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PhD DISSERTATION:

English subjects in the linguistic production of L1 Spanish, L1 Bosnian and L1 Danish speakers: typological similarity and transfer

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colorless green ideas sleep furiously
(Chomsky 1957)

ABSTRACT

This study contributes to the analyses of transfer in the case of typologically similar and typologically different language interactions from three different perspectives: L1, modality and time of instruction. To do so the L2 English sentential subjects produced by 26 L1 Spanish, 26 L1 Bosnian and 26 L1 Danish children are analyzed. These L2 English participants are divided into two proficiency groups depending on the time of instruction received (2 or 4 years). Written production data (story-telling) were obtained by means of a wordless picture sequence adapted from the Edmond Narrative Norms Instrument (Schneider et al. 2005) which participants had to narrate. Oral production data were obtained through a semi-guided individual interview which was audio recorded and then transcribed in CHAT (Codes for the Human Analysis of Transcripts) format (CHILDES, MacWhinney 2000). The subjects produced by these participants were classified following three criteria: form (overt vs. null), grammaticality (grammatical vs. ungrammatical) and adequacy (adequate vs. non-adequate). Two formal proposals on sentential subjects are tested against these L2 English data: Holmberg (2005) and Sheehan's (2006) with regards to [+null subject] languages being superset to [-null subject] languages; and Fernández Fuertes & Liceras (2018) and Liceras & Fernández Fuertes' (2019) on the so-called lexical specialization approach that accounts for both directionality and effect of cross-linguistic influence. The results show that typological similarity is a conditioning factor in what regards both core grammatical structures and syntax-pragmatics interface related issues. Time of instruction, however, does not have any effects on these children's L2 English acquisition of sentential subjects. In the case of modality, the written task is proven to be cognitively more demanding. These results offer a new window into the analysis of English L2 subjects in that they not only confirm the vulnerability of interfaces also in the case of under-studied languages, but they also show how Liceras & Fernández Fuertes' proposal applies to L2 acquisition: cross-linguistic influence from the superset language (i.e. Spanish and Bosnian) results in positive transfer.

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CHAPTER 1: INTRODUCTION[1]

Within the framework of generative grammar, sentential subjects have been widely studied both from a formal perspective (e.g. Perlmutter 1971; Chomsky & Lasnik 1977; Jaeggli 1981, 1982, 1984; Rizzi 1982, 1997, 2005; Chomsky 1981; Phinney 1987; Platzack 1987; Liceras 1988, 1989; Jaeggli & Safir 1989; Bel 2001; Belletti 2001, 2004; Holmberg 2005, 2010; Sheehan 2006; Camacho 2006, 2008, 2011, 2013, 2016; Holmberg & Roberts 2011; Roberts 2018) and in acquisition studies focusing on simultaneous bilinguals (e.g. Montrul 2004; Liceras et al. 2008; Cuza 2013; Cuza & Camacho 2017; Liceras & Fernández Fuertes 2019) and sequential bilinguals (e.g. Lozano 2002; Park 2004; Montrul & Rodríguez-Louro 2006; Rothman 2008, 2009; Montrul et al. 2009; Pladevall Ballester 2012, 2016; Cuza et al. 2013; Quesada 2014; Mitkovska & Bužarovska 2018). When considering bilinguals, most of these studies mainly compare across typologically different languages. That is, they focus on two languages with opposite values of the Null Subject Parameter which, when in contact, typically trigger cross-linguistic influence in the form of subject omission or subject overproduction. Much less frequently have previous studies dealt with the analysis of two typologically similar languages (i.e. languages that share the same value of the Null Subject Parameter). Few studies have been conducted on two [+null subject] languages (e.g. Bini 1993; Margaza & Bel 2006; Sorace & Filiaci 2006; Bel et al. 2016; Lozano 2018) and even fewer on two [-null subject] languages (White 1985; Liceras 1989; Liceras & Alba de la Fuente 2015; Mujcinovic 2015).

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The purpose of the present dissertation is to contribute to the understanding of the acquisition of sentential subjects in the light of previous empirical studies and by putting to the test formal proposals that have been put forward within the generative grammar framework. The target structure is, therefore, sentential subjects and these are analyzed in terms of both grammaticality (i.e. grammatical vs. ungrammatical) and adequacy (i.e. adequate vs. non-adequate). That is, the production of subjects is considered both from a purely syntactic perspective and from a pragmatic perspective under the syntax-pragmatics interface view. This is considered in the case of the English as a second language (L2) of children whose first languages (L1s) are either Spanish, Bosnian or Danish. The focus is placed on the role L1 transfer plays in these children's L2 English oral and written production. The existence of transfer as well as its effects (i.e. positive or negative) are explored together with three conditioning factors: i) typological similarity between the participants' L1 and their L2; ii) task modality used to elicit the production data (i.e. oral and written); and iii) time of instruction measured in terms of the amount of institutional exposure to L2 English the participants have received by the time of testing.

More specifically, one of the main foci under investigation is transfer and typological similarity. Languages can be classified typologically in at least two ways: i) whether or not they are typologically proximate (i.e. whether they have a common origin) and ii) whether or not they are typologically similar (i.e. whether they share the same parametric values). Given the languages analyzed in the present study, typological similarity provides more insight on our data. In the case of the grammatical structure under consideration (i.e. sentential subjects), there is a clear-cut distinction in terms of the option of the Null Subject Parameter that each of the languages under analysis takes. Thus, while Spanish and Bosnian are typologically similar languages, because they are [+null subject] languages, they are, in

their turn, typologically different from Danish and English which are [-null subject] languages. Typological similarity is expected to influence the L2 acquisition of English in the sense that the acquisition process should be facilitated when typologically similar languages are in contact (i.e. positive transfer will take place), whereas the contact between typologically different languages is expected to hinder (to some extend) the acquisition process (i.e. negative transfer will take place).

Also related to typological similarity are the types of subjects available cross-linguistically. In the case of [-null subject] languages, only one subject type is available (i.e. overt), while in the case of [+null subject] languages two subject types are available (i.e. overt and null). Therefore, following Holmberg (2005), Sheehan (2006) and Liceras & Fernández Fuertes (2019), Danish and English are subset languages, while Spanish and Bosnian are superset languages. The analysis of this combination of superset and subset languages provides further insight into the role played (if any) by typological similarity.

What regards modality, it has been argued that oral and written production do not require the same cognitive load, since, in the case of children, written tasks are expected to be more demanding and, therefore, could be more difficult (Kellog 1996; Granfeldt 2008; Kuiken & Vedder 2011; Williams 2012, among others). The two experimental tasks used (i.e. oral semi-guided interview and written picture sequence narration), thus, enable us to address the role played by modality in child L2 English acquisition.

Amount of input and time of instruction are said to be related issues in the sense that, the longer the participants are instructed in the L2, the greater the amount of input they receive. In the same vein, the more input they receive, the more proficient they get and this would be reflected, for instance, in a higher MLUw (Håkansson 2001; Unsworth 2008; Unsworth & Blom 2010; Hawkins & Filipovic 2012; Lundell & Lindqvist 2012, 2014,

among others). The participants in this study differ in the time they have been instructed in L2 English: 2 years and 4 years. This means that, for each language group, we can determine whether the amount of input and time of instruction affect these L2 speakers' production in terms of both grammaticality and adequacy; and whether this relates to the degree of typological similarity between the participants' L1 and the L2, and, if so, how.

This dissertation is organized in 7 chapters. Chapter 2 is concerned with the nature of subjects cross-linguistically and how this has been formally accounted for within the generative tradition. Special attention is placed on two accounts in particular: that verbal agreement affixes and null subjects have the same status in [+null subject] languages (Alexiadou & Anagnostopoulou 1998, among others); and that null and overt subjects differ, because overt subjects are phonologically articulated, while null subjects are not (Holmberg 2005 and Sheehan 2006, among others). Although the language under investigation is English, the participants' L1s (i.e. Spanish, Bosnian and Danish) are also considered and, therefore, the consequences of these formal accounts are explored for the four languages.

Chapter 3 refers to some of the issues that have been said to play a role, together with the formal properties of subjects, when acquiring an L2: typological similarity, lexical specialization, modality, time of instruction and type of input. It also includes a reference to the main findings obtained in previous studies conducted on sentential subjects in L2 acquisition which help to put into perspective the results obtained in the present investigation.

Chapter 4 outlines the research methodology used to elicit and codify the data and to select the specific participants that took part in this study. Initially, the participants were selected based on their language history and later classified following the selection criteria established and according to their language proficiency in terms of MLUw rates.

Taking as a point of departure the revision in chapters 2 and 3, in chapter 5 the research questions are raised and the corresponding hypotheses formulated.

Chapter 6 is dedicated to the analysis of the results obtained followed by a discussion. Both the answers to the research questions and the confirmation or rejection of the hypotheses that have been initially posed are provided.

The conclusions reached are available in chapter 7, where the contribution and limitations of the present study as well as suggestions for further research are included.

CHAPTER 2: THEORETICAL BACKGROUND

In this chapter the focus is set on how sentential subjects have been described in linguistic theory and how differences across languages have been formally accounted for in generative linguistics. A comparison is offered between different formal accounts of sentential subjects in English, as the language under investigation in this study, as well as Spanish, Bosnian and Danish, as the first languages (L1s) of the participants from whom data have been collected and analyzed (chapter 4).

Typologically, Spanish is a Romance language and Bosnian a Slavic language – more specifically South Slavic (Franks 1995, 2005, 2017; Lindseth 1997; Godjevac 2000; Progovac 2005, among others). Both languages have a rich morphological verbal agreement system, as the paradigm in table 1 shows. In relation to the Null Subject Parameter, this morphological richness has led many researchers to classify them as [+null subject] languages, as they allow their subjects to be null. In contrast, English and Danish are both Germanic languages and they have a poor verbal agreement morphology, as table 1 shows, and are thus classified as [-null subject] languages, requiring their subjects to be overt.

ENGLISH	SPANISH	BOSNIAN	DANISH
I sing	yo cant-**o**	ja pjeva-**m**	jeg synger
you sing	tu cantas-**s**	ti pjeva-**š**	du synger
he/she/it sings	el/ella canta-	on/ona pjeva-	han/hun synger
we sing	nosotros canta-**mos**	mi pjeva-**mo**	vi synger
you sing	vosotros canta-**is**	vi pjeva-**te**	I synger
they sing	ellos canta-**n**	oni/one pjeva-**ju**	de synger

Table 1: Verbal paradigm across the four languages under study

Using the terminology provided by Jaeggli & Safir (1989), Bosnian and Spanish are classified as morphologically uniform languages, as each grammatical person is identified by an independent morphological marker, as reflected in *table 1*. This type of uniform agreement is associated with the possibility of allowing null subjects. Furthermore, Bosnian has an overtly marked case system with seven different cases (i.e. nominative, accusative, genitive, dative, locative, instrumental and vocative), subjects bearing mainly nominative case[2]. It also has a relatively free word order that "serves to express functional sentence perspective information rather than grammatical relations" (Franks 1995:3). Also in Spanish, subjects bear nominative case and the word order is relatively free (Olarrea 1998).

Bearing in mind the above-mentioned classification and the basic distinctions between [+null subject] languages (like Spanish and Bosnian) and [-null subject] languages (like English and Danish), two different approaches to the Null Subject Parameter are reviewed in this chapter. On the one hand, Alexiadou & Anagnostopoulou (1998), among others, consider that in [+null subject] languages verbal agreement affixes and null subjects have the same status and that overt pronouns are pragmatically marked. On the other hand, Holmberg (2005) and Sheehan (2006), among others, propose that the only difference between null and overt subjects in [+null subject] languages lies in whether or not sentential subjects are phonologically articulated or not.

