Interface vulnerability in bilingual grammars? Spanish production of null and overt subjects in Basque-Spanish bilingual children and adults

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Abstract

Bilingual children typically produce more redundant pronominal subjects than monolingual children in null subject languages like Spanish in contact with non-null subject languages like English (Montrul & Sánchez-Walker, 2013; Montrul, 2004; Paradis & Navarro, 2003; Silva-Corvalán, 1994). According to the *Interface Hypothesis* (Sorace and Filiaci, 2006; Sorace and Serratrice, 2009; Sorace et. al. 2009; Sorace, 2011), the overextension of overt pronouns among bilinguals stems from interface constraints and processing limitations. Recent research with adults (Giannakou, 2018) found that the predictions of the Interface Hypothesis were not supported by bilingual performance in contact situations between two null subject languages, suggesting that language transfer may be at play. This study investigates the acquisition and development of pronominal subject expression in 196 school-age Spanish monolingual and Basque-Spanish bilingual children (ages 6-12), as well as adults, through a pronoun elicitation task. Basque and Spanish are both null subject languages. Findings suggest that monolingual Spanish speakers produced more

redundant overt pronouns than the bilinguals, and there was overextension of null pronouns in switch-reference contexts in both populations. Not only do these results disconfirm the Interface Hypothesis, but they also support the conclusion that null and overt pronouns display a variable distribution in null subject languages.

Keywords: subject pronouns, null subjects, Spanish, Basque, school-age children.

1. Introduction

Children must acquire the ability to use language to refer to people and objects around them. Pronominal subjects are a common universal referential device to establish anaphoric pronoun-antecedent dependency relations to make language as functionally economical as possible. Since pronouns refer to entities, to interpret a personal pronoun, speakers must identify pronoun-internal cues of person, number, and gender as they search for an appropriate antecedent in discourse. When pronoun-internal information is insufficient to disambiguate discursive contexts with multiple competing antecedents, speakers must resort to sentence-external information to assign an antecedent. How children —given their limited cognitive resources— learn to interpret and use these referential devices felicitously, particularly in null subject languages (henceforth, NSLs), has been an enduring question in language acquisition research.

The modular architecture of language establishes grammar-internal modules (syntax, morphology, phonology, and semantics/pragmatics) and grammar-external domains (the conceptual-intentional and the articulatory-perceptual systems) (White, 2009, 2011). Cross-modular integration of internal and external domains of grammar is essential to construct not only grammatically correct but also pragmatically felicitous[1] linguistic output. The external interface of syntax-discourse/pragmatics appertains to pragmatic constraints regulating contextual appropriateness, which involves increased processing resources. Null/overt subject expression in NSLs has been a pivotal topic in bilingualism because its acquisition and use display significant non-target variability (Sorace, 2011). The *Interface Hypothesis* (Sorace and Filiaci, 2006; Sorace and Serratrice, 2009; Sorace et. al. 2009; Sorace, 2011) is an influential theory formulated on the basis of consistent observations on how bilingual speakers process and interpret null and overt pronouns.

According to White (2009, 2011), internal interfaces refer to linguistic structures that comply with requirements set by multiple modules of grammar. For instance, syntax-semantics/pragmatics, syntax-morphology, and phonology-morphology are interfaces that are internal to the linguistic system. On the other hand, external interfaces concern modules of the computational system that interact with external domains (conceptual-intentional, articulatory-perceptual, or sentence processing). External interferences are observed to be more unstable than internal

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[1] Violations of contextual felicity do not result in ungrammaticality (i.e., an error) but, rather, in a gradient of felicity or pragmatic appropriateness (i.e., more or less felicitous or pragmatically appropriate) (Tsimpli & Sorace, 2006; Sorace & Serratrice, 2009; Tsimpli, 2014). *Optionality* is not only available in bilingual grammars but also in monolingual native grammars (Sorace, 2012).

interfaces. This instability makes the external interface one of the primary loci of *protracted indeterminacy* in bilingual L1 acquisition, *residual optionality* in L2 acquisition, and *emerging optionality* in L1 attrition (as defined by Sorace, 2011). *Optionality* or *indeterminacy*, in this case, are described as the (in)consistent linguistic behavior that bilinguals and L2 learners show in comparison to monolingual native speakers because, while (early and late) bilinguals have two different linguistic forms available to represent the same linguistic structure and encode the same meaning, monolinguals have only one (see Domínguez, 2013). By contrast, while internal interfaces like morphosyntax may also be problematic and may commonly entail some delay in acquisition, they are typically distinguished by successful ultimate attainment (Slabakova, 2006).

The Interface Hypothesis (Sorace and Filiaci, 2006; Sorace and Serratrice, 2009; Sorace et. al. 2009; Sorace, 2011) claims that grammatical operations where bilinguals are required to process and integrate linguistic material at the interface of syntax (e.g., realization of pronouns) and an external component (e.g., discourse/pragmatics) are cognitively taxing to compute and unlikely to be acquired at native-like levels, predicting thus indeterminacy, optionality, or incomplete acquisition for bilingual L1 speakers and L2 learners. In other words, under optimal conditions, the ultimate attainment of narrow syntactic properties is successful. However, in native bilingual grammars and even at advanced levels of L2 attainment, properties involving the syntax-discourse interface are vulnerable to permanent crosslinguistic interference and protracted divergence when compared to monolingual native grammars. The sources of instability at interface coordination in bilinguals have been explained by (a) the *representational account* and (b) the *processing resources account* (Sorace, 2011). The representational account interprets optionality as reflecting underlying deficiencies in the mental representation of the language. On the other hand, for the processing resources account, optionality arises from limited processing resources caused by the costly cognitive load that bilingualism entails (see Sorace (2011) for a detailed review of the arguments underlying these accounts).

In this study we examine the predictions of the Interface Hypothesis in Basque-Spanish bilinguals. The current linguistic situation of the Basque Country is ideal to examine the Basque and Spanish linguistic competence of both school-age children and adults educated predominantly in Basque, and to contribute to our understanding of language contact at the societal and individual level, monolingual and bilingual acquisition, and microvariation in NSLs. Both Spanish and Basque are null subject languages. That is, subject pronouns and null pronouns are possible depending on discourse context and pragmatic conditions. The expression of subjects in different varieties of Spanish has been amply investigated in Spanish linguistics (Cameron, 1992; Otheguy, Zentella, & Livert, 2007) but less is known about the rate of null/overt subjects in the contact variety spoken in the Basque Country. Research on child language acquisition shows that foundational linguistic knowledge is in place by age 5;0 (Guasti, 2002; Clark, 2009). However, the referential properties of subject pronouns take longer to reach adult distributions because pronouns do not have fixed referents in the discourse. Even though subject pronouns are syntactically licensed by verbal morphology in Spanish and Basque, their distribution is pragmatically determined. Mastering the interpretation and production of subject pronouns in these NSLs requires developing sensitivity to the syntax-discourse interface. Etxebarria (2022) traced the development of school-age bilingual children's sensitivity to

discursive constraints of third-person singular subject pronouns in Spanish and Basque, and in this article we present the results of the acquisition of Spanish by child and adult Basque-Spanish bilinguals from the Basque Country elicited through a production task.

The main research questions motivating our study are:

1) What is the overall distribution of felicitous and infelicitous null and overt subjects in monolingual and bilingual children's production in Spanish?
2) Do monolingual and bilingual children's developmental trajectories show significant differences in Spanish?
3) At what age do monolingual and bilingual children's subject pronoun production rates match the adult distributions in Spanish?
4) How does parental input relate to bilingual children's subject pronoun expression production in Spanish?

We tested the predictions of Interface hypothesis in a cross-sectional study of 6-12 year-old Spanish monolinguals and Basque-Spanish bilinguals, and a comparison group of three adult groups: monolinguals Spanish speakers from Madrid (monolingual region), monolingual Spanish speakers from the Basque Country (bilingual region) and Basque-Spanish bilinguals from the Basque Country. Before describing the details of the experiment, we first present the sociolinguistic situation of Basque followed by how null and overt subjects pronouns are expressed in both Basque and Spanish.

2. Spanish and Basque

2.1. The Basque Language

According to the *European Charter for Regional and Minority Languages* (Council of Europe, 1992), regional or minority languages like Basque are "languages traditionally used within a given territory of a state by nationals of that state who form a group numerically smaller than the rest of the state, and they include neither dialects of the official language(s) of the state nor the languages of migrants." Basque is mainly spoken in the Basque Autonomous Community ('BAC' henceforth), predominantly Northern and Central Navarre, and South-Western France (also known as *Iparralde*), a region situated in the westernmost Pyrenees in adjacent parts of Northern Spain and Southwestern France. This study focuses on the Basque Autonomous Community located in north-eastern Spain, where the largest number of Basque speakers reside among the three territories (i.e., BAC, Navarre, and Iparralde). The BAC has historically been a bilingual community where Basque and Spanish, two typologically and genetically unrelated languages, have been in contact for centuries. More specifically, the case of the BAC is a double diglossic situation where not only are these two languages in contact, but in rural areas, Standard Basque is in contact with several vernacular Basque dialects as well.

