



Me, mi, my: Innovation and variability in heritage speakers' knowledge of inalienable possession

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Abstract

The present study investigates variability in heritage speakers' (HSs) knowledge of inalienable possession in Spanish (e.g., *me rompí el brazo*: 'I broke my arm'). By testing HSs' productive **and** receptive knowledge of this property, the study fills an important gap in the literature and, furthermore, explores whether differences in performance across productive and receptive modalities reflect grammatical innovation at the level of underlying representation. Thirty HSs (16 advanced proficiency, 14 intermediate proficiency) and 15 Spanish-dominant controls (SDCs) completed two experimental tasks, each testing both inalienable and alienable object contexts. Results from the Elicited Production Task show that the HSs exhibit significant variability. Unlike the SDCs, who almost categorically produce clitics to communicate the inalienability of objects, the two HS groups rely more heavily on possessive determiners, alternating frequently between the "target" form (Clitic + DefDet: *me rompí el brazo*) and three different "innovative" variants (e.g., NoClitic + PossDet: *rompí mi brazo*). Results from the Acceptability Judgment Task complicate this finding by revealing that the HSs, despite their productive variability, make all of the same within-group distinctions as the SDCs, suggesting that they retain systematic receptive knowledge of inalienable possession. To explain these seemingly contradictory patterns, as well as the strong effect of Spanish proficiency on HSs' performance across tasks, we suggest that HSs' variability is consistent with English to Spanish influence at the level of bilingual alignments, transient storage mechanisms proposed by Sánchez (2019) to account for gradient and variable performance in multiple bilingual contexts.

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1 Introduction

Heritage speakers' (HSs) knowledge of heritage language (HL) morphosyntax is often characterized by two primary patterns. The first pattern, which we will call divergence, is an inherently **between-group** phenomenon, referring to situations in which HSs' knowledge of a given HL property, X, looks different from the knowledge of that same property demonstrated by so-called baseline speakers (e.g., first-generation immigrants who are dominant in the HSs' home language). If baseline speakers produce property X categorically (100%) in a particular linguistic context, but certain HSs do not (e.g., performing at 80%), those HSs are exhibiting "divergence" with respect to the HL property X. When Montrul (2009), for example, reports that HSs of Spanish produce less subjunctive mood morphology in so-called obligatory contexts than baseline speakers, we can call this pattern **divergence** because the HSs diverge from baseline speakers.

The second pattern, which we will call variability, is an inherently **within-group** phenomenon, referring to situations in which HSs' **themselves** alternate between two or more grammatical variants in a given linguistic context. Imagine a single linguistic context Y. If a given HS, when speaking in context Y, employs multiple HL variants (e.g., A and B), then this HS exhibits variability in context Y of the HL. When Perez-Cortes (2020), reports that HSs of Spanish produce **both** subjunctive and indicative mood morphology after desiderative constructions (e.g., *querer que*: want that), we can call this pattern **variability** because the HSs have developed a HL system that permits multiple linguistic forms to appear in a single HL context.

In our estimation, research in HL linguistics has focused primarily on divergence and only minimally on HL variability. While we acknowledge the value of identifying divergence and understanding factors (e.g., input quantity and quality) that trigger its presence, we feel that focusing on HL divergence often comes at the expense of understanding HL variability, which, in fact, may represent the more intriguing theoretical puzzle for HL researchers. When we focus our attention on HL divergence from so-called "target" norms, it's easy to lose sight of two important, yet still relatively unexplored questions. First, when a HS alternately produces multiple linguistic variants of a HL property X in a given linguistic context, what do they know about that property, and what causes them to produce it so variably? Second, when a HS's knowledge of a property takes a different shape in production vs. in comprehension, what does this asymmetry reveal about (a) their knowledge of the property and (b) HL variability more generally?

In the present paper, we address these important theoretical questions by investigating HSs' production and recognition of inalienable possession structures in Spanish (e.g., *me rompí el brazo*: 'I broke my arm'), which are uniquely suited to the study of bilingual variability. By testing both production and recognition, unlike previous studies of this structure, the present investigation offers unique insight into patterns of variability in HSs' morphosyntactic knowledge.

2 Bilingual variability: Transfer, cross-linguistic influence and alignments

The present paper focuses on variability in the linguistic knowledge of HSs. Nonetheless, the puzzle of why many bilingual speakers (in general) alternately produce (and/or accept) multiple variants of a property in a single linguistic context is a challenge that extends into other spheres of bilingualism/multilingualism research, including L2 acquisition (e.g., Franceschina 2001). For this reason, we begin Section 2 by reflecting upon one account of bilingual variability—transfer/cross-linguistic influence—that has been proposed not just for HSs, but also other bilinguals, too. In describing the notion of transfer/cross-linguistic influence, our goal is simply to provide a theoretical background against which to compare the alternative account of bilingual alignments (Sánchez 2019) that we will focus on throughout the remainder of the paper.

2.1 Transfer and cross-linguistic influence

Though different researchers define transfer differently (e.g., Odlin 1989; Schwartz & Sprouse 1996; Jarvis & Odlin 2000; Grosjean 2012), the intuition captured by the term is quite simple: when a bilingual of languages A and B produces and/or accepts a given linguistic form X in

language B—and that form X can be traced back to underlying lexical/structural characteristics of language A—then that form, X, **may be** the result of transfer from A to B.

In a very straightforward sense, then, transfer helps us understand the puzzle of bilingual *divergence*, that is to say, why a bilingual speaker might produce certain divergent forms (e.g., forms that are not produced by dominant speakers of that language) of a given property in their L1, L2, or HL. Montrul & Ionin (2010; 2012) report that both L2 Spanish learners and HSs of Spanish were more likely than “baseline” Spanish speakers to accept “non-target” bare plural NP subjects in Spanish (e.g., *[*estudiantes*] *nunca leen el sílabo*: ‘students never read the syllabus’), a finding that they attribute to English transfer. (Unlike in Spanish, bare plural NP subjects are grammatical in English generics, e.g., [*students*] *never read the syllabus*.) From the vantage point of divergence, then, transfer can be a simple and elegant explanation for bilinguals’ tendency to produce (and/or accept) “innovative” forms in one or both of their languages.

While general transfer accounts work very elegantly from the perspective of divergence, if we focus on variability, a more detailed account is needed. If transfer occurs from one language to another, what makes that transfer manifest so variably in so many bilingual speakers? Curiously, the HSs in Montrul & Ionin’s (2010) study exhibit English to Spanish transfer not by **always** accepting “non-target” bare-plural NPs in Spanish, but by both accepting **and** rejecting these “non-target” forms. It is perhaps because of variable patterns like this that Polinsky & Scontras (2020: 5, **emphasis ours**) define HL transfer as those situations in which “lexical or grammatical features of the dominant language **bleed into** the heritage language grammar so that the heritage language begins to resemble the dominant language.”

This conceptual metaphor accurately portrays variability in HL grammars and also illuminates a few challenging questions about the nature of the “bleeding” (transfer) that can occur from a dominant language to a HL. First, at what linguistic level does this “bleeding” take place? Second, on a related note, what does occasional “bleeding” (e.g., variable transfer) suggest about HSs’ underlying representations of a given HL form? When HSs alternate between two variants in the same context, is it because they have multiple grammatical representations (e.g., Amaral & Roeper 2014) or they are making frequent “performance errors” (e.g., Prévost & White 2000) that we must somehow differentiate from their underlying competence? Finally, putting aside the previous questions, what factors might cause “bleeding” to happen (a) more for some HSs than for others and (b) more in production than in recognition?

In this study, we explore the levels at which the “bleeding” or transfer can occur and attempt to provide an account for variability within HSs and across modalities.

2.2 Bilingual alignments

One recent account of bilingual variability is Sánchez’s (2019) hypothesis of bilingual alignments, a proposal we will reference throughout the remainder of this paper. Sánchez (2019) defines alignments as non-representational units composed of features from different language components (phonological form, morphology, syntax, and semantics) that are linked and stored in speakers’ minds in order to facilitate their production and comprehension of language. While Sánchez proposes that all speakers—both monolingual and multilingual—rely upon alignments, the idea of alignments becomes particularly useful for researchers when seeking to understand bilingual variability—especially in societal language contact situations. If a bilingual speaker’s alignments are permeable, that is to say, if features in a bilingual’s Language A alignment can “bleed into” an alignment of theirs from Language B, then this might help us to understand why bilingual speakers can, at the same time, both (a) exhibit apparent “transfer” from Language A to Language B (e.g., by using features of Language A in Language B) with a property X and yet also (b) maintain systematic knowledge of property X in Language B (e.g., by mostly producing and/or comprehending it in a “target-like” manner).

To show how the alignments proposal seeks to address challenges posed by bilingual (morphosyntactic) variability, we now consider, as a sample case, the use and recognition of differential object marking (DOM) by Spanish-Romanian bilinguals living in Spain.

In Spanish, the phenomenon known as Differential Object Marking (DOM), by which an internal argument receives a special marker (*a* in Spanish) has been attributed to multiple factors (Torrego 1998; Aissen 2003; Leonetti 2008; Rodríguez-Mondoñedo 2008; López 2012), foremost

amongst them animacy and specificity (Leonetti 2008). Romanian DOM, like Spanish DOM, is also modulated largely by animacy and specificity (Mardale 2008; Ticio & Avram 2015). Unlike Spanish DOM, however, Romanian DOM appears before inanimate demonstratives (e.g., *aceasta*: ‘that (thing)’), a fact that has been explained by pointing to the notion of referential stability, a linguistic feature presumably shared by all demonstratives. In Romanian, referential stability is the most highly ranked feature triggering the presence of DOM. What happens when Spanish-Romanian bilinguals juggle these two different DOM systems offers a revealing example of how patterns of bilingual variability can be consistent with Sánchez’s (2019) alignments proposal.

López-Otero (2019) reports that Spanish-Romanian bilinguals produce more DOM with inanimate demonstratives than Spanish monolinguals, apparently due to Romanian to Spanish influence. Curiously though, despite exhibiting Romanian to Spanish influence in Spanish production, these bilinguals also displayed evidence of Spanish to Romanian influence in Romanian comprehension, where they were more likely to accept non-DOM marked demonstratives in Romanian, presumably because referential stability is not a factor that triggers DOM in Spanish. Sánchez (2019) argues that these patterns of bilingual variability are directly attributable to these speakers’ bilingual alignments.

As noted above, Sánchez (2019) posits that bilingual alignments in a Language A are both permeable, in the sense that they allow for features from Language B to “bleed into” them, and transient, in the sense that this permeability is a temporary linking that does not necessarily imply anything about a bilingual’s underlying representation of the relevant features at play. If we grant these assumptions, then it becomes easier to see what might be happening in the minds of the Spanish-Romanian bilinguals reported in López-Otero (2019). (1) and (2) show possible bilingual Spanish/Romanian alignments for the demonstratives, *este* and *aceasta*.

As shown in (1), the Spanish alignment for *este* now includes referential stability, which is not relevant to DOM in monolingual Spanish, leading bilinguals to “overproduce” Spanish DOM. The Romanian alignment, displayed in (2), ranks animacy (which is lower ranked than referential stability for Romanian monolinguals) above referential stability, leading bilinguals to sometimes “overaccept” Romanian sentences lacking DOM before (inanimate) demonstratives.

- (1) Bilingual Spanish Demonstrative Alignment
 PF *este* (‘this’)
 Features + Referential Stability
 + Animate
- (2) Bilingual Romanian Demonstrative Alignment
 PF *aceasta* (‘this’)
 Features + Animate
 + Referential Stability

Under the alignments account, bilinguals’ variability in production and comprehension can be conceived of as transient—and not necessarily representational—influence from one language to another, leaving researchers with the flexibility to determine—on the basis of patterns from the data—whether a given speaker’s variability is evidence of representational change or not. If a Romanian-Spanish bilingual always or almost always (e.g., 85%) produces and accepts DOM with inanimate Spanish demonstratives, it is likely the case that his bilingual Spanish alignment has stabilized into an innovative representation. If, on the other hand, another bilingual rarely produces/accepts DOM with Spanish demonstratives, e.g., 15% of the time, this variability may be due to transient influence at the level of bilingual alignments. The bilingual alignments proposal offers a specific locus—the alignment—at which influence from one language to another is predicted to occur. Furthermore, this proposal makes predictions about relative bilingual proficiency and activation: as a bilingual speaker activates one of his languages (Language A) more and more over time and becomes relatively more dominant/proficient¹ in that language, he will become more likely to experience A to B influence at the level of bilingual alignments, which may ultimately lead to representational change.

