Abstract

In this paper we present data from subject personal pronoun (SPP) use in Spanish and Catalan in Minorca and Spanish in Valladolid, which provides evidence in favor of a formal analysis of cross-linguistic influence, the Vulnerability Hypothesis (VH). The VH establishes a categorical-variable continuum of permeability. In particular, this paper applies a comparative variationist analysis to Spanish SPP across four different groups of speakers (the Spanish of eleven Spanish– and twelve Catalan– dominant bilinguals vs. the Catalan of twelve Catalan-dominant bilinguals and twelve monolingual Spanish speakers) who participated in sociolinguistic interviews. Results indicated a higher use of overt pronominal subjects only in third person subjects, and the localization of contact effects on lower ranking variables. These results are discussed in terms of simplification, specified as the reduction of variability in the data, and convergence, defined as a an increase in variable and constraint ranking parallels across languages.

Keywords: subject personal pronoun, Spanish-Catalan bilinguals, Vulnerability Hypothesis

Theoretical implications of research on bilingual subject production: The Vulnerability Hypothesis

1. Introduction

The present paper proposes a language contact outcome hypothesis, the Vulnerability Hypothesis (VH), illustrating its testability through the discussion of data from Spanish-Catalan bilingual subject personal pronoun (SPP) expression.

This paper is envisioned within the formal analysis of bilingual speech in order to determine what linguistic generalizations emerge from the examination of a variety of languages in contact in a number of different contact situations. In particular, I am concerned with the linguistic restrictions posed on language contact induced change. Thus, I offer here a hypothesis for what these restrictions might be. Crucially, the data presented benefits from the comparative approach commonly used in variationist linguistics (Lavob 1982), whereby varieties (monolingual and bilingual) are compared based not only on rates of use of a specific form over another but also on the variables that are involved, their magnitude of effect (the ranking of these variables) as well as the direction of effect (constraint ranking). In particular, in this paper I discuss subject expression data in light of the hypothesis proposed.

In the past decade an abundance of studies within the generative tradition have tested the Interface Hypothesis (IH, Sorace 2011, 2012), whereby structures that lie at the core syntax are said to be more impervious to cross-linguistic influence than those at the syntax interfaces with other modules, particularly those at the external interfaces, such as the well-researched syntax-discourse interface. It is noteworthy, however, that these

studies tend to study phenomena that is not only at the syntax interface with other modules but also variable.

The paramount Spanish phenomenon both in the IH and variationist approaches is the distribution of null and overt pronominal subjects in Spanish. Spanish is a null subject language in which licensing occurs through the Morphological Uniformity Principle (Jaeggli & Safir 1989: 29) and identification through strong agreement. Within the generativist acquisition studies, the alternation between null and overt pronominal subjects has been attributed to the discourse context, where null subjects take place in topic continuation and overt pronominal subjects in topic shift contexts. Although assumed to be a categorical distribution in monolingual Spanish in most generativist acquisition research (however, see Liceras 2014), variationist analyses converge on the multitude of variables that affect this distribution (including discourse context). Among these variables, the highest ranked across studies tend to be discourse context (also dubbed co-referentiality) and person. Variationist studies, thus, tend to examine the variable person, largely concluding a number effect (singular subjects favor overt pronominal subjects) or a person effect (first person singular, in comparison with third person singular, favors overt pronominal subjects). Alternatively, they control for this variable by including only first person singular tokens in the analysis. Generative acquisitionist either did not control for the variable (Rothman 2009) or only included third person singular items (e.g. Montrul 2004).

The paper is organized as follows. Section 2 introduces the hypothesis placing it in the context of previous work dealing with the classic problem of cross-linguistic influence selectivity. Section 3 reviews previous research regarding subject expression in

Spanish, both in monolingual and bilingual speakers. In section 4 the present project is introduced. Lastly, section 5 offers the discussion and section 6 the conclusions.

2. Linguistic constraints on language contact

Within the fields of bilingualism and language contact the problem of cross-linguistic influence selectivity is considered a classic problem dating back to at least the 1950s (e.g., Weinreich 1953). In the early tradition of language contact formalization, restrictions on syntactic borrowing varied from typological factors to implicational universal constraints and constraints on naturalness (Thomason & Kaufman 1988). Within typological factors there were language pairings restrictions; only very similar language pairings can borrow at the syntactic level (Meillet 1921), compatibility restrictions; only compatible structures can be borrowed (Sapir 1921, Jackobson 1938), paradigm restrictions; the entire paradigm cannot be borrowed, or general restrictions on structural transfer (Haugen 1954, among many others). There were linguistic component hierarchies; from easiest to borrow (lexicon) to hardest to borrow (syntax), through morphology (Weinreich 1953) to subcomponent hierarchies. For instance, derivational morphology is easier to borrow than inflectional morphology. Cultural vocabulary is most often adopted than core vocabulary (body parts, numbers, pronouns, etc.). In this way, current approaches, e.g. Sorace's IH (2011, 2012), could be incorporated here, as they define what areas of the syntax are more permeable to inter-lingual influence (core vs. periphery).

Thomason & Kaufman (1988) criticized this approach offering multiple counterexamples to these restrictions. They argued that these restrictions only hold for

specific situations: borrowing and not substratum interference (recipient vs. source language agentivity in van Coetsem's 1999 terms, or whether the influence is from the L1 onto the L2 or vice versa). They do not claim, however, that all these restrictions are unfounded; they admit that some areas of the language are more permeable to cross-linguistic influence than others. Crucially, they defend that an area may be harder to borrow but not impossible to borrow, given the right contact circumstances. In this vein, they describe different contact situations based on language agentivity: borrowing vs substratum interference. The contact situation in combination with the intensity of the contact is what limits what is transferred. Note, however, that borrowability continuum is assumed under this approach. Nonetheless, those structures that are improbable to be borrowed can be transferred in cases of substratum interference in a situation of intense contact. We cannot ignore the advancement that this proposal constituted for the field of contact linguistics. However, the all-inclusive nature of the proposal calls for detailed analysis of specific situations to test the predictions.

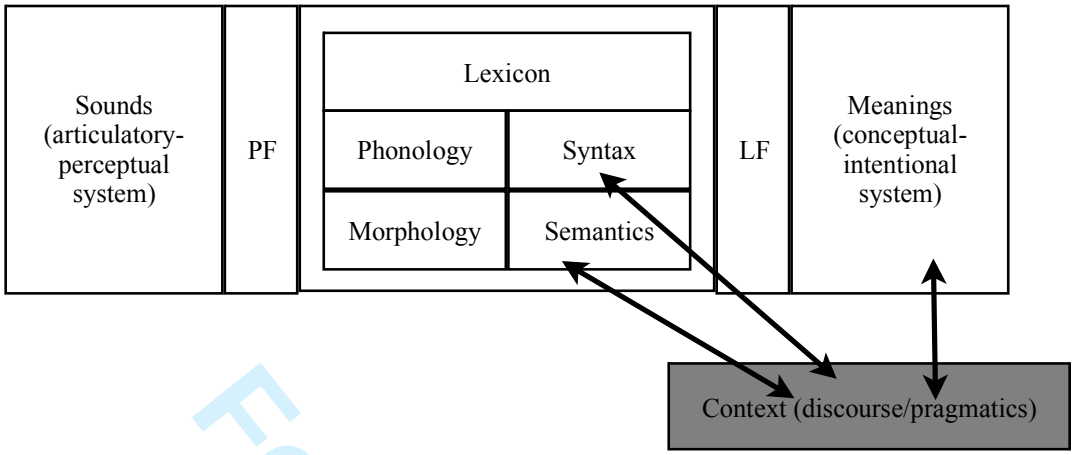
Silva-Corvalán (1993) evaluates this hypothesis in a context of intense and prolonged language contact situation, Spanish in L.A. In this situation, structural transfer should occur. Thus, she examines four structures where English influence is evident in Spanish and which on the surface appear to be syntactic. For instance, Silva-Corvalán convincingly argues that the overuse of overt pronominal subjects in a null subject language like Spanish is a pragmatic change, as the pronoun loses its pragmatic specifications, but the null pronominal subject continues to be grammatical. If this was not the case, that would constitute a syntactic change from a null to a non-null subject language. Likewise, the preponderance of preverbal subjects in her data does not imply

the loss of the structural specifications of Spanish that allow for postverbal subjects, as these are also attested on her data. The expression of inalienable possession in Spanish requires the use of a clitic and a definite article while Spanish speakers in L.A. had generalized the use of the possessive to this context. Lastly, the omission of the complementizer *que* is spread in this community from formal contexts to non-formal contexts. In all these cases, then, there is an extension of use of a form to a wider amount of contexts, losing its pragmatic restrictions, but no syntactic change is attested.

Still active today under the prolific Interface Hypothesis (IH), researchers in bilingualism and second language acquisition have examined a variety of structures[1], largely within the context of Romance minority languages in contact with English in the US or UK as well as the second language acquisition of such Romance languages in the same context. Grounded in the notion of linguistic modules and interfaces between them (e.g., Jackendoff 1997, 2002, 2007, Reinhart 2006), the IH (Sorace 2011) has evolved since its initial version (Sorace 2005, 2006), where the narrow syntax was considered impervious to cross-linguistic influence whereas the syntax interfaces with other modules were the locus of interference, to a current account where the notion of interfaces is downplayed (Sorace 2012, in response to commentaries to Sorace 2011), through a version where internal (or linguistic) and external (i.e., with other modules) syntax interfaces were differentially affected (Tsimpli & Sorace 2006, Sorace 2011).