Currently, the population of the BAC is 2,152,400 —1,838,800 of those being older than 16. The Seventh Sociolinguistic Survey conducted by the Basque Government in 2021 (Basque Government, 2019; Basque Tribune, 2023) concluded

that in 2021, there were 680,000 fluent Basque speakers in the BAC, which is 266,000 more Basque speakers than in 1991. Although Basque, and particularly vernacular dialects, have traditionally been relegated to rural areas, Basque has been steadily gaining ground in familial, social, and professional spheres in urban areas among the youngest generations. This positive shift was supported by governmental, administrative, and community initiatives, such as the standardization of Baque, implementation of government-funded Basque immersion programs, teacher training, curriculum development, and other measures, as part of the standardization and revitalization process of Basque (see Zuazo, 2005; Hualde and Zuazo, 2007; Salaburu and Alberdi, 2012). The Basque community has been arduously working towards cultivating positive linguistic attitudes to nurture and celebrate bilingualism, and currently, it is within the youngest generation that the number of Basque speakers is rising.

It is with caution, however, that we present this scenario. While 266,000 Basque speakers have been gained in the last three decades, the majority of adults still do not speak nor understand Basque in the Basque territories, and the number of "passive Basque speakers" (i.e. those who do not speak Basque fluently but understand it) is increasing. While this is a cautiously optimistic linguistic scenario, particularly when compared to the revitalization processes of many other minority, heritage, and indigenous languages around the world, a long-term language facilitation, maintenance, and expansion plan is crucial to ensure the future of Basque.

The Basque-Spanish bilingual community from where participants were recruited and tested for this study is a rural community in the BAC, the Valley of Arratia, where both Basque and Spanish are consistently spoken. These participants are fluent in both their native languages (i.e., Basque and Spanish), as well as both Basque dialects (Standard Basque and Arratia Basque). The traditional Basque-dominant community settled in these rural areas, along with governmental protectionist language policies, provides this region with an optimal environment for successful dual language development because the community and the educational system prioritize the minority language. While many sociolinguistic factors have certainly favored use of Spanish in this community over the last decades, both Basque and Spanish remain the community languages. It is relevant to clarify that this bilingual scenario represents a minority even within the Basque territories. Etxebarria (2022) studied the production and comprehension of third-person null/overt subjects in the Spanish and Basque of these speakers. This study reports on the results of the Spanish production task.

2.2. Null and Overt Subject Pronouns in Spanish and Basque

Referentiality in same-/switch-reference discursive contexts (i.e., subject continuity or discontinuity) has consistently been shown to be a deterministic pragmatic factor that constrains adult pronominal use in null subject languages (Cameron, 1995; Otheguy, Zentella, & Livert, 2007; Otheguy & Zentella, 2012). In fact, switch-reference is often regarded as "the queen of variables" in the study of subject expression in Spanish (Carvalho, Orozco, & Shin 2015) or "the central constraint" of this alternation (Cameron, 1993).

In same-reference contexts, a first-mentioned subject (*ella/berak*) is followed by the same subject, thus a same-discourse referent, as illustrated in (1a) and (1b).

Generally, same-reference contexts trigger null subjects (Ø) because the subjects of two clauses co-refer, and the first-mentioned subject can be identified by the verbal inflection.

(1) a. Ella   tiene   examen   mañana. $Ø_i$ Está   nerviosa.
         She_i have.3SG   exam   tomorrow $Ø_i$ be.3SG   nervous
     b. $Berak_i$ azterketa   du   bihar. $Ø_i$ Artega   dago.
         She_i exam   have.3SG   tomorrow $Ø_i$ nervous   be.3SG
         '**She_i** has an exam tomorrow. **$Ø_i$** (She) is nervous.'

In switch-reference contexts, a clause is followed by another clause with a different subject, so there is a referentiality switch, as shown in (2a) and (2b):

(2) a. Yo_i soy   periodista.   **$Él_{ii}$**   es   maestro.
         I_i be.1SG   journalist   **He_{ii}**   be.3SG   teacher
     b. Ni_i kazetaria   naiz.   **$Bera_{ii}$**   irakaslea   da.
         I_i journalist be.1SG   **He_{ii}**   teacher   be.3SG
         '**I_i** am a journalist. **He_{ii}** is a teacher.'

Generally, switch-reference contexts favor overt subjects because the referent is different from the referent in the preceding clause. Thus, null subjects are typically preferred and pragmatically felicitous in same-reference contexts, whereas overt subjects are pragmatically felicitous and typically preferred in switch-reference contexts (Tsimpli et al., 2004; Sorace & Filiaci, 2006). Overt subjects in same-reference contexts can be considered pragmatically inappropriate because they can be redundant or repetitive, whereas null subjects in switch-reference contexts can be considered ambiguous. However, variationist research (e.g., Otheguy & Shin, 2022) indicates that when ambiguity is resolved in natural speech, null subjects are overall the more frequent option even in switch-reference contexts. Note that redundant or ambiguous pronominal subjects are not ungrammatical, but rather, can be infelicitous or pragmatically inappropriate in certain contexts. Overall, Spanish and Basque promote overt subjects when the discourse reference changes.

The pragmatically appropriate distribution of subject pronouns in contrastive and non-contrastive discursive contexts is captured by the Avoid Pronoun Principle (APP) (Chomsky, 1981). The APP is a universal principle of grammar imposing an economy strategy on the referential grid of pronominal subjects. The APP states that, when the referential content (i.e., person, number, and potentially gender features) of an empty element can be licensed and identified by its local head, a pronoun with unspecified referential content should be inserted; that is, a null subject pronoun. If the formal identification requirements are satisfied, the economy principle applies by not spelling out the pronoun because this is a cognitively less taxing strategy than spelling out a redundant pronoun (see also Carminati (2002) who formalized the division between anaphoric null and overt pronoun resolution in the Position of Antecedent Strategy (PAS) for intrasentential anaphora).

Logically, re-introducing an already-established unambiguous entity requires more cognitive effort than simply deleting it. The use of null pronouns allows speakers to refer to already-established referents, thereby avoiding unnecessary repetition (Keating, VanPatten, & Jegerski, 2016; Iraola et al., 2017). Thus, when a redundant

overt pronoun is used, speakers need to process an unanticipated pronoun that is not serving its expected function. From this perspective, grammar is an economy-oriented system, and therefore, overt pronouns will generally be deleted when the antecedent information is recoverable, but overt pronouns will generally not be deleted when null subjects are not possible (i.e., unrecoverable information, contrast, and emphasis).

Yet, studies with adult monolingual and bilingual populations suggest that native speakers tend to show some optionality by producing redundant overt pronouns and, to a lesser extent, ambiguous null pronouns (see Carvalho, Orozco, & Shin, 2015). Thus, contextual referentiality seems to be a well-established tendency that triggers certain types of pronouns rather than a categorical linguistic restriction. In this sense, processing and producing subject pronouns is much more complex and demanding in Spanish and Basque than it is in non-null subject languages where overt pronouns are not similarly conditioned by pragmatic constraints.

2.3. Third-person Pronouns in Spanish and Basque

Although both Spanish and Basque allow null subject pronouns, the languages differ in the morphosyntactic and referential properties of third-person pronouns. First/second-person pronouns are different from third-person pronouns, which are more complex than first and second pronouns (Tauli, 1958; Hale, 1973; Givón, 1976; Mithun, 1991; Haugen, 2004; Van Gelderen, 2011). Etymologically, third-person pronouns derive from demonstratives, whereas first-/second-person pronouns derive from emphatic pronouns. Furthermore, while first- and second-person pronouns refer to actual discourse participants (i.e., speaker and hearer), third-person pronouns need to be assigned an antecedent to be identified and interpreted. For this reason, third-person pronouns are not as accessible and salient as first-/second-person pronouns, are often ambiguous, and are more difficult to trace back, decode, and interpret. Inherent differences in pronominal features account for the differential timing of acquisition of these pronouns in children acquiring NSLs; namely, null subject pronouns are acquired earlier than overt subject pronouns (Guasti, 1993; Meisel & Ezeizabarrena, 1996; Ezeizabarrena, 2003, 2013; Grinstead, 2004). Table 1 illustrates the pronominal systems of Castilian Spanish and Basque:

Table 1. The subject pronoun systems of modern Castilian Spanish and Basque

Person & Number	Gender	Mode	SPANISH	BASQUE
1 singular			*yo*	*ni*
2 singular		intimate	-	*hi*
2 singular		unmarked	*tú*	*zu*
2 singular		formal	*usted*	-
3 singular	masculine		***él***	-
3 singular	feminine		***ella***	-
3 singular	neuter		*ello*[2]	*hura*[3]/***bera***[4]

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[2]   *Ello* and *bera* are not strictly comparable since *ello* can only refer to non-human inanimate entities, whereas *bera* can only refer to animate entities.