¹ Following Montrul (2016b: 17), we recognize that proficiency and dominance are related, and yet “dominance is broader than proficiency because it takes into account the two languages of a bilingual person... biographical variables and the language-external conditions under which the two languages are learned or used by bilinguals.” As will be described in Section 4.2, the three bilingual groups in the present study are divided into different dominance/proficiency groups on the basis of their context and age of acquisition of English, self-rated proficiency in English and Spanish, and performance on a standard Spanish-language proficiency assessment.

In Section 2, we have presented the background of traditional transfer accounts to introduce the bilingual alignments proposal, which can provide us with some conceptual tools for addressing certain patterns of variability in bilingual data. In Section 3, we outline the morphosyntactic property of interest in the present study—inalienable possession in Spanish—and describe how it might surface variably in bilingual speakers as a result of transient, bilingual alignments.

3 Inalienable possession in Spanish

3.1 Description of the property

From a semantic perspective, internal arguments of a verb (direct objects: henceforth, DOs) can be classified as either inalienable or alienable, depending upon their semantic relationship to another nominal element in the preceding discourse context or within the sentence (Guéron 2006). Inalienable arguments are typically DPs that enter a part-whole/body part/kinship relationship with another DP (Chappell & McGregor 1996). Alienable DOs, on the other hand, are any **other** DPs that do **not** enter those types of semantic relations.

In (3), the DP *his arm* is inalienable, given that it belongs inherently to (and is a part of) the antecedent DP, *John*. In (4), however, the DO *the mirror* is alienable since it is not a part of *John's* body, and no part-whole relationship holds between the two DPs (*John* and *the mirror*).

(3) John_i broke [his arm]_i

(4) John broke [the mirror]

Different languages mark the (in)alienability of DOs in different ways. In English, possessive determiners (e.g., *his* in (3)) are used to mark inalienability (e.g., Pérez-Leroux, Schmitt & Lunn 2004), as highlighted by the contrast between (3) and (5).

(5) John_i broke [the arm]_j.

In (3), the possessive determiner, *his*, signals that the broken arm belongs to John. In (5), however, the use of the non-possessive determiner, *the*, indicates that the broken arm is an alienable object external to John, e.g., a sculpture of an arm. This tendency by English speakers to use possessive determiners (or their absence) to decode the (in)alienability of ambiguous DOs in English,² such as (3) and (5), has been confirmed experimentally by Montrul and Ionin (2010).

Guéron (2006) identifies three inalienable possession structures in French that have direct counterparts in Spanish. (We present these structures in Spanish throughout the present section.) Of the three inalienable possession structures identified by Guéron in French, two structures, shown below in (6) and (7), do not have a clear counterpart in English.

Structure I

(6) Juana levanta la mano.
 Juana raise-3.SGDEF.F.SG hand
 “Juana raises the hand”

Structure II

(7) [(Rafael) se romp-ió [_{DP}el brazo]].
 (Rafael) CL.3.SG break.3.SGDEF.M.SG arm
 “Rafael broke his arm.”

In Structure I, it is the definite determiner *la* that expresses inalienable possession—even in the absence of a possessive determiner. (Recall that in the English equivalent of Structure I, the DO is interpreted as alienable.) In Structure II, shown in (7), it is the verbal proclitic, *se*, that

² By “ambiguous” direct objects, we mean direct objects, like *arm*, that could be interpreted as either alienable (e.g., the arm of a statue) or inalienable (e.g., one’s own arm).

signals inalienable possession, specifically, by agreeing in person features with the possessor, *Rafael*. Since English lacks verbal clitics, there is no English syntactic equivalent to Structure II.

When signaling that an argument is alienable, on the other hand, Spanish requires neither person features in D (8), which might be used to specify that the object is possessed (alienably) by a given speaker ('my mirror'), nor clitic pronouns (9), which would be ungrammatical.

- (8) [Romp-í [_{DP}el espejo]].
 Break-1.SG DEF.M.SG mirror
 "I broke the mirror."
- (9) *[Me romp-í [_{DP}el espejo]].
 CL.1.SG break-1.SG DEF.M.SG mirror
 "I broke the mirror."

Though Spanish can communicate inalienable possession by means of Structure I or Structure II, and English **cannot** use either Structure I or II, both English and Spanish share a third strategy for marking the inalienability of objects. As shown in sentence (10), adapted from Silva-Corvalán (1994), Spanish, like English, can mark inalienability within the DP, specifically when that DP is embedded in a prepositional phrase.

- (10) Luisa_i puso la maleta debajo de [sus pies]_i.
 Luisa put the suitcase under PREP [POSS.3.PL feet]_i
 "Luisa put the suitcase under her feet."

While DP-internal person marking of inalienable possession is possible in Spanish (e.g., Kempchinsky 1992), as shown in (10), its usage is restricted, in this case to DPs embedded under non-argumental projections. Silva-Corvalán (1994) argues that Spanish DP-internal possessive marking occurs primarily when no clitic pronoun "referring to the possessor" (140) appears before the inalienably possessed DP. According to this descriptive account, the presence of the possessive determiner *sus* in (10) is attributable to (or made possible by) the absence of a clitic pronoun coreferential with *Luisa*, the owner of the inalienably possessed object (*feet*).

3.2 Syntactic analyses of (in)alienable possession

Guéron (1983; 1985; 2003; 2006) argues that Structure II involves a binding relationship between the clitic and the determiner of the body part DP. In her analysis, determiners in Romance languages have variable theta features³ that allow for feature binding. These features are absent in languages with invariable determiners like English.^{4,5} The relation between the possessed element and the clitic, therefore, is subject to locality and c-command requirements, as shown by the ungrammaticality of (11), where the clitic cannot bind the determiner in a raising structure, and of (12), where the binder *Juan* does not c-command the determiner in the DP, *la mano*:

- (11) *Juan le_i parece [t_j tomar la_i mano]
 Juan DEF.DAT.3.SG seems take DEF.F.SG hand
 "Juan seems to have taken his (somebody else's) hand"
- (12) *El hermano de Juan_i levantó la_i mano
 The brother of Juan raise-3.SG DEF.F.SG hand
 "Juan's brother raised his hand."

3 Guéron (2006: 597) assumes that anaphoric binding between the clitic and its antecedent relates the features that index the theta roles of disjoint constituents. In the case of the inalienable possession structure II, the clitic has features that relate via binding to the theta role of the possessor.

4 For a semantic analysis of inalienable possession based on the nature of the determiner, please see Vergnaud and Zubizarreta's (1992) analysis. In this paper, we adopt the view that differences between Structure II in (7) and structure I in (6) are attributable to differences in verb subcategorization. This will become clearer when we introduce our extension of Cuervo's (2003) analysis to Structure II.

5 This analysis can be extended to Spanish as the distribution of the data regarding the crucial points is the same.

For Guéron, English and French/Spanish express inalienable possession differently due, at least in part, to differences in the properties of English and French/Spanish determiners. While French/Spanish determiners have phi features,⁶ leading to the distributional patterns shown in (11) and (12), English determiners lack phi features and, consequently, cannot be bound.

Guéron (2006) further notes that the inalienable possession Structure II involves a dative clitic, making it similar to benefactive dative structures. In fact, she considers possessive datives such as (13) to be a sub-case of benefactive dative structures that also require a clitic, as shown by the contrast between the sentences in (13) and (14). Sentence (14), in particular, illustrates the unacceptability of interpreting a DP as inalienable when it is not bound by a clitic.

(13) Le tomé la mano
 CL.DAT.3.SG take-1.SG DEF.F.SG hand
 “I took his/her hand.”

(14) ??Tomé la mano a Pedro
 take-1.SG DEF.F.SG hand to Pedro
 “I took Pedro’s hand.”

Like French, Spanish also requires clitics in dative structures, as shown in (15).

(15) Pablo *(le) envidia a Valeria la hija
 Pablo CL.DAT.3.SG envies DOM Valeria the daughter
 “Pablo envies Valeria’s daughter”
 (He envies the fact that Pablo has a daughter)

Following Guéron, we assume that there is a parallelism between dative benefactive structures and possessive structures and, therefore, propose an extension of Cuervo’s (2003) analysis of datives to Structure II. Cuervo (2003) proposes that dative structures such as (15) involve an Applicative Phrase (ApplP) as a complement of the verb, as shown in (16).

(16) [_{VP} v [_{root} [_{ApplP} Appl [_{DP} la hija]]]]

In this analysis, the dative clitic is the head of the ApplP, the DP *la hija* ‘the daughter’ is a complement of the App head and the dative DP is in the specifier of ApplP. By extending Cuervo’s (2003) analysis of datives to Structure II, a sentence like (17) would be analyzed as in (18).

(17) Me romp-í la mano
 CL.1.SG break-1.SG DEF.F.SG hand
 “I broke my hand”

(18) [_{TP} me (1.SG) rompí [_{VP} rompí [_{root} romp- [_{ApplP} [me [_{DP} la mano]]]]]]

Because, under the analysis in (18), the clitic and the (body) part DP originate in the same maximal projection, meaning that the clitic c-commands the DP, the structure in (18) accounts for the locality and c-command requirements for the binding of theta-features (Guéron 2006). The difference between Structure I and Structure II, therefore, would follow from the fact that only Structure II involves the projection of a clitic. Other inalienable possession structures, such as (a) Structure I (e.g., (6)) and (b) the cases in which a possessive determiner is embedded within a prepositional phrase (e.g., (10)), simply lack an ApplP.

This analysis also accounts for a subcategorization difference noted by Guéron (2006). Some verbs like *romper* (‘break’) subcategorize for a clitic and a DP while others such as *levantar* (‘raise’) (6) do not. While the verb *romper* (in (7)) subcategorizes for an Applicative Phrase headed by a clitic, *levantar* (in (6)) can only select for a DP direct object. Consistent with this subcategorization-based explanation is the reduction in acceptability of the following two variants of sentences (6) and (7) with inalienable possession interpretations.

(19) #Juan se levantó la mano.
 Juan CL.3.SG raise-3.SG DEF.F.SG hand.
 “Juan raised his hand.”

6 Following Adger and Harbour (2008), we assume phi-features include those involved in predicate-argument agreement: person, gender, number as well as honorific and definiteness features.

- (20) #yo rompí el brazo.
 I break-1.SG DEF.M.SG arm
 “I broke my arm.”

Sentence (19), though interpretable, is of questionable grammaticality, given that the verb *levantar* does not subcategorize for an ApplP, making the presence of the clitic *se* non-target-like.⁷ Similarly, sentence (20) is also both interpretable (at least with an alienable interpretation of *el brazo*) and questionably grammatical, given its subcategorization violations. Unlike *levantar*, which does not subcategorize for an ApplP, *romper* obligatorily selects for an ApplP with inalienable objects, making (20), which is missing the clitic head (APPL), unusual.

In Section 2.2, we presented Sánchez’s (2019) model of bilingual alignments. Because we will be using this idea as a framework for approaching participants’ production and recognition of inalienable possession structures in the present paper, we will now summarize the differences between English and Spanish with respect to Structure II by showing how alignments, as storage and retrieval units, work in monolingual Spanish and English for the verbs *romper* and *break*.

In Spanish, a sentence like (21), assuming structure (22), involves alignments for the verb, the clitic, and the determiner, as shown in (23):

- (21) me rompí el brazo.
 CL.1.SG break-1.SG 1.DEF.SG.M arm
 “I broke my arm.”