[1] Subject expression (Belletti, Benneti & Sorace 2007, Müller & Hulk 2000, Roman 2009, Serratrice, Sorace & Paoli 2004, Sorace & Filiaci 2006, Tsimpli, Sorace, Heycock & Filiaci 2004), subject position (Belletti, Benneti & Sorace 2007, Domínguez & Arche 2008, Hertel 2003, Lozano 2006, Montrul 2006, Zapata et al. 2005, Author 2010a), left peripheral constructions (Slabakova, Kempchinsky, and Rothman, submitted, Slabakova, Rothman, & Kempchinsky 2011, Slabakova, Rothman, Leal Mendez, Campos & Kempchinsky 2011, Valenzuela 2006, 2008, Zapata et al. 2005), etc.

(1) Linguistic modularity, adapted from White (2009)[2]



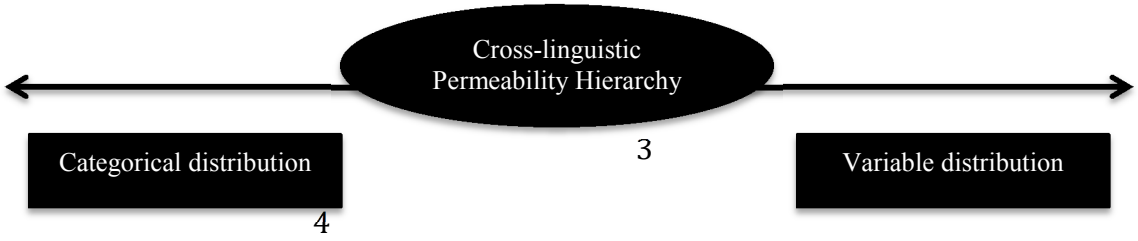
Responses to Sorace (2011) raised a number of concerns with the IH. Crucially, several authors highlighted the role of **complexity** as being a better factor than interface (Hopp 2011, Pires & Rothman 2011). In fact, it has been pointed out that not all external interface phenomena are equally affected (e.g. Montrul 2011 questions what is so special about pronominals) and, within the internal interfaces, the syntax-semantics is largely unproblematic while the syntax-morphology is highly problematic (White 2011). In her response to these commentaries, Sorace (2012) argued "Again, the problem evaporates once we remove a rigid distinction between core syntax and interfaces and instead allow for a range of interface conditions, graded according to their computational complexity and their dependence on extra-linguistic factors." The details, however, remain largely unexplained. Thus, this paper aims to offer a detailed proposal of what this complexity might be as well as contributing further evidence that being a linguistic phenomenon at the external interface is not what explains cross-linguistic influence selectivity. In fact, I argue here that complexity resides in variability, which is understood as the availability

[2] These modules interface with each other. The syntax module, for instance, interfaces with the internal modules, such as the lexicon (specially noteworthy is the role of the lexicon on the syntactic derivation in the Minimalist Program, Chomsky 1995) or the phonology (e.g. the interaction of intonation and syntactic structure, Zubizarreta 1998). Similarly, it interfaces with the external component: the pragmatics.

of more than one form for a specific paradigmatic gap such that the alternation between the two forms is not categorical. As will be further explained below, this alternation is not necessarily random either, as the probabilistic use of a form is determined by linguistic and extra-linguistic factors (Labov 1982). Cross-linguistic influence selectivity is, thus, due to variability of the distribution in the receiving language, which would be a specification of Weinreich's (1953) generalization on contact-induced change targeting structural weaknesses in the target language.

A proposal along these lines does not rely on the structure of grammars and our changing understanding of linguistic modules and their interfaces. Instead it is based on an understanding of the grammar based on the factors that affect a specific distribution in a specific language, thus, requiring a detailed description of the facts in the receiving language. Once the probability of producing one of the forms in the alternation in a specific language is known, predictions can be made about the effects of bilingualism on the distribution (relative frequencies) under study. The VH establishes a cross-linguistic permeability hierarchy along the variability continuum, which spans from categorical distributions, where a form occurs (near) 0% or 100% of the time in a specific context (e.g. overt pronominal subjects with impersonal predicates), to highly variable contexts, where the production of a specific form is (near) 50% of the time. Thus, this analysis is based on the relative frequencies of forms in a specific context. Under the VH, those distributions in the variable end of the continuum will be subject to cross-linguistic influence whereas those that are on the categorical end of the continuum will not (2).

(2) Cross-linguistic Permeability Hierarchy: Vulnerability Hypothesis



How far to the categorical end a speaker will exhibit cross-linguistic influence depends on individual and social factors, as a measure of language contact intensity. Thus, highly proficient bilinguals are expected to only exhibit influence in highly variable phenomena while low proficient bilinguals are expected to show evidence of cross-linguist influence is less variable phenomena. However, this is an assumption that is left for further research in this paper as it would require testing of several bilingual groups.

This proposal, therefore, builds on the numerous and important contributions starting in the 1950s, however, using a new concept in the cross-linguistic influence selectivity literature: the notion of variability[3]. While this notion has been formalized in the variationist literature, often times with a functionalist understanding of language, adopting the variationist method (i.e., detailed linguistic description based on regression analyses) I will argue here does not require adopting a specific view of the nature of language or the characteristics of the language faculty. Variability in language is a fact that is approached from different perspectives, including theoretical syntax (Richards 2008) and often hinted at in acquisition studies, sometimes under the concept of optionality (e.g. Prevost 2011) or gradiency (Duffield et al. 2009). Unfortunately, the same term has been used to refer to native speaker variability in production (Type II

[3] In fact, the proposal put forth here would be more adequately named the Variability Hypothesis. However, a different hypothesis already exists under that name.

variation, Rehner 2002) as second language speaker variability (Type I variation, Rehner 2002), meaning differences with respect to monolingual forms.

3. Subject expression in Spanish and Catalan

The topic of subject expression in Spanish has received extant attention in both acquisitionist and variationist studies. This section reviews the most relevant research in both monolingual and bilingual varieties of Spanish.

Spanish and Catalan are both null subject languages (Perlmutter 1971), with similar null vs. overt subject distributions (Prada Pérez 2009, 2010, 2015). Variationist analyses of Spanish subject expression indicate that the distribution of null and overt pronominal subjects in Spanish is regulated by a combination of variables, except in those cases traditionally excluded from variable rule analyses: predicates that require an expletive subject (3a), predicates accompanying impersonal uses of the second person singular and third person plural (3b), reverse psychological predicates (3c), predicates in subject relative clauses (3d), subjects with inanimate referents (3e), and predicates in set phrases (3f). In most cases, the null pronominal subject fails to alternate with an overt counterpart.

(3) 'Outside the envelope' of variation

a. *Y* ***hay*** *una misa y luego un acto.*

'And there is mass and then a ceremony.' (Participant 49, monolingual, female, age 18)

b. ***Dicen*** *que cuando vas a buscar trabajo luego ponen en los currículums [anuncios] que absténgase privadas.*

'It is said that when one goes and looks for a job, they say in the ads that private (colleges) should abstain.' (Participant 49, monolingual, female, age 18)

c. *Me **ha gustado** siempre escribir mucho y leer mucho*

'I have always liked to read and to write a lot.' (Participant 39, monolingual, male, age 89)

d. *Sí, y Mariví, que **se casa**, por cierto.*

'Yes, and Mariví, who is getting married, by the way.' (Participant 55, monolingual, female, age 27)

e. *Cada día caminaba de mi apartamento a la universidad por "El paseo de los ingleses". **Era** un camino muy lindo con vistas de hoteles y también el mar azul y claro del Mediterráneo.*

'Everyday I walked from my apartment to college through "El paseo de los ingleses". It was a very nice walk with a view of hotels and also the blue and clear Mediterranean Sea.'[ARGL, upper-advanced, CEDEL2 corpus] (Lozano 2008)

f. *Sí, sí, nadadora mítica pero de echarme a nadar siempre a medio día o no **sé** estoy vago este año no me apetece nadar.*

'Yes, yes, legendary swimmer, I always went swimming at lunch time and I do not know if I am lazy this year or what, but I do not feel like swimming.' (Participant 48, monolingual, male, age 27)

In variable contexts, on the other hand, the distribution has been best accounted for by a combination of variables. In general terms, null subjects tend to indicate continuity.

Thus, CO-REFERENTIALITY (also referred to as switch reference), or whether the subject in the preceding sentence is the same or not, favors the use of a null subject.

(4) Coding of language-internal variables: Continuity

CO-REFERENCE

Y yo los bañaba, y los vestía, les daba de comer, los ponía a dormir.

'And I would bathe them, dress them, feed them, put them to sleep.'

[NMCOSS, 117–1A3: 248.-2512] (Travis 2007)

In (4) the pronominal subject is expressed in the first instance and omitted afterwards where it is co-referential. Similarly, TENSE, ASPECT, MOOD (TAM) CONTINUITY favors null subjects, as exemplified in (5).

(5) Coding of language-internal variables: Continuity

TAM CONTINUITY

Mañana voy. Yo ***dejé*** *diez paquetes allá.*

'I will go tomorrow. I left ten packets there.' [Colombia, cooking: 100-101] (Travis 2007)

The subject in (5) is null in the first clause and expressed in the second, where there is a change in TAM. In the literature, a combination of these two variables has been productively used, SPEECH CONNECTIVITY or Connect. Although more constraints have been proposed in earlier studies (Bailey and Pease-Álvarez 1997, Paredes Silva 1993), recently researchers use a three-way distinction from maximum level of connectedness (same referent and same TAM), as in (4), to lowest level of connectedness (different referents), as in (6a), through an intermediate level (same referent but different TAM), as

in (6b).