[3]   *Hura* ('that') is considered a demonstrative and can refer to human and non-human as well as animate and inanimate entities.

[4]   Iraola et al. (2017) explored the distributional differences of *bera* vs. *hura* in an acceptability judgement task with children and adults.

1 plural	masculine		*nosotros*	-
1 plural	feminine		*nosotras*	-
1 plural	neuter		-	*gu*
2 plural	masculine		*vosotros*	-
2 plural	feminine		*vosotras*	-
2 plural	neuter		-	*zuek*
2 plural	neuter	formal	*ustedes*	
3 plural	masculine		*ellos*	
3 plural	feminine		*ellas*	
3 plural	neuter		-	*haiek/beraiek*

It has been claimed that Basque has no true third-person pronouns but, instead, it has third-person demonstratives and "quasi-pronouns" (Laka, 1996; Hualde & Ortiz de Urbina, 2003; de Rijk, 2008; Ezeizabarrena, 2013). The third-person pronoun *bera* is assumed to have become a full pronoun only recently, although it differs from traditional third-person pronouns. Etymologically, unlike traditional pronouns that commonly derive from emphatic pronouns in Basque, *bera* partially derives from a demonstrative. Intrinsically, *bera* does not have contrastive value like traditional pronouns have in Basque. While *bera* seems to be more similar to a third-person pronoun of other languages, Iraola (2015) suggested that *bera* might have lost its anaphoric properties. Additionally, compared to Spanish, the Basque third-person singular pronoun *bera* ('he/she', 'himself'/'herself') encodes number and case features —third-person nominative singular pronoun—, whereas Spanish third-person singular pronouns *el* ('he') and *ella* ('she') encode gender, number, and case —third-person masculine/feminine nominative singular pronoun. While anaphoric dependencies and same- and switch-reference contexts are, in many respects, resolved similarly in Basque and Spanish, differences in acquisition might be expected in the scope of null and overt pronominal subjects in the two languages, mainly because of differences in the feature composition of the third-person pronouns, as well as the dialectal and diachronic trajectories of these languages (see Iraola 2012, 2014, 2015 for more information).

3. The Acquisition of Null Subjects

3.1. Children

Research on child language acquisition shows that the underlying foundations of linguistic knowledge are in place by age 5;0 (Guasti, 2002; Clark, 2009), including syntactic features and licensing mechanisms of pronominal subjects. However, acquiring sensitivity to pronominal referential properties takes longer to reach adult-like levels because pronouns are pragmatically complex and have unstable referents in the discourse. Yet, except for Iraola (2015), many studies of Spanish and Basque bilingual acquisition have traditionally focused on very young children from ages 1;6 to 4;0 (e.g., Barreña, 1993; Meisel & Ezeizabarrena, 1996; Austin et al., 1998; Paradis & Navarro, 2003; Silva-Corvalán & Sánchez-Walker, 2007; Austin, 2009; Villa-García & Suárez-Palma, 2016), although subject pronouns are rarely produced by children within this age range. In fact, sociolinguistic and psycholinguistic studies corroborate the low production rate of overt subject pronouns in children older than

3;00 and children in the early school-age period (Shin, 2012; Shin & Cairns, 2012). Therefore, subsequent studies tested bigger samples of older, school-age children to track the development of sensitivity to pragmatic and discursive constraints regulating null and overt subject pronouns in NSLs.

Compared to adult Mexican Spanish speakers that produce an overt subject pronoun use rate of 18-22% (Lastra & Butragueño, 2015; Shin & Otheguy, 2013; Shin & Erker, 2015), monolingual Mexican Spanish school-age children produce overt subjects at a rate of 8% at ages 6-7 and a rate of 10% at ages 10-11 (Shin, 2012, 2016). While children underproduce overt pronouns even in late childhood, Shin (2016) reported that overt pronouns are positively correlated with switch-reference contexts alreadywithin 6/7-year-old children. Yet, full mastery of the pragmatic constraints regulating null/overt pronominal subjects is not achieved during late stages of childhood. Research with Mexican Spanish monolingual children suggests that referential sensitivity when using null or overt pronouns emerges around age 8;0 and is not fully acquired until around age 12-14 (Shin & Cairns, 2012; Shin, 2012).

Montrul and Sánchez-Walker (2013) examined the production rates of null and overt pronominal subjects occurring in same-/switch-reference contexts in school-age Spanish-English bilingual children and adolescents in the United States (ages 6-17, mean 11). They found that subject expression in bilingual school-age children is influenced by dominant language pressure, structural complexity of overt pronouns in Spanish, dialect contact, and age of onset of bilingualism, among other factors. Bilingual children produced more redundant overt subject pronouns than monolingual children in same-reference contexts in Spanish, and both monolinguals and bilinguals produced few ambiguous null subject pronouns in switch-reference contexts in Spanish. Both Shin and Cairns (2012) and Montrul and Sánchez-Walker (2013) expressed the need for more studies of school-age children of different age groups with larger sample sizes to better capture and describe the developmental changes that occur during childhood.

More specifically, looking at Basque-Spanish bilingual teenagers, García-Azkoaga (2003) analyzed cohesive devices in different text genres among 11 to 15-year-old Basque-Spanish bilinguals. She reported that third-person pronouns are highly frequent in narratives to identify main characters or thematic subjects of the story, which corroborates previous findings by Karmiloff-Smith (1981), Hickmann (1980, 1985, 1987), and de Weck (1991). García-Azkoaga (2003) demonstrated that teenagers show adult-like patterns in the decreased use of proper nouns around the age of 13, which suggests it might also be around age 13 that adult-like usages of third-person pronouns in narratives are observed, in line with what Shin and Cairns (2012) found.

Other studies have focused on examining the interpretation of null and overt subjects in school-age bilingual children and adult L2 learners of a NSL in contact with a non-NSL (Tsimpli, Sorace, Heycock, & Filiaci, 2004; Sorace & Filiaci, 2006; Serratrice, 2007; Argyri & Sorace 2007) or, less commonly, another NSL (Sorace, Serratrice, Filiaci, & Baldo, 2009). Felicity judgment and pronoun resolution tasks with bilingual children have found that bilingual children are much more accepting than monolingual children and adults of infelicitous pronouns (both ambiguous null pronouns and redundant overt pronouns). These studies tested bilingual school-age children with different language pairs: English-Italian 8-year-olds (Serratrice, 2007), English-dominant and Greek-dominant English-Greek 8-year-olds (Argyri & Sorace,

2007), and English-Italian and Spanish-Italian 6/7-year-old and 8/10-year-olds (Sorace et al., 2009). Regarding null subject interpretation, Serratrice (2007) found no significant group differences, whereas Sorace et al. (2009) showed that, regardless of age and language combination, bilinguals tend to also accept some pragmatically infelicitous null subject pronouns. As for overt subject interpretation, both Serratrice (2007) and Sorace et al. (2009) reported that bilinguals tend to accept more pragmatically infelicitous overt pronominal subjects in contexts where a null subject would have been felicitous. This widely attested bilingual strategy was not found by Argyri and Sorace (2007), however. In fact, Sorace et al. (2009) clarified that this common strategy attested with monolingual and bilingual 6/7-year-olds when compared to adult monolinguals, is more pronounced among bilingual children. Argyri and Sorace (2007) also found a relationship between crosslinguistic directionality and dominance, which indicates that the bilinguals' degree of language exposure to their two languages determines the likelihood of crosslinguistic influence.

These results indicate that, generally, bilinguals differ from monolinguals with respect to their overacceptance of ambiguous null pronouns and redundant overt pronouns. On the one hand, these findings demonstrate that acquiring the pragmatic constraints of pronominal subjects is taxing for all children, but it is particularly taxing for bilingual children because their learning experiences are more varied as well. On the other hand, the acceptance of pragmatically inappropriate overt subject pronouns in Spanish in contact with English cannot be solely related to crosslinguistic influence from English, since it was also attested in Italian-Spanish bilingual children. However, Sorace et al. (2009) did not test Italian-Spanish bilingual children in both of their languages, which makes it difficult to make overarching predictions for other bilingual children who speak two NSLs. Most of the research on this phenomenon was conducted in either in Italian or Greek in contact with English. However, to control for or even rule out the influence of the other language in the protracted acquisition of phenomena involving the syntax-discourse interface, more studies that investigate children acquiring two NSLs are needed. The present study addressed this need.