- (22) V_ [ApplP App [DP]]

Spanish Alignments

| | | | |
|------|-----------------|----------------------|----------------------|
| (23) | Verb alignment | Clitic alignment | Determiner alignment |
| | PF <i>rompí</i> | PF <i>me</i> | PF <i>el</i> |
| | Features + PAST | + DEF | + DEF |
| | + SG | + SG | + SING |
| | 1 PERSON | 1 POSS PERSON | + M |
| | | | 3 PERSON |

In (23) we see that the clitic is marked for first person as required by the need of person marking to denote the possessor in a Structure II sentence. Unlike the clitic, the determiner receives a third person marking denoting the possessed element in the possessive inalienable relationship.

In the English sentence in (24), assuming the structure in (25), there is no ApplP, so the person feature on the determiner is a possessor first person feature as shown in (26):

- (24) I broke my arm

- (25) V_DP

English alignments

| | | |
|------|-----------------|----------------------|
| (26) | Verb alignment | Determiner alignment |
| | PF <i>broke</i> | PF <i>my</i> |
| | Features + PAST | Features + DEF |
| | + SG | + /-PL |
| | 1 PERSON | 1 POSS PERSON |

This difference between Spanish and English alignments, alongside the assumption that bilingual alignments are permeable, will be crucial to our account of the heritage data in this study.

Up to this point in Section 3.2, we have described the “target” form of inalienable possession Structure II in Spanish and explained what that form might look like in terms of alignment. Because the present paper focuses on variability, however, it is important for us to supplement this account by modeling other potential ways in which inalienable possession might be expressed in the Spanish of Spanish-English bilinguals. If we think of inalienable possession marking in Structure II as the product of two binary choices (+ or – ApplP and + or – possessor person features in D), it becomes clear that there are three more logically possible ways in which Spanish speakers might express inalienable possession.

⁷ In sentences such as *Juan, se, levantó* (‘Juan got up’), though the verb *levantar* subcategorizes for a clitic pronoun, it does not subcategorize for the Applicative Phrase with both a clitic pronoun and a DP direct object.

The first option (henceforth, Clitic + PossDet) would be for speakers to produce *both* a clitic pronoun and a determiner with possessor person features, as in (27), which we assume to have the structure in (28). This structure has been found in Spanish in contact with indigenous languages in Latin America, as well as some other regional varieties (Escobar 1992), but it is less common in non-contact varieties and, to our knowledge, unattested in heritage Spanish:

(27) Me rompí mi brazo
 CL.1.SG break-1.SG POSS.1.SG arm
 “I broke my arm”

(28) V_ [ApplP App [DP]]

Spanish-English bilinguals who produce or accept this form might be making use of the bilingual alignment depicted in (29), where possessor person features are part of the clitic and the determiner alignments:

Bilingual Spanish alignment
 (29) Verb alignment Clitic alignment Determiner alignment
 PF *rompí* PF *me* PF *mi*
 Features + PST + DEF + DEF
 + SG + SG + SG
 1 PERSON 1 POSS PERSON 1 POSS PERSON

A second alternative option (henceforth, NoClitic + PossDet) would be to produce a possessive determiner but not a clitic pronoun, as in (30), which we assume has the structure shown in (31). The absence of the clitic indicates the lack of an ApplP projection. To our knowledge, sentence (30) has not been attested in non-contact varieties of Spanish as an expression of inalienable possession.

(30) ??Yo rompí mi brazo.
 I break-1.SG POSS.1.SG brazo
 “I broke my arm.”

(31) V_[DP]

Spanish-English bilinguals who produce this form might be making use of the bilingual alignment depicted below in (32), where the determiner alignment includes possessor person features, but there is no alignment for the clitic, given that ApplP is not projected here.

Bilingual Spanish Alignment
 (32) Verb alignment Determiner alignment
 PF *rompí* PF *mi*
 Features + PST Features + DEF
 + SG + /-PL
 1 PERSON 1 POSS PERSON

The third and final logically possible option for marking inalienable possession in Spanish is a sentence with no ApplP and no possessive determiner (henceforth, NoClitic + DefDet), shown above in (20) (and repeated here as 33) with the structure in (34). This structure, like (30), disobeys the subcategorization requirements of *romper*, given that it lacks an ApplP projection. Unlike (30), however, (33) does not “make up for” the missing ApplP by having possessor person features in D. Instead, it hosts definiteness, gender and number in D.

(33) ?? Yo_i rompí [e]_i brazo].
 I break-1.SG [DEF.M.SG hand]
 “I broke my hand.”

(34) V_[DP]

Spanish-English bilinguals who produce (33) might be making use of the alignment in (35), where the determiner lacks possessor person features:

Bilingual Alignment
 (35) Verb alignment Determiner alignment
 PF *rompí* PF *el*
 Features + PAST Features + DEF
 + SG + SG
 1 PERSON + M

How might we categorize the grammaticality status of the three alternative variants of Structure II described in this section and summarized in *Table 1*? To our knowledge, no previous paper has made claims about the grammaticality of these forms. For that reason, we will refer to them as “innovative” (e.g., Polinsky 2019)—rather than “non-target”—throughout the present paper. As *Table 1* shows, innovative forms 1 and 2 have possessor person features while innovative form 3 lacks them altogether, a difference that will be relevant later.

| Label | Grammaticality Status | Appl. Head with possessor person features | D with possessor person features | Sample Sentence |
|--------------------|-----------------------|---|----------------------------------|--------------------------|
| Clitic + DefDet | “Target” | √ | X | <i>me rompí el brazo</i> |
| Clitic + PossDet | Innovative 1 | √ | √ | <i>me rompí mi brazo</i> |
| NoClitic + PossDet | Innovative 2 | X | √ | <i>rompí mi brazo</i> |
| NoClitic + DefDet | Innovative 3 | X | X | <i>rompí el brazo</i> |

Table 1 Options for heritage Spanish representations of inalienable possession.

3.3 Previous studies of Spanish HSs and inalienable possession

Most prominent amongst the few studies that have tested HSs’ knowledge of inalienable possession is work by Montrul & Ionin (2010; 2012), who tested HSs’ interpretation of (in)alienable possession in Spanish with verbs, such as *levantar* (‘raise’), that do not subcategorize for clitic pronouns. By focusing only on this subset of inalienable possession structures, Montrul & Ionin isolate the impact of DP possessive marking on HSs’ interpretations of inalienability.

In a Picture Sentence Matching Task (PSMT), 30 HSs (DELE proficiency: M = 39.3/50; 40 + /50 is typically characterized as “advanced” proficiency) and 17 Spanish-dominant controls read sentences, e.g., *Pablo levantó la mano*, which were presented beneath two pictures: one depicting an inalienable object (e.g., a boy lifting his own hand) and another depicting an alienable object (e.g., a boy lifting a sculpture of a hand). After reading each sentence, participants decided whether that sentence “matched” the picture of the inalienable object, the picture of the alienable object, or both. Results indicate that both HSs and Spanish-dominant controls derived inalienable interpretations from sentences with a definite article (HSs: M = 85.0%; SDCs: M = 93.4%) **and** sentences with a possessive determiner (HSs: M = 52.2%; SDCs: M = 65.6%) in the DP. This interpretive tendency was further corroborated in a Sentence Picture Acceptability Task (SPAT).

These findings have two key implications for the present study. First, they show that HSs, at least with a certain subset of Spanish verbs, can get an inalienable interpretation of Spanish sentences that include possessive determiners. Second, they indicate that the SDCs exhibit this exact same interpretive pattern, meaning that even in non-heritage varieties of Spanish possessive determiners can sometimes mark inalienable possession, just as in English. Based on the syntactic analysis presented in Section 3.2, we interpret this pattern as evidence that for these two groups, both person features in D (e.g., possessive determiner) and binding (e.g., no possessive determiner in D) are possible ways of deriving the inalienability of a Spanish DP.

Silva-Corvalán (1994) examined innovation in the spontaneous speech of three groups of Spanish-English bilinguals living in Los Angeles: Group 1 speakers (who immigrated to the US at age 12 or later), Group 2 speakers (who were either born in the US or immigrated to the US by age 6), and Group 3 speakers (who were born in the US and have at least one parent from Group 2). In current terminology, Group 1 speakers roughly correspond to what we might call first-generation immigrants while Group 2 and Group 3 speakers are similar to 2nd/3rd generation HSs.

Because Silva-Corvalán worked exclusively with spontaneous speech, she did not purposely elicit inalienable possession structures, let alone inalienable possession structures with a particular subclass of verbs. Nonetheless, Silva-Corvalán reports evidence that Group 3 speakers sometimes produce innovative variants of inalienable possession structures in Spanish, specifically by omitting the (obligatory) reflexive clitic in 13% of all ‘indirect reflexive’ sentences. (In Silva-Corvalán’s terminology, indirect reflexives are verbs like *romper* that select for both a clitic

pronoun and an object DP, e.g., (17)). It is unclear whether Group 3's reduced production of reflexive clitics in inalienable possession contexts co-occurred with an increased production of possessive determiners, given that Silva-Corvalán does not provide this information. That said, Silva-Corvalán does present examples of HSs using possessive determiners to communicate inalienability, e.g., *quebraron mi jaw* ('they broke my jaw'), cf. *me quebraron la mandíbula*). This sentence suggests that some HSs opt to signal the inalienability of DPs via possessor features in D instead of clitic pronouns.

Though informative, the previous literature on HSs' knowledge of (in)alienable possession suffers from a few gaps. First, there is little data on HSs' **productive** knowledge of (in)alienable possession in Spanish. Furthermore, the only production data that does exist (Silva-Corvalán 1994) comes from spontaneous speech. As such, it remains unclear whether HSs' specific production of (in)alienable possession structures with alienable and inalienable objects is impacted by verb class (e.g., verbs that subcategorize for clitics vs. verbs that do not), as well as other linguistic factors.

In the case of studies that have tested HSs' **receptive** knowledge of inalienable possession, a second key gap emerges. All previous studies in this area have utilized interpretive tasks (e.g., Truth Value Judgment Tasks), which elicit HSs' comprehension of sentences deemed to be grammatically target-like. Though informative, the interpretive tasks employed by Montrul & Ionin (2010; 2012) necessarily excluded "ungrammatical" sentences, meaning that participants could not be asked to evaluate innovative variants of inalienable possession structures, such as *rompí mi brazo*, despite the fact that these variants may very well form a part of HSs' grammar.

A third gap is that no previous study has explored HSs' productive **and** receptive knowledge of inalienable possession structures in Spanish. Given HSs' tendency to exhibit asymmetries across production and comprehension of the HL (e.g., Putnam & Sánchez 2013; Sherkina Lieber 2015; Perez-Cortes, Putnam & Sánchez, 2019), studying HSs' exhibited knowledge of inalienable possession across different modalities (productive and receptive tasks) represents an important opportunity to better understand the nature of variability in HL grammars.

The present study addresses the three gaps mentioned above in the following ways. First, by employing an experimental production task, the study manages to both (a) elicit a high number of inalienable possession structures while still (b) carefully controlling linguistic factors that might impact the production of those structures. Second, by utilizing a receptive task that is unconstrained by the methodological requirements of interpretive tasks, the study investigates the extent to which certain, previously untested, linguistic innovations (e.g., *rompí mi brazo*) are present in HSs' underlying grammatical systems. Third, and perhaps most importantly, the present study combines productive **and** receptive experiments to gain a more thorough and multimodal understanding of what HSs really know about (in)alienable possession in Spanish.

4 Research questions and participants

Given our theoretical framework, as well as the gaps in the literature highlighted in Section 3.3, we adopt the following research questions.

4.1 Research questions

RQ 1: Do Spanish-English bilinguals exhibit variability in their production/acceptance of alignments for inalienable possession Structure II? If so, what does this variability look like?

Hypothesis: Given the permeable nature of bilingual alignments (Sánchez 2019), we expect that all groups of Spanish-English bilinguals in this study will exhibit (some) variability in their production and acceptance of inalienable possession Structure II in Spanish. As outlined in Section 3.2, we expect that variability will be evident in both the Applicative Phrase, which participants will variably project, as well as the DP, where they will variably include possessor person features.