(6) Coding of language-internal variables: Continuity

SPEECH CONNECTIVITY

a. *Entonces, había necesidad de trabajar porque se había muerto mi papá y* ***teníamos*** *una familia de seis personas.* (Participant #19)

Then, there was the need to work because my father had died and (d) [we] had a family of six people. (Holmquist 2012)

b.... *y ha recibido hijos de las personas que ella* ***recibió****, o sea nietoh, cómo quien dice.* [BF07116-117]

' … and [she] has delivered children of the people that she delivered, that is grandchildren, we could say.' (Orozco 2015)

In (6a) the referent of the subject of *teníamos* 'we had' is different from the referent in the subject in the previous clause (*mi papá* 'my father'), a context in which there is a tendency to use overt pronominal subjects. In (6b) the referent is the same but the TAM is different across clauses, a situation that neither favors nor disfavors the overt form. Finally, null subjects are favored in *embedded* clauses (see Lozano 2008, Margaza & Bel 2006, Morales 1997, Otheguy et al. 2007, Silva-Corvalán 1994), as in (8).

(7) Coding of language-internal variables: Continuity

CLAUSE TYPE

No, no. . . De verdad. Yo quiero que hablemos, negro.

'No, no. Really. I want us to talk, sweetheart.' [Colombia, restaurant:

1149-1157] (Travis 2007)

In (7) a null subject is employed, despite the topic shift. In addition to cases where continuity is reduced, the use of the overt pronominal subject has also been identified with "speaker egocentrism" and verb form ambiguity. It has been widely attested in the literature that overt pronominal subjects are more frequent in first person singular than in third person singular, or any of the plural verb forms (Enríquez 1984, Morales 1997, Otheguy et al. 2007, Silva-Corvalán 1982, 1994, Travis 2007). Thus, the variable PERSON affects subject expression in Spanish.

(8) Coding of language-internal variables: PERSON

*Y luego ya no pude ir más, porque yo **iba** muy lejos pa' agarrar el bos,*

'And then (I) couldn't go anymore, because I had to go really far to catch the bus,' [NMCOSS, 76–1A1: 228–229] (Travis 2007)

In (8) the subject is the first person in the two conjugated verb forms, with the second one being an overt pronominal subject. Previous research has observed a higher use of overt pronominal subjects in first person singular subjects, as compared to the other grammatical persons. Some of the verb forms in Spanish, namely the first and third person singular forms, are the same in several tenses (imperfect, conditional, present subjunctive and related compound forms). These ambiguous forms have sometimes been attested with more overt pronominal subjects, with disambiguating purposes. Consider the following example.

(9) Coding of language-internal variables: VERB FORM AMBIGUITY

En la noche ella iba a mi lado y yo estaba temblando

'At night she used to go by my side and I wasn't shaking.' (Silva-Corvalán

1997)

In (9), both verbs could refer to a first or a third person singular. In this case, to disambiguate, both appear with an overt pronominal subject. While overt subjects are favored with verbal forms that are *ambiguous* and not with *unambiguous* ones (Bayley & Pease-Álvarez 1996, 1997, Silva-Corvalán 1994, Travis 2005) this result is not always attested (Casanova 1999, Morales 1997, Ranson 1991). Unlike in example (9), often times there is enough information in the context for the referent not to be ambiguous even if the verb form is so, as in (4) above. Ranson, for instance, found that *ambiguous* forms exhibited fewer overt pronominal subjects than *unambiguous* ones in the Andalusian dialect she examined. She attributes this to the fact that the subject of *ambiguous* forms were identifiable in the context. The distribution of overt subjects is also relevant to the establishment of the speaker's position on an idea. As a result, PERSON in combination with SEMANTIC VERB TYPE affects the distribution. For instance, the *first person singular* and verbs that express opinion or estimative verbs favor overt subjects (Enríquez 1984, Morales 1997, Otheguy et al. 2007, Silva-Corvalán 1982, 1994, Travis 2007). For example, Morales (1996) shows that the subjects of verbs like *pensar* 'to think' may be produced even in topic continuation contexts, as in (7).

(10) Coding of language-internal variables: VERB TYPE

Parece que ellos piensan que es signo de cultura.

'It seems as if they think that is it a sign of culture.' (Morales 1996)

More recently the classification of verb type has been reduced to external actions, mental processes and stative verbs (see Orozco 2015 for a fuller description). In general, mental and stative predicates favor null subjects while external actions favor overt pronominal

subjects. In recent work, however, lexical frequency seems to be a better predictor than semantic verb type (Orozco 2015), or even the formulaic nature of the verb (Posio 2015). For example, Orozco (2015) finds that stative verbs tend to appear with overt pronominal subjects. Importantly, however, *tener* 'to have' does not follow this trend. Lastly, a PRIMING or structural perseverance effect has been reported in the literature, where overt subjects lead to more overt subjects while null subjects lead to more null subjects (Cameron 1995, Cameron & Flores-Ferrán 2004, Flores-Ferrán 2007, Travis 2005, 2007).

(11) Coding of language-internal variables: FORM OF PREVIOUS MENTION/ PRIMING

> *...**Yo** soy un títere de la calle. No me cruces la línea a mí. Y al tipo empujarme, **yo** le metí un puño en la misma oficina. Y el otro salió corriendo. Y entonces la secretaria estaba mirando pero se dio cuenta que fue que él me empujó. **Yo** me defendí. ¿Entiendes?....*
>
> '... I am a street guy. (You) don't cross my line. And the guy, when he pushed me, I punched him right in the office. And the other guy ran out. And then the secretary was looking but she realized that he had pushed me. I defended myself. Understand?' (Cameron and Flores-Ferrán, 2004:52)

As exemplified in (11), there is a priming effect where the initial use of an overt pronominal subject in the first person singular leads to further use of overt pronominal subjects in subsequent references to the same person.

These factors are mainly language internal. Some studies additionally address

language-external factors, such as linguistic variety, age, gender, and language contact. Numerous studies have examined the distribution of null and overt pronominal (and rarely lexical) animate subjects in Spanish across different varieties. In general, differences are reported for overt pronominal rates particularly between the Caribbean (Alfaraz 2015, Cameron 1996, Lastra and Martín Butragueño 2015, Orozco 2015, Orozco and Guy 2008, Otheguy and Zentella 2012, Posio 2015, among many others) and Mainland varieties. Caribbean varieties report rates close to 40% (e.g. Alfaraz 2015, Bentivoglio 1987, Cameron 1996, Morales 1982, Orozco 2015), Buenos Aires and Santiago report slightly lower rates (36%-38%, Barrenechea & Alonso 1977, Cifuentes 1980) while Peninsular and Mexican varieties exhibit rates closer to 20% overt pronominal subjects (Enríquez 1984, Lastra and Martín Butragueño 2015, Miró Vera and Pineda 1982, Posio 2015). Although dialectal variation is largely attested in subject pronoun rates and restricted to lower ranked variables (those with a smaller effect size), these differences do not affect most linguistic variables. That is, this combination of variables is rather stable across varieties of Spanish. Crucially, Spanish and Catalan exhibit the same variables that are significant, with the same ranking of variables (obtained through the range or effect size), and the same direction of effect (Prada Pérez 2009, 2010, 2015). In terms of ratings, the two languages are also very similar in that respect: Spanish exhibits 19.8% overt pronominal subjects and Catalan 20.7% overt pronominal subjects.

The role of age and gender, however, remains largely variable across varieties (cf. Flores-Ferrán 2007 for a review). In monolingual communities, age and gender are considered as variables indicating linguistic change (e.g., Bailey's [2004] 'apparent time'

for age). Age has variably been found to condition subject expression in Spanish. For instance, Cameron (1992) did not report an age effect while Ávila-Jiménez (1995) did, both examining the same variety and region. Recently, younger generations exhibit lower rates of overt pronominal expression for monolingual speakers from Barranquilla, Colombia (Orozco and Guy 2008), Colombian Costeño Spanish (Orozco 2015) and Mexico City Spanish (Lastra and Martín Butragueño 2015), while the opposite trend has been reported for Puerto Rico (e.g. Ávila-Jiménez 1995; Flores-Ferrán 2002; Lizardi 1993) and the Dominican Republic (Alfaraz 2015).

For gender, different results have been attested as well. Some studies report no gender effect (Holmquist 2012; Orozco and Guy 2008; Otheguy, Zentella and Livert 2007) while others find a *women effect*, in which female participants are leading the change towards expressed pronouns in monolingual and bilingual varieties (Bayley and Pease-Alvarez 1996; Carvalho and Child 2011; Otheguy and Zentella 2012; Shin 2013; Shin and Otheguy 2013). In monolingual varieties, there is evidence beyond subject expression of women leading linguistic change (Eckert and McConnell-Ginet 2003; Labov 2001; each cited in Shin and Otheguy 2013). In bilingual varieties, on the other hand, a *women effect* has been reported for first generation Mainlanders (Otheguy and Zentella 2012), first generation speakers from several regions (Shin 2012), and for innovative speakers (Shin and Otheguy 2013), which has been attributed to female bilinguals' increased contact with second-generation bilingual speakers (Shin 2013, Shin and Otheguy 2013). Beyond New York City, the *women effect* has been attested in the US Southwest (Bayley and Pease-Alvarez 1996) and Uruguay (Carvalho and Child 2011).

A comparison in subject pronoun expression that has been rather productive in the

literature has been between monolingual and bilingual varieties of Spanish. Spanish in contact with English has reported conflicting results: while some do not report differences (Bayley and Pease-Alvarez 1997, Flores and Toro 2000, Flores-Ferrán 2004, Silva-Corvalán 1994, Torres-Cacoullos & Travis 2010a, and Travis 2007), others report an increase in overt pronominal subjects and changes in the distribution reflected in variables that are significant, their ranking, and/or their constraint ranking (Erker & Guy 2013, Erker & Otheguy 2016, Lipski 1994, 1996, Otheguy & Zentella 2012, Shin 2012, Shin & Otheguy 2013, Orozco 2015, Toribio 2004, among others).