The chapter is organized as follows: section 2.1 provides some general information about the nature of the subjects and their availability in the four languages under consideration; section 2.2 provides an account of the Extended Projection Principle and its

[2] All Slavic languages allow their subjects to be in dative case with impersonal predicates if they also have experiencer theta-role. In contrast to other Slavic languages, Bosnian does not allow dative subjects with infinitives. In Spanish, the impersonal subjects are null and they are marked with *se* (Otero 1999).

change of status from a principle (as part of the Principles and Parameters approach) to a feature (under more minimalist assumptions); section 2.3 offers an analysis of the Null Subject Parameter and its link to both the Extended Projection Principle as well as the Agreement Parameter cross-linguistically. The last section provides an overview of the chapter and states the main theoretical foundations that will serve as the bases of this dissertation.

2.1 Sentential subjects cross-linguistically

The distribution of sentential subjects in the four languages involved in the present dissertation differs in terms of the availability of null subjects across languages, as illustrated in the examples bellow. Across the four sets of examples, the three possible forms are illustrated as follows: in examples 1-4*a* the subjects are Determiner Phrases (DPs), in 1-4*b* personal pronouns and in 1-4*c* the subjects are null.

1) English:

a)	*These green apples* are the best	[DP subject]
b)	*They* had to take care of the boy	[pronominal subject]
c)	*Ø were happy that day	[null subject]

2) Spanish:

a)	*Estas manzanas verdes* son las mejores	[DP subject]
b)	*Ellos* tenían que cuidar al niño	[pronominal subject]
c)	*Ø* estábamos contentos aquel día	[null subject]

3) Bosnian:

a)	*Ove zelene jabuke* su najbolje	[DP subject]
b)	*Oni* su trebali čuvati dječaka	[pronominal subject]
c)	*Ø* bili smo sretni taj dan	[null subject]

4) Danish:

a)	*Disse grønne æbler* er de bedste	[DP subject]
b)	*De* skulle passe drengen	[pronominal subject]
c)	**Ø* var lykkelige den dag	[null subject]

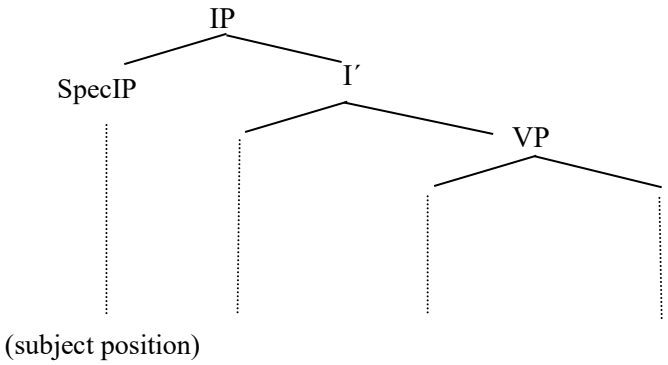
In spite of the *availability* of subjects across languages, as per the Extended Projection Principle, the *nature* of subjects is indeed subject to variation, as displayed in the examples above, and so languages are divided into two groups: [+null subject] and [-null subject] languages. Verbal agreement, as the functional projection of the verbal lexical head that involves a checking relationship between the subject and the verb, has also been argued to play a crucial role in this classification (Pollock 1989; Chomsky 1991, 1995, among others). This link between the nature of the subject and that of verbal agreement has been captured in the Agreement Parameter (Pollock 1989; Chomsky 1995; Alexiadou & Anagnostopoulou 1998; Kato 1999, among others) in that the presence of null subjects is tied to the [+pronominal agreement] nature of verbal inflection (Alexiadou & Anagnostopoulou 1998 and Kato 1999). As shown in the examples above, [+null subject] languages like Spanish, as in 1, and Bosnian, as in 2, are also [+pronominal agreement] languages in contrast to [-null subject] languages like Danish, as in 3, and English, as in 4, which are [-pronominal

agreement] languages[3]. These, as well as other grammatical properties of subjects, are discussed in more detail in the subsequent sections.

2.2 The Extended Projection Principle: from a principle to a feature-checking mechanism

It is a universal requirement that all sentences must have a subject, as initially captured under the Extended Projection Principle which, in its original formulation (see Chomsky 1981, 1982), as in 5, involved the projection of the specifier of the inflection phrase (i.e. SpecIP) as the canonical position of sentential subjects.

5) Canonical position of subjects



The Extended Projection Principle imposes the specifier position to be projected at all syntactic levels, but it does not impose this position to be filled. Further investigation on the Extended Projection Principle has led to the development of other possible positions, including the specifier of the verb phrase under the VP-internal Subject Hypothesis (Koopman & Sportiche 1985, 1991; Radford 1997; Lasnik 2001; Lasnik & Park 2003;

[3] This theory is challenged by Asian languages such as Chinese, Korean, Thai and Japanese, among others, because they are [-pronominal agreement] languages, but they license null subjects (Huang 1984 and Neeleman & Szendröi 2005, among others). These languages are classified as topic-drop, since they allow null pronominal arguments (i.e. both subjects and objects can be dropped). Hence, not all [+null subject] languages are also [+pronominal agreement] languages.

Radford 2004), as well as to a somewhat different formulation in terms of feature checking (Chomsky 1982, 1995; Uriagereka 1996), which will be discussed throughout this chapter.

In [-null subject] languages, if the Extended Projection Principle position is not filled with a thematic subject, then, an expletive pronoun has to fill this position, otherwise the Extended Projection Principle would be violated making the sentence ungrammatical. In [+null subject] languages, since null referential subjects are allowed, this position is said to be filled with an empty category (i.e. *pro*).

In the early minimalist interpretation of the Extended Projection Principle, Chomsky (1995), among others, considers that there is a feature in T(ense) that is part of subject licensing (i.e. the EPP feature). The EPP feature is a universal [–interpretable][4] nominal feature that merges in T and that, therefore, must be valued and deleted before reaching the interfaces. EPP checking is also related to verbal agreement morphology and the status of agreement (i.e. [+/-pronominal agreement]).

In [-pronominal agreement] languages, the EPP feature can be checked in two ways (Chomksy 1995): i) merge, as in 6, and ii) move, as in 7:

6) merge XP

there came a woman

[$_{IP}$ there $_{EPP}$ [$_{I}$ [$_{VP}$ came a woman]]]

7) move X

a woman came

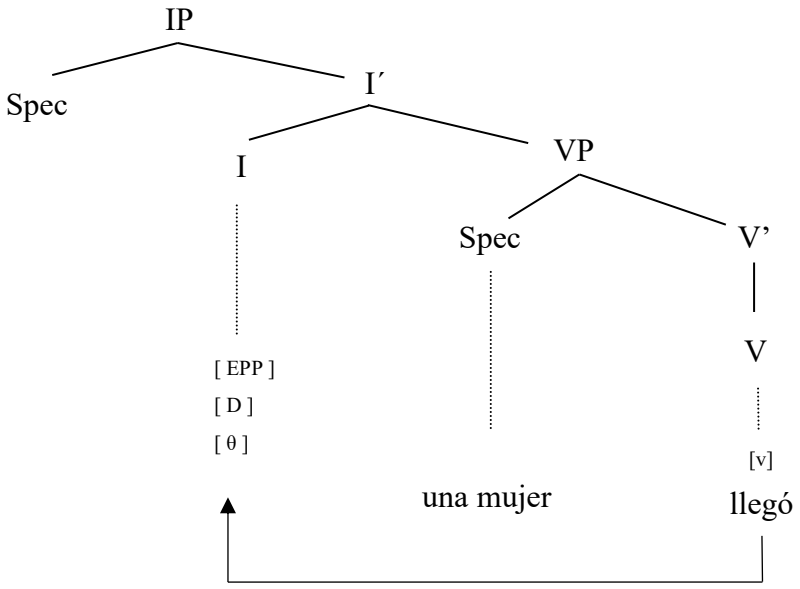
[$_{IP}$ a woman $_{EPP}$ [$_{I}$ [$_{VP}$ came]]]

[4] Following Chomsky (1995) and further taken up by Holmberg (2005:536), person, number and gender features marked on a DP are [+interpretable], restricting the denotation of the DP; whereas these same features marked on lexical verbs, auxiliary verbs and adjectives are [-interpretable], as they do not denotate these categories.

These examples are derived from a structure such as *came a woman*. In example 6, the EPP feature is checked via agreement by merging an expletive (i.e. *there*). In example 7, *a woman* moves to SpecIP to check the EPP feature. Merging operations are less costly than moving operations. As for Case features and phi-features, they are checked via agreement. In the merge operation, I carries strong specifier-features which are checked in SpecIP by the subject as a result of the merge operation. In the move operation, subjects carry the Case features which can only be checked if the subject is moved (or raised) to SpecIP (Radford 2004:166).

In [+pronominal] agreement languages, the EPP feature and the [D] feature are checked when the verb moves to I, as shown in 8:.

8) [+pronominal] agreement languages
llegó una mujer
came a woman
"a woman came"
[$_{IP}$ [$_{I'}$ llegó$_{i}$ $_{+D\ +\theta}$ [$_{VP}$ una mujer t_i]]]



In other words, initially, it was proposed that subjects are licensed via IP functional projections and the different features are checked through movement (i.e. A-movement). Subsequently under minimalist assumptions, the licensing of subjects is said to occur through EPP feature checking (Chomsky 1995, 1999, 2000 and Lasnik 2001, among others), even though the EPP checking is satisfied differently across languages (see section 2.3.2).

2.3 Overview of the Null Subject Parameter

Parameters involve clusters of properties and divide languages typologically, thus capturing cross-linguistic variation (Perlmutter 1971; Chomsky & Lasnik 1977; Taralsden 1978, 1980; Jaeggli 1981, 1982, 1984; Rizzi 1982, 1997, 2005; Chomsky 1981; Phinney 1987; Platzack 1987; Liceras 1988, 1989; Jaeggli & Safir 1989; Bel 2001; Belletti 2001, 2004; Holmberg 2005, 2010; Sheehan 2006; Frascarelli 2007; Camacho 2006, 2008, 2011, 2013, 2016; Holmberg & Roberts 2011; Cuza & Camacho 2017; Roberts 2018, among others). The Null Subject Parameter divides languages into [-null subject] languages, like English and Danish which do not allow their subjects to be null, in contrast to [+null subject] languages, like Spanish and Bosnian which allow their subjects to be both null and overt.

2.3.1 The Null Subject Parameter as a cluster of properties: the original formulation

The initial approach to the Null Subject Parameter formulated by Perlmutter (1971) was based on the idea that languages can be classified into [+/-null subject] on the basis of the Extended Projection Principle, which requires the projection of subjects, and the presence or absence of verbal agreement.

Chomsky (1981) and later Rizzi (1982) observed how null subject languages displayed similarities that have been classified into at least four different clusters of properties. In the examples bellow, Spanish and Bosnian are used to illustrate these clusters:

i) possibility of *pro* (i.e. referential subjects) in subject position of tensed clauses, as in examples 9 for Spanish and 10 for Bosnian presented above and repeated here:

9) Estábamos contentos aquel día
Be-PRS.1PL happy that day
"we were happy that day"

10) Bili smo sretni taj dan
Be-PRS.1PL happy that
"we were happy that day"

ii) possibility of subjects in post-verbal position, as in examples 11 and 12 for Spanish and 13 and 14 for Bosnian:

11) Juan ha venido
John has arrived
"John has arrived"

12) ha venido Juan
has arrived John
"John has arrived"

13) Marko je došao
Marko has arrived
"Marko has arrived"

14) došao je Marko
has arrived Marko
"Marko has arrived"

iii) possibility of an explicit complementizer when the subject of an embedded clause is moved, as in examples 15 for Spanish and 16 for Bosnian:

15) quién$_i$ *pro* crees que t_i se ha ido a casa
who do you think that went home
"who do you think *Ø* went home"

16) ko$_i$ *pro* mislite da t$_i$ je otišao kući?
who do you think that went home
"who do you think Ø went home"

iv) possibility of *pro* as a non-referential subject with weather-type verbs[5], as in examples 17 for Spanish and 18 for Bosnian, and in expletive constructions, as in examples 19 for Spanish and 20 for Bosnian:

17) *pro* llueve
Ø rains
"it rains"

18) *pro* grmi
Ø thundering
"it is thundering"

19) *pro* hay un congreso internacional en Valladolid
Ø is an international congress in Valladolid
"There is an international congress in Valladolid"

20) *pro* ima internacionalni kongres u Valladolidu
Ø is an international congress in Valladolid
"There is an international congress in Valladolid"

[5] In Bosnian, weather-type verbs bear subjects which are events and these are usually postponed, as shown in the example below:

(i) pada kiša
falls rain
"it rains"

In [-null subject] languages, overt expletives are obligatory, because subjects have to be overt, whereas in [+null subject] languages subjects need not be overt. Progovac (2005) states that [+null subject] languages such as Serbian (also Bosnian and Croatian) have no expletive subject pronouns, even though other Slavic languages allow expletive subjects. Franks (1995) argues that there are some marginal cases in which overt expletives appear, as in (ii):

(ii) to Novak pliva.
that Novak swims
"That is (the event of) Novak swimming./What you see/witness is (evidence) that Novak is swimming."