RQ 2: Is bilingual variability with inalienable possession Structure II more pronounced for the Spanish HSs (English-dominant, early acquisition of English)

than for the Spanish-dominant bilingual controls (SDCs; Spanish-dominant, later acquisition of English)?

Hypothesis: Because the permeability of bilingual alignments is closely connected to language dominance, we expect that the HSs, who are English-dominant, will exhibit more variability in their Spanish alignments of Structure II than the SDCs, who are Spanish-dominant.

RQ 3: Assuming that HSs do exhibit variability, is that variability with inalienable possession alignments modulated by (a) Spanish proficiency and (b) task modality?

Hypothesis: Proficiency and task modality are both expected to modulate variability in HSs' inalienable possession alignments. Specifically, HSs with higher proficiency in Spanish are expected to exhibit less variability in their bilingual alignments than HSs with lower proficiency, respectively. In addition, HSs in both proficiency groups are expected to perform more variably in a production task, which is more cognitively demanding (e.g., Levelt, Roelofs & Meyer 1999), than in a receptive task, which is relatively less demanding.

RQ4: Finally, in spite of their variability, are HSs sensitive to object type when projecting ApplP?

Hypothesis: We expect that HSs, despite exhibiting variability in the production/acceptance of Structure II, inalienable possession, will, nonetheless, remain sensitive to object type when projecting ApplP. In other words, we expect that HSs will be significantly more likely to produce/accept clitics with inalienable nouns than with alienable nouns, respectively. In this respect, then, the HSs are expected to exhibit the same patterns of sensitivity as the SDCs.

4.2 Participants

All 45 participants in the present study were adult native speakers of Spanish with advanced or native-like English proficiency. Participants, all of whom were currently living in the US, were divided into three groups based on differences in their (a) age (and context) of acquisition of English and also (b) Spanish-language proficiency.

The primary dividing factor was age (and context) of acquisition of English. The 30 heritage speakers (HSs) in the study began acquiring English in the context of the US between birth and age six. The 15 Spanish-dominant controls (SDCs), on the other hand, began acquiring English in the context of the United States at age 13 or later⁸ (Age of Arrival: $M = 22.44$; $SD = 5.85$; Range = 13–36). After this initial division, the HSs were further subdivided on the basis of the DELE Spanish proficiency test, a 50-question testing instrument (maximum score: 50) commonly used in HL acquisition research (e.g., Montrul 2009), which we take to be a rough proxy for Spanish-language activation. Following previous studies, participants scoring between 30–39 were classified as intermediate ($n = 14$) while those scoring between 40–50 were classified as advanced ($n = 16$). All 16 SDCs scored 40+ on the DELE.

Arguments for the importance of bilingual control groups (e.g., Pascual y Cabo & Rothman 2012; Otheguy & Zentella 2012; *inter alia*) in HL research typically emphasize two major points. First, bilingual control groups are bilingual, like HSs, meaning that it is possible for them to experience cross-linguistic transfer/interference (Grosjean 2012) from one language to another. Second, bilingual controls, particularly those who have lived in the same country as the HSs for an extended period of time, better represent the HL input that HSs have received from their parents, whose own extended contact with English may have led to emerging changes in usage of the home language. By testing bilingual controls, therefore, researchers can determine whether innovation in HSs' knowledge of a given grammatical property X is (a) a true innovation not produced by the first generation or (b) a reflection (or "amplification"; Polinsky 2019) of a similar innovation already emerging in the speech of first-generation speakers.

⁸ Evidence from L1 attrition research (e.g., Bylund 2009) suggests that such bilingual controls are less likely to experience L1 attrition than bilinguals with earlier acquisition of the L2 (e.g., HSs).

It is often assumed that most HSs will become dominant in the societal language while first-generation (post-pubescent) immigrants, like the SDCs, remain dominant in their L1 (e.g., Montrul 2016a). If self-ratings of language proficiency are any indication, then this pattern is clearly evident in the experimental groups of this study, despite the SDCs' substantial length of residence in the US ($M = 8.28$ years; $SD = 5.90$; Range = 2–19).

All participants provided self-ratings (1 = beginner; 10 = native-like) of their Spanish and English. Paired samples t -tests reveal that both the AdvHSs (English: $M = 9.56$; $SD = 0.73$; Spanish: $M = 7.81$; $SD = 0.91$), $t(15) = 7.00$, $p < .001$, $d = 1.75$, and the IntHSs (English: $M = 9.43$; $SD = 0.76$; Spanish: $M = 7.64$; $SD = 0.84$), $t(13) = 7.486$, $p < .001$, $d = 2.00$, rated their English proficiency significantly higher than their Spanish proficiency. The SDCs, however, provided higher self-ratings for their Spanish ($M = 9.93$; $SD = 0.25$) than for their English ($M = 7.77$; $SD = 1.05$), $t(14) = 7.653$, $p < .001$, $d = 1.98$.

Not surprisingly, the SDCs' DELE proficiency scores ($M = 46.93$; $SD = 2.15$) were significantly higher than the DELE scores for both the AdvHSs ($M = 41.94$; $SD = 1.77$) and the IntHSs ($M = 34.50$; $SD = 3.13$), all p 's $< .001$, highlighting another important difference between the HS groups and the SDCs.

In addition to providing self-ratings and completing the DELE, all HSs in the study used a -2 (all English) to +2 (all Spanish) scale to rate the extent to which they produced and heard Spanish and English with their parents over three age ranges: birth to age 5, ages 6–12, and ages 13–18. Using these responses, the researchers calculated one Spanish “production” score and one Spanish “exposure” score for each HS in each age range. Scores for a given range were calculated by dividing participants' responses for each of their parents during that range. If a HS reported using “all Spanish” (+2) with her father and “mostly Spanish” (+1) with her mother, for example, then her Spanish usage score for that age range would be $(2+1)/(2) = 1.5$. On such a scale, 0 means “Equal Spanish and English” while negative scores mean more English than Spanish.

From this data, shown in [Figures 1 and 2](#), we would like to highlight three patterns. First, both the IntHSs and the AdvHSs (both p 's $< .05$) reported **using** less Spanish **with** their parents during the ages of 13–18 than during the ages of 0–5, respectively, signaling a reduction in their frequency of at-home Spanish **production**. Second, both the IntHSs and the AdvHSs (both p 's $< .05$) also reported **hearing** less Spanish **from** their parents during the ages of 13–18 than during the ages of 0–5, pointing to a decrease over time in at-home **exposure** to Spanish. Finally, both the IntHSs ($p < .05$) and the AdvHSs ($p < .01$) reported that their average of Spanish use (from birth to age 18) when speaking with their parents was significantly less than their parents' average use of Spanish with them. This finding is consistent with the observation that first-generation immigrants speak more Spanish to their children than the children speak to them.

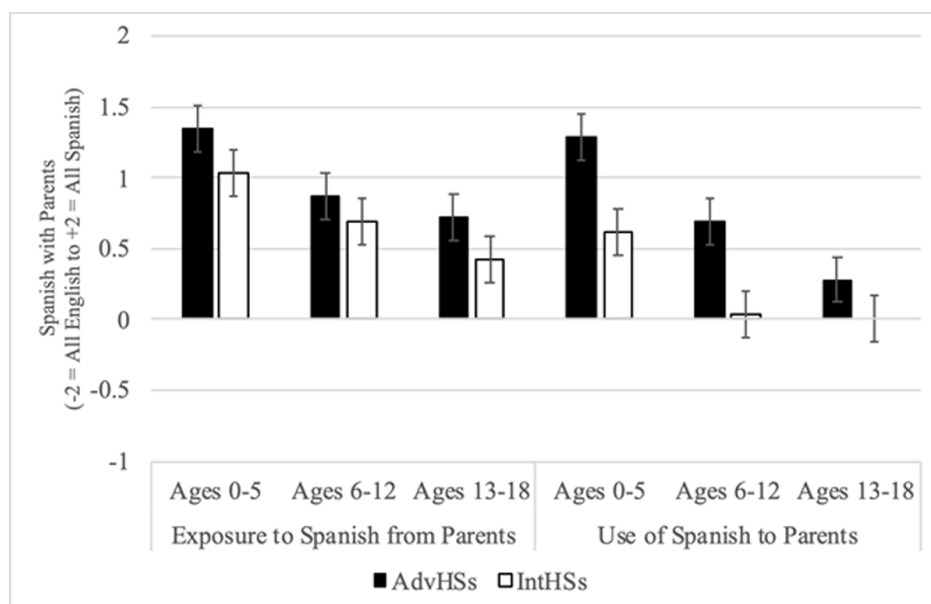


Figure 1 Participants' usage of and exposure to Spanish with parents over time.

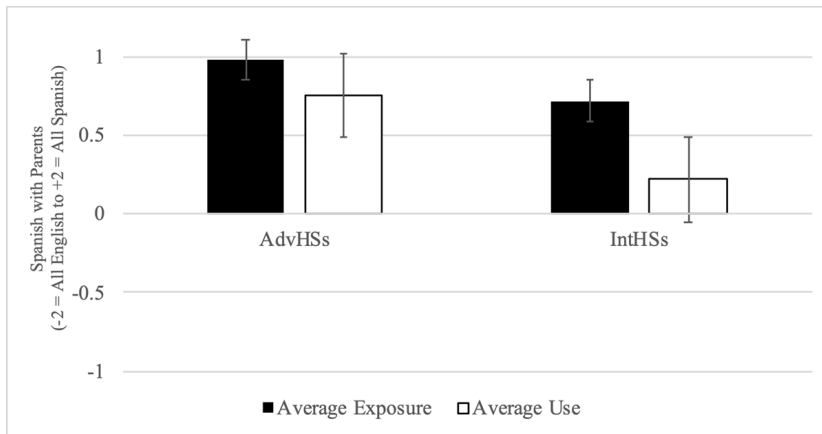


Figure 2 Participants’ average (birth-age 18) exposure to and usage of Spanish with parents.

5 Elicited production task

5.1 Methodology

The goal of this experiment was to test whether participants produce Structure II when describing (in speech) images that depict inalienable objects and non-possessive structures when describing alienable objects. In each experimental item,⁹ participants saw a cartoon image, presented via GoogleSlides, as well as two words: a verb marked with perfective morphology, e.g., *rompí* (‘I broke’), and a singular noun, e.g., *brazo* (‘arm’). Participants described what happened in each image, using the given words, as well as any other words they wanted to add. All participant responses were recorded with an H4nZoom Handy Recorder.

There were 48 items in the EPT: 32 experimental items, which were divided up by object type, as well as 16 fillers. In the Inalienable Objects condition (k = 16), the image on screen depicted an inalienable object, e.g., an arm. All inalienable objects were presented in such a way that their inalienability was unambiguous (e.g., the arm was attached to its owner). In the Alienable Objects condition (k = 16), on the other hand, the image on screen depicted an alienable object, e.g., a mirror. Testing participants’ performance with both alienable and inalienable objects allows researchers to see if participants differentiate between the two.

Because the present experiment sought to explore participants’ expression of Structure II, all Spanish verbs that appeared in the experimental items subcategorize, at least in Spanish-dominant varieties, for both an ApplP with a clitic pronoun head (e.g., *me*) as well as an object DP (e.g., *el brazo*) complement. To ensure that participants’ production of Structure II was driven by object type (inalienable or alienable), rather than differences in the lexical selection properties of specific verbs, all eight verbs used in the experimental items—shown in *Table 2*—appeared four times: twice with inalienable objects and twice with alienable objects.¹⁰ As a result of this “within-verbs” design, any differences in participants’ performance across inalienable and alienable objects cannot be attributed to the specific verbs that were used in each.

| SPANISH VERB | ENGLISH TRANSLATION |
|-----------------|---------------------|
| <i>arreglar</i> | ‘to fix up’ |
| <i>cortar</i> | ‘to cut’ |
| <i>lavar</i> | ‘to wash’ |
| <i>morder</i> | ‘to bite’ |
| <i>pintar</i> | ‘to paint’ |
| <i>quemar</i> | ‘to burn’ |
| <i>romper</i> | ‘to break’ |
| <i>secar</i> | ‘to dry’ |

Table 2 Verbs used in the Elicited Production Task.