The extensive and expanding literature on subject expression in Spanish across varieties converges on the patterned nature of the distribution, which is delimited by well-studied linguistic factors. Across studies differences in rates are reported between varieties where overt pronominal subject rates hover around 20% and those where they are close to 40%. Nonetheless, the effect of variables and direction of effects remain largely the same across varieties. The role of the external factors age and gender seem to depend largely on the variety, as they seem to be community-specific. One of the external factors that has received extant attention is the role of language contact. Thus, we now turn to the effect of the presence of another language in the expression of subjects in Spanish.

4. The Present Study

Bearing in mind the differences between the IH and the VH, the current project seeks to test the predictions of these hypotheses against bilingual Catalan-Spanish data, in particular, data pertaining to subject expression.

4.1 Research questions and Hypotheses

In particular, this study aims to answer the following questions:

(i) SUBJECT EXPRESSION IN MONOLINGUAL SPANISH: What variables from those examined (Speech connectivity, ambiguity and verb type) predict the distribution of Spanish null and overt pronominal first and third person subjects? From the variables included, the distribution of Spanish null and overt pronominal subjects can be interpreted as lying at the syntax-pragmatics interface (speech connectivity), at the syntax-morphology interface (verb form ambiguity) and at the syntax interface with the lexico-semantics (verb type). In previous studies, all these variables have been found to be significant. Thus, we predict they will also play a role in the Spanish of the monolingual participants included in this study. The analysis will also examine if any of these variables is more predictive than other (that is, if the magnitude of effect is larger, as per the range in constraints). If, as previously claimed, distributions at the syntax interface with the pragmatics are more variable, it is expected that speech connectivity will be ranked lower than verb type and verb form ambiguity, a result not reported in the

previous literature and not expected in the present data either. Lastly, comparisons will be made between first and third person singular subjects, as some of the contradictions found in the previous literature on bilingual subject expression may be largely due to studies examining first vs. third person singular.

(ii) SUBJECT EXPRESSION IN BILINGUAL SPANISH: What variables from those examined (Speech connectivity, ambiguity and verb type) predict the distribution of Spanish null and overt pronominal first and third person subjects in the Spanish spoken by bilinguals as compared to monolinguals? Previous studies in general show sensitivity to these variables in bilingual speakers, although the differences may be expected in the magnitude of effect of certain variables, as sometimes results are interpreted as a laxity in the variables. In line with the VH, we anticipate changes to target mostly lower ranked variables. Given the differences in cross-linguistic effects reported in the previous literature between first and third person singular, it is expected that more evidence of cross-linguistic influence is found with subjects in the third person singular than with first person singular subjects.

(iii) CROSS-LINGUISTIC INFLUENCE THEORIES: If cross-linguistic influence is attested, can it be attributed to variability or to interface between linguistic and extra-linguistic modules? The IH predicts bilingual speakers will exhibit more cross-linguistic influence (or larger differences from the monolingual group) in the distribution of null and overt pronominal subjects that is restricted by syntax-pragmatics interface variables (speech connectivity) and

less so by syntax-semantics (in our study, verb type) or syntax-morphology (in this case, verb form ambiguity) interface variables. The VH, in contrast, predicts that those variables that are lower ranked (i.e. where the distribution is more variable) in the monolingual grammar will be the target of cross-linguistic influence. In order to determine which variables are lower ranked, the monolingual data will be examined first.

In order to respond to these questions, data from Spanish monolinguals and Catalan-Spanish bilinguals was collected and analyzed. The following section describes the participants included in the study.

4.2 Participants

Data from bilingual and monolingual speakers were collected and divided into four groups: two control groups and two bilingual Spanish groups. The Spanish control group consisted on data from 12 Spanish monolingual speakers from Valladolid while the Catalan control group consisted on data from 12 Catalan-dominant speakers from villages in the center of Minorca, where Spanish is rarely spoken. The bilingual data comprised Spanish speech samples from 12 Catalan L1 bilinguals and 11 Spanish L1 bilinguals residing in Minorca. Each group comprised (roughly) the same number of male and female participants who were equally distributed into three age groups, as per their access to education in Catalan: Age group 1 (ages 13 to 35), age group 2 (ages 36 to 64), age group 3 (65 and over).

Participants self-reported their proficiency using a 7-point Liker scale, where 1 referred to minimal abilities and 7 to native-like abilities. This measure was used for lack of a sensitive enough measure of proficiency for these Catalan-dominant bilinguals who are highly proficient bilinguals, who have been exposed to both languages from birth and who all score within the native range in the DELE. Clear differences exist, as expected, between the Catalan-dominant speakers' proficiency in Spanish and Spanish-dominant speakers' proficiency in Catalan. Catalan Bilingual speakers' self-reported proficiency in Spanish ranged from 4 to 7 (mean: 5.3) regarding speaking ability and from 6 to 7 with respect to listening proficiency (mean: 6.8). The majority of the Spanish-dominant bilinguals were born and raised in a Spanish monolingual area. Thus, it is not surprising that larger differences exist in their self-rated proficiency in Catalan. Their self-reported speaking proficiency in Catalan ranges from 1 to 7 (mean: 4) and their listening proficiency from 5 to 7 (mean: 6.7).

Differences between the groups in language use are also reported. Although all participants are exposed to both languages every day, they vary in their production in each of the languages. Catalan-dominant bilinguals produce in Catalan every day and Spanish-dominant bilinguals produce Spanish everyday. The differences emerge with respect to the use of their second language. While the majority of speakers in each of the groups produce in their second language everyday (n=7 for the Catalan-dominant and n=6 for the Spanish-dominant), the frequency of use of their second language is higher in the Catalan-dominant group than in the Spanish-dominant group (Catalan-dominant: one participant as little as once or twice a month (n=1), with the rest of participants producing in it a few times a week (n=2) or once a week (n=2); Spanish-dominant: three participants

never produce in Catalan, one produces it once or twice a month, one once a week, and the rest every day).

4.3 Materials and coding

The relevant data for this study was extracted from two sections of an oral interview conducted in Spanish by a native speaker from Valladolid and in Catalan by a native of Alaior, Minorca: the language background questionnaire, for participant profiling, and a sociolinguistic interview.

The sociolinguistic interview was transcribed and every subject form was coded for a number of linguistic and extralinguistic variables. For the purpose of the analysis, the only tokens included were those with null or overt pronominal subjects in the first or third person, in topic continuation contexts (i.e. exclusion of newly introduced referents), in broad focus (i.e. exclusion of tokens in narrow focus) and in main clauses.

The final set of tokens were coded for subject form (null vs overt pronominal subjects), person and number (1st vs. 3rd person singular subjects), speech connectivity or connect (same referent, same TAM; same referent, different TAM; different referent, cf. Otheguy et al. 2007), verb form ambiguity (ambiguous vs non ambiguous verb forms) and semantic verb type (stative, mental or external actions, cf. Enríquez 1984). The predictions were largely guided by antecedent research, where (i) first person singular, (ii) more connected speech (iii) ambiguous verb forms, and (iii) stative and mental verbs favored overt pronominal subjects more than third person singular subjects, less

connected speech, unambiguous forms and external action verbs. Thus, the same distribution was expected in this study.

The data was also coded by individual characteristics of the speaker. The external variables included in the final analysis were language group (Spanish controls, Catalan controls, Spanish-dominant bilinguals, Catalan-dominant bilinguals), gender (male and female) and age group (In Minorca: (1) with access to education in Catalan, ages 13 to 35; and (2) without access to education in Catalan, over 35; In Valladolid ((1) 13 to 35; (2) 36 to 64; and (3) 65 and over).

4.4 Results

Several analyses were run to gain a better understanding of the data. All the data (first and third person singular) was included in an initial analysis in order to determine if there was an effect for person.

As Table 1 shows person was returned as significant. In particular, first person singular subjects favor overt pronominal subjects more than third person singular subjects.

INSERT TABLE 1 AROUND HERE

Since this result has been widely attested in the literature and the variable person incurs in collinearity with several other variables, the remainder of the paper presents first person data separately from third person data. The separate analysis can be particularly

telling as it pertains to language group differences. As noted above, previous research is inconsistent with respect to the effects that language contact has: some reported a contact effect and other did not. We hypothesized that it could be due to different studies examining subject expression across linguistic persons, in the first person or the third person. The following table presents the results for the first person data, where differences did not emerge across language groups.

INSERT TABLE 2 AROUND HERE

The data above indicates that the use of first person singular overt pronominal subjects hovers around 20% across speaker groups (range: 19.8% to 21.3%). As will be discussed below, when the data analysis is performed separately on each of the language groups some minor differences emerge between the bilingual and the control groups. In contrast, in Table 3, the data for third person singular subjects reveals a language group effect.

INSERT TABLE 3 AROUND HERE

The rate of overt third person singular pronominal subjects varies from 4.8% in the Spanish control to 14.5% in the Spanish-dominant bilingual group. The data further indicates that all groups in Minorca favor the use of overt pronominal subjects (Spanish-dominant bilinguals [.65], Catalan-dominant bilinguals [.51] and Catalan controls [.59]) while the Spanish controls disfavor them [.37].

These data so far reveal an interesting interaction between language group and person. While no statistical difference emerges in the overall rates of overt first person pronominal subjects across groups, differences emerge with respect to third person singular. In the remainder of this section, thus, we examine the variables involved in subject expression in first and third person singular subjects in each of the language groups.

Spanish controls

The data presented above revealed great differences in rates of overt pronominal expression in first vs third person singular subjects in the Spanish controls: 19.8% overt pronominal subjects in first person singular vs. 4.8% overt pronominal subjects in third person singular. First and third person subjects differ in significant ways, e.g. first person is deictic while third person is referential. As can be seen in tables 4 and 5, they do not differ in the linguistic variables that are significant in the distribution of overt vs. null pronominal subjects in Spanish.