3.2. Adults

Studies on mature grammars with adult L2 learners (Sorace & Filiaci, 2006; Belletti, Bennati, & Sorace, 2007), bilingual children (Serratrice, 2007; Argyri & Sorace, 2007), adult heritage speakers (Montrul, 2004), and longterm immigrants assumed to undergo L1 attrition (Tsimpli, Sorace, Heycock, & Filiaci, 2004) confirm that L1 transfer, exposure to inconsistent input, and processing limitations affect the observed optionality and non-target performance, which results from interface coordination difficulties. According to the Interface Hypothesis, optionality affects only overt pronouns and is manifested in the form of overextensions of overt pronouns but not null pronouns. However, against this prediction, multiple studies have also found overextensions of null pronouns in switch-reference contexts among bilingual populations, particularly adult L2 learners of Spanish (Liceras & Díaz, 1999; LaFond, Hayes, & Bhatt, 2001; Montrul & Rodríguez Louro, 2006; Lubbers Quesada & Blackwell, 2009; Rodríguez-Ordóñez & Sainzmaza-Lecanda, 2018) and heritage speakers of Greek (Giannakou, 2018).

Null subject languages are guided by general universal principles regulating the distribution of null and overt pronominal subjects. However, these languages can

also have very different scopes of null and overt subject pronouns, which accounts for systematic variation between two NSLs, such as Spanish and Italian (Filiaci, 2010; Filiaci, Sorace, & Carreiras, 2014), Spanish and Catalan (Prada Pérez, 2010), Spanish and Moroccan Arabic (García-Alcaraz, 2015; Bel & García-Alcaraz, 2015), Spanish and Farsi (Judy, 2015), Spanish and Basque (Iraola, 2015; Iraola, Santesteban, Sorace, & Ezeizabarrena, 2017), Spanish and Portuguese (Duarte & Soares da Silva, 2016), or Spanish and Greek (Giannakou, 2018). Findings with Spanish-Italian and Spanish-Catalan language pairs indicate that, even in typologically related languages with generally comparable distributions of pronominal subjects, the scopes of null and overt pronouns can vary significantly.

The Spanish-Farsi and Spanish-Greek language pairs are very suitable comparisons for the case at hand: Spanish-Basque. Spanish and Farsi, just like Spanish and Basque, are two typologically unrelated languages with two different basic word-order patterns: Spanish is an SVO (Subject-Verb-Object) language, and Farsi, like Basque, is an SOV (Subject-Object-Verb) language. Judy (2015) conducted a study with native Farsi-speaking adults who were also near-native Spanish speakers living in a context of immersion for 20 years. Judy (2015) showed that L1 Farsi speakers showed higher tolerance for null subjects in switch-reference contexts than L1 Spanish speakers in offline tasks, indicating a wider scope of null subject pronouns in Farsi than in Spanish. Giannakou (2018) found similar results with adult heritage speakers of Greek and Greek immigrants in Chile, who produced both null subjects in switch-reference contexts in oral narratives and flexible and ambiguous interpretations of null subjects in both discursive contexts with anaphora resolution in Spanish and Greek. These findings indicate that bilinguals overuse null subjects in switch-reference contexts and that they often over-interpret null subjects as involving a switch in reference. In fact, Giannakou's (2018) results confirmed that even typologically similar languages can present divergent distributions of null/overt subject pronouns, that null subject pronouns may also have a more variable distribution than is commonly assumed, and that the rates and distributions of null pronominal subjects in contact situations between two NSLs may differ from contact situations between a null and another non-NSL. As we will see, similar trends obtained with Basque-Spanish bilinguals, as we report next.

4. The Study

4.1. Participants

The participant sample included 136 Spanish monolingual and Basque-Spanish bilingual children (ages 6, 8, and 12), as well as 40 Spanish monolingual adults (both from the monolingual region of Madrid and bilingual region of the BAC) and 20 Basque-Spanish bilingual adults. Basque-Spanish bilingual children were raised in a rural region with strong Basque and Spanish presence, whereas Spanish-monolingual children were raised in an urban region with strong Spanish presence and very limited Basque presence. Bilingual children attended a government-funded, public Basque immersion school that teaches the curriculum entirely in Basque, in addition to Spanish and English taught as second/foreign language courses in their respective languages. Monolingual children attended a semi-private, religious school where the core subjects

are taught in three languages: Spanish, English, and Basque. These monolinguals had varying degrees of receptive skills in Basque and limited productive skills. These children conducted their days mostly in Spanish. While these monolinguals were not "monolinguals" in the traditional sense of the word, we use this label in this study to differentiate both populations. Immigrant children who spoke other languages or varieties of Spanish were excluded from the study.

Parents or guardians of the children completed a Language Background Questionnaire (LBQ) with short answer questions about demographic and biographical information. According to the responses gathered in the LBQ, Basque-dominant households included two Basque native or fluent parents who use Basque the majority of the time with their children. On the other hand, Spanish-dominant households included two Spanish monolingual parents or one Spanish monolingual parent and another Basque-Spanish bilingual parent who use Spanish the majority of the time.

In addition to children, 20 bilingual adults (*mean age = 26.2*; *age range = 21-36*) were recruited. These bilinguals lived and were educated in the same school as the recruited bilingual children. As for monolingual adults, two additional groups were recruited: 20 monolingual adults (*mean age = 26.8*; *age range = 21-35*) were born and raised in an urban area in the BAC and had barely any productive or receptive skills in Basque. An additional 20 monolingual adults (*mean age = 24.2*; *age range = 21-34*) from Madrid with no knowledge of Basque participated. This latter monolingual adult group from Madrid was included to assess potential crosslinguistic effects and influence in pronoun distribution in monolinguals' Spanish variety of the BAC. Table 2 summarizes the participant sample:

Table 2. Demographic information including age, sex, and dominant school language attended during childhood by each group.

	N	*Age*	*Grade*	*Dominant family language*		*Majority school language*
				Spanish	*Basque*	
Monolinguals						
Age 6	24	6	1st	24	—	Spanish
Age 8	24	8	3rd	24	—	Spanish
Age 12	20	12	7th	20	—	Spanish
Adults (bilingual region)	20	Adults	—	20	—	Spanish
Adults (monolingual region)	20	Adults	—	20	—	Spanish
Bilinguals						
Age 6	24	6	1st	12	12	Basque
Age 8	24	8	3rd	16	8	Basque
Age 12	20	12	7th	8	12	Basque
Adults	20	Adults	—	8	12	Basque
TOTAL:	**196**			**152**	**44**	

Participants were also asked to complete a narrative task with *The Little Red Riding Hood* tale to elicit spontaneous, unrehearsed speech as a proficiency measure.

Participants were shown 15 wordless colored pictures from the tale and were asked to retell the story in Spanish. For each participant, three lexical complexity measures were taken: two fluency measures and an accuracy measure, a selection of measures suggested by Ahmadian and García Mayo (2017). For *fluency measure A*, the number of words produced per minute of speech was counted. This was obtained by dividing the number of words per minute by the number of seconds in a minute (adapted from Wendel, 1997; Yuan & Ellis, 2003; Ellis & Yuan, 2004; Ahmadian & García Mayo, 2017). For *fluency measure B*, the number of meaningful words per minute of speech was counted (e.g., Wendel, 1997; Yuan & Ellis, 2003; Ellis & Yuan, 2004; Ahmadian & García Mayo, 2017). This was measured by considering the number of words per minute excluding all words or phrases that were repeated, reformulated, or replaced within each narrative, divided by the number of seconds in a minute. For the *accuracy measure*, error-free units were counted (e.g., Wendel, 1997; Yuan & Ellis, 2003; Ellis & Yuan, 2004; Ahmadian & García Mayo, 2017). The number of meaningful words per minute of speech excluding all words or phrases that were repeated, reformulated, or replaced, were divided by the number of seconds. Table 3 illustrates all three proficiency measures by age group in Spanish:

Table 3. Proficiency scores by age group in Spanish.

	Fluency Measure A		*Fluency Measure B*		*Accuracy Measure*	
	M (Sd)	*Range*	*M (Sd)*	*Range*	*M (Sd)*	*Range*
Monolinguals						
Age 6	1.50 (*0.30*)	0.82-2.00	1.34 (*0.26*)	0.82-1.70	1.30 (*0.30*)	0.82-1.65
Age 8	1.69 (*0.28*)	1.23-2.17	1.55 (*0.27*)	1.03-1.98	1.53 (*0.26*)	1.03-1.93
Age 12	2.29 (*0.37*)	1.68-2.95	2.14 (*0.36*)	1.52-2.90	2.14 (*0.37*)	1.52-2.90
Bilinguals						
Age 6	1.36 (*0.26*)	0.90-1.85	1.21 (*0.28*)	0.70-1.72	1.17 (*0.28*)	0.70-1.72
Age 8	1.63 (*0.39*)	0.98-2.45	1.48 (*0.37*)	0.85-2.35	1.47 (*0.37*)	0.85-2.33
Age 12	2.36 (*0.26*)	1.88-2.93	2.28 (*0.29*)	1.77-2.93	2.28 (*0.29*)	1.75-2.93

We conducted three mixed ANOVAs fitted with *lme()*, one for each proficiency measure. The summaries in Table 4 show significant age by speaker type interactions in each model. In general, the 12-year-olds obtained higher scores than the 6- and 8-year-olds, who did not differ from each other.