⁹ For sample items in each condition, see Appendix A in Supplemental File 1.

¹⁰ Half of all experimental items involved first-person verbs (e.g., *rompí*: ‘I broke’), while the other half involved third-person verbs (e.g., *rompió*: ‘He/she broke’).

Our decision to provide participants with fully inflected verbs, rather than infinitival verbs, was made to ensure that all participants responded to each experimental item with the same syntactic subject. If we provided participants with non-finite verbs (e.g., *romper*) in the Alienable Objects condition, they would ultimately have the option of producing a sentence with either (a) a first-person subject (e.g., *rompí el espejo*) or (b) a third person subject (e.g., *se me rompió el espejo*: literally, ‘the mirror broke itself on me’), thereby introducing a confounding variable (person) into the design and problematizing our theoretically motivated coding scheme.

5.2 Coding and analysis

Of the 1440 total participant responses, 131 (9.10%) were excluded from further analyses,¹¹ most commonly when participants’ responses included (a) an indefinite article or no article at all (e.g., by producing *me corté un dedo* (‘I cut a finger’) or *corté _ césped* (‘I cut grass’; n = 46), (b) an inanimate subject (e.g., *el sol secó la camisa* (‘the sun dried the shirt’); n = 15) or (c) a dative or benefactive (rather than reflexive) interpretation of the picture on screen (e.g., *le pinté la cara* (‘I painted her face’) instead of ‘I painted my face’); n = 14). The remaining 1309 responses were used in the descriptive and inferential statistical analyses presented below.

5.2.1 Descriptive statistics

We begin our analysis by examining the descriptive data, which will allow us to shed light on RQ1. Participants’ responses were first classified into four different categories: (1) Clitic + DefDet (e.g., *me rompí el brazo* or *me rompí el espejo*), corresponding to Structure II, (2) Clitic + PossDet (e.g., *me rompí mi brazo* or *me rompí mi espejo*)¹² (3) NoClitic + PossDet (e.g., *_ rompí mi brazo* or *_ rompí mi espejo*) and (4) NoClitic + DefDet (e.g., *_ rompí el brazo* or *_ rompí el espejo*). Each category is a strategy that participants could employ when describing experimental items in either the Inalienable and Alienable object conditions, respectively.

Figure 3 displays participants’ production strategies in the Inalienable objects condition. As you can see, all groups—including the SDCs—exhibit some variability here, defined as the alternation between target and innovative forms. Nonetheless, to provide a very preliminary glimpse at RQ2, this variability appears more pronounced in the two HS groups—both English-dominant—than in the Spanish-dominant SDCs.

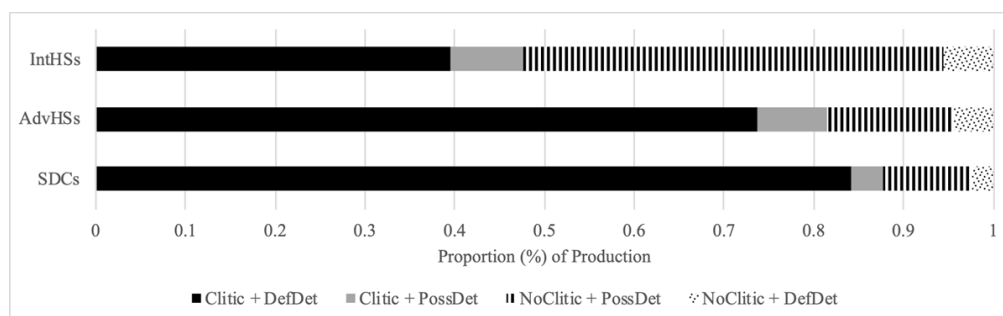


Figure 3 Participants’ average use (%) of four possible response types: Inalienable objects.

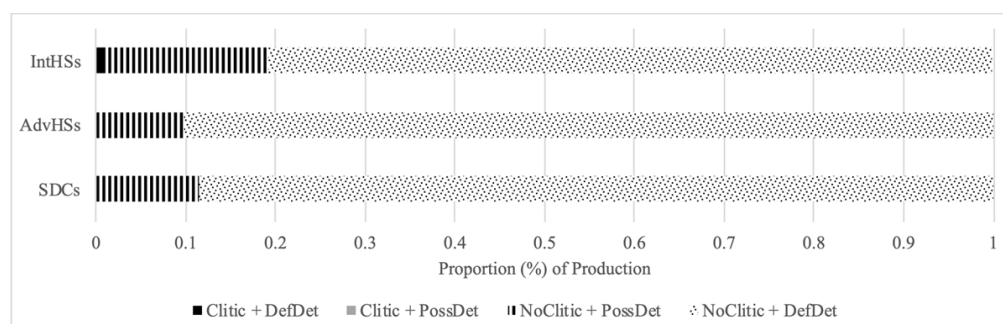


Figure 4 Participants’ average use (%) of four possible response types: Alienable objects.

11 For a full list of the types of responses that were excluded, see Appendix A in Supplemental File 1.

12 Clitic corresponds in our theoretical analysis to the head of ApplP and PossDet corresponds to D with only person and number features. In the same way, NoClitic corresponds to the lack of an ApplP projection and DefDet corresponds to D with definiteness, gender and number features and no person features.

The second part of RQ1 asks about the shape that this variability takes, a question that we can also begin to answer with the descriptive statistics. All groups produced at least a few tokens of each of the four logically possible strategies listed above. Notably, the presence of the second strategy (Clitic + PossDet.) in all three groups is consistent with our analysis in Section 3.2, which assumes that the production of clitic pronouns is independent from (and, therefore, can co-occur with) the production of D with possessor person features. One other pattern worth highlighting from the descriptive data is the groups' lower variability with Alienable objects (Figure 4), a tendency that appears to point to the context-specific nature of participants' variability.

5.2.2 Inferential statistics

Given that participants' responses can be classified into four separate categories, it would be possible, in principle, to analyze the data from the EPT with a multinomial mixed effects model. However, for both statistical,¹³ as well as theoretical,¹⁴ reasons we chose to analyze the data with two separate, logistic mixed effects models.

In the first model (henceforth, Model #1), the dependent variable is CliticProduction, coded as either '1' (clitic) or '0' (no clitic). It is important to note that by coding the dependent variable in this binary fashion, Model #1 cannot take into consideration the presence of person features in D, meaning that two different participant responses (e.g., *me rompí el brazo* and *me rompí mi brazo*) would both be coded as '1' (clitic). In the second model, the dependent variable is PossDetProduction, coded as either '1' (PossDet.) or '0' (DefDet.). By coding PossDetProduction in this way, Model #2 cannot take into consideration the presence of clitic pronouns, meaning that in Model #2, two different participant responses (e.g., *me rompí mi brazo* and *rompí mi brazo*) would both be coded as '1' (PossDet.). Despite using different dependent variables, however, Model #1 and Model #2 both included the fixed factors Group (SDCs, AdvHSs, IntHSs), ObjectType (Inalienable, Alienable), and Group*ObjectType. Similarly, Model #1 and Model #2 also included random intercepts for participant, as well as (lexical) item.

5.3 Results

Model #1 revealed statistically significant effects of ObjectType ($F(1, 1303) = 161.88, p < .001$) and Group*ObjectType ($F(2, 1303) = 3.72, p < .05$) but not Group ($F(2, 98) = 1.15, p = .32$). In the rest of this subsection, we will limit our discussion to the Group*ObjectType interaction (Figure 5), which allows us to directly address the RQs.

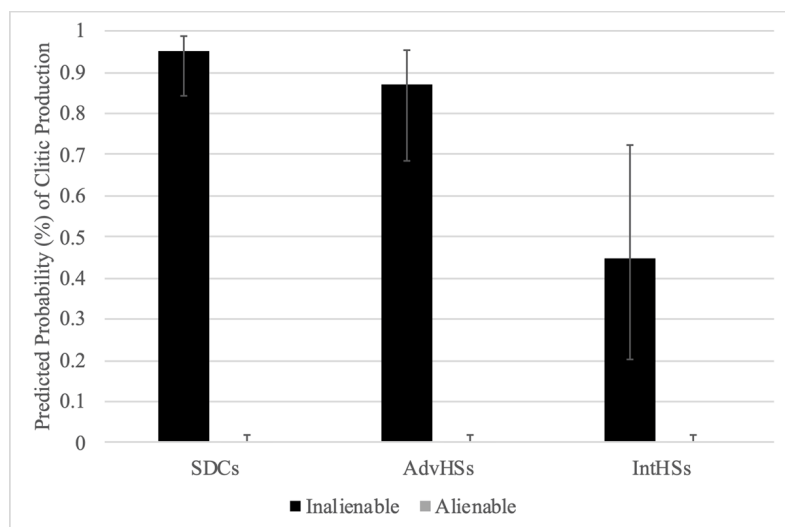


Figure 5 Participants' predicted probability of producing clitics: Inalienable/ Alienable objects.

¹³ Statistically, it is not possible to run a multinomial mixed effects model when there are "zero cell counts," that is to say, experimental conditions in which one of the multinomial outcomes (e.g., Clitic + PossDet) is not observed at all. As shown in Figure 4, above, there are multiple examples of zero cell counts (e.g., the SDCs do not produce any Clitic + PossDet responses in the Alienable objects condition.)

¹⁴ Theoretically, we are interested in exploring the factors that affect participants' likelihood of (a) projecting ApplP and (b) utilizing a possessive determiner. In order to explore these factors, it is imperative that we group together (as a single outcome) both Clitic + NoPoss Det and Clitic + Poss Det responses (Model #1) as well as both Clitic + Poss Det and NoClitic + Poss Det responses (Model #2).

RQ1 asks (a) whether the groups exhibit variability in the production of inalienable possession Structure II and (b) what that variability looks like. Results of the model indicate that the SDCs ($M = 95.1\%$) and the AdvHSs ($M = 87.1\%$) show minimal variability, producing clitics almost categorically with Inalienable objects. (There were no statistically significant differences ($p = .18$, $OR = 2.86$) between the clitic production of these two groups.) The IntHSs, however, who produce far fewer clitics ($M = 44.6\%$) than the SDCs ($p < .001$, $OR = 23.88$) and the AdvHSs ($p < .01$, $OR = 8.36$), exhibit more variability, alternating almost equally between producing (and not producing) clitics with inalienable objects. The difference between the AdvHSs and IntHSs provides our first insight into RQ3, which addresses proficiency effects on HS variability.

Variability in participants' performance is less apparent in the Alienable objects condition, where none of the groups' predicted probability of clitic production exceeded 0.3% (SDCs: 0.2%; AdvHSs: 0.2%; IntHSs: 0.3%), and there were no statistically significant differences between the three groups (all p 's $> .77$; all OR 's < 1.52).

RQ4 asks whether each group, despite its variability, is sensitive to (in)alienability when producing Structure II. To answer this question, we now turn to within-group comparisons of participants' performance in the Production Task. Results of Model #1 indicate that the SDCs ($p < .001$; $OR = 10026.63$), AdvHSs ($p < .001$, $OR = 2881.31$) and IntHSs ($p < .001$, $OR = 276.72$) are all significantly more likely to produce clitics in the Inalienable Object condition, where such pronouns are expected, than in the Alienable Object condition, where they are not. Clearly, then, all three groups are sensitive to object type when producing clitic pronouns.

The findings of Model #1 raise a key question: if HSs produce fewer clitics with inalienable objects, do they make up for it by using more possessive determiners? In Model #2, we address this question, in doing so, shedding light on RQ 1, which asks about the shape of HSs' variability, RQ2, which asks about HS variability relative to the SDCs, and RQ 3, which asks about whether HS variability is driven by differences in proficiency.

Model #2 revealed statistically significant effects of Group ($F(2, 39) = 6.13$, $p < .01$), Object Type ($F(1, 1303) = 53.50$, $p < .001$), and Group*Object Type ($F(2, 1303) = 10.33$, $p < .001$). In the remainder of this subsection, however, we will limit our discussion to the Group*Object Type interaction (Figure 6), which allows us to directly address the RQs.