INSERT TABLE 4 AROUND HERE

In first person singular, two variables were selected as significant, namely connect and ambiguity. As expected, the more connected the speech is the lower the odds of producing an overt pronominal subject and the more ambiguous a verb form is the higher

the odds of producing an overt pronominal subject. As can be seen in Table 5, similar results are returned for the third person.

INSERT TABLE 5 AROUND HERE

The variables connect and ambiguity continue to be significant and exhibit the same patterns, where the more connected the speech the lower the use of overt pronominal subjects and the more ambiguous the verb form is the higher the use of overt pronominal subjects.

Overall, Spanish controls indicate differences across persons in terms of rates of overt pronominal subjects. Nonetheless, two linguistic variables affect the distribution of null and overt pronominal subjects irrespective of person: connect and verb form ambiguity. Thus, although differences in rates are significant across persons, the distribution is subject to the same variables.

Catalan controls

In the Catalan control group differences between first and third person emerged with respect to overt pronominal subject rates, which were 20.7% in the first person vs. 10.6% in the third person. As can be seen in tables 6 and 7, the difference between first and third person is also noticeable in their distribution of null vs. overt pronominal subjects, which differ in the linguistic variables that are significant.

INSERT TABLE 6 AROUND HERE

As was the case in the Spanish controls, the linguistic variables that are significant in Catalan are connect and ambiguity, with connect presenting the largest effect size (range: 33). Also similarly, the direction of effect is the same: more connected speech favors null subjects and ambiguous verb forms favor overt subjects. Although the trends are the same, as can be seen in Table 7, only connect is significant in the third person.

INSERT TABLE 7 AROUND HERE

As can be seen above, in the third person singular data only one variable is returned as significant, connect, again with the same direction of effect and a large effect size (range: 40).

Unlike in Spanish, in Catalan the difference in rate of use of overt pronominal subjects between first and third persons is accompanied by a difference in significant variables. Only the highest ranked variable, connect, remains significant across persons.

Spanish-dominant bilinguals

As seen above in tables 2 and 3, the Spanish-dominant bilingual group does not differ noticeably in the percentage of overt pronominal subjects in first (19.9%) vs. third person singular (14.5%), exhibiting the highest rate of overt pronominal subjects in the third person of all groups while using similar rates of overt pronominal subjects as the other

groups. In the first person (Table 8), some differences from both control groups are attested.

INSERT TABLE 8 AROUND HERE

In particular, unlike in both control groups, ambiguity is not returned as a significant variable while verb type is. The highest ranked constraint, connect, however, remains significant. Also relevant is the fact that the trends are similar across groups, even if they do not reach significance in all groups: ambiguous forms favor overt pronominal subjects more than unambiguous forms; mental and stative verbs favor overt subjects more than external actions; and less connected speech favors more overt subjects than more connected speech. As was the case with the Catalan control group, the data from the Spanish-dominant bilinguals shows some differences between first and third person, not so much in terms of percentage of use of overt pronominal subjects as in terms of significant variables.

INSERT TABLE 9 AROUND HERE

Although the difference in rate between first and third person was not as noticeable in this speaker group, only the variable connect is significant in the third person.

In conclusion, Spanish-dominant bilinguals exhibit similar overt pronominal subject rates in first and third person singular. Nonetheless, differences exist in the variables that are returned as significant, where fewer variables are significant in the third person.

Catalan-dominant bilinguals

As in the Spanish control group, Catalan-dominant bilinguals use a significantly higher rate of overt pronominal subjects in the first (13.1%) than the third person singular (8.2%). Examining significant variables and their rankings, Catalan-dominant bilinguals exhibit a contrast between first and third person singular similar to that of the Spanish-dominant bilingual group.

INSERT TABLE 10 AROUND HERE

Table 10 indicates that in the first person singular, Catalan-dominant bilinguals, like Spanish-dominant bilinguals and unlike both control groups, return two linguistic variables as significant: connect and verb type, while ambiguity is not significant. The patterns across all groups are the same for all these variables, even if they do not reach significance across the groups. These trends are also present in the third person but the only variable that reaches significance is connect.

INSERT TABLE 11 AROUND HERE

In the third person, both bilingual groups and the Catalan control group only return connect as a significant variable.

1.1.1. Language group comparisons

In terms of rates of overt pronominal subjects, there is a larger difference between first and third person in the Spanish controls than in the Catalan controls, where the percentage of use of overt pronominal subjects is higher in the third person than in the Spanish controls. The difference is also smaller in the two bilingual groups, particularly in the Spanish-dominant bilingual group. Within persons, no difference was found across groups in the first person while differences were attested across groups in the third person singular. This result may explain some of the discrepancies previously found in the literature, an issue that we expand on in the next sections.

With respect to the patterns of use observed, the two control groups are identical in the significant variables in the first person but not in the third person, where Catalan is not sensitive to verb form ambiguity. For Spanish-dominant bilinguals, differences in variables that are significant are found in the first person between this bilingual speaker group and the two control groups. Regarding third person, however, this bilingual control group patterns similarly to the Catalan control group. Recall, however, that this is the person where differences are attested between Spanish and Catalan.

5. Discussion

The results indicate interesting contrasts across speaker groups both in terms of rates of use of overt pronominal subjects and patterns of use, as attested in the variables returned as significant, the effect size of the variables, and the direction of effects. Crucially, contrasts between first and third person were rather revealing.

In the first person, the rate of overt pronominal subjects was similar across groups (around 20%) while in the third person, differences were attested (the rate varied from

4.8% in the Spanish control to 14.5% in the Spanish-dominant bilingual group). These differences were further supported by the variable language group (i.e. speaker group), which was returned as significant only in the third person. This result confirms our intuition that differences across studies could be due to differences in the persons included across studies. Overall, these results are consistent, thus, with the previous literature that finds no contact effects in the first person singular (Bayley and Pease-Alvarez 1997, Flores and Toro 2000, Flores-Ferrán 2004, Silva-Corvalán 1994, Torres-Cacoullos & Travis 2010a, and Travis 2007) but also with the previous literature that finds contact effects in the third person singular or in the inclusion of several persons in the analysis (Erker & Guy 2013, Erker & Otheguy 2016, Lipski 1994, 1996, Otheguy & Zentella 2012, Shin 2012, Shin & Otheguy 2013, Orozco 2015, Toribio 2004). This effect is particularly noticeable in the Spanish-dominant bilinguals, whose rate of overt pronouns in the third person (14.5%) is close to that of the first person (19.9%). Sorace (2011) anticipates the overuse of overt pronominal subjects in bilinguals as an economic processing strategy to avoid holding the referent in memory. Since the third person is referential, while the first is deictic, it follows that the processing burden is different in the third than in the first person. Thus, Sorace's assumption can be applied to the person difference attested here. If the processing burden lies in holding the referent in memory, it is expected that the contact effect be more prevalent in the third person, as reported in this analysis. These data, however, are not consistent with the inclusion of interfaces as the defining factor in cross-linguistic influence. Although subject expression has been considered to lie at the syntax interface with discourse-pragmatics, it is also dependent on other internal interfaces, such as the lexico-semantic interface (semantic verb type) or the

morphology-syntax interface (verb form ambiguity). In fact, bilinguals in this study did not differ from monolingual speakers in their rates of use of overt pronominal subjects in contexts with a referent different from the previous referent or in contexts with same referent both in first and third person singular. Thus, no loss of pragmatic content of overt pronominal subjects was attested in this study. In contrast, there were some differences between bilingual and monolingual speakers with respect to the variables verb type (at the lexico-semantic interface) and verb form ambiguity (at the interface with morphology). Thus, the data from both first and first person singular subject expression in these groups of Spanish-Catalan bilinguals is more consistent with the predictions of the VH. For these data, the IH predicted a loss of pragmatic content in the use of overt pronominal subjects while the VH predicted differences between monolingual and bilingual speakers in the lower ranking constraints (verb form ambiguity and verb type in our data). Both in first and in third person singular, bilinguals were comparable to monolinguals in their use of overt and null pronominal subjects with same referent and different referents. Thus, there was no evidence of loss of pragmatic content in the use of overt pronominal subjects. In contrast, differences between monolingual and bilingual speakers were reported with respect to the variables verb form ambiguity and verb type.

No differences in rates were attested across groups in the first person. In fact, the direction of effect was the same in all the groups. Nonetheless, some differences emerged in the variables that were significant for each of the groups, and as predicted by the VH, only in the lower ranked variables. Connect was returned as the highest ranked variable, with ranges from 30 to 39. Being such a highly ranked variable in Spanish, the VH anticipated this variable not to be so permeable to cross-linguistic influence, a result

attested in the data. The other significant variable both in Catalan and Spanish, was ambiguity. The two bilingual groups, however, returned this variable as non significant and verb type as significant. These differences can also be explained as simplification, as the lower ranked variables exhibit more variability and are, thus, predicted by the VH to be affected by cross-linguistic influence, an effect attested in our data. The similarities and differences between monolingual and bilingual speakers in this study, thus, were not predicted by the IH.

In the third person, on the other hand, contact effects are stronger. In fact, significant differences are reported in rates of overt pronominal subjects, the variable language group is returned as significant in the regression, and differences in significant variables and their rankings are attested across groups. In this case too, though, all the groups were sensitive to the pragmatic condition of the distribution, as connect was significant and the highest ranked constraint in all speaker groups. In third person, unlike in first person, differences existed between Catalan and Spanish, Spanish had lower rates of overt pronominal subjects than Catalan and was subject to more constraints (connect and verb form ambiguity) while for Catalan only connect was significant. The bilingual groups exhibited higher rates of overt pronominal subjects, even higher than the Catalan control group, and, as was the case with the Catalan control group, subject expression was only constrained by the variable connect. In this case, since differences existed between Catalan and Spanish, the differences attested between monolingual and bilingual Spanish could be due to convergence, simplification or a combination of both.

