performance with mood.

As it turns out, dividing the 37 HS participants on the basis of Spanish proficiency (as operationalized by the DELE), and controlling for (rather than manipulating) AofAE, proved to be a more effective method of predicting their odds of producing and preferring subjunctive

mood forms, especially in non-presuppositional ARCs. In this particular linguistic context, where HSs with "early" and "late" ages of acquisition performed very similarly to one another, HSs with advanced proficiency were significantly more likely to exhibit target-like subjunctive knowledge than intermediate-proficiency HSs.

How, in the face of such findings, can we understand the results of Montrul (2002), who found that "sequential" HSs (AofAE: 4 to 7 years) performed more accurately with tense/aspect morphology in Spanish than "simultaneous" heritage speakers (AofAE: 0 to 3 years)? One possibility is that in Montrul's (2002) study, AofAE could have been confounded with Spanish-language proficiency, which was not tested. If the sequential HSs in her study were more proficient in Spanish than the simultaneous HSs, it would be impossible to know whether AofAE or Spanish-proficiency was driving between-group differences. In the present study, where both AofAE and Spanish proficiency were controlled, no such confound exists, strengthening the evidence that Spanish proficiency exerts more influence on knowledge of mood than AofAE—at least for HSs who acquire English by age 6.

Why, in the case of the HSs, does Spanish proficiency appear to more effectively predict subjunctive mood knowledge than AofAE? Bylund (2009a) points out that L1 (or in this case, heritage language) retention by early childhood bilinguals, such as the heritage speakers in the present study, is "by and large dependent on advantageous frequencies of L1 contact" (pp. 318–19). If this is true, and HSs are more greatly impacted by random differences in their childhood opportunities to use or activate (Putnam and Sánchez 2013) the heritage language, then it may be the case that such random differences in heritage language use end up diluting (or perhaps even overriding) what remain, nonetheless, real advantages of later AofAE.

Silva-Corvalán (2014) and Anderson (2001) studied pairs of child HS siblings and found that younger siblings, whose acquisition of English began earlier than it did for their older siblings, were more limited in their production of different types of inflectional morphology, including mood morphology. This pattern, though based on a total of only four bilingual children, seems to suggest that AofAE does shape knowledge of mood morphology, at least in early childhood.

Even if this advantage is real, though, making "later" HSs more likely to exhibit "target-like" knowledge of inflectional morphology and "earlier" HSs less likely to exhibit such knowledge, it is not hard to imagine how circumstances of heritage language use could quickly override such general tendencies. If a simultaneous HS, for example, lives with her monolingual Spanish-speaking grandparents and frequently spends the summer in a Spanish-speaking country, she might be able to overcome any disadvantages that she might have faced due to her earlier acquisition of English. Alternatively, sequential HSs with relatively fewer opportunities to use the heritage language, e.g., because they live in an area with very few Spanish-speakers, might end up with a less "target-like" knowledge of mood than their AofAE would predict. Consistent with this idea is evidence that child HSs of Spanish can either become less accurate with subjunctive mood over time (Merino 1983) or (slightly) more accurate (Rodriguez et al. 2017), presumably due to either different "frequencies of L1 contact" and/or differential access to formal education in Spanish.

When studying adult HSs, an instrument such as the DELE proficiency test (which has proven highly effective in a large number of studies (Giancaspro 2019; Montrul 2009; Perez-Cortes 2016; inter alia) might end up successfully predicting outcomes in heritage language grammatical knowledge because the test reflects, directly or indirectly, the diverse linguistic life experiences that HSs have encountered *after* beginning to acquire English. Given the nature of the DELE, which includes multiple-choice questions about a number of relatively infrequent lexical items (e.g., *naufragios*, 'shipwrecks'), participants who score most highly are likely those whose exposure to (and usage of) Spanish has been extensive both inside and outside the home.[7].

[7] Interestingly, though, HSs' DELE proficiency scores were not correlated with the number of college Spanish courses that they had taken: EarlyHSs (r = 0.311, p = 0.224), LateHSs (r = 0.307, p = 0.188), IntHSs (r = 0.369, p = 0.160), AdvHSs (r = 0.259, p = 0.256).