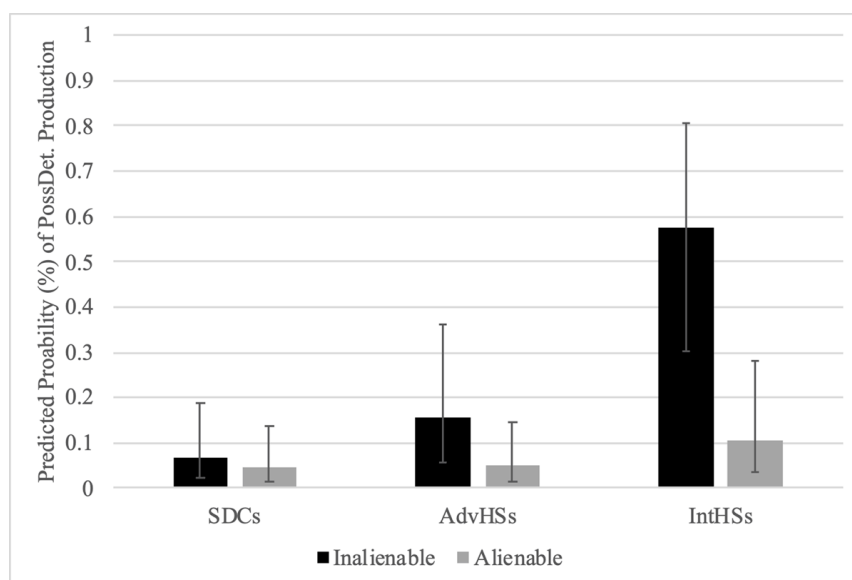


Figure 6 Participants' predicted prob. of producing poss. det.: Inalienable/ Alienable objects.

The SDCs show little variability, meaning that they rarely produce possessive determiners ($M = 6.6\%$) with inalienable objects. Relative to the SDCs, the HSs show more variability (RQ2), specifically, in their increased likelihood of producing possessive determiners. Though the AdvHSs ($M = 15.7\%$) only produce marginally more possessive determiners than the SDCs ($p = .11$, $OR = 2.62$), the IntHSs ($M = 57.5\%$) exhibit much more variability, producing more

possessive determiners than the SDCs ($p < .001$, OR = 19.07) and the AdvHSs ($p < .01$, OR = 7.26). The difference between the AdvHSs and IntHSs confirms, following RQ 3, that HL proficiency modulates variability with inalienable possession.

Like Model #1, Model #2 reveals that participants' variability is largely limited to the Inalienable objects condition. In the Alienable objects condition, no group produces possessive determiners more than 10.5% of the time, and no statistically significant differences emerge between the groups' predicted probability of possessive determiner production (all p 's $> .15$).

Consistent with the claim that HSs' variability with possessive determiners is limited to the Inalienable objects condition is evidence from the within-group perspective of Model #2, which shows that both the IntHSs ($p < .001$, OR = 11.48) and AdvHSs ($p < .001$, OR = 3.55) are more likely to use possessive determiners with Inalienable objects than Alienable objects. Notably, the SDCs do not use any more possessive determiners with Inalienable objects than with Alienable objects ($p = .25$, OR = 1.51), highlighting that for them, possessive determiners are not used as an alternate strategy for marking inalienability.

6 Acceptability judgment task

The EPT showed variability along two axes: HSs, when compared to controls in the Inalienable objects condition, produced fewer clitics and more possessive determiners, differences that were magnified at lower HL proficiency levels. Though production tasks offer substantial insight into speakers' knowledge, it is important to complement production data with receptive data which, according to Polinsky (2019), can be a "guide to a fuller picture" (76) of what HSs know about a given property. With that point in mind, as well as the second part of RQ3, we now turn to the Acceptability Judgment Task.

6.1 Methodology

Task 2 was an Acceptability Judgment Task (AJT), which all participants completed immediately after finishing the EPT.¹⁵ In each experimental item, participants read (a) a short, 1–2 sentence context and then (b) a short follow-up sentence, both of which were presented via GoogleSlides. Participants evaluated the naturalness of each follow-up sentence using a 1 ('sounds very odd') to 4 ('sounds very good') naturalness scale. To increase the likelihood that participants were judging the follow-up sentence, all follow-up sentences were presented in blue (as opposed to the contexts, which were written in black) a full line beneath the context sentences. (For sample items with contexts, see Appendix B of Supplemental File 1.)

There were 72 items in the AJT: 48 experimental items and 24 fillers, which tested mood morphology. Of the 48 experimental items, 32 tested inalienable objects and 16 tested alienable objects. In the inalienable object condition, participants rated three types of inalienable structures: "target-like" Clitic + DefDet ($k = 8$) forms, "innovative" Clitic + PossDet forms ($k = 8$), and "innovative" NoClitic + PossDet forms ($k = 16$).¹⁶ The remaining 16 experimental items tested sentences with alienable objects (e.g., *espejo*). Of these items, 8 tested the "target-like" NoClitic + DefDet structure and 8 tested the "non-target-like" Clitic + DefDet structure.

Before presenting the AJT data, it is important to note that the eight verbs used in the AJT, each of which appears a total of six times, are the same verbs that appeared in the EPT, a methodological decision that will make comparisons across the two tasks more consistent.

¹⁵ We chose not to counterbalance task order because we feared that giving participants the AJT before the EPT could prime their production of the "target" structure as well as other innovative forms.

¹⁶ Anonymous reviewers note two limitations of this design. First, there are twice as many items in the NoClitic + PossDet condition (16) as in the other two conditions (8). Second, there are no items in the NoClitic + DefDet condition. (We did not test these items because we did not expect that participants would produce them.) While we acknowledge that future research should avoid these shortcomings, we also wish to make two quick clarifications. Because our inferential statistical analyses use long-form coding, they take into consideration the imbalance in item distribution. In addition, the one structure that we did not include (NoClitic + DefDet) was the least commonly produced form in the Elicited Production Task ($n = 25$; 3.61% of all Inalienable object responses.)

6.2 Coding and analysis

With 48 experimental items and 45 participants, it was expected that there would be 2,160 participant responses. In twelve instances (0.6%), however, participants either (a) did not provide a response to a given sentence ($n = 2$) or (b) rated an incorrect sentence ($n = 10$),¹⁷ leaving a total of 2,148 responses to be used in the descriptive and inferential statistical analyses presented below.

6.2.1 Descriptive statistics

Participants rated sentences in the AJT with a four-point acceptability scale where ‘1’ equals ‘sounds very odd,’ ‘2’ equals ‘sounds odd,’ ‘3’ equals ‘sounds good’ and ‘4’ equals ‘sounds very good.’ The groups’ average acceptability ratings by object type and structure are presented in [Figures 7 and 8](#), respectively. Though these average ratings are descriptive, rather than inferential, statistics, they highlight a few patterns relevant to our RQs.

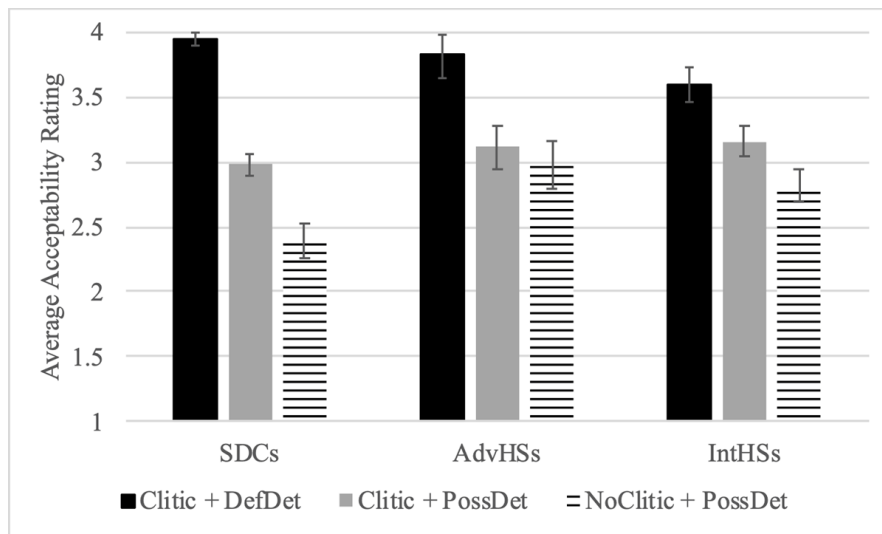


Figure 7 Participants’ average acceptability ratings by Group, Structure: Inalienable Objects.

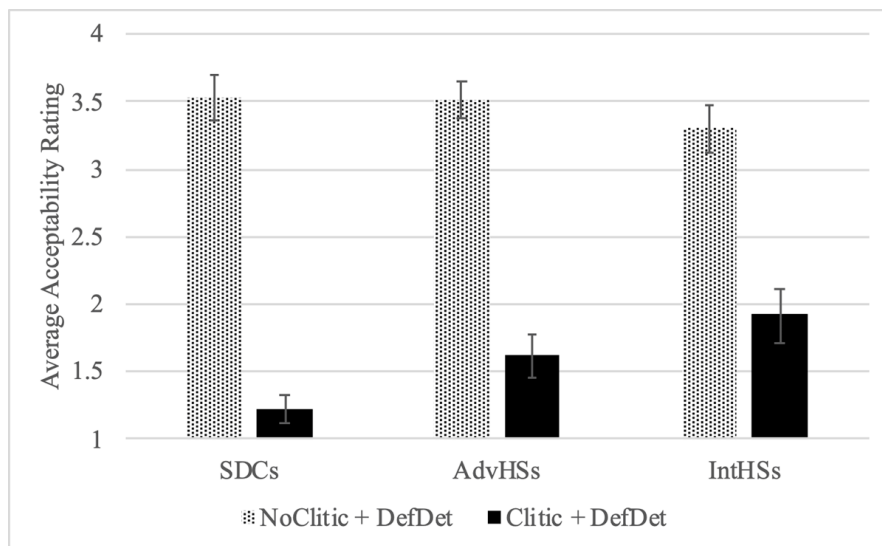


Figure 8 Participants’ average acceptability ratings by Group, Structure: Alienable Objects.

First, the SDCs perform as expected, confirming the description of (in)alienable possession presented above. In the Inalienable objects condition, the SDCs rate the “target” form at ceiling ($M = 3.94/4$), as expected. In the Alienable objects condition, too, the SDCs again show strong acceptance of the “target” structure, which they rate well above 3 ($M = 3.53/4$). Second, in the two “innovative” Inalienable object conditions, the SDCs exhibit a level of uncertainty (Clitic + PossDet: $M = 2.95/4$; NoClitic + DefDet: $2.35/4$) that is consistent with our decision to classify

¹⁷ In two cases, participants were mistakenly provided with an older version of the answer sheet, where five experimental sentences did not match up with the target sentence on screen.

these options as “innovative” rather than “ungrammatical.” Finally, as shown in [Figure 8](#), the SDCs ($M = 1.23/4$), AdvHSs ($M = 1.62/4$) and IntHSs ($M = 1.92/4$) all summarily reject items in the ungrammatical, Alienable objects condition. Consequently, HSs’ tendency to over-accept “innovative” items (Polinsky 2019) cannot be due to a general unwillingness to reject AJT items.

6.2.2 Inferential statistics

For the inferential statistical analyses, participants’ acceptability ratings were reclassified into a binary acceptability scale¹⁸ (e.g., Giancaspro 2020). Ratings of 3 (‘sounds good’) and 4 (‘sounds very good’) were recoded as ‘1’ (‘accept’), and ratings of 2 (‘sounds odd’) and 1 (‘sounds very odd’) were recoded as ‘0’ (‘reject’). To analyze participants’ binary responses, the researchers utilized two separate, logistic mixed effects models.

In the first model (henceforth, Model #1), which focused on participants’ 1432 responses with Inalienable objects, as well as the second model (henceforth, Model #2), which focused exclusively on participants’ 716 responses with the Clitic + DefDet structure, the binary dependent variable was Acceptance, coded as either ‘1’ (accept) or ‘0’ (reject). Though the two models included slightly different fixed effects, each of which will be described below, both models included random intercepts for both subject and lexical item.