This same structure could be used for weather-type verbs:

(iii) to kiša pada
that rain falls
"That is (the event of) rain falling./What you see/witness is (evidence) that the rain is falling."

Other clusters that have also been included are the possibility of empty resumptive pronouns in embedded clauses and long wh-movement of subjects. If these clusters are checked positively, then a language is classified as a [+null subject] language.

Nevertheless, there are some cases where [-null subject] languages also allow their subjects to be null (Haegeman 2000; Haegeman & Ihsane 2001; Scott 2010, 2013; Camacho 2013). These cases include two major grammatical contexts: i) coordinated clauses (see example 21 for English and 22 for Danish); and ii) special registers such as diary style, as in 23, and fixed expressions, as in 24.

21) She read the book and *Ø* wrote a summary

22) Hun læste bogen og *Ø* skrev et resumé

23) *Ø* cried yesterday morning

24) *Ø* wish you were here

As captured in the Empty Category Principle (Rizzi 1986), empty subjects are grammatical and formally licensed if their content can be recovered. Null subjects in coordinated structures usually involve coordination at the VP level as long as they obey the Across-the-Board principle which states that predicates can be conjoined under I'-level or VP-level coordination (Burton & Grimshaw 1992).

In special register cases where null subjects are used, economy conditions override grammar (Haegeman 2010). In diary register, most null subjects are found in matrix clauses and they seem to be restricted to 1st and 3rd person singular referential subjects. The same persons seem to be omitted in informal spoken English as registered by Quirk et al. (1985:896-897).

Null non-referential subjects in English are also possible in informal register (Thrasher 1977). Nevertheless, even in these cases null subjects are not permitted in embedded clauses (Nuñez del Prado et al. 1994).

The null subjects referred to in the preceding paragraphs are not considered as part of a cluster of any parameter. First because their availability is due to the very high recoverability of the referent. And second because their appearance is highly restricted to specific grammatical and pragmatic conditions which are not the ones regulating the use of null subjects in [+null subject] languages.

2.3.2 On the Agreement Parameter: the initial formulation

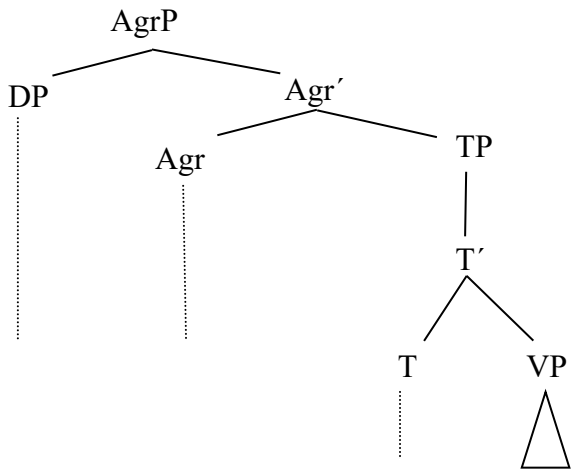
Already from the initial formulations of the Null Subject Parameter, the nature of verbal agreement has been said to play a role in the availability and licensing of null subjects (Perlmutter 1971; Chomsky 1981,1991; Rizzi 1986). Pollock (1989) placed the spotlight into agreement by proposing the Split Inflection Hypothesis and by referring to the opaqueness/transparency of Agreement Phrases, both issues leading the way in the formulation of the Agreement Parameter[6]. Agreement phrases function as barriers to certain movements and their acting as barriers is what differs across languages, thus, classifying languages typologically.

Under the initial Split Inflection Hypothesis, inflection is divided into two different strong features, [+tense] and [+agreement], each with their own syntactic head and maximal projection: Agreement Phrase (AgrP) and Tense Phrase (TP)[7], as shown in example 25

[6] Pollock (1989:365) refers to the “opacity” or "transparency" of agreement and what regards the Split Hypothesis Parameter. Even if no parameter as such is proposed, he provides arguments in favor of a Tense Phrase that contains two sets of features (i.e. tense and agreement).
[7] Pollock (1993) further adds Mood Phrase and Negation Phrase to the Split Inflection Hypothesis.

below, where Agreement is a head that is independent of tense and, therefore, a functional projection of its own.

25) Split Inflection: AgrP and TP (Pollock 1989)



The strength of features in AgrP is related both to the Null Subject Parameter and to the Verb Movement Parameter (Pollock 1989) in that whether the verb moves overtly or not is also determined by the strength of Agr features a particular language has. In English and Danish, Agr features are weak and, thus, verb movement is only available for auxiliary verbs. Lexical verbs remain in the VP, while verbal features have to rise to IP to be checked. Therefore, English is a [-verb movement] language as verb movement does not apply across the board. In languages such as Spanish or Bosnian ([+verb movement] languages), both lexical and auxiliary verbs undergo verb movement as Agr features are strong. This makes the nature of agreement responsible for the availability of both verb movement and null subjects. Spanish and Bosnian strong agreement features licence null subjects. In contrast, agreement in English is opaque to theta-role assignment, under Pollock's formulation, and so verbs must remain in the VP and null subjects are not licensed. In Danish and other

Mainland Scandinavian languages, the agreement system is bare (i.e. no person is marked on the verb) and referential subjects must be overt. The Agreement Phrase adjusts the relationship between the subject and the verb and bears an EPP feature which attracts a phonologically overt element (i.e. the subject). In other words, subjects must be phonologically realized in all finite clauses (Holmberg & Platzack 2005).

In [+null subject] languages the subject is null when its referent can be identified by verbal agreement, but if the referent cannot be identified ambiguity arises, and an overt pronominal subject is preferred (Chomsky 1981; Jaeggli 1981; Fernández Soriano 1989; Cardinaletti & Stark 1999). These overt pronouns are said to be constrained by pragmatic factors (see Fernández Soriano 1989; Ordóñez 1997; Alexiadou & Anagnostopoulou 1998; Kato 1999; Platzack 2004, among others).

In short, the relationship between the Agreement Parameter and the Null Subject Parameter establishes a link between subjects and verbs and, in particular, between rich verbal agreement inflection and the availability of null subjects (as exemplified by Spanish and Bosnian), on the one hand, and poor verbal agreement inflection and the lack of null subjects (as in English and Danish), on the other.

2.3.3 On Extended Projection Principle checking cross-linguistically & the Agreement Parameter

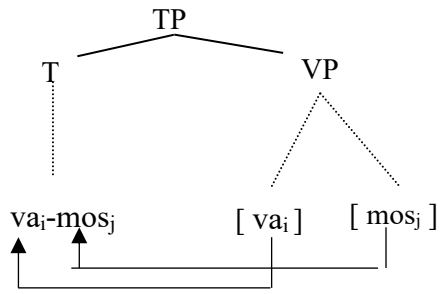
Alexiadou & Anagnostopoulou (1998) propose a reformulation of the Null Subject Parameter in terms of agreement and feature strength. They argue for the existence of two independent parameters: i) the Extended Projection Principle/Agreement Parameter, which is related to the [D] feature checking and the Extended Projection Principle itself; and ii) the SpecTP Parameter, which deals with the strength of the N-feature located in T and related to

Case. The evidence for the existence of these two parameters is also linked to the fact that there are languages that do not license referential null subjects, but allow for null expletives (i.e. Icelandic and Finish).

As they indicate, EPP features can be checked in two different ways: i) merge/move XP (as in Germanic languages), where the Extended Projection Principle checks the nominal feature in agreement (see example 26*b*); or ii) merge/move X' (as in Romance languages), where Extended Projection Principle checking takes place through V-raising and the nominal features are overtly realized on the verb (see example 26*a*). In other words, merge/move XP requires an overt subject to check the EPP features, whereas merge/move X' can exhibit a null subject, since the EPP features are checked through verbal agreement affixes. This formulation places verbal agreement affixes in [+null subject] languages at a somehow similar level as pronouns in [-null subject] languages. Alexiadou & Anagnostopoulou argue that in rich verbal agreement languages, each agreement affix has an individual listing in the lexicon and, therefore, verbal agreement has a [D] feature, as in 26*a* (-mos in Spanish) and in 26*b* (-mo in Bosnian). In poor verbal agreement languages, agreement affixes are not listed in the numeration as such and, therefore, an overt subject is required to comply with the Extended Projection Principle requirement, as in 27*a* in English and 27*b* in Danish. Only [+null subject] languages have the option of checking the EPP feature through verbal agreement affixes (as in 26*a*&*b*), because, in Alexiadou & Anagnostopoulou's view, verbal agreement in morphologically rich languages has the status of a pronoun.

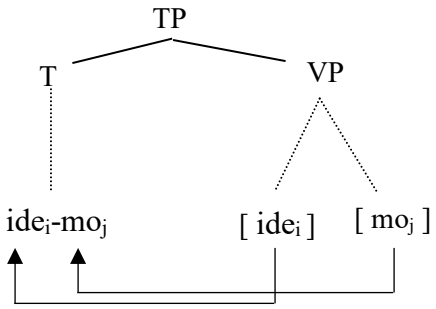
26) [+null subject] languages

a) Spanish (Romance)
Vamos.
go-PRS.1PL
"We go."



(adapted from Liceras & Fernández Fuertes 2019:5)

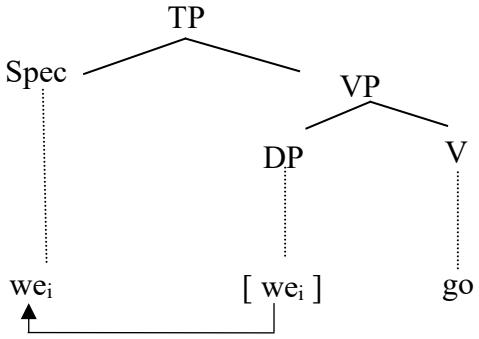
b) Bosnian (Slavic)
Idemo.
go-PRS.1PL
"We go."



(adapted from Liceras & Fernández Fuertes 2019:5)

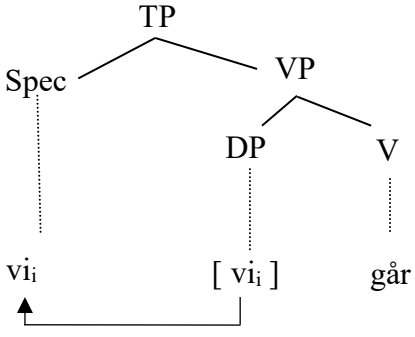
27) [-null subject] languages

a) English (Germanic)
"We go."



(adapted from Liceras & Fernández Fuertes 2019:5)

b) Danish (Germanic)
Vi går.
"We go."



(adapted from Liceras & Fernández Fuertes 2019:5)

In languages like English agreement does not bear pronominal affixes and, so, agreement does not have argumental features as Spanish has. Therefore, in [-null subject] languages, subjects must be represented either as free morphemes (such as pronouns) or as overt DPs. This same rationale applies to Danish as a [-null subject] language. In Spanish and Bosnian, [+null subject] languages, agreement does bear pronominal affixes and thus, null subjects are allowed.