The VH, thus, is one more approach to examining and understanding differences between bilingual and monolingual speech. In line with Thomason & Kaufman (1988) it

assumes differences in the outcomes depending on the intensity of language contact, an idea that requires further testing and that was not evaluated in the present paper. It, however, expands on previous attempts at explaining the limits on the effects of language contact. It proposes that changes are not affecting specific structures because they lie at specific interfaces. Such a proposal poses problems with identifying what interface a structure belongs to. In addition, often times structures lie at more than one interface. Instead, the current proposal is grounded in the notion of variation, which is measurable. The VH predicts that categorical distributions are not affected by language contact, while variable distributions may be affected by language contact. In this paper, the focus has been on subject expression, with a comparison of contexts where the uses are more predictable (as in same vs. different referent contexts) and those less predictable, as with ambiguous vs. with unambiguous verb forms.

There is data from other studies that seem consistent with this proposal. For instance, examining subject position in Spanish, several authors report more difficulty in the use of postverbal subjects in Spanish in narrow focus, which is regulated by the syntax-pragmatics interface but with a not near categorical distribution, than with unaccusative subjects, which is regulated by the syntax-semantics interface and with a near categorical distribution, in bilingual speakers of different language pairings (English-Spanish HSs: Gómez Soler 2013, Prada Pérez & Pascual y Cabo 2012; English L1 Spanish L2ers: Domínguez & Arche 2008, Hertel 2003; and Spanish-Catalan bilinguals: Prada Pérez 2010b). Future research should examine other structures and language pairings in order to test this hypothesis further.

Lastly, this proposal is compatible with several theoretical approaches to linguistics. Although variation may pose some difficulty to generative syntactic analyses, it is acknowledged as part of the grammar (Richards 2008: 114). Variation is an integrative part of the grammar in functional approaches. From an acquisition point of view, it is reasonable to posit that variable distributions are inconsistent in the input and, thus, may pose more difficulty in acquisition (Papp 2000, Sorace 2000). Lastly, this approach is also compatible with sociolinguistic studies on language contact, as external sociolinguistic factors also play a role in the outcomes of contact between two or more languages.

6. Conclusion

This paper introduces the Vulnerability Hypothesis (VH) as a proposal for examining and understanding language contact. In particular it proposes a continuum of language contact effects depending on the categoricality of the linguistic distribution, such that variable distributions are more susceptible to cross-linguistic influence than categorical distributions. Using subject expression in Spanish-Catalan bilinguals, the predictions of the Interface Hypothesis (Sorace 2011) and those of the VH are contrasted. In particular, this paper examines the use of null and overt pronominal subjects as constrained by the variables connect, which lies at the syntax-pragmatics interface but is highly ranked in Spanish, verb form ambiguity, which lies at the morphology-syntax interface and is low ranked in Spanish, and verb type, which lies at the lexico-semantic interface with syntax and is not significant in Spanish. The IH would predict that bilinguals differ from

monolinguals in their distribution of null and overt subjects more when it is constrained by pragmatic factors (connect) than when it is constrained by morphology (ambiguity) or lexico-semantics (verb type). The VH, on the contrary, would predict that bilinguals differ from monolinguals in their distribution of null and overt pronominal subjects more when it is constrained by lower ranked variables (verb type and ambiguity) than by higher ranked variables (connect). The data from first and third person singular subjects in Spanish is consistent with the predictions of the VH, as no difference was attested in bilingual and monolingual speakers' use of overt and null subjects in contexts of same or different referents. In contrasts, differences between monolingual and bilingual speakers were attested with respect to their distribution across verb types and in the presence or absence of morphological ambiguity.

References

Abreu, L., 2012. Subject pronoun expression and priming effects among bilingual speakers of Puerto Rican Spanish. In: Geeslin, K., Díaz-Campos, M. (Eds.), Selected Proceedings of the 14th Hispanic Linguistics Symposium. Cascadilla Proceedings Project, Somerville, pp. 1–8.

Bayley, R., Pease-Álvarez, L., 1996. Null and expressed pronoun variation in Mexican-descent children's Spanish. In: Arnold, J., Blake, R., Davidson, B. (Eds.), Sociolinguistic Variation: Data, theory, and analysis, CSLI Publications, Stanford, pp. 85–99.

Bayley, R., Pease-Álvarez, L., 1997. Null pronoun variation in Mexican-descent children's narrative discourse. Language Variation and Change 9, 349–371.

Belletti, A., E. Bennati & A. Sorace. (2007). Theoretical and developmental issues in the syntax of subjects: evidence from near-native Italian. *Natural Language and Linguistic Theory*, 25:4, 657-689

Bentivoglio, P., 1987. Los sujetos pronominales de primera persona en el habla de Caracas. Central University of Venezuela, Caracas.

Cameron, R., 1994. Switch reference, verb class and priming in a variable syntax. Papers from the Regional Meeting of the Chicago Linguistics Society: Parasession on Variation in Linguistic Theory 30, 27–45.

Cameron, R., 1995. The scope and limits of switch reference as a constraint on pronominal subject expression. Hispanic Linguistics 6–7, 1–27.

Cameron, R., Flores-Ferrán, N., 2004. Perseverance of subject expression across regional dialects. *S*panish in Context 1 (1), 41–65.

Casanova Seuma, L.,1999. El sujeto en catalán coloquial. Revista española de lingüística 29 (1), 105–131.

Domínguez, L. & M.J. Arche (2008). Optionality in L2 Grammars: The Acquisition of SV/VS Contrast in Spanish. In H. Chan, H. Jacob and E. Kapia (Eds.), *Proceedings of Annual Boston Conference on Language Development 32* (pp. 96-107). Sommerville, MA: Cascadilla Press.

Enríquez, E., 1984. El pronombre personal sujeto en la lengua española hablada en Madrid. Consejo Superior de Investigaciones Científicas, Madrid.

Erker, D., Guy, G. R., 2012. The role of lexical frequency in syntactic variability: Variable subject personal pronoun expression in Spanish. Language, 88 (3), 526–557.

Erker, Daniel, & Ricardo Otheguy. 2016. Contact and coherence: Dialectal leveling and structural convergence in NYC Spanish. *Lingua* 172—173: 131--146

Flett, Susanna. 2006. A comparison of syntactic representation and processing in first and second language production. Unpublished dissertation. University of Edinburg.

Flores, Nydia, and Jeannette Toro. 2000. The persistence of dialect features under conditions of contact and leveling. *Southwest Journal of Linguistics* 19.31–42.

Flores-Ferrán, N., 2002. Subject Personal Pronouns in Spanish Narratives of Puerto Rican in New York City: A Sociolinguistic Perspective. Lincom Europa, Munich.

Flores-Ferrán, N., 2004. Spanish subject personal pronoun use in New York City Puerto Ricans: Can we rest the case of English contact? Language Variation and Change 16, 49–73.

Gómez Soler, I. (2013). Non-native Trends in the Acquisition of Split-intransitivity and its Relation to Variable Input. *17th Hispanic Linguistics Symposium*, University of Ottawa, October, 17-20, 2013.

Haugen, E. (1954). Review of Weinreich (1953). *Language,* 30: 380-388.

Hertel, T. (2003). Lexical and discourse factors in the second language acquisition of Spanish word order. *Second Language Research*, 19, 273-304.

Jakobson, R. (1938). Sur la théorie des affinités phonologiques entre des langues. *Selected writings*, 1. 234-246.

Jaeggli, Osvaldo, & Kenneth J. Safir. (1989). The Null Subject Parameter and Parametric Theory. Osvaldo Jaeggli & Kenneth J. Safir (Eds.) *The Null Subject Parameter* (pp. 1 – 45). Dordrecht: Kluwer.

Lapidus, N., Otheguy, R., 2005a. Contact induced change? Overt nonspecific ellos in Spanish in New York. In: Sayahi, L., Westmoreland, M. (Eds.), Selected Proceedings of the 2nd Workshop on Spanish Sociolinguistics, Cascadilla Press, Somerville, pp. 67–75.

Lapidus, N., Otheguy, R., 2005b. Overt nonspecific ellos in Spanish in New York. Spanish in Context 2, 157–174.

Lipski, John M. 1994. *Latin American Spanish*. London: Longman.

Lipski, John M. 1996. Patterns of pronominal evolution in Cuban-American bilinguals. *Spanish in contact: Issues in bilingualism*, ed. by Ana Roca and John B. Jensen, 159–86. Somerville, MA: Cascadilla.

Lozano, Cristóbal. 2009. "Selective deficits at the syntax-discourse interface: Evidence from the CEDEL2 corpus". *Representational Deficits in SLA: Studies in honor of Roger Hawkins (Language Acquisition and Language Disorders)*, ed. by Neal Snape, Yan-kit Ingrid Leung & Michael Sharwood-Smith. Amsterdam: John Benjamins, 127–166.

Lozano (2006). Focus and Split-Intransitivity: The acquisition of word order alternations in non-native Spanish. *Second Language Research*, 22, 1-43.

Margaza, Panagiota & Aaurora Bel. 2006. "Null Subjects at the Syntax-Pragmatics Interface: Evidence from Spanish Interlanguage of Greek Speakers". *Proceedings of the 8th Generative Approaches to Second Language Acquisition Conference (GASLA 2006)*, ed. by Mary Grantham O'Brien, Christine Shea & John Archibald, 88-97. Somerville, Mass.: Cascadilla

Meillet, A. (1921). Le problème de la parenté de langues. Reprinted in Linguistic historique et linguistique générale, (pp. 76-101), Paris: Champion.