6.3 Results

Model #1 analyzes participants’ acceptance of “target” and “innovative” structures with Inalienable objects. The fixed factors in Model #1 are Group (SDCs, AdvHSs, and IntHSs), Structure (Clitic + DefDet, Clitic + PossDet and NoClitic + PossDet), and Group*Structure.

The results of Model #1 revealed statistically significant effects of Structure ($F(2, 1423) = 55.86, p < .001$) and Group*Structure ($F(4, 1423) = 5.41, p < .001$) but not Group ($F(2, 55) = 0.01, p > .98$). In the remainder of this subsection, we will limit our discussion to the Group*Structure interaction ([Figure 9](#)), which allows us to most directly address the RQs.

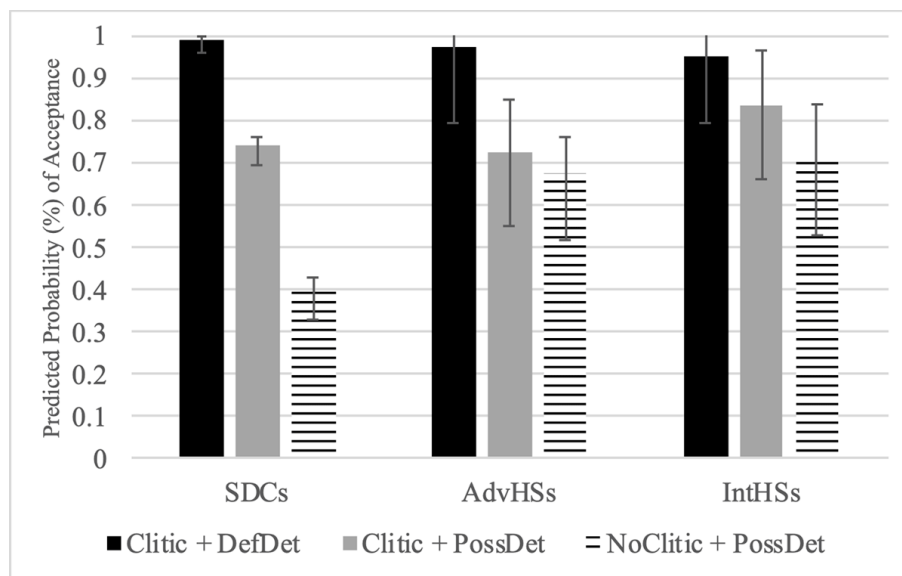


Figure 9 Predicted probability of acceptance: Group by Structure. (Inalienable Objects).

In the Clitic + DefDet items, all three groups’ predicted probabilities of acceptance exceeded 95%, signaling that each group finds such items to be unambiguously grammatical. Though the SDCs’ predicted probability of acceptance ($M = 99.3\%$) was slightly higher than the predicted probabilities of the AdvHSs ($M = 97.5\%$) and the IntHSs ($M = 95.3\%$), respectively, no

¹⁸ As suggested by multiple anonymous reviewers, converting four-point data to binary data results in a loss of information. Despite this loss of information, however, we feel that re-coding the data in a binary fashion is appropriate for the present study for a few different reasons. First, we have already presented the average ratings by condition in [Figures 7 and 8](#), so interested readers can still see the patterns from the original, four-point data. Second, we are not actually interested in participants’ relative likelihood of utilizing ‘3’ vs. ‘4’ ratings or ‘1’ vs. ‘2’ ratings. Finally, binary data allows us to use logistic mixed effects models, which are more easily interpretable for the average reader than ordinal mixed effects models, which would take much more time to explain in the paper.

between-group comparisons were statistically significant (SDCs vs. IntHSs: $p = .10$, OR = 6.73; SDCs vs. AdvHSs: $p = .25$, OR = 3.51). Because HSs differ from the SDCs in the production—but not acceptance—of these target forms, we can conclude, to address RQ 3, that task modality impacts HSs' variability with (in)alienable possession.

RQ 1 asks (a) whether HSs exhibit variability with (in)alienable possession in Spanish and (b) what that variability looks like. In Section 5.3, we saw that the HSs exhibit productive variability with inalienable possession by alternately producing (a) clitics and (b) possessive determiners as markers of inalienability. To address HSs' receptive variability, we now examine HSs' acceptance of two innovative variants of inalienable possession Structure II.

All three groups variably accept Clitic + PossDet items (SDCs: $M = 74.4\%$; AdvHSs: 72.4% ; IntHSs: 83.6%), thereby demonstrating receptive variability. Curiously, though, despite the IntHSs' apparently higher acceptance of these innovative forms, there were no statistically significant differences between the three groups (all p 's $> .34$). This finding sheds light on both RQ2, by showing that HSs do not exhibit more variability than the SDCs in this condition, and RQ3, by revealing that HL proficiency does not affect HSs' acceptance of this innovative form.

While the three groups converged in their judgments of Clitic + PossDet items, they performed differently with NoClitic + PossDet items, where both the AdvHSs ($p < .05$, OR = 3.11) and IntHSs ($p < .01$, OR = 3.64) were more accepting than the SDCs, who showed low ($M = 40.0\%$), though non-categorical, rejection of these forms. As in the between-group comparisons above, this finding, too, sheds light on both RQ 2, by showing that the AdvHSs ($M = 67.5\%$) and the IntHSs ($M = 70.8\%$) exhibit more variability than the SDCs in this condition, and RQ 3, by revealing, once again, that HL proficiency does not affect HSs' acceptance of this particular innovative form (AdvHSs vs. IntHSs: $p = .75$, OR = 1.17).

In the EPT, we saw, addressing RQ4, that the HSs' increased variability relative to the SDCs did not imply a lack of (within-group) sensitivity to the property at hand. With this point in mind, we now conclude our presentation of Model #1 by outlining within-group comparisons of the AJT, which allow us to see if participants are more accepting of target vs. innovative forms.

Not surprisingly, the SDCs' predicted probability of accepting "target" Clitic + DefDet structures was significantly higher than their probability of accepting both (a) "innovative" Clitic + PossDet structures ($p < .01$, OR = 47.42) and (b) "innovative" NoClitic + PossDet structures ($p < .001$, OR = 206.23). Though they did not summarily reject the two "innovative" structures in the AJT, the SDCs clearly prefer "target" Clitic + DefDet structures.

Similarly, the AdvHSs' predicted probability of accepting Clitic + DefDet structures was significantly higher than their probability of accepting both (a) "innovative" Clitic + PossDet structures ($p < .01$, OR = 14.95) and (b) "innovative" NoClitic + PossDet structures ($p < .001$, OR = 18.90). Even though the AdvHSs accept both "innovative" structures at least two thirds of the time, they are much more accepting of the Clitic + DefDet structure.

Like the other groups, the IntHSs' predicted probability of accepting the Clitic + DefDet structure was also significantly higher than their probability of accepting both (a) "innovative" Clitic + PossDet structures ($p < .05$, OR = 4.02) and (b) "innovative" NoClitic + PossDet structures ($p < .01$, OR = 8.42). The fact that both the AdvHSs and IntHSs are more accepting of the Clitic + DefDet structure than either of the two "innovative" variants reveals that HSs perform more accurately with inalienable possession in receptive vs. productive tasks, and, furthermore, suggests that HSs' variability in the EPT does not necessarily imply that they have different underlying grammatical representations of this property than the SDCs.

Though the HSs differentiate between "target" and "innovative" forms of inalienable possession Structure II, this distinction alone does not fully capture their sensitivity to the property at hand. To gain maximum insight into the HSs' receptive sensitivity to (in)alienable possession, thereby addressing RQ4, we must also determine whether their acceptance of the "target" Clitic + DefDet structure is conditioned by object type. This is the goal of Model #2, which analyzes participants' acceptance of the Clitic + DefDet structure in both the Inalienable and Alienable object conditions. The fixed factors in Model #2 are Group (SDCs, AdvHSs, and IntHSs), Object Type (Inalienable, Alienable) and Group*Object Type.

The results of Model #2 revealed statistically significant effects of Object Type ($F(1, 708) = 217.11, p < .001$) and Group*Object Type ($F(2, 708) = 7.95, p < .001$) but not Group ($F(2, 65) = 0.06, p = .94$). In the remainder of this subsection, we will limit our discussion to the Group*Object Type interaction (Figure 10), which allows us to most directly address the RQs.

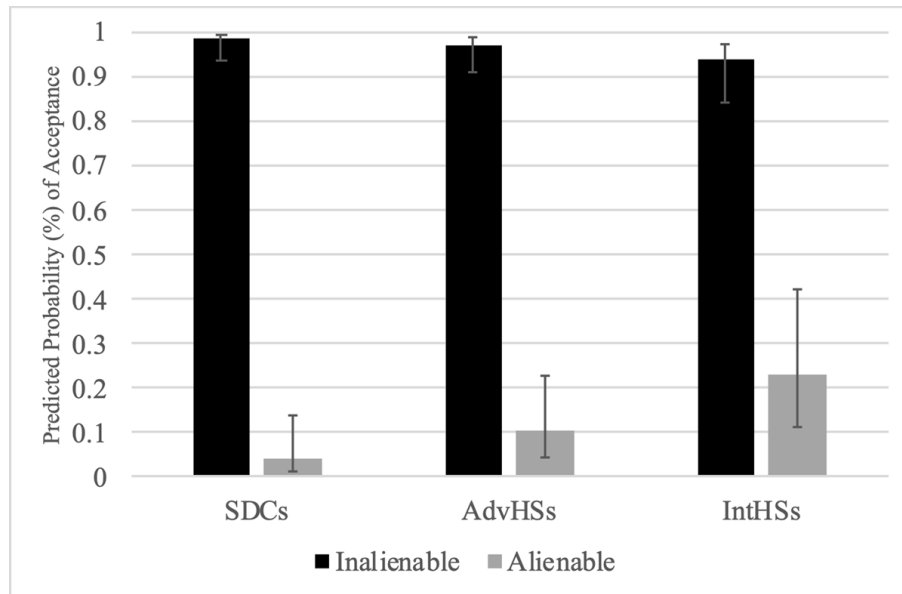


Figure 10 Predicted probability of acceptance by Group, Object Type: Clitic + DefDet.

In our discussion of Model #1, we showed that the three bilingual groups do not differ from one another in their acceptance of the target Clitic + DefDet structure in the Inalienable objects condition. For this reason, our analysis of Model #2 will focus exclusively on (a) between-group differences in the participants’ acceptance of non-target Clitic + DefDet structures with Alienable objects and (b) within-group differences in each group’s relative acceptance of the Clitic + DefDet structure with Inalienable, as opposed to Alienable objects.

In the Alienable objects condition, all groups’ predicted probabilities of acceptance were below 25%, signaling clear rejection of these forms. However, despite the groups’ shared tendency to reject these structures with Alienable objects, both the IntHSs ($p < .01, OR = 7.16$) and the AdvHSs ($p = .08, OR = 2.81$) were significantly—or marginally—more willing to accept them than the SDCs, thereby shedding light on both RQ 1 and RQ 2.

Despite these between-group differences, the within-group comparisons show that the SDCs ($p < .001, OR = 1749.35$), AdvHSs ($p < .001, OR = 280.62$), and IntHSs ($p < .001, OR = 50.70$) were all far more likely to accept Clitic + DefDet structures with Inalienable objects than with Alienable objects, thereby exhibiting clear sensitivity to the restrictions on the use of this particular syntactic structure. To return to RQ 4, it is easily apparent that HSs are sensitive to object type when accepting or rejecting Structure II in Spanish.

7 Discussion

This paper explored variability in heritage speakers’ productive and receptive knowledge of inalienable possession Structure II in Spanish. By studying variability with this property, we gained insight into how HSs’ dominant language can shape, in multiple and complex ways, their HL production and recognition.