Table 4. Fixed Effects for Proficiency Measures A, B, and C: Age by Speaker Type.

Fixed effects: A ~ SpeakerType * Age					
	Value	*SE*	*DF*	*t-value*	*p*
(Intercept)	0.3313619	0.13732139	131	2.413039	0.0172
SpeakerTypeMonolingual	0.2808447	0.19405474	131	1.447245	0.1502
Age	0.1682982	0.01556444	131	10.813000	0.0000
SpeakerTypeMonolingual:Age	-0.0296930	0.02200849	131	-1.349161	0.1796
Fixed effects: B ~ SpeakerType * Age					
	Value	*SE*	*DF*	*t-value*	*p*
(Intercept)	0.0980863	0.13532684	131	0.724810	0.4699
SpeakerTypeMonolingual	0.4044372	0.4044372	131	2.114872	0.0363
Age	0.1803491	0.01533819	131	11.758171	0.0000
SpeakerTypeMonolingual:Age	-0.0452014	0.02168855	131	-2.084112	0.0391
Fixed effects: C ~ SpeakerType * Age					
	Value	*SE*	*DF*	*t-value*	*p*
(Intercept)	0.0300541	0.13447579	131	0.223491	0.8235
SpeakerTypeMonolingual	0.4181853	0.19002940	131	2.200635	0.0295
Age	0.1860689	0.01524136	131	12.208149	0.0000
SpeakerTypeMonolingual:Age	-0.0464513	0.02155158	131	-2.155354	0.0330

4.2. Materials and Procedure

The main task reported in this article is an oral elicitation task, which was originally based on Shin and Cairns' (2012) Pronoun Preference Judgement Task. However, due to replicability issues, the Pronoun Preference Judgment Task was adapted into a Pronoun Elicitation Task. This Elicitation Task includes 16 experimental items. Each experimental item consists of two-sentence-long narratives in the present tense paired with a three-picture sequence. The first sentence describes the first picture and introduces a male and a female character with a lexical NP. The second sentence describes the second picture and illustrates one of the characters performing an activity, introduced with a third-person singular pronoun (*él/ella* in Spanish). The third sentence elicits a spoken description of the third picture by the participant. The experimenter asks '*And then*?'. In the same-reference context, the target response elicits a null subject pronoun, whereas in the switch-reference context the target response elicits an overt pronoun. Figure 1 (Condition 1) and Figure 2 (Condition 2) below illustrate the experimental materials in both same- and switch-reference discursive contexts in Spanish.

Figure 1. Condition 1. Same-reference contexts (triggering null subject pronouns).

Lore y Joseba van de vacaciones. Primero, ella se pone un sombrero, ¿y luego?
'Lore and Joseba go on vacation. First, she puts her hat on, and then?'
<u>Expected Target Response</u>: Ø saca una foto ('Ø (she) takes a picture.')

Figure 2. Condition 2. Switch-reference context (triggering overt subject pronouns).

Aitor y Haize van a la playa. Primero, ella toma el sol, ¿y luego?
'Aitor and Haize go to the beach. First, she sunbathes, and later?'
<u>Expected Target Response</u>: **Él** hace un castillo de arena ('**He** builds a sandcastle.')

There was a five-minute training period before the experiment began. Participants were asked to describe what they see in the third picture as accurately as they could in one sentence. Each testing session lasted around 8-12 minutes, the younger children's sessions being longer.

4.3. Research Questions and Hypotheses

We reiterate the research questions below:

1) What is the overall distribution of felicitous and infelicitous null and overt subjects in monolingual and bilingual children's production in Spanish?
2) Do monolingual and bilingual children's developmental trajectories show significant differences in Spanish?
3) At what age do monolingual and bilingual children's subject pronoun production rates match the adult distributions in Spanish?

4) How does parental input relate to bilingual children's subject pronoun expression production in Spanish?

The Interface Hypothesis predicts that, compared to Spanish monolinguals, Basque-Spanish bilingual children will overproduce overt subject pronouns in Spanish as a result of increased cognitive load. However, the Interface Hypothesis would not be supported if bilingual and monolingual children show very similar developmental trajectories, as found in previous studies (Montrul & Sánchez-Walker, 2013). The Interface Hypothesis also predicts asymmetrical difficulty; namely, the acquisition of overt subject pronouns will be more problematic for simultaneous bilinguals compared to monolinguals. Yet, several studies have found that both null and overt pronominal subjects are comparably taxing for bilinguals, as well as for monolinguals (Liceras & Díaz, 1999; LaFond, Hayes, & Bhatt, 2001; Montrul & Rodríguez Louro, 2006; Lubbers Quesada & Blackwell, 2009). If bilinguals overextend and overuse ambiguous null subjects in switch-reference contexts more frequently than redundant overt subjects in same-reference contexts compared to monolinguals, the Interface Hypothesis will be disconfirmed (see Giannakou, 2018).

The Interface Hypothesis further downplays the role of crosslinguistic influence because one study found that Italian-Spanish bilinguals had similar pronoun overextension patterns as bilinguals who speak a null subject language and a non-null subject language (Bini, 1993; Sorace, 2016). Basque and Spanish are both null subject languages, where Basque shows a particularly low rate of overt pronoun production (Rodríguez-Ordóñez & Sainzmaza-Lecanda, 2018) and no traditional third-person pronouns (Laka, 1996; Hualde & Ortiz de Urbina, 2003; Ezeizabarrena, 2013; Iraola et al., 2017). If crosslinguistic influence plays a role in the acquisition of null/overt subject pronouns, different production patterns are expected with overt pronouns between monolingual and bilingual children. If comprehension patterns from previous studies in Basque (Iraola et al., 2017) extend to production in Spanish, bilingual children are expected to produce lower rates of felicitous overt pronouns in switch-reference contexts, as the Basque pronoun *bera* seems have more flexible constrains than traditional pronouns in certain contexts.

5. Results

A total of 3,021 responses were included in the analysis. All responses consisted of full sentences with a conjugated verb preceded by a null or an overt third-person singular pronominal subject. Responses were coded as null or overt, depending on whether the subject was a null or an overt pronoun. All other responses were discarded from the analysis (3.7% of the overall data). Discarded responses typically included subject NPs (e.g., 'the girl/boy' or the character's name) or, particularly among the youngest children, sentences with uninflected verbs or third-person plural pronominal subjects.

Data was analyzed using two mixed-effect binomial logistic regression models in the *lme4* package (Bates et al., 2015), which looked at same-/switch-reference contexts separately in the statistical software R (R Development Core Team, 2020). Statistical models were chosen using a stepwise selection process, with each variable being added and evaluated for importance using ANOVA. Due to the low statistical

power, interactions were not included. Model 1 looked at same-reference contexts and included 1,510 utterances. Model 2 looked at switch-reference contexts and included 1,511 utterances. In both models, the dependent variable was *Response* (null, overt) and included three fixed effects: *Age* (6, 8, 12, Adults), *Speaker Type* (monolingual from a monolingual region, monolingual from a bilingual region, bilingual), and *Home Language Dominance* (Spanish, Basque). Both models included *Subject* as a random effect to account for individual variability. We begin by discussing first the results of the adult groups, as they constitute the comparison groups for the monolingual and bilingual children.

5.1. Adults

Table 5 illustrates the production rates of null and overt pronominal subjects in different discursive contexts by the monolingual and bilingual adult groups.