Montalbetti, M. (1984). *After Binding. On the Interpretation of Pronouns*. Cambridge, MA: MIT Ph. D. dissertation.

Montrul, S. (2008). *Incomplete Acquisition in Bilingualism. Re-examining the Age Factor*. Amsterdam: John Benjamins-

Montrul, S. (2006). On the bilingual competence of Spanish heritage speakers: Syntax, lexical-semantics and processing. *International Journal of Bilingualism*, 10, 37—69.

Montrul, S. (2005). Second Language acquisition and first language loss in adult early bilinguals: exploring some differences and similarities. *Second Language Research*, 21, 199-249.

Montrul, S. (2004). Psycholinguistic evidence for split intransitivity in Spanish second language acquisition. *Applied Psycholinguistics*, 25, 239-267.

Montrul, S. (2003). Bilingual Inaccusitivity. In Barbara Beachley et. al. (Eds.), *Proceedings of the Annual Boston Conference on Language Development 27* (pp. 556-567). Somerville, Mass: Cascadilla Press.

Morales, A., 1997. La hipótesis funcional y la aparición del sujeto no nominal: El español de Puerto Rico. Hispania 80, 153–165.

Müller, N. & Hulk, A. (2001). Crosslinguistic Influence in Bilingual Language Acquisition: Italian and French as Recipient Languages. *Bilingualism: Language and Cognition*, 4 (1), 1-21

Orozco, Rafael. 2015. Pronominal Variation in Colombian Costeño Spanish. In *Subject Pronoun Expression in Spanish: A Cross-Dialectal Perspective*, edited by Ana M. Carvalho, Rafael Orozco, and Naomi Lapidus Shin, 17—37. Washington D.C.: Georgetown University Press

Otheguy, R., Zentella, A. C., 2012. Spanish in New York. Language Contact, Dialectal Leveling, and Structural Continuity. Oxford University Press, Oxford, New York.

Otheguy, R., Zentella, A. C., Livert, D., 2007. Language and dialect contact in Spanish in New York: Towards the formation of a speech community. Language 83, 1–33.

Papp, S. (2000) Stable and developmental optionality in native and non-native Hungarian grammars. *Second Language Research*, 16(2), 173-200.

Perlmutter, David M. 1971. *Deep and surface structure constraints in syntax*. New York: Holt, Rinehart, and Winston.

Prada Pérez, Ana de. 2009. Subject expression in Minorcan Spanish: consequences of contact with Catalan. Unpublished dissertation. The Pennsylvania State University.

Prada Pérez, Ana de. 2010a. "Variation in subject expression in Western Romance". In Colina, Sonia, Antxon Olarrea and Ana Maria Carvalho (eds.), Romance Linguistics 2009: Selected papers from the 39th Linguistic Symposium on Romance Languages (LSRL), Tucson, Arizona, March 2009. 2010. xiv, 426 pp. (pp. 267–284).

Prada Pérez, Ana de. 2010b. "Subject Position in Spanish in Contact with Catalan: Language Similarity vs. Interface Vulnerability". In Michael Iverson et al (eds.), Proceedings of the 2009 Mind/Context Divide Workshop, pp.104–115.

Prada Pérez, Ana de. 2015. First Person Singular Subject Pronoun Expression in Spanish in Contact with Catalan. In *Subject Pronoun Expression in Spanish: A Cross-Dialectal Perspective*, edited by Ana M. Carvalho, Rafael Orozco, and Naomi Lapidus Shin, 121—142. Washington D.C.: Georgetown University Press.

Ranson, D. L., 1991. Person marking in the wake of /s/ deletion in Andalusian Spanish. Language Variation and Change 3 (2),133–152.

Rehner, K. (2002). The development of aspects of linguistic and discourse competence by advanced second language learners of French. Unpublished PhD dissertation. Toronto: OISE/University of Toronto.

Richards, M. (2008). Two Kinds of Variation in a Minimalist System. Varieties of Competition, in Fabian Heck, Gereon Müller & Jochen Trommer (eds.), 133-162

Rizzi, L. (1997). The fine structure of the left periphery. L. Haegeman (ed.). *Elements of Grammar. Handbook of Generative Syntax*, (pp. 281- 337). Dordrecht: Kluwer Academic Publishers.

Rizzi, L. (1986). Null Objects in Italian and the Theory of pro. *Linguistic Inquiry,* 17, 501-557.

Rothman, J. (2009). Pragmatic Deficits with Syntactic Consequences: L2 Pronominal Subjects and the Syntax-Pragmatics Interface. *Journal of Pragmatics*, 41, 951-973.

Sapir, E. (1921). *Language*. New York: Harcourt, Brace and World, Inc.

Serratrice L, Sorace A, Paoli S. (2004). Crosslinguistic influence at the syntax-pragmatics interface: subjects and objects in Italian-English bilingual and monolingual acquisition. *Bilingualism Language and Cognition*, 7, 183-205.

Shin, N. L., 2012. Variable Use of Spanish Subject Pronouns by Monolingual Children in Mexico. In: Geeslin, K., Díaz-Campos, M. (Eds.), Selected Proceedings of the 2010 Hispanic Linguistics Symposium, Cascadilla Proceedings Projects, Somerville, pp. 130–141.

Shin, N. L., 2013. Women as Leaders of Language Change: A Qualification from the Bilingual Perspective. In: Carvalho, A. M., Beaudrie, S. (Eds.), Selected Proceedings

of the 6th Workshop on Spanish Sociolinguistics, Cascadilla Proceedings Project , Somerville, pp. 135–147.

Shin, N. L., and Otheguy, R., 2013. Social class and gender impacting change in bilingual settings: Spanish subject pronoun use in New York. Language in Society 42:429–452.

Silva-Corvalán, C., 1982. Subject expression and placement in Mexican-American Spanish. In: Amastae, J., Elías-Olivares, L. (Eds.), Spanish in the United States: Sociolinguistic aspects, Cambridge University Press, Cambridge, pp. 93–120.

Silva-Corvalán, C., 1994. Language Contact and Change: Spanish in Los Angeles. Clarendon, Oxford.

Slabakova, R., P. Kempchinsky, and J. Rothman. (Submitted). The Syntax-Discourse Interface in Adult L2 Acquisition. *Second Language Research*.

Slabakova,R., J. Rothman, P. Kempchinsky, (2011). Gradient competence at the Syntax-Discourse Interface. *EUROSLA Yearbook*, 11(1), 218-243.

Slabakova R., J. Rothman, T. Leal Mendez, G. Campos, and P. Kempchinsky (2011). Nick Danis, Kate Mesh, and Hyunsuk Sung (Eds.). Pragmatic Features at the L2 Syntax-Discourse Interface. *BUCLD 35: Proceedings of the 35th annual Boston University Conference on Language Developmen*t, 564-576.

Sorace, A. (2011). Pinning down the concept of "interface" in bilingualism. *Linguistic Approaches to Bilingualism* 1, 1-33

Sorace, A. (2005). Syntactic optionality at interfaces. L. Cornips and K. Corrigan (eds). *Syntax and Variation: Reconciling the Biological and the Social*, (pp. 46-111). Amsterdam: John Benjamins.

Sorace, A. (2004). Native language attrition and developmental instability at the syntax-discourse interface: Data, interpretations and methods. *Bilingualism: Language and Cognition*, 7, 143-145.

Sorace, A. (2003). Near-Nativeness. In C. Doughty and M. Long (eds.), *The Handbook of Second Language Acquisition*, 130-153. Oxford: Blackwell Publishers.

Sorace, A. (2000). Syntactic optionality in non-native grammars. *Second Language Research*, 16, 93-102.

Sorace, A. and Filiaci, F. (2006). Anaphora Resolution in Near-Native Speakers of Italian. *Second Language Research*, 22 (3), 339-368.

Thomason, S. G., and T. Kaufman (1988). *Language contact, creolization, and genetic linguistics*. Berkeley: University of California Press.

Toribio, A. J. 2004. Convergence as an optimization strategy in bilingual speech: Evidence from code-switching. *Bilingualism: Language and Cognition,* 7. 165–73.

Toribio, A. J. (2000). Setting parametric limits on dialectal variation in Spanish. *Lingua* 110. 315-341.

Torres Cacoullos, R., Travis, C. E., 2010a. Variable Yo Expression in New Mexico: English influence? In: Rivera-Mills, S., Villa, D. (Eds.), Spanish of the U.S. Southwest: A Language in Transition, Iberoamericana/Vervuert, Madrid, pp. 185–206.

Torres-Cacoullos, R., Travis, C. E., 2010b. Testing convergence via code-swtiching: Priming and the structure of variable subject expression. International Journal of Bilingualism 15 (3), 241–267.

Travis, C. E., 2005. The yo-yo effect: Priming in subject expression in Colombian Spanish. In: Gess, R. S., Rubin, E. J. (Eds.), Theoretical and Experimental Approaches to Romance Linguistics: Selected Papers from the 34th Linguistic Symposium on Romance Languages, John Benjamins, Amsterdam, pp. 329–349.

Travis, C. E., 2007. Genre effects on subject expression in Spanish: Priming in narrative and conversation. Language Variation and Change 19, 101–135.

Tsimpli, I.M., Sorace, A., Heycock, C, Filiaci, F. (2004). First Language Attrition and Syntactic Subjects: A Study of Greek and Italian Near-Native Speakers of English. *International Journal of Bilingualism*, 8, 257-277.

Valenzuela, Elena. (2008). On CP positions in L2 Spanish. In J. M. Liceras, H. Zobl and H. Goodluck (eds.), *The role of formal features in second language acquisition*, (pp. 534-560). Lawrence Erlbaum Associates.