The findings of the present study have implications both for heritage language research, as well as heritage language pedagogy. In order to draw even preliminary conclusions about age-of-acquisition effects on heritage speakers' grammatical knowledge, it is fundamental that researchers control (to the extent possible) for heritage language proficiency, a broad and relatively opaque variable that, nonetheless, appears to accurately reflect HSs' linguistic life experiences. With respect to heritage language pedagogy, the results of the study suggest that larger heritage language programs may want to collect data on incoming students' age of acquisition of English and then, subsequently, create specific courses catered to the needs of later childhood immigrants, whose command of heritage language inflectional morphology (and likely other heritage language grammatical properties, too) makes their classroom needs different from those of traditional HSs.

Though the present study sheds light on the relationship between proficiency and age-of-acquisition of English on HSs' knowledge of subjunctive mood, it suffers from a couple of key shortcomings. First of all, the present paper does not (and cannot) provide a detailed analysis of the role of formal education in Spanish on participants' performance, given that only a small proportion of the HSs in the present study were not currently enrolled in college Spanish courses. As an anonymous reviewer points out, it is possible, given that some types of subjunctive mood are taught in the heritage language classroom (Mikulski 2006), that a balanced comparison of HSs with and without formal Spanish instruction would yield substantial differences between the two groups. (Curiously, though, Correa (2011) found that HSs' written subjunctive production was not at all correlated with their metalinguistic awareness in Spanish, raising questions about the connection between education and subjunctive use.) Future research, then, should more carefully analyze the role of this potentially impactful variable. Second, like other previous work on HSs and subjunctive mood, the present study does not effectively determine whether HSs' failure to produce and prefer subjunctive mood in expected subjunctive contexts is due to differences in their morphosyntactic knowledge (e.g., knowing that *para que* selects for subjunctive mood) or their knowledge of specific subjunctive mood forms (e.g., knowing that the subjunctive form of *observar* is *observe*). In the future, researchers should consider methodological innovations—such as within-verbs experimental designs (e.g., where participants see, and are forced to inflect, the same verbs across multiple experimental conditions)—that will better differentiate between these two theoretical possibilities.

5. Conclusions

One of the primary goals in heritage language research is better understanding the factors that shape variability in adult heritage speakers' knowledge of grammatical properties, such as subjunctive mood. The present article contributes to this goal by revealing that Spanish proficiency, at least in the case of HSs who began acquiring English between birth and age 6, is a better predictor of subjunctive mood knowledge than age-of-acquisition of English. Nonetheless, given the enormous range of variability observed across both the proficiency and AofAE spectra, respectively, it is clear that researchers still have a lot to learn about the known (and as yet unidentified) variables that together shape and explain HSs' knowledge of mood morphology in Spanish.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

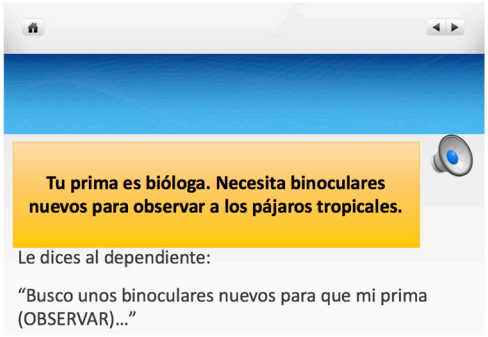

Figure A1. Screenshot of experimental item from Contextualized Elicited Production Task (CEPT). The sentence presented in the gold box is the context for this experimental item. At the beginning of every item, the audio recording of the context played automatically as the context appeared on screen. Consequently, participants could both listen to and read the context if they chose. By clicking on the microphone, participants could re-listen to the context as many times as they wanted to.