In Spanish-like-languages, overt pronouns have received two analyses: i) overt pronouns and null pronouns co-occur with verbal agreement affixes; the difference between the two subject types is that overt pronouns have a phonological form whereas null pronouns do not (Holmberg 2005 and Sheehan 2006, among others); and ii) null pronouns and overt pronouns differ in that the later have a pragmatic value which null pronouns do not (Alexiadou & Anagnostopoulou 1998 and Kato 1999, among others). We agree with the first approach in that overt pronouns need not have a pragmatic value. Therefore, in Spanish or Bosnian ([+null subject] languages), when a null subject is produced, the subject is not phonologically articulated, although it is still specified. When an overt subject is produced, it is argued to be both phonologically articulated and specified. In either case, whether subjects are overt or null, they are specified as per EPP requirements. Thus, [+null subject] languages exhibit a double option, as subjects can be phonologically articulated or not, whereas [-null subject] languages, such as English or Danish, require their subjects to always be phonologically articulated.

2.3.4 On the Agreement Parameter & pronouns

Cardinaletti & Starke (1999) propose a classification of pronouns into strong and deficient forms, the latter being subdivided into weak pronouns and clitics. Deficient forms can be semantically empty, because they do not necessarily occupy a theta-position. Whereas, strong pronouns can be referential without being associated with an antecedent that is prominent in the discourse. Their function is both syntactic and emphatic and they can double both weak pronouns and clitics in a structure.

As of semantics, weak pronouns can be expletives, impersonal, non-referential datives, possibly non-human. That is, they can be semantically empty, but they must have a D-antecedent. Strong pronouns are, on the contrary, similar to morphemes and they occupy a theta-position, which means that they cannot be semantically empty. They can be referential without being associated with an antecedent in the discourse.

As of distribution, strong pronouns are full nominal projections, whereas weak pronouns lack the highest functional layer and clitics lack both highest functional layers. That is, the deficient forms lack C' and, therefore, they do not contain case features. Since verbal agreement is necessary for Case to be assigned, deficient forms must occur in local structural configuration with agreement.

Cardinaletti & Starke consider *pro* a deficient pronoun, a superset of weak pronouns (see also Holmberg 2005 and Saab 2009, 2010, 2014, 2016, among others). It is projected in the specifier of AgrP in the same line as weak elements (cf. Rizzi 1986 and Chomsky 1993). As of choice, weak forms are preferred over strong forms. This is captured in the Avoid Pronoun Principle (Chomsky 1981 and Fernández Soriano 1998). Nonetheless, as Camacho (2013) states, weak pronouns have fewer syntactic/functional projections, but this does not necessarily mean that they have less prosodic content or less semantic complexity. "A weak

pronoun can remain prosodically weak but show one of the properties of strong pronouns" (Camacho 2013:91).

To sum up, under Cardinaletti & Starke's (1999) proposal, clitics are distributionally, morphologically, semantically and emphatically deficient, if compared to weak pronouns, whereas weak pronouns such as *pro* are deficient, if compared to strong pronouns.

Kato (1999), following Cardinaletti & Starke (1999), classifies pronouns into strong, weak and clitics. Under this classification, Kato considers free pronouns, clitics and pronominal agreement affixes to be weak, supposing that all three bear the [D] feature and appear as independent items in the numeration. Agreement morphemes are independent [D] features that bear both case and theta-features which are merged with tense inflected verbs. In order for these features to be checked, Agreement has to raise to T, and so SpecTP is not projected. In the same line as Alexiadou & Anagnostopoulou (1998), Kato also states that these affixes are merged as VP arguments and have case. She argues that strong pronouns and lexical subjects are in a higher projection where they check nominative case. This idea has previously been taken up to discussion by Roberts (1991), who claims that the licensing of null subjects is governed by agreement in the sense that null subjects are licensed where nominative case can be assigned.

Kato (1999) argues that it is not the [+pronominal] inflection as such that licenses null subjects (i.e. *pro*) in [+null subject] languages. It is rather the agreement morphemes that contain Case and phi-features and are considered independent [D] items which merge with inflected verbs as external arguments. Pronominal agreement affixes are [+strong] or [+interpretable] and, in fact, replace overt subjects in its EPP licensing capacity and receive theta-role. If agreement is [+interpretable] in [+null subject] languages, then *pro* is redundant, because it is not even projected and, therefore, does not exist. Pronominal agreement is in the

numeration and it has the same status as a subject clitic or a weak pronoun, as mentioned above. In addition, more than one weak form can appear in complementary distribution which means that pronominal agreement can co-exist with, say, a weak pronoun.

As of strong pronouns, they are available in all languages and can double weak forms. For example, in [-null subject] languages this doubling occurs with the use of a strong and a weak pronoun, as illustrated in 28 below.

28) ME, I want bananas

29) YO quiero bananas

As of [+null subject] languages, the doubling of the subjects involves [+pronominal agreement] (i.e. the weak pronoun *-o* in *quier-**o***) and strong pronouns (i.e. the nominative subject pronoun *yo*), as in 29. According to Kato, doubling in [+null subject] languages does not involve *pro*; it involves the agreement affix and the (always strong) pronoun. Agreement affixes enter the numeration as independent items bearing case features, just like free weak pronouns in [-null subject] languages.

Strong and weak pronouns also differ in their respective domains; the domain for strong pronouns is C, while that for weak pronouns is XP. In both [+/-null subject] languages, DPs that function as subjects fill the SpecIP position, which is also argued to be the same position occupied by strong pronouns. Both [+/-null subject] languages have the option of strong and weak pronouns in subject position. Following Kato, the subject strong pronoun option seems to be related to pragmatic factors (i.e. contrast) rather than to syntactic factors. That is, strong pronouns are pragmatically marked.

To sum up and putting together EPP checking and the nature of pronouns, following Alexiadou & Anagnostopoulou's (1998) and Kato's (1999) approach, Spanish agreement markers and English pronouns differ in terms of EPP-feature checking. Spanish agreement

affixes are considered pronominal elements with a [+D] feature in the numeration and they are [+interpretable]. In English, overt pronominal elements merge in SpecTP. Thus, English overt pronouns and Spanish null pronouns occupy different positions, although they carry similar syntactic value, whereas Spanish overt pronouns bear both semantic and pragmatic value and occupy the focus position (i.e. Adjunct Phrase).

2.3.5 A reformulation of the Null Subject Parameter in terms of phonological overtness

In contrast to Alexiadou & Anagnostopoulou's (1998) and Kato's (1999) approach, Holmberg (2005, 2010), Sheehan (2006), Martínez-Sanz (2011) and Liceras & Fernández Fuertes (2019), among others, argue that overt pronouns in [+null subject] languages and overt pronouns in [-null subject] languages occupy the same position (e.g. SpecIP) and are equally interpreted, that is, have a similar value. The difference is that overt pronouns are spelled out, that is, they have a phonological form, whereas null pronouns are not spelled out, that is, they have a syntactic function but no phonological form.

Based on his analysis of Finnish, Holmberg (2005) argues that there are at least three types of null subject pronouns: i) null weak pronouns (as argued by Cardinaletti & Starke (1999)) that bear the phi-feature but lack the [D] feature; ii) a deleted DP under recovery conditions; and iii) *pro* (i.e. a bare noun with no phi-features that is only available in languages with no agreement).

To compare both approaches (i.e. Alexiadou & Anagnostopoulou's, on the one hand, and his own approach, on the other), Holmberg provides two hypotheses which are based on the interpretability of agreement. Hypothesis A (i.e. supported, among others, by Alexiadou & Anagnostopoulou (1998) and Kato (1999)) considers agreement as [+interpretable] in

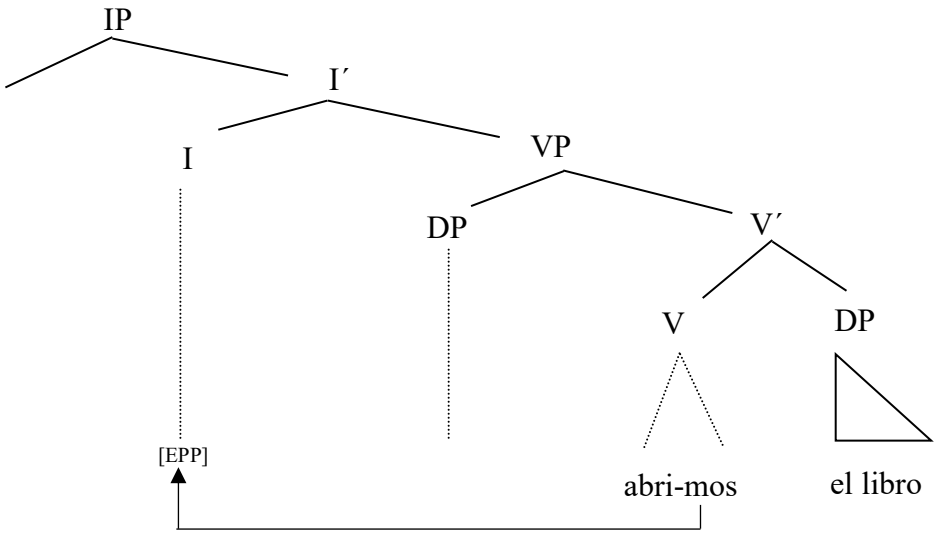
[+null subject] languages and hypothesis B (i.e. supported, among others, by Holmberg (2005) himself and Sheehan (2006)) assumes that null subjects in [+null subject] languages have no phonological form, but they value the [-interpretable] features of agreement. More specifically, these two hypotheses are defined as follows:

> *Hypothesis A: There is no pro at all in null subject constructions. Instead, Agr (the set of phi-features of I) is itself interpretable; Agr is a referential, definite pronoun, albeit a pronoun phonologically expressed as an affix. As such, Agr is also assigned a subject theta-role, possibly by virtue of heading a chain whose foot is in vP, receiving the relevant theta-role* (Holmberg 2005:537).

Thus, hypothesis A indicates that, if agreement is [+interpretable] then it has to be referential. If it is referential, then it fulfills the Extended Projection Principle; that is, it has to check nominative Case and a subject theta-role. If this is so, then there is no need for *pro* (see examples 30 and 31 below).

Under hypothesis A, if agreement is [+interpretable] and can check the EPP features, then SpecIP is not projected (see example 30).

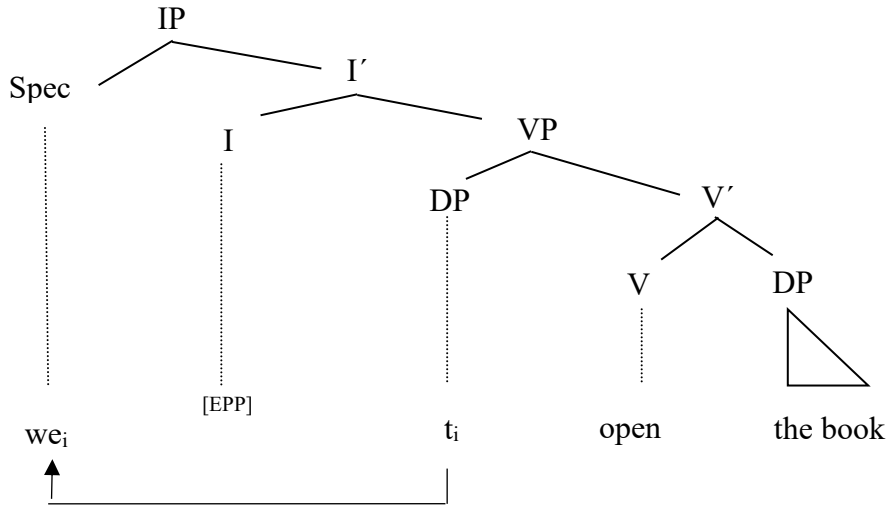
30) representation of hypothesis A with [+interpretable] agreement features
Spanish: abrimos el libro
open-PRS.1PL the book
"We open the book."



Nevertheless, if agreement is [-interpretable] and cannot check the EPP features, SpecIP is projected and occupied by a pronoun, as in 31.