Table 5. Count distribution of null and overt subject pronouns in same- and switch-reference contexts by monolingual and bilingual adult populations in Spanish.
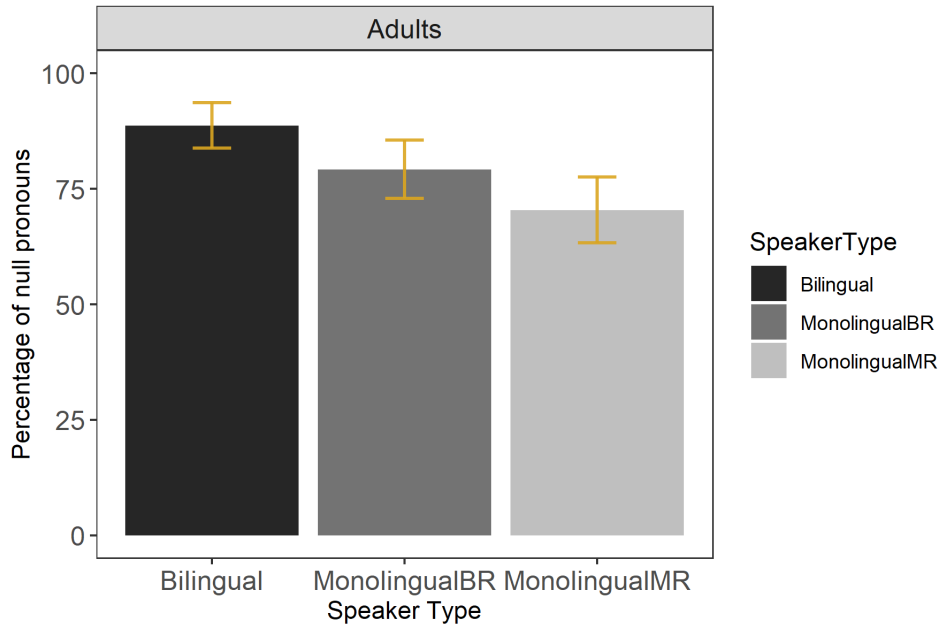
	SAME-REFERENCE CONTEXTS		*SWITCH-REFERENCE CONTEXTS*	
	Null % *(felicitous)*	*Overt %* *(infelicitous)*	*Null %* *(infelicitous)*	*Overt %* *(felicitous)*
ADULT POPULATIONS:				
Bilinguals	88.75% (142/160)	11.25% (18/160)	21.9% (35/160)	78.1% (125/160)
Monolinguals from the BR*	79.25% (126/159)	20.75% (33/159)	10.1% (16/159)	89.9% (143/159)
Monolinguals from the MR**	70.4% (112/159)	29.6% (47/159)	5.6% (9/160)	94.4% (151/160)

*BR = bilingual region (BAC)
**MR = monolingual region (Madrid)

In controlled same-reference constructions such as these sentences, null subject pronouns are typically preferred, and overt subject pronouns are typically considered redundant or repetitive. This tendency is evident in the three adult groups. However, bilinguals produced the highest rates of null pronouns (88.75%) in same-reference contexts, followed by Spanish monolinguals from the BAC (79.25%) and Spanish monolinguals from Madrid (70.4%). At the same time, bilinguals produced lower rates of redundant overt pronouns (11.25%) in same-reference contexts than the monolinguals from the bilingual region (20.8%) and the monolinguals from the monolingual region (29.6%). Figure 3 shows the null pronoun production percentages in same-reference contexts by monolingual and bilingual adult groups in Spanish:

Figure 3. Percentage of null pronouns in same-reference contexts by monolingual and bilingual adult groups in Spanish.

Model 1 (Table 6) confirmed significant differences in monolingual and bilingual pronoun distributions and production rates in same-reference contexts: the likelihood of bilinguals producing null pronouns in same-reference contexts is significantly higher than monolinguals from the bilingual region ($\beta = 1.09$, $SE = 0.42$, $z = 2.56$, $p = .01$) as well as monolinguals from the monolingual region ($\beta = 1.60$, $SE = 0.70$, $z = 2.29$, $p = .02$). A subsequent post hoc analysis using the *emmeans* package (Length, 2017) showed that, while bilinguals significantly differ from monolinguals from the bilingual region ($\beta = -1.09$, $SE = 0.42$, $z = -2.56$, $p = .02$) and from monolinguals from the monolingual region ($\beta = -1.60$, $SE = 0.70$, $z = -2.29$, $p = .05$), the two monolingual groups do not significantly differ from each other ($\beta = -0.51$, $SE = 0.63$, $z = -0.80$, $p = 0.7$).
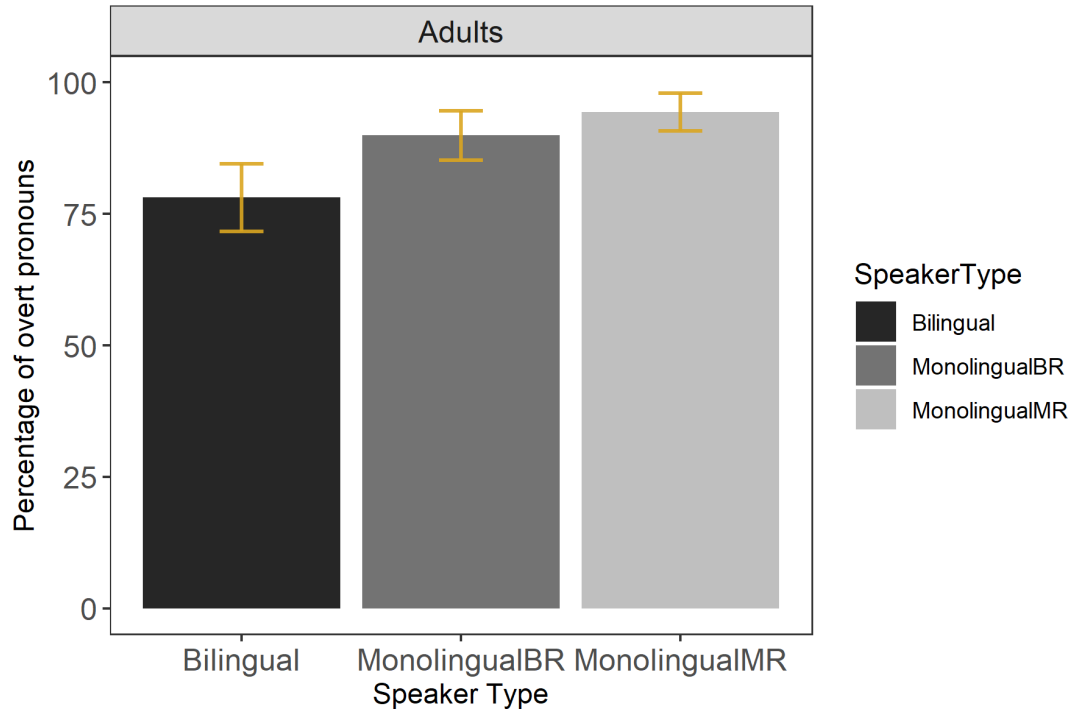
Table 6. Summary of Mixed-effect Binomial Logistic Regression Model 1.

	β	*SE*	*z*	*P*
(Intercept)	-2.7850	0.4810	-5.790	<.0001
Age: 6	0.2529	0.5049	0.501	0.6164
Age: 8	1.5782	0.4906	3.217	=.001
Age: 12	0.4990	0.5131	0.973	0.3380
Speaker Type: MonolingualBR	1.0950	0.4270	2.564	=.01
Speaker Type: MonolingualMR	1.6068	0.7004	2.294	=.02
Home Dominant Language: Spanish	-0.2106	0.5067	-0.416	0.6778

In switch-reference constructions such as the sentences used in our task, overt subject pronouns are typically preferred, and null subject pronouns are typically considered ambiguous. Monolinguals from the monolingual region produced the highest rates of overt pronouns (94.4%) in switch-reference contexts, followed by monolinguals from the bilingual region (89.9%) and Basque-Spanish bilinguals (78.1%). At the same time, the monolinguals from the monolingual region and the monolinguals from the bilingual region produced lower rates of ambiguous null

pronouns in switch-reference contexts (5.6% and 10.1%, respectively) compared to bilinguals (21.9%). Figure 4 shows the overt pronoun production percentages in switch-reference contexts by monolingual and bilingual adult groups in Spanish:

Figure 4. Percentage of overt pronouns in switch-reference contexts by monolingual and bilingual adult groups in Spanish.

Model 2 (Table 7) also confirmed significant differences in monolingual and bilingual pronoun distributions and production rates in switch-reference contexts: the likelihood of bilinguals producing overt pronouns in switch-reference contexts is significantly lower than the monolinguals from the bilingual region (β = 1.47, SE = 0.57, z = 2.56, p =.01) and than the monolinguals from the monolingual region (β = 2.51, SE = 1.04, z = 2.40, p =.01). A post hoc analysis using the *emmeans* package showed that, whereas bilinguals differ significantly from the monolinguals from the bilingual region (β = -1.47, SE = 0.57, z = -2.56, p =.02) and the monolingual region (β = -2.51, SE = 1.04, z = -2.40, p =.04), the two monolingual groups do not significantly differ from each other (β = -1.05, SE = 0.98, z = -1.06, p = 0.5).

Table 7. Summary of Mixed-effect Binomial Logistic Regression Model 2.