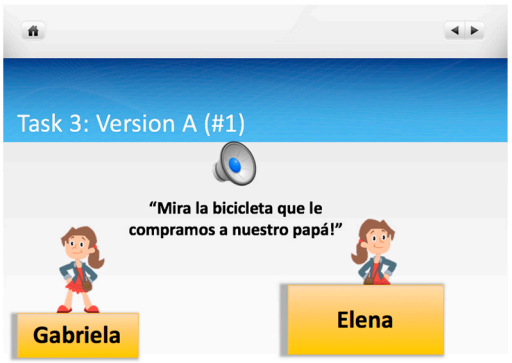

Figure A2. Screenshot of experimental item from Mood Preference Task (MPT). The sentence in quotation marks is the context for this experimental item. At the beginning of every item, the audio recording of the context, voiced by the same speaker who voiced Gabriela and Elena, played automatically. Immediately after the context, participants would hear Gabriela's follow-up sentence, followed by Elena's follow-up sentence. To ensure that participants knew which of the sisters was speaking, Gabriela always spoke first. Participants were also able to know which sister was speaking by seeing that that sister's "name plate" pulsed and got larger. (In Figure A2, Elena is speaking.).

Sample Items from Each Condition of the CEPT

Para Que condition

Context: Tu prima es bióloga. Necesita binoculares nuevos para observar a los pájaros tropicales.

Le dices al dependiente:

Fragment: "Busco unos binoculares nuevos para que mi prima (OBSERVAR)..."

Porque condition

Context: Necesitas una película divertida para tu amigo. Su novia lo dejó ayer y ahora parece estar muy triste.

Le dices al dependiente:

Fragment: "Busco una película de humor porque ahora mi amigo (ESTAR)..."

-Presupposition ARC condition

Context: Necesitas un robot de color verde con la habilidad de hablar cuatro idiomas. Encuentras uno con función en dos lenguas y otro con tres.

Le dices al dependiente:

Fragment: "Busco un robot que sea verde y que (HABLAR)..."

+*Presupposition ARC condition*

Context: Necesitas una linterna para los viajes de campamento—con 5 pilas extra incluidas. Después de 2 minutos, encuentras una con 5 pilas extras.

Le dices al dependiente:

Fragment: "Gracias, pero no necesito ayuda. Ya encontré una linterna que (VENIR)..."

Table A1. Verbs used in the CEPT.

Verb	MoodSelection	Condition	ExpectedMood	Regularity
hacer	Lexical	*para que*	Subjunctive	Irregular
salir	Lexical	*para que*	Subjunctive	Irregular
correr	Lexical	*para que*	Subjunctive	Regular
parecer	Lexical	*para que*	Subjunctive	Irregular
mover	Lexical	*para que*	Subjunctive	Regular
romper	Lexical	*para que*	Subjunctive	Regular
llegar	Lexical	*para que*	Subjunctive	Regular
tomar	Lexical	*para que*	Subjunctive	Regular
tocar	Lexical	*para que*	Subjunctive	Regular
ganar	Lexical	*para que*	Subjunctive	Regular
observar	Lexical	*para que*	Subjunctive	Regular
usar	Lexical	*para que*	Subjunctive	Regular
tener	Contextual	−*PRE ARC*	Subjunctive	Irregular
decir	Contextual	−*PRE ARC*	Subjunctive	Irregular
comprender	Contextual	−*PRE ARC*	Subjunctive	Regular
producir	Contextual	−*PRE ARC*	Subjunctive	Irregular
dirigir	Contextual	−*PRE ARC*	Subjunctive	Regular
elegir	Contextual	−*PRE ARC*	Subjunctive	Regular
llamar	Contextual	−*PRE ARC*	Subjunctive	Regular
hablar	Contextual	−*PRE ARC*	Subjunctive	Regular
aceptar	Contextual	−*PRE ARC*	Subjunctive	Regular
explicar	Contextual	−*PRE ARC*	Subjunctive	Regular
bajar	Contextual	−*PRE ARC*	Subjunctive	Regular
evitar	Contextual	−*PRE ARC*	Subjunctive	Regular
ir	Lexical	*porque*	Indicative	Irregular
llevar	Lexical	*porque*	Indicative	Regular
utilizar	Lexical	*porque*	Indicative	Regular
venir	Lexical	*porque*	Indicative	Irregular
leer	Lexical	*porque*	Indicative	Regular
sacar	Lexical	*porque*	Indicative	Regular
seguir	Contextual	+*PRE ARC*	Indicative	Regular
estar	Contextual	+*PRE ARC*	Indicative	Regular
mirar	Contextual	+*PRE ARC*	Indicative	Regular
necesitar	Contextual	+*PRE ARC*	Indicative	Regular
recibir	Contextual	+*PRE ARC*	Indicative	Regular
decidir	Contextual	+*PRE ARC*	Indicative	Regular

Table A2. Verbs used in the MPT.