31) representation of hypothesis A with [-interpretable] agreement features

English: we open the book



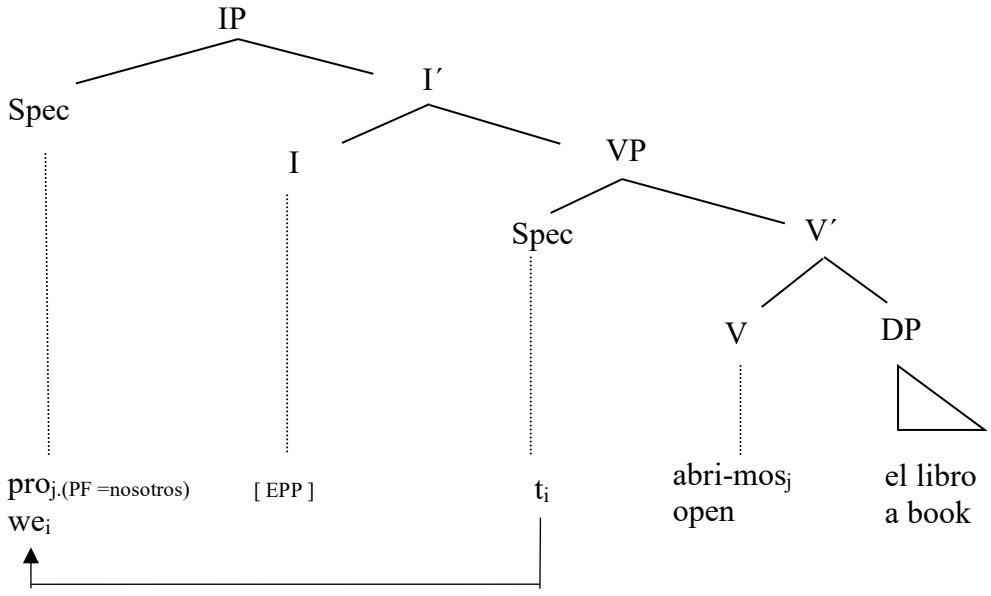
Hypothesis B shows an alternative view.

> *Hypothesis B: The null subject is specified for interpretable phi-features, values the uninterpretable features of AGR, and moves to Spec,IP, just like any other subject. This implies that the nullness is a phonological matter: the null subject is a pronoun that is not pronounced* (Holmberg 2005:538).

Thus, hypothesis B indicates, contrary to hypothesis A, that agreement morphology is [-interpretable]. The SpecIP position is always occupied by a pronoun checking the EPP features, and, therefore, this position cannot be occupied by another category. This makes the null subject a pronoun that has no phonological form.

Under hypothesis B, SpecIP is only available for a pronoun that can check the EPP features (example 32).

32) tree diagram representation of hypothesis B



In the case of English, *we* moves to the SpecIP position to check its features leaving a trace in Spec VP. In Spanish, *nosotros "we"* (overt subject) is considered a weak pronoun, whereas

pro is an even weaker pronoun, both being coreferential with verbal inflection (-mos). Therefore, in Spanish subjects may have two realizations: the overt subject (i.e. PF realization) and the null subject (i.e. no PF realization).

2.4 Summary

To sum up, under Alexiadou's & Anagnostopoulou's (1998) and Kato's (1999) account of the Null Subject Parameter, verbal agreement markers in a [+null subject] language are equivalent to weak pronouns in a [-null subject] language. While, under Holmberg's (2005, 2009 and 2010) account *pro* is considered to be phonologically silent, but a syntactically realized head. Following this idea, preverbal null subjects of a finite clause occupy SpecIP and can have two different forms; i) a null pronoun that is specified for phi-features but lacks the [+D] feature or ii) a fully specified pronoun with a [+D] feature, which has been deleted in the phonology (Holmberg 2005: 559).

In this dissertation, Holmberg's (2005) and Sheehan's (2006) account of the Null Subject Parameter is adapted, because, as argued by Liceras & Fernández Fuertes (2019), it has the following advantages over Alexiadou's & Anagnostopoulou's (1998) and Kato's (1999) proposal: i) in both [+/-null subject] languages, preverbal subjects occupy the SpecIP position (in contrast to previous accounts where verbal agreement affixes (i.e. -mos) occupy one position and overt pronouns (i.e. we) a different one); ii) it takes into an account the nature of Spanish nominative pronouns as weak pronouns, so that they do not necessary have to have a pragmatic value; and iii) following the Superset/Subset Parameter, English and Danish represent the subset option, since they allow one option (i.e. subjects must be phonologically realized), compared to languages such as Spanish and Bosnian that allow two

options (i.e. phonologically realized and non-phonologically realized subjects) and are, therefore, superset languages. This last outcome of Holmberg's (2005) proposal has interesting implications for acquisition which will be explored in chapter 3.

CHAPTER 3: SECOND LANGUAGE ACQUISITION

This chapter presents the different studies that have been conducted on L2 acquisition and that set a base for the present investigation on how sentential subjects can be accounted for bearing in mind typological similarity, time of instruction and type of input.

In section 3.1 an overview on the acquisition of more than one language is provided. In section 3.2 the relationship between L1 transfer and typological similarity is discussed. In sections 3.3 and 3.4 the focus is set, on the one hand, on the effect of time of instruction and, on the other, on the role input has in L2 attainment in the case of learning in institutional settings. Section 3.5 provides a review of studies that have dealt both with child and adult L2 acquisition. In section 3.5.1, an overview of studies on the contact between typologically different languages (i.e. [+null subject] and [-null subject]) is provided, whereas sections 3.5.2 and 3.5.3 deal with typologically similar languages (i.e. when two [+null subject] languages are in contact, on the one hand, and when two [-null subject] languages are in contact, on the other). The phenomena that occur in these language-contact situations are targeted in the three L2 acquisition settings. In section 3.6 a summary wraps up the most important issues treated in this chapter which are the ones that have guided the empirical investigation offered in chapter 6.

3.1 The acquisition of more than one language

The acquisition of two languages can proceed in fundamentally two different ways: simultaneously or sequentially. Simultaneous bilinguals acquire both languages as first languages (2L1), that is, from birth or in early infancy in a naturalistic setting; whereas sequential bilinguals acquire an L1 from birth and later on an L2, in many cases, in an institutional setting. In other words, in the case of the L2, learning is typically instructed and

conscious. While both bilinguals differ from monolinguals in their ability and capacity to deal with two languages, differences and similarities between these two broad types of bilinguals can be pointed out.

Both types of bilingualism involve situations of languages in contact and, as a result, and in contrast to their monolingual peers, bilinguals' two languages interact. This interaction could lead to different types of cross-linguistic influence or transfer. The two languages can influence each other in a variety of ways and, depending on a variety of factors, some of which will be discussed throughout this chapter.

However, while 2L1 bilinguals acquire their two languages from birth, L2 bilinguals may acquire their L2 as children or as adults. That is, what makes 2L1 bilinguals differ from L2 bilinguals is age of exposure to one of the languages and, linked to this, the notion of the critical period appears (Lenneberg 1967; Schwartz 1992, 2003, 2004; Long 1995, 2005; Lakshmanan 1995, 2009; Hyltenstam & Abrahamsson 2003; Meisel 2004, 2008, 2009, 2013; Herschensohn 2007, Haznedar & Gavruseva 2008; Muñoz & Singleton 2011; DeKeyser 2000, 2012; Monner et al. 2012; Unsworth 2014, among many others). The critical period refers to the period beyond which language acquisition happens no more and rather language learning appears instead. The distinction between acquisition and learning is an attempt to capture the different ways language properties are perceived by L1 speakers as opposed to L2 speakers. In fact, the Critical Period Hypothesis, initially proposed by Penfield & Roberts (1959) and later by Lenneberg (1967), captures the idea of developmental changes in the human brain that can affect the nature of language acquisition. In an attempt to apply this theory to language acquisition, different researchers have provided tentative age ranges, where this fundamental change in the perception of language takes place (Guasti 2002; Schwartz 2004; Meisel 2004, 2008; DeKeyser et al. 2010, among others). However, no

agreement as to where the exact line should be drawn seems to have been reached. Furthermore, some researchers have argued in favor of different sensitive periods depending on the linguistic domain (i.e. phonology, morphology, syntax, etc.), since each domain develops differently; and so instead of dealing with a single critical period, they propose to deal with several critical or sensitive periods, one per linguistic domain (White & Genesee 1996; Montrul 2008; Meisel 2008, 2013, among others). Even more, others argue against the existence of the critical period altogether (Bialystok 1997; Abrahamsson & Hyltenstam 2009; Ortega 2009; Yusa et al. 2011, among others). They do not argue against a connection between age and acquisition as such, but against the nature of this connection as captured in the Critical Period Hypothesis.

The setting of the critical period correlates with the distinction between simultaneous bilinguals, on the one hand, and sequential or L2 bilinguals, on the other. This way, if one of the languages starts being acquired after the critical period, then L2 bilingualism appears.

Furthermore, in the case of the L2, a division between early and late L2 bilinguals, or child and adult L2 bilinguals, could be established, since children do not perceive linguistic properties in the same way adults do. Unsworth (2016:103), for instance, argues that child L2 acquisition research mainly concerns children between the ages of 2 years and 10 years. In the case of an L2, age is relevant in that the level of competence that can be reached in the L2 changes, if the acquisition process is delayed. In fact, when it comes to L2 attainment, a delay in the age of onset of acquisition is negatively associated with reaching a native-like performance. This has been said to be so in different linguistic domains such as phonology, morphosyntax and lexicon (DeKeyser 2000; Pfenninger 2011, 2012; Lambelet & Berthele 2015). Hoff (2017) argues that, if there is a relationship between language exposure and language growth in the case of L1 acquisition, this relation should also be reflected in the

case of bilingual acquisition. However, this association between age of exposure and L2 attainment needs to be taken with care. DeKeyser (2000) and Pfenninger (2011), for instance, show that there is no clear relationship between age of exposure and L2 attainment. That is, an early acquisition of the L2 does not necessarily guarantee a high level of proficiency.

In this dissertation the focus is placed on one domain, syntax, and on a specific type of bilingualism, early L2 bilingualism. In particular, L2 English child data are gathered and analyzed in terms of sentential subjects.

Research on early L2 bilingualism by children or child L2 acquisition has been concerned with issues such as transfer, time of exposure and type of input as relevant in the characterization of the language of these bilinguals. We will deal with them in more detail in the following sections.

A terminological note is due at this point. The tag *bilinguals* is far from being used in the same way across scholars in the field. In fact, Wei (2000) and Filipović (2019), for instance, offer a whole typology of bilinguals in the sense that, if a bilingual is the one that can communicate in two languages, then different types of bilinguals emerge depending on issues such as age of acquisition, context of acquisition, degree of acquisition, time of exposure, etc. The focus of the present dissertation is on sequential bilinguals (i.e. L2 speakers) as defined above. Since the term *L2 speaker* seems to be the most spread tag for this particular kind of bilinguals (Genesee et al. 1978; Paradis 1994; Gass & Selinker 2008; Rothman 2009; Cuza et al. 2013; Montrul 2013a; Filipović 2019, among many others), this is the one that will be used throughout this dissertation. In a similar vein, acquisition is used as an umbrella term both for acquisition and learning (e.g. Edwards 2006; VanPatten & Benati 2015; Filipović 2019).

3.2 L1 transfer in L2 acquisition

Transfer is a language internal phenomenon that appears when at least two languages are stored and processed in the mind of the speaker. When languages are in contact, they interact and, as a result, transfer effects may appear in the different linguistic domains (i.e. phonology, morphology, syntax, etc.). Jarvis & Pavlenko (2007:13) define transfer as "a highly complex phenomenon that is often affected by language users' perceptions, conceptualizations, mental associations and individual choices."

Transfer is seen as one of the central relationships created in the mind of an L2 learner (Cook 2016), as an interplay between both earlier and later acquired languages, because it occurs not only as a learning strategy but also as a communicative one. From the point of view of L2 bilingualism, Flynn & O'Niel (1988:5) claim that:

> "[i]n L2 acquisition, the learner, it is argued, attempts to transfer the linguistic habits from the L1 to the L2. Where the L1 and the L2 match, positive transfer takes place; where they do not match, there is a negative transfer of habits. At points of interference, the learner must acquire the new habits for the L2 […]."