Participants in the study completed two tasks, which we will briefly summarize as an entry point into our broader discussion of bilingual variability. In the Elicited Production Task (EPT), HSs produced both the “target” version of Structure II (Clitic + DefDet), as well as all three logically possible variants: “Innovation 1” (Clitic + PossDet), “Innovation 2” (NoClitic + PossDet) and “Innovation 3” (NoClitic + DefDet). Unlike the SDCs, who almost always signal inalienability with clitic pronouns, the two HS groups are more variable in their strategies for communicating inalienability. Notably, the IntHSs, who produce clitics with only about half (44.6%) of inalienable objects, exhibit nearly maximal variability with these forms.

The fact that the HSs produce fewer clitics than the SDCs, however, does not imply that they cannot express inalienability in their HL or are insensitive to its component parts. As evidenced by Model #2 of the EPT, the HSs—especially the IntHSs (57.5%)—produced higher rates of possessive determiners with inalienable objects than the SDCs, suggesting the emergence of an innovative strategy for marking inalienability in Spanish. Though the AdvHSs were no more likely than the SDCs to produce possessive determiners with inalienable objects, their higher likelihood of producing possessive determiners with inalienable (vs. alienable) objects points to a similar innovation.

Conceivably, one might use these patterns of bilingual variability to argue that the HSs in this study—at least the IntHSs—have developed underlyingly divergent grammars of inalienable possession Structure II. What complicates such an assessment, however, is the fact that both the AdvHSs and the IntHSs, despite their obvious productive variability, make the same within-group distinctions as the SDCs, specifically, by producing more clitics with inalienable objects than with alienable objects. This within-group sensitivity points to HL grammars that are variable **and** systematic, a pattern also evident in the Acceptability Judgment Task (AJT).

In the AJT, the HSs performed almost identically to the SDCs. Despite being more accepting than the SDCs of “Innovation 2”, both the AdvHSs and the IntHSs accepted “target” Clitic + DefDet forms over 95% of the time, a predicted likelihood that was significantly higher than their acceptance of both Innovation 1 and Innovation 2, highlighting their clear recognition of Structure II inalienable possession. Because both HS groups were more likely to accept Clitic + DefDet forms with Inalienable objects than with Alienable objects, their high acceptance of the “target” form cannot be the simple result of across-the-board over-acceptance.

If HSs’ knowledge of inalienable possession is both innovative, in the sense that they produce fewer clitics and more possessive determiners than the SDCs, and systematic, in the sense that they make the same within-group distinctions as the SDCs, what do they really know about inalienable possession and how do we conceptualize that variable knowledge, which seemingly varies not just across proficiency levels but also different task modalities?

In the present paper, we argue that these patterns are consistent with Sánchez’s (2019) proposal of bilingual alignments, which suggests that bilingual speakers have access to transient storage units that may—but do not necessarily have to—become stable representations. Under this analysis, as laid out in Section 3.2, we have a framework for understanding how HSs make the same distinctions as the SDCs and yet, at the same time, produce three innovative variants of inalienable possession Structure II. The first variant (Innovation 1) arises when the clitic alignment and the determiner alignment have possessor person features, as illustrated in (29). The second variant (Innovation 2) arises when there is no ApplP and the determiner alignment has possessor person features, as illustrated in (32). Finally, the third variant (Innovation 3) arises when there is neither an ApplP nor possessor person features in the determiner alignment, as shown in (35). Because bilingual alignments are not necessarily representational, the fact that a HS produces one (or more) of these innovations in no way implies that he has a “divergent” grammar.

An anonymous reviewer points out that the HS groups do not produce these three innovative forms in anything close to equal proportions, a pattern (illustrated in [Figure 3](#)) that requires further exploration. What makes Innovation 2 the most common of the three logically possible innovations? If frequent activation of English affects bilingual Spanish verb and determiner alignments similarly, it should not surprise us that Innovation 2 is the most frequent innovation observed, given that it is the result of permeability in **both** verbal and DP-level alignments. This would set Innovation 2 apart from Innovation 1, which in principle results from influence in the determiner alignment only, and Innovation 3, which would presumably be the outcome of influence in the verbal alignment only. The fact that Innovation 3 is slightly less common than Innovation 2 may be because it lacks possessor person features altogether.

In a field with many theories of transfer and cross-linguistic influence, what makes Sánchez’s (2019) proposal distinctly useful for understanding the patterns of bilingual variability in this study? Admittedly, certain characteristics of the data, such as the frequency with which HSs produce the most “English-like” innovation (NoClitic + PossDet), lend themselves to traditional transfer accounts, which assume wholesale transfer from the dominant to non-

dominant (in this case, heritage) language. That said, we believe that there are patterns in the present data that also fit neatly within the framework of Sánchez's (2019) proposal of bilingual alignments.

First, consider the fact that the HSs produce “non-English-like” innovations, (Clitic + PossDet and NoClitic + DefDet), in 12.8% of Inalienable object responses. From the perspective of bilingual alignments, these “non-English-like” productions are not particularly surprising, given that they can be conceived of as the result of English to Spanish influence at one of two possible alignment loci: either the verbal alignment only (leading to NoClitic + DefDet) or the determiner alignment only (leading to Clitic + PossDet).

Second, consider the fact that both relative dominance and Spanish proficiency impact bilingual variability. Though all three participant groups are bilingual and, therefore, could experience English to Spanish influence, this influence is more prominent in (a) English-dominant HSs (vs. Spanish-dominant controls) and (b) intermediate-proficiency HSs (vs. advanced-proficiency HSs). For the alignments account, these findings, too, are also expected, given Sánchez's (2019) argument that bilinguals with lower dominance and/or HL proficiency are more likely to experience dominant language to HL influence at the level of bilingual alignments.

Third, and perhaps most importantly, consider the final pattern in the present data set that we believe to be consistent with the bilingual alignments account. Though proficiency shapes HSs' likelihood of exhibiting variable production of “innovative” forms of inalienable possession, in recognition, as tested by the Acceptability Judgment Task, proficiency played almost no role at all, given that the AdvHSs and IntHSs performed in a nearly identical fashion. This curious production/recognition asymmetry, where the two HS proficiency groups differ from one another in production but not recognition, offers us a unique insight into the nature of bilingual variability.

Given that both HS groups make the same within-group distinctions as the SDCs in both experimental tasks, we believe that it is reasonable to suggest that the HSs “know” the representation for (in)alienable possession in Spanish. Consequently, we believe that the differences that we observed between the higher proficiency AdvHSs and the lower proficiency IntHSs could be attributable to other, non-representational differences between the two groups. Sánchez's (2019) notion of bilingual alignments offers a location—the transient bilingual alignment—at which these proficiency/dominance-driven differences might begin to exert their influence—and in a way that affects HL production more than HL recognition.

Recall that the HSs in this study report hearing more Spanish from their parents than what they themselves produce (*Figures 1 and 2*), a trend that is typical of US-born HSs, and consistent with the idea that they might experience less English to Spanish influence in bilingual alignments in recognition vs. in production. Also consonant with this pattern is the fact that recognition tasks (in general) are cognitively less taxing than production tasks, which require participants not just to “know” an underlying grammatical representation but also to access that representation and assemble it for speech production (e.g., Levelt, Roelofs & Meyer 1999).¹⁹

An anonymous reviewer asks how Sánchez's (2019) bilingual alignments account differs from the traditional generativist idea of competence vs. performance. We agree with the basic concept behind the competence/performance dichotomy, namely, that speakers' language production does not always reflect their deeper representational knowledge. That said, we believe that there is little value in classifying bilingual variability as the result of mere “performance errors.” Even if theorists were to agree on how to definitively identify performance errors, how could we meaningfully apply this concept to HSs—like many IntHSs in this study—who produce a given “innovative” form 50% of the time or more and yet, simultaneously, show the same within-group recognition of the “target” form as baseline speakers? Is it really coherent to say that **half** of their responses are performance errors?

¹⁹ One anonymous reviewer suggests that the heritage speakers in the present study did “better” on the AJT because it is the more “explicit” of the two experimental tasks, a finding that would contradict previous studies (e.g., Montrul, Foote & Perpiñán 2008). We do not agree with this suggestion, in part because it is not actually clear, according to Ellis' (2005) metrics, that the AJT is actually more “explicit” than the EPT, especially for heritage speakers.

By seeking to pinpoint (some) bilingual variability at the level of alignments, we offer an alternative story that might allow researchers to recognize the possibility of going beyond the dichotomy of competence vs. performance and open the door to new and (potentially) more fruitful research questions. For example, if HS variability is driven by cross-linguistic influence at the level of bilingual alignments, can we prime HSs into performing more (or less) variably with a given HL property by exposing them to certain structures (in either the HL or dominant language) prior to HL production? In the case of inalienable possession, for instance, could we increase HSs' likelihood of projecting a clitic by exposing them to such a structure immediately prior to production? Similarly, can we model how exposure to HL variability itself (e.g., from other HSs) might allow HSs to create multiple bilingual alignments for a single HL property or, furthermore, test whether those alignments might stabilize (or not) into consistent representations over time?

Despite raising these questions and showcasing the complexity of bilingual variability in HSs, the present study suffers from a few key limitations, two of which we mention here. First of all, as pointed out by multiple anonymous reviewers, the AJT did not test all four logically possible structures with both inalienable and alienable objects, making it harder to compare participants' productive and receptive knowledge of the property at hand. Second, because the study only tested participants at a single time point, the results cannot support or refute Sánchez's (2019) prediction that bilingual alignments, as transient storage units, might change **over time** in response to shifts in relative activation of the heritage and dominant languages, respectively. Future work should address this weakness by collecting longitudinal data.

In spite of these shortcomings, though, we believe that this paper offers modest conceptual contributions to the field of HL acquisition research, which we hope will begin to shift its focus from divergence, that is to say, differences between HSs and baseline speakers, to variability, that is to say, HSs' own alternation between "target" and "innovative" HL forms.

8 Conclusion

In this paper, we explored variability in Spanish heritage speakers' (HSs) knowledge of inalienable possession, a property, which we analyze as involving an applicative projection (Cuervo 2003), that has received little attention in previous research. The results of two experiments indicate that HSs' variability with this property is conditioned by heritage language proficiency, task modality, and the interaction between these two factors. Rather than focusing on how HSs' variability diverges from the lesser variability evidenced by the Spanish-dominant controls, we show that HSs, in spite of this variability, retain systematic within-group sensitivity to inalienable possession Structure II in Spanish. In light of the fact that (a) HSs perform both variably and systematically, and (b) their variability is conditioned by both proficiency and task modality, we suggest that this bilingual variability might emerge from English to Spanish influence at the level of bilingual alignments (Sánchez 2019), transient storage units that link elements from different language components of a bilingual's two linguistic systems. We argue that this account, if it receives further empirical support in other, independent studies, might obviate the need to propose multiple grammars or define "performance errors" and, as such, open up fruitful new avenues for understanding and conceptualizing bilingual variability.

Abbreviations

1 = 1st person, 3 = 3rd person, ADVHS = Advanced Heritage Speaker, AJT = Acceptability Judgement Task, APPL = Applicative, APPLP = Applicative Phrase, CL = Clitic, D = Determiner, DAT = Dative, DEF = Definite, DEFDET = Definite Determiner, DELE = Diploma de Español como Lengua Extranjera, DOM = Direct Object Marking, DP = Determiner Phrase, DO = Direct Object, EPT = Elicited Production Task, F = Feminine, HL = Heritage Language, HS = Heritage Speaker, INTHS = Intermediate Heritage Speaker, M = Masculine, NP = Noun Phrase, OR = Odds Ratio, PF = Phonetic Form, PL = Plural, POSS = Possessive, POSSDET = Possessive Determiner, PREP = Preposition, PSMT = Picture Sentence Matching Task, PST = Past, SDC = Spanish Dominant Control, SG = Singular, TP = Tense Phrase.

Additional files

The additional files for this article can be found as follows:

- **Appendix A.** Elicited Production Task: Instructions, Sample Items, Excluded Responses, and SPSS Syntax. DOI: <https://doi.org/10.5334/gjgl.1240.s1>
- **Appendix B.** Acceptability Judgment Task: Instructions, Sample Items, and SPSS Syntax. DOI: <https://doi.org/10.5334/gjgl.1240.s2>

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Competing interests

The authors have no competing interests to declare.

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