Verb	MoodSelection	Condition	ExpectedMood	Regularity
hacer	Lexical	*para que*	Subjunctive	Irregular
salir	Lexical	*para que*	Subjunctive	Irregular
correr	Lexical	*para que*	Subjunctive	Regular
tomar	Lexical	*para que*	Subjunctive	Regular
tocar	Lexical	*para que*	Subjunctive	Regular
tener	Contextual	*−PRE ARC*	Subjunctive	Irregular
decir	Contextual	*−PRE ARC*	Subjunctive	Irregular
comprender	Contextual	*−PRE ARC*	Subjunctive	Regular
hablar	Contextual	*−PRE ARC*	Subjunctive	Regular
aceptar	Contextual	*−PRE ARC*	Subjunctive	Regular
ir	Lexical	*porque*	Indicative	Irregular
mirar	Lexical	*porque*	Indicative	Regular
utilizar	Lexical	*porque*	Indicative	Regular
necesitar	Lexical	*porque*	Indicative	Regular
seguir	Lexical	*porque*	Indicative	Regular
llevar	Contextual	*+PRE ARC*	Indicative	Regular
leer	Contextual	*+PRE ARC*	Indicative	Regular
venir	Contextual	*+PRE ARC*	Indicative	Irregular
estar	Contextual	*+PRE ARC*	Indicative	Regular
recibir	Contextual	*+PRE ARC*	Indicative	Regular

Appendix B

Statistical Model 1: Age of Acquisition of English and Subjunctive Production (CEPT)

Model Term	Coefficient	Standard Error	*t*	Sig.
Intercept	−2.128	0.519	−4.102	0.000
AofAGroup = 1	0.101	0.683	0.148	0.883
AofAGroup = 2	−0.295	0.666	−0.443	0.658
AofAGroup = 3	1.710	0.653	2.619	0.010
AofAGroup = 4				
MoodSelectType = 1	−2.594	0.798	−3.250	0.001
MoodSelectType = 2				
ExpectedMood = 1	6.889	0.758	9.085	0.000
ExpectedMood = 2				
AofAGroup = 1 x MoodSelectType = 1	−0.174	1.059	−0.165	0.869
AofAGroup = 1 x MoodSelectType = 2				
AofAGroup = 2 x MoodSelectType = 1	0.098	1.121	0.087	0.931
AofAGroup = 2 x MoodSelectType = 2				
AofAGroup = 3 x MoodSelectType = 1	−2.308	1.327	−1.739	0.082
AofAGroup = 3 x MoodSelectType = 2				
AofAGroup = 4 x MoodSelectType = 1				
AoAGroup = 4 x MoodSelectType = 2				
MoodSelectType = 1 x ExpectedMood = 1	3.112	1.254	2.481	0.013

Model Term	Coefficient	Standard Error	*t*	Sig.
MoodSelectType = 1 x ExpectedMood = 2				
MoodSelectType = 2 x ExpectedMood = 1				
MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 1 x ExpectedMood = 1	−5.283	0.789	−6.693	0.000
AofAGroup = 1 x ExpectedMood = 2				
AofAGroup = 2 x ExpectedMood = 1	−3.894	0.788	−4.942	0.000
AofAGroup = 2 x ExpectedMood = 2				
AofAGroup = 3 x ExpectedMood = 1	−1.001	1.098	−0.912	0.362
AofAGroup = 3 x ExpectedMood = 2				
AofAGroup = 4 x ExpectedMood = 1				
AofAGroup = 4 x ExpectedMood = 2				
AofAGroup = 1 x MoodSelectType = 1 x ExpectedMood = 1	0.597	1.433	0.417	0.677
AofAGroup = 1 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 1 MoodSelectType = 2 ExpectedMood = 1				
AofAGroup = 1 x MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 2 x MoodSelectType = 1 x ExpectedMood = 1	0.375	1.474	0.254	0.799
AofAGroup = 2 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 1				
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 3 x MoodSelectType = 1 x ExpectedMood = 1	2.610	2.038	1.281	0.200
AofAGroup = 3 x MoodSelectType = 1 x ExpectedMood = 2				