Thus, two types of transfer can be identified, based on the effect of the L1 on the L2: positive (or facilitative) transfer and negative (or non-facilitative, interfering) transfer. In search for a definition of transfer, Ringbom & Jarvis (2009:112) point towards the idea that negative transfer might be the absence of "relevant concrete" transfer (i.e. wrong assumption of equivalent L1/L2 patterns). They argue that L2 learners seek to find an equivalence between the patterns in their L1 and those in their L2, which they can erroneously perceive as formally and functionally similar. Because of these wrong assumptions that learners may create, their production results in ungrammatical or inadequate structures (i.e. negative transfer). Broadly, positive transfer, contrariwise, occurs when equivalent structures are

available and have the same distribution in both languages. Thus, it results in successful acquisition of the L2 properties (i.e. positive transfer). In other words, positive transfer is said to be limited to instances where identical or equivalent language properties are to be processed, whereas negative transfer emerges when differences or conflicting properties are to be processed, which typically result in ungrammatical/non-adequate production. The amount of transfer, both positive and negative, is related to at least two issues: the degree of proficiency the L2 learner has in the L2 and the amount of similarity that the learner is able to identify between the two languages in contact and at the different linguistic domains (Cenoz 2001; Gass & Salliner 2008).

It is assumed that, in language contact situations, L2 learners rely heavily on their L1, at least in the initial stages. Ideally, the more these participants are exposed to a language, the more proficient they become, the more native-like their production gets and, consequently, the less L1 transfer occurs (e.g. Ringbom 2007, 2016; Blom & Baayan 2012; Montrul & Ionin 2012; Gathercole 2002, 2016; Unsworth 2016a; Llinàs-Grau & Bel 2019, among others). Since proficiency is also related to exposure and to the use of the language, it seems reasonable to argue that the better knowledge speakers have of a language (i.e. the more proficient they are), the less negative transfer (i.e. errors) there will be in their L2 production (Gathercole 2016:123). In fact, Blom & Baayan (2012) argue that effects of transfer are the highest at an intermediate stage of proficiency, because developmentally L2 speakers are both ready and proficient enough to produce structures influenced by their L1. In other words, as argued by Montrul & Ionin (2012), errors (i.e. negative transfer) are more likely to occur in the beginning and in the intermediate stages and are expected to diminish in the advanced stages. Transfer is, therefore, nuanced in subsequent stages of language learning, but it does not necessarily disappear. This is evident for transfer in the syntactic or

morphological domain, but different issues related to the syntax-pragmatics interface continue to be vulnerable in very proficient stages, even if the languages are typologically similar (Park 2004; Tsimpli & Sorace 2006; Rothman 2009; Slabakova & Ivanov 2011; Pladevall Ballester 2012, 2016; Lozano 2018; Mitkovska & Bužarovska 2018, among others).

In order to explain and account for non-native-like production at very advanced stages of acquisition, the Interface Hypothesis is put forward (Sorace & Filiaci 2006). It states that "narrow syntactic properties are completely acquirable in a second language, even though they may exhibit significant developmental delays, whereas interface properties involving syntax and another cognitive domain may not be fully acquirable" (Sorace & Filiaci 2006:340). Interface properties are more complex and, therefore, acquired later (if at all), as interfaces integrate syntactic knowledge and other cognitive systems and so require more effort. However, not all interfaces demand the same effort and are equally complex. In fact, studies on the Interface Hypothesis have focused on the connection between the internal interfaces (i.e. between syntax and other linguistic domains such as semantics and morphology), on the one hand, and between syntax and other cognitive modules such as discourse and pragmatics (i.e. the so-called external interfaces), on the other (Tsimpli & Sorace 2006; Sorace & Filiaci 2006; Domínguez 2009; Sorace & Serratrice 2009; Sánchez et al. 2010). The syntax-pragmatics interface seems to be especially problematic both in L1 acquisition and in L2 acquisition until very advanced stages of proficiency (even at near-native levels). Furthermore, Sorace (2005) has found that interfaces are problematic for learners regardless of the languages in contact. In fact, she has found traces of non-native-like production (i.e. residual L1 effects) in L1 Italian L2 Spanish speakers' production, even

though the same pragmatic conditions regulate the distribution of overt and null subjects in both languages.

Interfaces in child L2 acquisition have also been explored. In this case, the problematic nature of the syntax-pragmatics interface preventing even very proficient L2 speakers to acquire native-like performance is found to be additionally problematic due to cognitive maturity, an effect that is also found in child L1 speakers (Tsimpli & Roussou 1991; Müller & Hulk 2000; Paradis & Navarro 2003; Sorace 2005; Haznedar 2007; Rothman 2009; White 2009, 2011; Cuza & Frank 2011; Zdorenko & Paradis 2011; Müller 2017 among others).

Given that L1 transfer characterizes and shapes (at least) the initial stages of L2 acquisition, attention has been placed on comparing across the L1 and the L2. Being transfer an overt manifestation of the L1 (Gass 1996:385), the similarities between the languages in contact have some bearing on the type of transfer that might appear. In the case of typological proximity and typological similarity, while the first one has centered the attention of L2 acquisition research the latter has received much less attention (Rothman 2010, 2011; Rothman & Cabrelli Amaro 2010; Montrul et al. 2011; Liceras & Alba de la Fuente 2015; Westergaard et al. 2017; Cuza et al. 2018, among others). Typological proximity groups languages that belong to the same family and share the same origin; an example is Spanish and French, both derived from Latin and considered Romance languages. However, typological similarity refers to languages that share the same option at a micro-parametric level so that "a typological or formal universal is equally realized in these two typologically-close languages" (Liceras & Alba de la Fuente 2015:333). In other words, Spanish and French are typologically proximate languages, because they are both Romance languages, but they are not typologically similar when dealing with subject realization, because Spanish

is a [+null subject] language and French is a [-null subject] language. While Spanish and Bosnian are not typologically proximate (i.e. they do not belong to the same family since Spanish is a Romance language while Bosnian is a Slavic language), they are indeed typologically similar languages, since they both share similar features within the realization of subjects (i.e. both are [+null subject] languages). Danish and English are both typologically proximate (i.e. Germanic languages) and typologically similar (i.e. [-null subject] languages).

In languages that are typologically similar, the L1 can facilitate the acquisition of the L2, following the Facilitation Hypothesis (Gundel & Tarone 1992). In the same line, if linguistic differences are found between the L1 and the L2, lower L2 learnability can arise (i.e. more transfer which can impede the learning of the L2) (Schepens et al. 2016). What is evident so far is that relatedness of the languages plays a crucial role. In the case of linguistic distance between the learners' L1 and their L2, the less typologically similar the languages are, the more negative transfer is expected. For instance, Ringbom's (2007, 2016) study on L1 Swedish L2 English and L1 Finish L2 English proves that, since Swedish is typologically similar to English, while Finish is typologically different, this difference facilitates L2 acquisition in the case of the L1 Swedish group. In particular, as sentential subjects are equally projected and have the same distribution in English and in Swedish, an acceleration in the acquisition of this grammatical property on the part of the L1 Swedish participants is seen, when compared to the L1 Finish participants.

Confirmation of the role of typological similarity is seen also in Muñoz et al.'s (2018) analysis of L1 Danish and L1 Spanish primary school learners of L2 English. Albeit the considerable difference in hours of instruction in English (10 and 12 hours for the Danish groups, and 287 and 520 hours for the Spanish groups), the scores obtained by the L1 Danish

participants matched the ones obtained by the L1 Spanish learners. This result is interpreted by the authors as an indication that typological similarity between Danish and English (both being [-null subject] languages) is crucial because it is making these L1 Danish speakers behave like the L1 Spanish speakers in spite of their very reduced exposure to English.

Westergaard et al. (2017) analyze 2L1 Norwegian-Russian L3 English speakers. Norwegian and English are both typologically proximate (i.e. both are Germanic languages) and typologically similar in what regards many of their morphosyntactic structures. Russian, on the other hand, is typologically distant (i.e. as it is a Slavic language) and typologically different with respect to the morphosyntax in general terms. Analyzing two different aspects, i) adverb-verb word order (no V2), where English patterns with Russian and not with Norwegian and ii) subject-auxiliary inversion (residual V2), where English patterns with Norwegian and not with Russian, it was possible to determine whether Norwegian or Russian cause cross-linguistic influence in L3 English. The results from the adverb-verb word order task showed positive transfer from Russian into English. In the subject-auxiliary inversion task, both the L1 Norwegian and the bilinguals obtained very similar results. The reason for this similarity, they argue, is that this property has already been acquired, and so no effect is shown (neither facilitative from Norwegian, nor non-facilitative from Russian). Finally, Westergaard et al. (2017:33) conclude that "the typological proximity between Norwegian and English was overridden by facilitative CLI [cross-linguistic influence] from Russian, which exhibits structural similarity with English in this condition." That is, contrary to what was expected, Norwegian does not function as a facilitator in the acquisition of English and, in this way, typological difference between English and Russian supersedes typological similarity between English and Norwegian.

These studies evidence that the degree of typological similarity and typological difference clearly plays a prominent role in how speakers manage their two languages and how performance in the L2 is shaped.

In an attempt to shed further light on how the grammatical properties of the L1 affect the acquisition of those of the L2, Liceras & Alba de la Fuente (2015) claim that the acquisition of the L2 grammar and, consequently, the type of transfer expected are not affected by the typological proximity between the L1 and the L2 as such but rather by the typological similarity between the two languages where the focus is placed on the micro-parametric syntactic level. Evidence for their proposal is found in the case of Spanish and French, when it comes to the analysis of sentential subjects. As already mentioned, both are Romance languages and, therefore, typologically proximate, but, at the micro-parametric level, they are different: Spanish is a [+null subject] language while French is a [-null subject] language. Liceras & Alba de la Fuente show that L1 French speakers have an advantage over L1 English speakers of L2 Spanish, because French and Spanish verbal morphology are typologically proximate but not typologically similar. Then, either positive or negative transfer can occur, even if languages are typologically similar/different, because it is these languages' internal similarities or differences the ones that lead to transfer, when languages are in contact.

Cuza et al. (2018), in their study on the acquisition of Differential Object Marking in Spanish, analyze whether typological proximity and typological similarity are a determining factor, when languages such as L1 Mandarin L2 Spanish and 2L1 Spanish/Brazilian Portuguese (where Spanish is the heritage language and Brazilian Portuguese the dominant language) are in contact. Thus, they analyze language development both in the case of L2 speakers and heritage speakers. Their results show that typological proximity is not a

conditioning factor neither for the heritage nor for the L2 speakers, whereas typological similarity plays an essential role. Their results go in line with what Liceras & Alba de la Fuente (2015) also conclude: the crucial factor is not typological proximity but rather typological similarity.

As presented above, issues such as L2 proficiency and L1/L2 typological similarity have been proven to influence or activate transfer in some cases. Other studies, however, find no evidence of L1 transfer in child L2 acquisition (e.g. Blom et al. 2007; Meisel 2008; Paradis 2005; Paradis et al. 2008; cf. Blom & Unsworth 2010:206-207). They argue that the reason for the absence of L1 transfer is threefold: i) the properties from a specific developmental stage might coincide with the properties attributed to L1 transfer (i.e. the production of null subjects is evident in both [+null subject] and [-null subject] languages at the very initial stages of acquisition in the so-called omission stage where, in the case of [-null subject] languages, child output does not coincide with the adult requirement); ii) L1 transfer is mainly evident in the initial stages of acquisition; and iii) not all properties are equally sensitive to L1 transfer.

Issues other than typology can, of course, play a role in how speakers process and acquire the L2 and, in turn, in how transfer is shaped. Some are discussed in the subsequent sections.