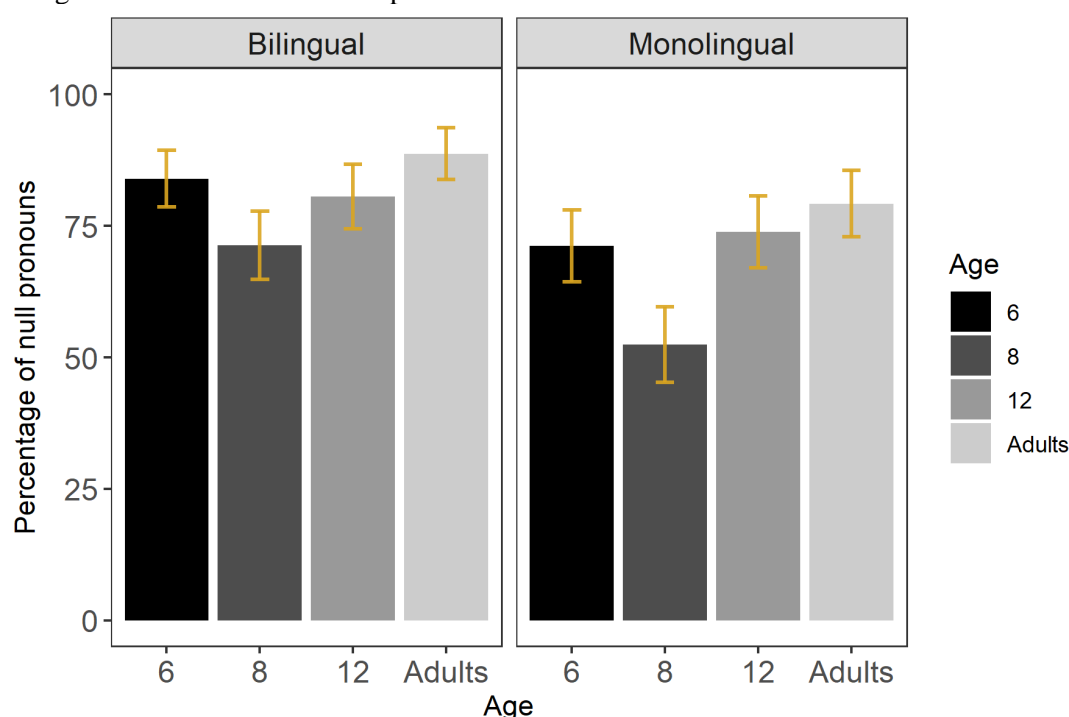|	β	SE	z	p
(Intercept)	2.3464	0.6331	3.706	<.001
Age: 6	-4.6270	0.7346	-6.299	<.0001
Age: 8	-1.6074	0.6817	-2.358	=.01
Age: 12	-0.7330	0.6998	-1.047	0.29490
Speaker Type: MonolingualBR	1.4706	0.5728	2.567	=.01
Speaker Type: MonolingualMR	2.5184	1.0475	2.404	=.01
Home Dominant Language: Spanish	0.2589	0.6551	0.395	0.69265

5.2. Children

Table 8 shows the production rates of null and overt pronominal subjects in different discursive contexts by monolingual and bilingual children. Both monolingual and bilingual children followed very similar developmental trajectories and show comparable null/overt pronoun distributions and production rates across different age groups. At age 6, monolingual and bilingual children already show a clear preference for producing null pronouns in same-reference contexts (71.2% and 84%, respectively). Six-year-old monolingual children produced 28.8% of redundant overt pronouns whereas bilingual children of the same age produced less (16%). In general, 8-year-olds produced the highest rates of redundant overt subject pronouns in same-reference contexts, and consequently, the lowest rates of felicitous null subject pronouns. Monolingual 8-year-olds produced 52.4% of felicitous null pronouns and 47.6% of redundant overt pronouns, whereas bilingual 8-year-olds produced 71.35% of felicitous null pronouns and 28.65% of redundant overt pronouns. Twelve-year-old children, both monolingual and bilingual, showed adult-like distributions and rates of null and overt subject pronouns. Monolingual 12-year-olds produced 73.9% of felicitous null pronouns in same-reference contexts, while monolingual adults from the Basque Country produced 79.25%. Similarly, bilingual 12-year-olds produced 80.6% of felicitous null pronouns in the same discursive context. By comparison, bilingual adults produced 88.75%.

Table 8. Count distribution of null and overt subject pronouns in same- and switch-reference contexts by monolingual and bilingual children in Spanish

	SAME-REFERENCE CONTEXTS		*SWITCH-REFERENCE CONTEXTS*	
	Null % *(felicitous)*	*Overt %* *(infelicitous)*	*Null %* *(infelicitous)*	*Overt %* *(felicitous)*
MONOLINGUAL CHILDREN:				
Age 6	71.2% (121/170)	28.8% (49/170)	49.15% (86/175)	50.85% (89/175)
Age 8	52.4% (97/185)	47.6% (88/185)	21.2% (39/184)	78.8% (145/184)
Age 12	73.9% (116/157)	26.1% (41/157)	13.3% (21/158)	86.7% (137/158)
BILINGUAL CHILDREN:				
Age 6	84% (147/175)	16% (28/175)	75.1% (130/173)	24.9% (43/173)
Age 8	71.35% (132/185)	28.65% (53/185)	35.5% (65/183)	64.5% (118/183)
Age 12	80.6% (129/160)	19.4% (31/160)	27% (43/159)	73% (116/159)

Model 1 (Table 6) revealed that age effects emerge between children and adults in same-reference contexts: the likelihood for eight-year-old children producing null pronouns in same-reference contexts is significantly lower compared to adults (β = 1.57, SE = 0.49, z = 3.21, p =.001). Six-year-olds and 12-year-olds do not significantly differ from adults regarding the rates of subject pronouns in same-reference contexts. The variable Home Dominant Language was not significant, suggesting that bilingual children raised in Basque-dominant and Spanish-dominant households produce similar rates of null and overt pronouns in same-reference contexts in Spanish. Figure 5 illustrates the percentages of null subject pronouns in same-reference contexts by monolingual and bilingual children and adults.
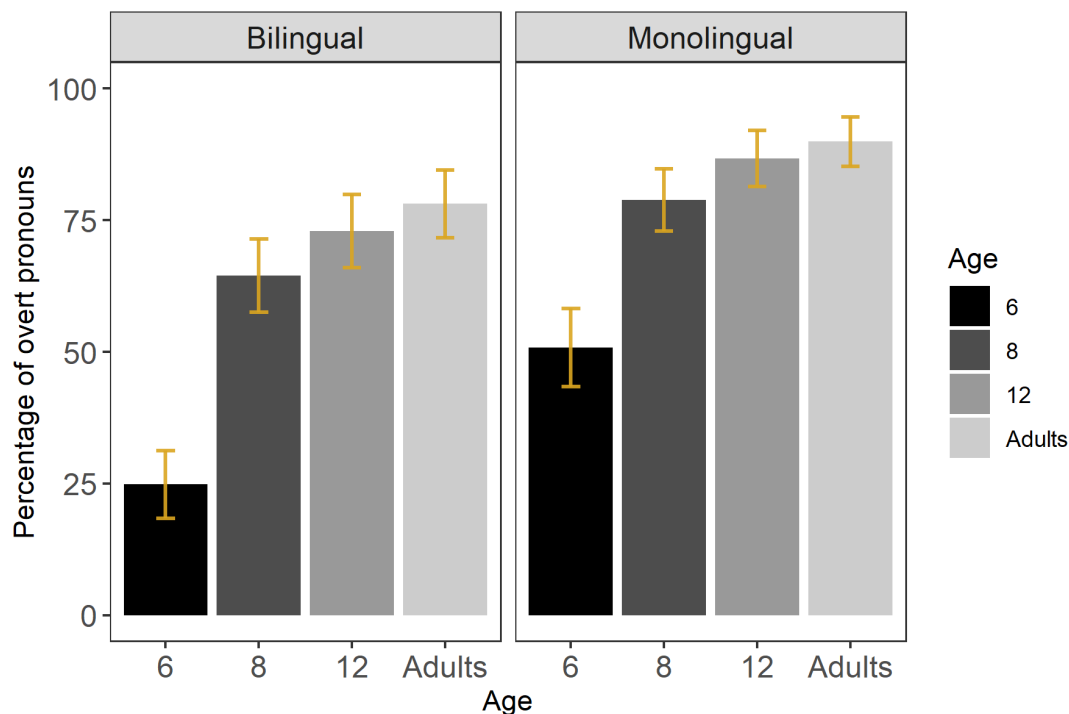
Figure 5. Percentages of null pronouns in same-reference contexts by monolingual and bilingual children and adults in Spanish.