Model Term	Coefficient	Standard Error	*t*	Sig.
AofAGroup = 3 x MoodSelectType = 2 x ExpectedMood = 1				
AofAGroup = 3 x MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 4 x MoodSelectType = 1 x ExpectedMood = 1				
AofAGroup = 4 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 4 x MoodSelectType = 2 x ExpectedMood = 1				
AofAGroup = 4 x MoodSelectType = 2 x ExpectedMood = 2				

AofAGroup: 1 = EarlyHSs; 2 = LateHSs; 3 = LCIs; 4 = SDCs (reference)
MoodSelectType: 1 = lexically-selected; 2 = contextually-selected (reference)
ExpectedMood: 1 = subjunctive; 2 = indicative (reference)

Statistical Model 2: DELE Proficiency and Subjunctive Production (CEPT)

Model Term	Coefficient	Standard Error	*t*	Sig.
Intercept	−2.406	0.588	−4.094	0.000
Group = 1	0.389	0.713	0.546	0.587
Group = 2				
MoodSelectType = 1	−1.807	0.692	−2.613	0.009
MoodSelectType = 2				
ExpectedMood = 1	1.462	0.489	2.989	0.004
ExpectedMood = 2				
Group = 1 x MoodSelectType = 1	−1.404	1.047	−1.341	0.180
Group = 1 x MoodSelectType = 2				
Group = 2 x MoodSelectType = 1				
Group = 2 x MoodSelectType = 2				
MoodSelectType = 1 x ExpectedMood = 1	2.891	0.800	3.616	0.000
MoodSelectType = 1 x ExpectedMood = 2				
MoodSelectType = 2 x ExpectedMood = 1				
MoodSelectType = 2 x ExpectedMood = 2				
Group = 1 x ExpectedMood = 1	1.569	0.511	3.067	0.002
Group = 1 x ExpectedMood = 2				

Model Term	Coefficient	Standard Error	*t*	Sig.
Group = 2 x ExpectedMood = 1				
Group = 2 x ExpectedMood = 2				
Group = 1 x MoodSelectType = 1 x ExpectedMood = 1	1.222	1.113	1.098	0.272
Group = 1 x MoodSelectType = 1 x ExpectedMood = 2				
Group = 1 MoodSelectType = 2 ExpectedMood = 1				
Group = 1 x MoodSelectType = 2 x ExpectedMood = 2				
Group = 2 x MoodSelectType = 1 x ExpectedMood = 1				
AofAGroup = 2 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 1				
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 2				

Group: 1 = AdvHSs; 2 = IntHSs (reference)
MoodSelectType: 1 = lexically-selected; 2 = contextually-selected (reference)
ExpectedMood: 1 = subjunctive; 2 = indicative (reference)

Statistical Model 3: AofAGroup and Subjunctive Preference (MPT)

Model Term	Coefficient	Standard Error	*t*	Sig.
Intercept	−3.119	0.599	−5.206	0.000
AofAGroup = 1	1.669	0.556	3.000	0.003
AofAGroup = 2	1.391	0.554	2.510	0.012
AofAGroup = 3	0.626	0.612	1.024	0.306
AofAGroup = 4				
MoodSelectType = 1	−.174	0.846	−0.206	0.838
MoodSelectType = 2				
ExpectedMood = 1	5.646	0.787	7.172	0.000
ExpectedMood = 2				
AofAGroup = 1 x MoodSelectType = 1	−0.378	0.780	−0.484	0.628
AofAGroup = 1 x MoodSelectType = 2				
AofAGroup = 2 x MoodSelectType = 1	−0.741	0.797	−0.929	0.353
AofAGroup = 2 x MoodSelectType = 2				