Valenzuela, Elena. (2006). L2 end state grammars and incomplete acquisition of Spanish CLLD constructions. In Slabakova, Roumyana, Silvina Montrul and Philippe Prévost (eds.). *Special Volume in honour of Lydia White*. Amsterdam: John Benjamins.

Weinreich, U. (1953). *Languages in Contact: Findings and Problems*. New York: Mouton.

White, L. (2009). Language acquisition at the interfaces: some hardy perennials and new varieties. *Mind-Context Divide: Language Acquisition and Interfaces of Cognitive-Linguistic Modules*, University of Iowa. 30 April 2009.

Zapata, G., Sánchez, L., & Toribio, A. J. (2005). Contact and contracting Spanish. *International Journal of Bilingualism*, 3-4, 377-395.

1

2

3

Table 1

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a first or third person singular overt pronominal subject vs. a null subject; factor groups selected as significant in gray background

	Factor weight	%	N
CONNECT			
Different referent	**0.66**	27.4	2562
Same referent, different TAM	0.41	12.7	1275
Same referent, same TAM	0.34	8.5	1920
Range	32		
PERSON			
First singular	**0.56**	20.5	4466
Third singular	0.31	8.6	1291
Range	25		
AMBIGUITY			
Ambiguous	**0.59**	20.7	1365
Unambiguous	0.47	16.9	4392
Range	12		
VERB TYPE			
Mental	**0.54**	23.5	899
Stative	**0.53**	19.7	1069
External	0.48	15.9	3789
Range	6		
LANGUAGE GROUP			
Catalan L1 bilinguals	**0.52**	18.9	1580
Catalan control	**0.52**	18.6	1422

Spanish L1 bilinguals	**0.52**	19.1	1499
Spanish control	0.43	14.1	1256
Range	2		
Total N			5757

Corrected Mean	.152
Log likelihood	-2477.539
Significance	.027

Table 2

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a first person singular overt pronominal subject vs. a null subject; factor groups selected as significant in gray background

	Factor weight	%	N
CONNECT			
Different referent	**0.65**	20.6	616
Same referent, different TAM	0.42	14.6	152
Same referent, same TAM	0.34	10.4	147
Range	31		
AMBIGUITY			
Ambiguous	**0.59**	25.6	237
Unambiguous	0.48	19.1	678
Range	11		
VERB TYPE			
Mental	**0.55**	24.5	208
Stative	**0.53**	24.7	178
External	0.48	18.3	529
Range	7		
LANGUAGE GROUP			
Catalan L1 bilinguals	**0.51**	21.3	274
Catalan control	**0.50**	20.7	234
Spanish L1 bilinguals	0.49	19.9	253
Spanish control	0.49	19.8	154
Range	2		
Total N			4466

Corrected Mean	.186
Log likelihood	-2127.748
Significance	.012

Table 3

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a third person singular overt pronominal subject vs. a null subject; factor groups selected as significant in gray background

	Factor weight	%	N
CONNECT			
Different referent	**0.71**	15.4	504
Same referent, different TAM	0.38	4.2	236
Same referent, same TAM	0.32	3.2	504
Range	39		
LANGUAGE GROUP			
Spanish L1 bilinguals	**0.65**	14.5	227
Catalan control	**0.59**	10.6	292
Catalan L1 bilinguals	**0.51**	8.2	294
Spanish control	0.37	4.8	478
Range	28		
VERB TYPE			
Stative	**0.53**	9.5	348
External	**0.50**	8.4	894
Mental	0.41	6.1	49
Range	12		
AMBIGUITY			
Ambiguous	**0.56**	10.4	441
Unambiguous	0.47	7.6	850
Range	9		
Total N			1291
Corrected Mean			.062

Log likelihood	-340.105
Significance	.000

Table 4

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a first person singular overt pronominal subject vs. a null subject; factor groups selected as significant in gray background

Spanish control			
	Factor weight	%	N
CONNECT			
Different referent	**0.65**	29.3	389
Same referent, different TAM	0.40	12.6	175
Same referent, same TAM	0.30	8.4	214
Range	35		
AMBIGUITY			
Ambiguous	**0.63**	28.4	637
Unambiguous	0.47	17.9	141
Range	16		
VERB TYPE			
Mental	**0.59**	25.9	135
Stative	**0.55**	23.1	130
External	0.46	17.3	513
Range	13		
Total N			778

Corrected Mean	.175
Log likelihood	-359.123
Significance	.007

TABLE 5

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a third person singular overt pronominal subject vs. a null subject for Spanish controls; factor groups selected as significant in gray background

Spanish controls			
	Factor weight	%	N
CONNECT			
Different referent	**0.74**	10.1	199
Same referent, same TAM	0.26	1.5	196
Same referent, different TAM	N/A	0	83
Range	48		
AMBIGUITY			
Ambiguous	**0.68**	7.8	141
Unambiguous	0.42	3.6	337
Range	26		
VERB TYPE			
External	**0.52**	5.4	351
Stative	0.43	3.7	107
Mental	N/A	0	20
Range	9		
Total N			478
Corrected Mean			.038

Log likelihood	-76.899
Significance	.019

Table 6

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a first person singular overt pronominal subject vs. a null subject; factor groups selected as significant in gray background

Catalan controls			
	Factor weight	%	N
CONNECT			
Different referent	**0.62**	27.9	545
Same referent, different TAM	0.46	18.3	289
Same referent, same TAM	0.31	9.8	296
Range	33		
AMBIGUITY			
Ambiguous	**0.63**	29.4	255
Unambiguous	0.46	18.2	875
Range	17		
VERB TYPE			
Stative	**0.56**	24.9	185
External	**0.51**	21.3	658
Mental	0.44	16.7	287
Range	12		
Total N			1130

Corrected Mean	.191
Log likelihood	-547.111
Significance	.021

Table 7

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a third person singular overt pronominal subject vs. a null subject for Catalan controls; factor groups selected as significant in gray background

Third person singular	**Catalan controls**		
	Factor weight	%	N
CONNECT			
Different referent	**0.70**	18.2	121
Same referent, different TAM	0.46	7.5	67
Same referent, same TAM	0.30	3.8	104
Range	40		
VERB TYPE			
Mental	**0.72**	23.1	13
Stative	**0.50**	10.6	94
External	0.48	9.7	185
Range	24		
AMBIGUITY			
Ambiguous	**0.54**	12.2	115
Unambiguous	0.47	9.6	177
Range	7		
Total N			292
Corrected Mean			.087
Log likelihood			-92.110
Significance			.002

Table 8[1]

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a first person singular overt pronominal subject vs. a null subject; factor groups selected as significant in gray background

Spanish L1 bilinguals			
	Factor weight	%	N
CONNECT			
Different referent	**0.68**	32.2	513
Same referent, different TAM	0.42	13.5	462
Same referent, same TAM	0.35	10.4	462
Range	33		
VERB TYPE			
Mental	**0.58**	28.2	211
Stative	**0.55**	24.6	188
External	0.47	17.0	873
Range	11		
AMBIGUITY			
Ambiguous	**0.54**	22.9	280
Unambiguous	0.49	19.1	992
Range	5		

[1] The variable age shows evidence of collinearity as the factor weights and percentages do not correspond. We leave them as three groups in this analysis for comparisons across ages. In Author (2015) the two youngest groups, who seem to behave similarly and have had access to education in Catalan, were merged into a single group.

Total N	1272
Corrected Mean	.178
Log likelihood	-590.402
Significance	.040

Table 9

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a third person singular overt pronominal subject vs. a null subject for Spanish L1 bilinguals; factor groups selected as significant in gray background

	Factor weight	%	N
CONNECT			
Different referent	**0.66**	22.5	111
Same referent, different TAM	0.32	6.5	31
Same referent, same TAM	0.35	7.1	85
Range	61		
VERB TYPE			
Stative	**0.53**	16.9	77
External	0.48	14.1	142
Mental	N/A	0	8
Range	5		
AMBIGUITY			
Ambiguous	**0.51**	15.4	78
Unambiguous	0.50	14.1	149
Range	1		
Total N			227
Corrected Mean			.132
Log likelihood			-87.171
Significance			.006

Table 10: First person singular subject expression in Catalan-dominant bilinguals

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a first person singular overt pronominal subject vs. a null subject; factor groups selected as significant in gray background

	Factor weight	%	N
CONNECT			
Different referent	**0.66**	32.8	564
Same referent, different TAM	0.39	13.3	278
Same referent, same TAM	0.36	11.7	444
Range	30		
VERB TYPE			
Mental	**0.58**	30.0	240
Stative	**0.57**	25.6	195
External	0.46	17.9	851
Range	12		
AMBIGUITY			
Ambiguous	**0.54**	23.4	248
Unambiguous	0.49	20.8	1038
Range	5		
Total N			1286
Corrected Mean			.193
Log likelihood			-621.557
Significance			.010

Table 11: Third person singular subject expression in Catalan-dominant bilinguals

Multivariate regression analysis of the contribution of internal and external factors to the probability of producing a third person singular overt pronominal subject vs. a null subject for Spanish L1 bilinguals; factor groups selected as significant in gray background

	Factor weight	%	N
CONNECT			
Different referent	**0.72**	15.0	120
Same referent, different TAM	0.46	5.5	55
Same referent, same TAM	0.28	2.5	119
Range	46		
AMBIGUITY			
Ambiguous	**0.51**	8.8	107
Unambiguous	0.49	8.2	187
Range	2		
VERB TYPE			
Stative	**0.51**	8.6	70
External	0.50	8.3	216
Mental	N/A	0	8
Range	1		
Total N			294
Corrected Mean			.064
Log likelihood			-75.856
Significance			.002