Similar to same-reference contexts, the results revealed that monolinguals and bilinguals show very similar developmental trajectories with comparable pronominal distributions and production rates across different age groups in switch-reference contexts as well. Six-year-old children —but particularly bilingual children— still produced high rates of ambiguous null pronouns in switch-reference contexts: the rate of infelicitous null pronouns was 49.1% by monolingual 6-year-olds and 75.1% by bilinguals. Monolingual and bilingual 8-year-old children showed a strong preference to produce overt subject pronouns in switch-reference contexts: monolingual children's production rate was 78.8% and bilingual children's was 64.5%. So, the rate of infelicitous null pronouns dropped significantly in all groups. Twelve-year-old children showed adult-like distributions and rates of null and overt subject pronouns: monolingual 12-year-olds produced 86.7% of felicitous overt pronouns, whereas bilingual 12-year-olds produced 73%. Also, these monolinguals produced 13.3% of ambiguous null pronouns, whereas bilinguals produced 27%. Model 2 (Table 6) also

revealed that age effects emerge between children and adults in switch-reference contexts: the likelihood for 6-year-old children (β = -4.62, SE = 0.73, z = -6.29, p <.0001) and 8-year-old children (β = -1.60, SE = 0.68, z = -2.35, p =.01) to produce overt pronouns in switch-reference contexts is significantly lower compared to adults. Twelve-year-olds do not differ significantly from adults on the rates of subject pronouns in switch-reference contexts. Similar to Model 1, the variable Home Dominant Language was not significant, indicating that bilingual children raised in bilingual households with different dominant languages produce similar rates of null and overt pronouns in switch-reference contexts in Spanish. Figure 6 shows the overt subject pronoun percentages in switch-reference contexts by monolingual and bilingual children and adults.

Figure 6. Percentages of overt pronouns in switch-reference contexts by monolingual and bilingual children and adults in Spanish.

6. Discussion

When acquiring sensitivity to the pragmatic constraints regulating pronouns in both discursive contexts, the rates of pronoun productions by monolingual and bilingual children follow comparable developmental paths, as shown in Figures 7 and 8. In same-reference contexts, children go through a U-shaped developmental sequence in which, at age 8, monolingual and bilingual children overproduce redundant overt subject pronouns, twice the rate of infelicitous overt subject pronouns documented among adults. This developmental pattern contrasts with the patterns found in switch-reference contexts, whereby children follow a linear trajectory: that is, as age increases, the use of infelicitous null subject pronouns consistently decreases (see also Shin & Cairns, 2012).

Figure 7. U-shaped developmental trajectory of monolingual and bilingual children in same-reference contexts in Spanish.
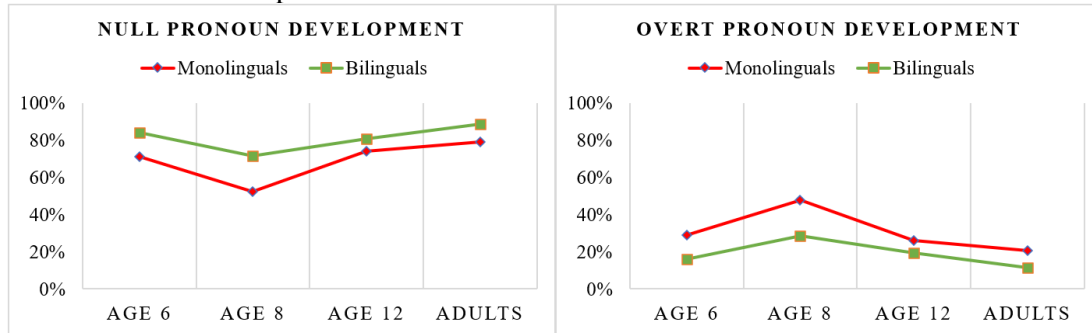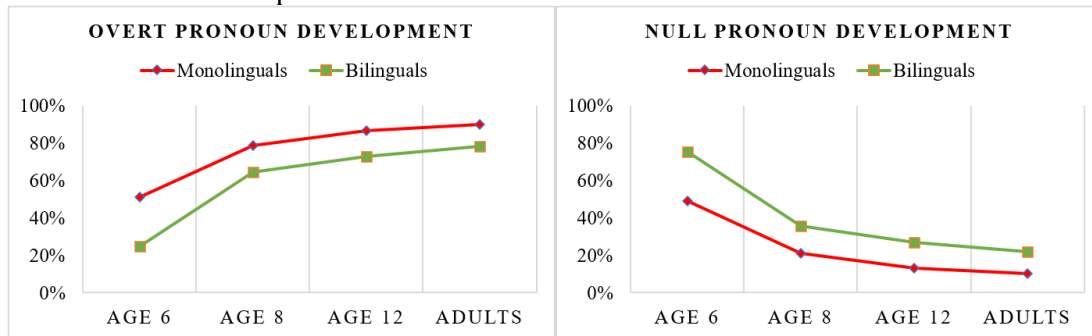

Figure 8. Linear developmental trajectory of monolingual and bilingual children in switch-reference contexts in Spanish.

As with previous research (Liceras & Díaz, 1999; LaFond, Hayes, & Bhatt, 2001; Montrul & Rodríguez Louro, 2006; Lubbers Quesada & Blackwell, 2009), monolingual and bilingual children as well as adults overextended and produced infelicitous null and overt pronouns. However, bilinguals produced significantly higher rates of ambiguous null pronominal subjects than monolinguals in switch-reference contexts in Spanish, and monolinguals produced significantly higher rates of redundant overt pronominal subjects than bilinguals in same-reference contexts in Spanish. In accordance with recent research (Giannakou, 2018; Rodríguez-Ordóñez & Sainzmaza-Lecanda, 2018), our results do not support the Interface Hypothesis. On the one hand, monolinguals produced significantly more redundant overt subject pronouns than bilinguals, suggesting that the processing limitations associated with bilingualism do not necessarily result in greater overuse of redundant overt pronouns in bilinguals. On the other hand, bilinguals as well as monolinguals overextended not only infelicitous overt subject pronouns but also infelicitous null subject pronouns, indicating that the acquisition of null pronouns is also somewhat difficult.

Crosslinguistic effects can better capture these results based on distributional asymmetries between both populations. Basque and Spanish are both null subject languages, where Basque shows a particularly low rate of overt pronoun production (Rodríguez-Ordóñez & Sainzmaza-Lecanda, 2018) and no traditional third-person pronouns (Laka, 1996; Hualde & Ortiz de Urbina, 2003; Ezeizabarrena, 2013; Iraola et al., 2017). Following our predictions, comprehension patterns from previous studies in Basque (Iraola et al., 2017) extended to production patterns in Spanish: bilingual children produced lower rates of felicitous overt pronouns than monolingual children in switch-reference contexts in Spanish. Overall, the status and scope of the third-

person "pronoun" *bera* in Basque still remain unclear. However, in certain syntactic and discursive contexts, such as antecedent choices (Iraola et al., 2017), as well as switch-reference contexts, the Basque pronoun *bera* seems to have less rigid constraints than traditional third-person pronouns in languages like Spanish. This shows that, when the status and scope of pronouns do not completely align in two languages, contact-induced distributional differences may emerge.

The crosslinguistic effects that emerged in Spanish in contact with Basque suggest that Basque influence weakens the referential discontinuity properties of Spanish pronouns *él/ella*. At the same time, crosslinguistic effects can also explain the "double NSL effect" that results from particularly high felicitous null pronoun production rates in Spanish in contact with Basque. Production data from adult monolingual groups further supports this claim: the highest rates of felicitous null pronouns are observed in Basque-Spanish bilinguals, followed by Spanish monolinguals from the BAC (historically bilingual region), and finally Spanish monolinguals from Madrid (historically monolingual region). Thus, crosslinguistic influence from Basque on Spanish and microvariation with third-person pronoun scopes in the two languages can better explain these findings when constrasted with the predictions of the Interface Hypothesis.

7. Conclusions

This study traced the acquisition and development of Spanish subject pronoun expression and referentiality in Spanish monolingual and Basque-Spanish bilingual school-age children in Spanish. This cross-sectional experiment with different age groups showed that monolingual and bilingual children followed very similar developmental trajectories with comparable rates and distributions of null and overt pronominal subjects in both discursive contexts. In same-reference contexts, monolingual and bilingual children showed a U-shaped developmental trajectory. In switch-reference contexts, monolingual and bilingual children showed a linear developmental trajectory. However, we acknowledge that cross-sectional studies can only provide indirect support for developmental paths. Ideally, a longitudinal study in which the same children are tested several times as they get older would provide more direct evidence for the U-shaped and linear developmental patterns found in this study.

Findings indicate that subject pronoun expression is affected by crosslinguistic effects during the school-age period and adulthood. During the school-age period, parental input does not seem to deterministically influence children's use of subject pronoun in Spanish. Overall, the acquisition of pronominal subjects in NSLs is a taxing and prolonged process, as it is not until age 12-14 that monolingual and bilingual children use subject pronouns in Spanish like adults do. Thus, it seems that syntactic, pragmatic, and/or processing complexity, which includes the use and interpretation of pronominal subjects, reaches adult-like mastery around the late childhood and early adolescence period. Overall, the results do not support the predictions of the Interface Hypothesis. Instead, results point to crosslinguistic influence from Basque on Spanish and microvariation with the features of the third-person pronouns in Basque and Spanish.

We should continue documenting pronominal variation, and we should combine interpretation and production data to gain more understanding. Therefore,

this study underscores the importance of analyzing different bilingual populations with different language pairs, particularly genetically non-related language pairs, to test and further extend current theories.

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