3.3 Age of exposure

Within language acquisition research, age in general and age of exposure (or age of onset) in particular play a crucial role. In fact, age (including critical period effects) has been the focus of attention in previous studies and has been used to classify bilingual speakers into

different groups, as well as to capture differences in cognitive maturity and language development. For instance, as discussed in section 3.1 above, age differences are behind the distinction between simultaneous and sequential bilinguals as captured under the critical period analyses; and, in the case of the latter, between early/child and late/adult L2 bilinguals. Cognitive maturity and language development make child L2 bilinguals pattern with L1 bilinguals in some respects and with adult L2 bilinguals in some others. Child L2 acquisition resembles adult L2 acquisition as both are L2 acquisition processes, even if adult L2 speakers have completely developed their L1 system, while child L2 speakers have not done so yet. What is more, stronger L1 transfer effects are found within child L2 than in the case of simultaneous L1 bilinguals (Unsworth 2013 and Unsworth et al. 2014). Therefore, it seems that child L2 acquisition shares transfer effects with adult L2 acquisition; while it shows a developing grammar as in the case of simultaneous L1 bilingual child acquisition.

The difference between early and late L2 acquisition is established according to the specific timing when the first exposure to the L2 takes place. As early as 1979, Krashen highlighted the importance between ultimate attainment and rate (i.e. time) of acquisition. He argued that, even if older L2 learners perform at a higher rate during the first stage when it comes to issues related to morphology and syntax, while younger L2 learners' initial performance is poorer, it is in fact younger L2 learners who reach a higher level of ultimate attainment. Older learners (i.e. late bilinguals) typically refer to speakers who have started learning the L2 around puberty. They are considered faster, because they use explicit learning mechanisms, which the younger learners have not mastered yet. In fact, previous studies have shown that older L2 children perform better, because they are more experienced and have greater cognitive maturity (Gathercole 2002a, 2002b, 2002c, 2007; Golberg et al. 2008, among others). Early learners have been found to have certain advantages over late learners

in natural but not necessarily in institutional contexts. These advantages are not evident in the initial stages but rather in the long term (Singleton & Ryan 2004:223). In the short term, and especially in institutional settings, this advantage has in fact not been corroborated. As Lambelete & Berthele (2015) argue, there are many limitations in L2 acquisition in an institutional setting, such as limited exposure both in terms of time of exposure and type of input. In fact, usually, learners only receive input from the teacher and varied proficiency exposure in their interaction with other learners.

Taken Krashen's (1979) initial ideas as a point of departure, different studies have attempted to capture the distinction between younger and older L2 learners in terms of their (different) linguistic abilities.

Based on neurolinguistic evidence, Meisel (2008:59) establishes a tentative age range for optimal acquisition based on previous research related to the age of onset. If the onset of acquisition is before the age of 3, then simultaneous bilingual acquisition takes place. If the onset of acquisition is between the ages of 4 and 8, then it should be considered as child L2 acquisition. And finally, if the onset of acquisition occurs after the age of 10, then it should be considered as being more similar to adult L2 acquisition.

Other studies, however, suggest a different time line. Guasti (2002) proposes that the critical period starts at the age of 4. For Schwartz (2004), the age of 7 is claimed to be the limit beyond which native-like attainment is no longer possible. Unsworth (2013) and Unsworth et al. (2014) also analyze age effects in early child acquisition, as proposed by Meisel (2008). In the first study on gender marking, she focuses on the comparison between bilingual children with different linguistic profiles: i) 2L1 English-Dutch children; ii) sequential bilingual children, who were exposed to Dutch between the ages of 1 and 3; and iii) L2 children who were exposed to Dutch between the ages of 4 and 10. She concludes

that, when it comes to gender marking, there is no evidence that the critical period ends at the age of 4, contrary to what is stated by Meisel. In the second study, they found errors in the production of the early sequential bilinguals and the L2 children that they attribute to L1 transfer, something that is not reported in the case of the 2L1 English- Dutch children.

In a more recent study conducted by Hartshorne et al. (2018), L2 English speakers are analyzed to determine whether there is a critical period, and, if so, how long it lasts and how it actually might affect the L2 acquisition process and how it is modulated (if at all) by the degree of proficiency. The participants were demographically diverse (i.e. 38 different L1s are analyzed). Their data show that the learners who are exposed to the L2 at the ages of 10 to 12 are able to reach the same level as the 2L1 bilinguals. After that age, there seems to be a decline, but they do not find that final attainment ceases after puberty, as some studies have suggested.

Child learners have received quite a lot of attention as to how their acquisition process is to be analyzed and, in particular, whether their production should be compared to that of native speakers, as a baseline. Singleton & Ryan (2004) highlight the importance of comparing between L2 bilinguals themselves as well. They claim that a comparison should be made between early bilinguals and late bilinguals and taking into consideration the specific conditions under which the L2 is acquired.

The studies referred to in the preceding paragraphs point to different conceptualizations of the critical period and to how age of onset may constrain L2 attainment. From the above, it can be concluded that there is no agreement where the line between early L2 and late L2 acquisition should exactly be drawn. Perhaps the key in this debate, as in Meisel (2008, 2013), is the conceptualization of the critical period as such. The critical period does not refer to a single age period but rather to sensitive phases in developing grammars.

Sensitive phases cluster at different points of acquisition in relation to different domains. These clusters can then constitute what is known as the critical period but in very broad terms, without identifying a precise age. Age effects should be detectable at different points of development between the ages of approximately 4 and 16 and for the different linguistic domains.

Of course, age of exposure might not be the only explanation for L2 speaker's (non-)native-like production. In a study conducted by Blom & Baayan (2012), they prove that L2 proficiency is a more explanatory factor than age, because some variations that could not be attributed to proficiency could not be explained by age either. In other words, L2 proficiency is highly correlated with age, but age did not predict variation that was unexplained by L2 proficiency (Blom & Baayan 2012:805). In a study on adults whose age of exposure to the L2 varied, Muñoz (2011) argues that, in long terms, age does not seem to be an indicative variable. In fact, she does not find any advantages of early over later learners.

3.4 Input: quantity & quality

Input (comprehensible and non-comprehensible) is the particular language that learners are exposed to and which they use to further mature their development in this specific language (Krashen 1982, 1985, 2004, 2009). In the context of L2 acquisition, input deals both with learners' understanding of grammatical forms as well as with input itself. As formulated in the Input Hypothesis, comprehensible input is input that is slightly beyond the level of competence of L2 speakers, but which can be comprehended by means of context and extralinguistic cues. The idea is that L2 learners need to be provided with comprehensible input to stimulate language acquisition, which is developed through the learners'

understanding of the input. Optimal L2 acquisition is constrained by input, which must be comprehensible to trigger or (re)construct grammar, because it provides positive evidence from which learners form their L2 grammar. Non-comprehensible input, on the other hand, is the one that cannot be deciphered by learners. As it is not comprehended by L2 speakers, the L2 acquisition process is not stimulated and, as a consequence, learners cannot form their L2 grammar. That is, non-comprehensible input is negative, because it hinders the L2 acquisition process.

When the focus is placed on the context in which input is provided, input has been classified into institutional (formal) or natural (informal). Institutional input is limited to the context where the target language is taught as an L2. It is classroom-based, highly structured, and teacher-directed in terms of the content to be learnt (Lightbown & Spada 2001; Mitchell & Myles 2001). Natural input, on the contrary, is not necessarily structured nor controlled and it is usually related to unconscious learning. In this case, learners are exposed to the language in diverse contexts (i.e. at home, in the playground, etc.). Of interest for the present study is the institutional (or instructional) input provided in the foreign language learning context, because in these cases exposure is limited to the classroom context and for a specific amount of time (Ellis & Collins 2009).

The quality and quantity of input received also shape the L2 acquisition process, because they are considered to directly influence language learning both in natural and in institutional settings (Döpke 1992; Gass 1996; Norris & Ortega 2000; Ellis & Collins 2009; Spada & Tomita 2010; Howard 2011; Unsworth 2016b; Muñoz et al. 2018; Unsworth et al. 2019; Arnaus Gil et al. 2020, among others). In broad terms, the quantity of input is calculated as the amount of exposure received, while the quality is based on the type of exposure (i.e. richness and complexity).

The quantity of institutional input that learners receive can be measured by counting the specific hours they are taught L2, either as part of the language class as such or as part of the teaching methodology in which other subjects in the curriculum are taught in the L2.

What regards quantity, Muñoz (2006:34) studies the age of exposure and the number of hours of L2 exposure employed in relation to learning speed. She finds that there is a rapid initial stage of learning (after 200 hours) both for adolescents and for adults. More specifically, participants whose age of exposure was 8 showed more progress after 416-726 hours of instruction, whereas participants whose age of exposure was 11 showed most progress after 200-416 hours of instruction. These data show that quantity of exposure to L2 English (as measured in terms of hours of received instruction) correlates with proficiency: the more input received, the more proficient the L2 learners are. However, in a more recent study analyzing Danish and Spanish L2 English speakers, Muñoz et al.'s (2018) results go in the opposite direction: the amount of instruction does not play a role in L2 attainment. They analyze two age groups: 7 and 9-year-olds. The Danish participants had just begun formal instruction in L2 English; the 7-year-olds had only received an average of 10 hours of instruction and the 9-year-olds 12 hours. The 7-year-old Spanish learners had received an average of 287 hours and the 9-year-olds 520 hours. Since the results obtained were similar for both language groups, even though the amount of instruction was substantially different, the authors conclude that the amount of formal instruction does not necessarily play a role. Thus, what can be concluded is that the more input L2 learners receive does not necessarily translate into a better performance or a faster learning.

What regards quality of input, Cummins (1991a, 1991b) observes that L2 acquisition experiences are mostly based on isolated, task-oriented input that has proven to be insufficient for L2 development in that it does not provide interaction nor informal context

as such. Along the same line, Lightbown & Spada (2001) insist on the importance of cooperative learning tasks and informal language learning environments (i.e. learning in a non-institutional context). Also related to quality of input is the distinction between native input and non-native input. The argument that exposure from native speakers in the early contact has a positive effect seems to be plausible (Lightbown & Spada 2001). This does not indicate that L2 speakers cannot provide adequate input for child L2 learning. Rather, the focus is placed on the fact that language development depends on the quality of the exposure that the learner receives from the L2 speaker with whom the learner interacts. That is, the more native-like the input the better and faster the acquisition process, because exposure incorporates not only formal but also informal language learning environments. Nonetheless, to calculate the quality of input is highly complex and, as such, it has not be much explored (Ellis & Collins 2009; Moyer 2009; Howard 2011; Rowe 2012; Lambelet & Berthele 2015; Unsworth 2016b; Gómez Garzarán & Fernández Fuertes 2020; among others).

Performance does not necessarily depend exclusively on the quality or quantity of input (Paradis 2011; Rowe 2012, Unsworth 2016b; Paradis et al. 2017; Unsworth et al. 2019; Arnaus Gil et al. 2020). It seems that a combination of issues affects performance and that input is simply one of these issues. In this sense, the argument is that factors such as input but also others such as age of exposure and L1/L2 similarity must be included in the analysis to get a more complete picture of the characterization of speakers' L2 grammar.

3.5 Review of L2A studies on the Null Subject Parameter

L2 acquisition studies have extensively addressed the analysis of sentential subjects (White 1985; Liceras 1988, 1989; Tsimpli & Roussou 1991; Bini 1993; Al-Kasey & Pérez-Leroux 1998; Liceras & Díaz 1998, 1999; Liceras et al. 1998, Ravid et al. 2002, Park 2004;

Isabelli 2004; Margaza & Bel 2006; Sorace & Filiaci 2006; Valenzuela 2006; Rothman 2009; Liceras et al. 2010; Pladevall Ballester 2010, 2012, 2016; Cuza et al. 2013; Bel et al. 2016a; Bel et al. 2016b; Cuza & Camacho 2017; Arnaus Gil & Müller 2018, Lozano 2018; Mitkovska & Bužarovska 2018, to name just a few). Different issues have been targeted including the four that constitute the focus of the present dissertation: the linguistic differences and similarities between the participants' L1 and the L2 and how these affect the L2 acquisition process (typological proximity, typological similarity and transfer) and how differences between the L1 and the L2 could shape the participants' L2 production (subject omission and overproduction of overt subjects).