Model Term	Coefficient	Standard Error	*t*	Sig.
AofAGroup = 3 x MoodSelectType = 1	−0.313	0.871	−0.359	0.720
AofAGroup = 3 x MoodSelectType = 2				
AofAGroup = 4 x MoodSelectType = 1				
AoAGroup = 4 x MoodSelectType = 2				
MoodSelectType = 1 x ExpectedMood = 1	1.673	1.279	1.308	0.194
MoodSelectType = 1 x ExpectedMood = 2				
MoodSelectType = 2 x ExpectedMood = 1				
MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 1 x ExpectedMood = 1	−3.978	0.694	−5.735	0.000
AofAGroup = 1 x ExpectedMood = 2				
AofAGroup = 2 x ExpectedMood = 1	−3.713	0.687	−5.403	0.000
AofAGroup = 2 x ExpectedMood = 2				
AofAGroup = 3 x ExpectedMood = 1	−0.590	0.807	−0.731	0.465
AofAGroup = 3 x ExpectedMood = 2				
AofAGroup = 4 x ExpectedMood = 1				
AofAGroup = 4 x ExpectedMood = 2				
AofAGroup = 1 x MoodSelectType = 1 x ExpectedMood = 1	0.067	1.179	0.057	0.955
AofAGroup = 1 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 1 MoodSelectType = 2 ExpectedMood = 1				
AofAGroup = 1 x MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 2 x MoodSelectType = 1 x ExpectedMood = 1	1.606	1.213	1.324	0.186
AofAGroup = 2 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 1				

Model Term	Coefficient	Standard Error	*t*	Sig.
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 3 x MoodSelectType = 1 x ExpectedMood = 1	0.174	1.443	0.121	0.904
AofAGroup = 3 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 3 x MoodSelectType = 2 x ExpectedMood = 1				
AofAGroup = 3 x MoodSelectType = 2 x ExpectedMood = 2				
AofAGroup = 4 x MoodSelectType = 1 x ExpectedMood = 1				
AofAGroup = 4 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 4 x MoodSelectType = 2 x ExpectedMood = 1				
AofAGroup = 4 x MoodSelectType = 2 x ExpectedMood = 2				

AofAGroup: 1 = EarlyHSs; 2 = LateHSs; 3 = LCIs; 4 = SDCs (reference)
MoodSelectType: 1 = lexically-selected; 2 = contextually-selected (reference)
ExpectedMood: 1 = subjunctive; 2 = indicative (reference)

Statistical Model 4: DELE Proficiency and Subjunctive Preference (MPT)

Model Term	Coefficient	Standard Error	*t*	Sig.
Intercept	−1.527	0.480	−3.181	0.004
Group = 1	−0.117	0.411	−0.285	0.776
Group = 2				
MoodSelectType = 1	−0.408	0.684	−0.596	0.557
MoodSelectType = 2				
ExpectedMood = 1	1.184	0.639	1.851	0.080
ExpectedMood = 2				
Group = 1 x MoodSelectType = 1	−0.416	0.611	−0.681	0.496
Group = 1 x MoodSelectType = 2				
Group = 2 x MoodSelectType = 1				
Group = 2 x MoodSelectType = 2				
MoodSelectType = 1 x ExpectedMood = 1	2.165	0.934	2.318	0.031

Model Term	Coefficient	Standard Error	*t*	Sig.
MoodSelectType = 1 x ExpectedMood = 2				
MoodSelectType = 2 x ExpectedMood = 1				
MoodSelectType = 2 x ExpectedMood = 2				
Group = 1 x ExpectedMood = 1	1.109	0.503	2.203	0.028
Group = 1 x ExpectedMood = 2				
Group = 2 x ExpectedMood = 1				
Group = 2 x ExpectedMood = 2				
Group = 1 x MoodSelectType = 1 x ExpectedMood = 1	0.508	0.825	0.616	0.538
Group = 1 x MoodSelectType = 1 x ExpectedMood = 2				
Group = 1 MoodSelectType = 2 ExpectedMood = 1				
Group = 1 x MoodSelectType = 2 x ExpectedMood = 2				
Group = 2 x MoodSelectType = 1 x ExpectedMood = 1				
AofAGroup = 2 x MoodSelectType = 1 x ExpectedMood = 2				
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 1				
AofAGroup = 2 x MoodSelectType = 2 x ExpectedMood = 2				

Group: 1 = AdvHSs; 2 = IntHSs (reference)
MoodSelectType: 1 = lexically-selected; 2 = contextually-selected (reference)
ExpectedMood: 1 = subjunctive; 2 = indicative (reference)

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