3.5.1 Contact between [+null subject] & [-null subject] languages

Most of the research conducted on the L2 acquisition of subjects on both children and adults is focused on the interaction between a [+null subject] language and a [-null subject] language (Liceras 1988, 1989; Tsimpli & Roussou 1991; Al-Kasey & Pérez-Leroux 1998; Liceras & Díaz 1998, 1999; Lázaro Ibarrola 2002; Lozano 2002; Park 2004; Isabelli 2004; Valenzuela 2006; Montrul & Rodríguez-Louro 2006; Rothman 2009; Liceras et al. 2010, Pladevall Ballester 2010, 2012, 2016; Mitkovska & Bužarovska 2018, among many others).

The general theory behind L1 transfer in this case is that when a [+null subject] language and a [-null subject] language are in contact, a difference in the distribution of subject types is found. If the L1 is a [-null subject] language, overproduction of overt subjects in the L2 is expected, but if the L1 is a [+null subject] language, subjects are expected to be dropped in the L2 as a result from L1 transfer. In other words, typological similarity is

expected to influence the amount and type of transfer. Given that the focus of this dissertation deals with the second of these two scenarios, a more detailed account is presented below.

Studies on speakers of a [-null subject] L1 (e.g. English) learning a [+null subject] L2 (e.g. Spanish) have reported evidence of overproduction of overt subjects in the data of speakers with different proficiency levels (Rothman 2008, 2009; Lozano 2002; Montrul & Rodríguez-Louro 2006; Montrul et al. 2009; Quesada 2014, among many others). Even the most proficient speakers overproduce overt subjects, but this overproduction cannot only be attributed to L1 transfer, because it also seems to be related to interface properties which are more complex and, therefore, later acquired (if ever at all). In fact, both native and non-native speakers can experience problems with pragmatically marked subjects (i.e. the syntax-pragmatics interface) (Montrul & Rodríguez-Louro 2006), and, therefore, this issue cannot be attributed to L1 transfer alone.

Studies on speakers of a [+null subject] L1 learning a [-null subject] L2 have reported that omission of subjects is not that frequent in the L2 (e.g. Park 2004; Pladevall Ballester 2012, 2016; Mitkovska & Bužarovska 2018, among many others).

Park (2004) and Pladevall Ballester (2012, 2016) analyze child data and conclude that, even at the earliest stages, children do not drop the subject in L2 English. In Park's analysis of L1 Korean L2 English children, no negative transfer is found. The fact that data were elicited after 9 months of exposure to English (both institutional & naturalistic) could explain the results. Data collection from the children's initial stage grammar could have yielded different results, though. Pladevall Ballester finds the same results in the case of Spanish children that have received early exposure to L2 English (from age 3) in an institutional context. These data indicate that proficiency plays a role in the omission of

subjects in the L2 but that, certainly, negative transfer from the L1 might not be a determinant factor.

Mitkovska & Bužarovska (2018) analyze transfer from L1 Macedonian to L2 English with a special focus on the subject pronoun realization (i.e. both referential and non-referential). All the participants are prepuberty learners aged between 8 and 15 and they are distributed into four proficiency groups (beginners, elementary, pre-intermediate and upper-intermediate). Their data show subject omission cases in the initial stages, but as the proficiency level of the speakers increases the ungrammaticality rate in subject production decreases. In the more advanced stages, omission is mostly found within non-referential subjects. These authors attribute the omission to L1 transfer which is modulated by proficiency. However, the fact that illicit null subjects are found at all proficiency levels under study is an indicator that L1 influence persists in the L2 acquisition process to a higher or lesser degree.

From the two previous sets of studies on typologically different languages in contact, the following conclusions can be drawn. If the speakers' L1 is a [-null subject] language, overt subjects tend to be overproduced in the L2 because of negative transfer and because of the complexity of the interfaces given that the use of explicit subjects is grammatical in the L2 but regulated at the syntax-pragmatics interface. If the speakers' L1 is a [+null subject] language, illicit null subjects can appear and this production is attributed to L1 transfer. Even if the illicit null subject rate does not seem to be very high, residual cases seem to always appear and be modulated by proficiency.

In the case of 2L1 acquisition research, a proposal has been put forward to account for the presence as well as for the directionality and effect of cross-linguistic influence that we would like to adapt to L2 contexts. Following Holmberg's (2005) and Sheehan's (2006)

proposal, a [+null subject] language like Spanish is considered the superset language when compared to a [-null subject] language like English. This is so because Spanish has two realizations of the subject (the phonologically realized option and the phonologically null option) whereas English has one (the phonologically realized one). This phonological realization is the common option as it is shared by both languages and it is the marked option in Spanish (as null pronouns are less marked than overt pronouns). Based on the so-called lexical specialization approach, Liceras & Fernández Fuertes (2019) propose that the superset language does not receive cross-linguistic influence from the subset language (i.e. no transfer from English into Spanish would occur). Rather, the superset language is the one causing cross-linguistic influence (i.e. transfer from Spanish into English) and with a specific effect: acceleration in the development of the overt subject requirement in 2L1 bilingual English. Their study analyzes and compares the Spanish and the English subject omission and production rates in the naturalistic data of the 2L1 English Spanish bilingual twins from the FerFuLice corpus (age range 1;10-2;11) and the adults who interact with them, as it appears in CHILDES (MacWhinney 2000). They focus on cross-linguistic influence that might arise when English and Spanish are in contact.

In the case of Spanish, when it comes to null subjects, the bilinguals' (≈73%) and the monolingual's (70%) rates are quite comparable. These results indicate that there is no cross-linguistic influence from English into Spanish, because the bilinguals do not produce less null subjects (i.e. something that could be the result of cross-linguistic influence from English). In fact, the bilinguals' production is actually higher than that of the monolingual's in this respect.

In the case of English, a higher omission rate could be expected, if the unmarked option of Spanish (i.e. the null subject) is transferred, which will help reinforce subject

omission in the so-called omission stage monolinguals also go through. Alternatively, and if Spanish works as a facilitator, as Liceras & Fernández Fuertes argue, the null subject rate could be lower than what is the norm in the early stages in monolingual speech. This would involve that the obligatory overt subject requirement in English is set earlier in bilingual than in monolingual speech. Their data, in fact, go in this last direction since more pronominal subjects are produced by the bilinguals (63%) when compared to the monolinguals (44%). This result confirms their initial hypothesis in that there is transfer from the superset language (i.e. Spanish) into the subset language (i.e. English) and that this transfer has a positive effect in that it makes the bilinguals reach the adult requirement sooner than monolinguals.

While in 2L1 acquisition both languages have the same status as L1s, in the L2 acquisition process, the L2 learner seems to depart from his L1 knowledge and so the L1 tends to influence the L2. Nonetheless, if we apply Liceras & Fernández Fuertes' (2019) proposal and adapt it to the L2 acquisition of sentential subjects, transfer would be expected from the L1 superset language (i.e. Spanish) into the L2 (i.e. English) and would have a positive effect. This will involve that these learners will use one of the options available in Spanish (i.e. the overt subject) as a reinforcement for the only available option in their L2 English, resulting in positive transfer. In fact this is what previous studies seem to suggest in that no transfer from the null subject L1 into English takes place (e.g. Park 2004 and Pladevall Ballester 2012, 2016).

Even though many studies have dealt with the two opposite values of the null subject parameter in contact, not many have included languages such as Bosnian. Given the lack of studies based on L1 Bosnian, this dissertation seeks to contribute to fill this gap.

3.5.2 Contact between two [+null subject] languages

L2 acquisition research on subjects involving the interaction between two [+null subject] languages also discusses the role of L1 transfer and proficiency effects (Bini 1993; Margaza & Bel 2006; Sorace & Filiaci 2006; Bel et al. 2016; Lozano 2018, among others). This language pair, although different from the one under consideration in this dissertation, is relevant for our analysis in that studies on languages with the same option of the parameter predict no L1 transfer effects i) because both languages behave in the same way in their availability of null subjects, as per the Interference Hypothesis, and ii) because both languages have two sets of subjects (rich verbal agreement inflection and overt subject pronouns), as per the lexical specialization approach (Fernández Fuertes & Liceras 2018 and Liceras & Fernández Fuertes 2019).

In their studies, Bini (1993), Sorace & Filiaci (2006), Margaza & Bel (2006) and Lozano (2018) find non-native-like production related to the syntax-pragmatics interface. All participants understand very quickly that null subjects are licensed grammatically, but they find difficulties in acquiring the syntax-pragmatics interface conditions that regulate the presence of overt pronominal subjects. Proficiency level affects adequacy in subject production so that, even if syntax is at place from very early stages, pragmatics continues being problematic for advanced speakers, even when the two languages share the same parametric option. In fact, the same pragmatic conditions regulate the distribution of overt and null subjects in the languages under analysis (L1 Spanish L2 Italian in Bini's study; L1 Italian L2 Spanish in Sorace & Filiaci's study; and L1 Greek L2 Spanish in Margaza & Bel's and Lozano's studies). The pragmatic interface conditions are the ones that govern the felicitous use of both subject types (i.e. null and overt pronominals). The overproduction in this case does not seem to be related to L1 transfer but is rather considered a default

(unmarked) option. In all four studies, as proficiency increases, the learners' production becomes more native-like, but even the most advanced learners show overuse of overt pronominal subjects in contexts where a native would use a null subject. The findings in these studies lead to the conclusion that typological proximity and typological similarity do not seem to be a facilitating factor, especially not when it comes to the syntax-pragmatics interface. As a consequence, L1 positive transfer might not always take place or not fully so.

Studies on two [+null subject] languages in contact seem to be mainly conducted on L2 adult speakers. The conclusions that can be drawn are the following: i) proficiency seems to play a crucial role; the more advanced speakers are, the more native-like their production is; and ii) the overproduction of overt subjects is interpreted as related to interface vulnerability and not to typological proximity or typological similarity.

3.5.3 Contact between two [-null subject] languages

Comparatively, a very small amount of L2 acquisition research on subjects has been conducted on the interaction between two [-null subject] languages (White 1985; Liceras 1989; Liceras & Alba de la Fuente 2015 and Mujcinovic 2015).

White's (1985) study analyzes the contact between L1 Spanish and L2 English (i.e. [+null subject] and [-null subject] languages respectively), but she compares this data set to data from L1 French L2 English speakers (i.e. both being [-null subject] languages, that is typologically similar). In the case of the L1 French group, subject omission cases are correctly judged as ungrammatical making this group pattern with the control group, as opposed to the L1 Spanish group. Furthermore, in the case of overt subjects evidence of positive transfer in felicitous judgments is found. Therefore, she concludes that typological

similarity plays a role in L2 acquisition, because L1 French and L1 Spanish speakers differ in their L2 English judgments (in spite of French and Spanish being typologically proximate languages).

Making reference to White (1985) and referring back to Liceras (1989), Liceras & Alba de la Fuente (2015), also analyze French and English as typologically similar languages in the sense that both are under the [-null subject] option of the Null Subject Parameter. French and Spanish, on the other hand, are typologically proximate in the sense that they are both Romance and synthetic languages. Liceras (1989) and Liceras & Alba de la Fuente (2015) compare L1 French L2 Spanish learners and L1 English L2 Spanish learners. Their data show that French verbal morphology seems to have a facilitating role in the acquisition of L2 Spanish when compared to English, since verbal morphology in English is poor. In this case, typological proximity between French and Spanish (i.e. both being synthetic languages and French having verbal agreement markers although not with the same value as the Spanish ones) seems to be a conditioning factor in the acquisition of L2 Spanish. Both studies conclude that "typological proximity may supersede the fact that these two languages [Spanish and French] differ in terms of the microparameters (or properties) associated to the Null Subject Parameter" (Liceras & Alba de la Fuente 2015:353). Thus, they argue that since French is of special character, more sophisticated linguistic analyses must be done in order to get a more refined view on the interaction between typological proximity and typological similarity between the languages involved.

Mujcinovic (2015) analyzes production data of L1 Danish L2 English speakers. Her data show a preference for overt subjects over null ones, thus adhering to the L2 overtness requirement. As for the production of null subjects, a very low rate is produced by these learners and, out of this, less than 2% of these null subjects are in fact non-native-like. As for

the adequacy of overt subjects, an overproduction of DPs over overt pronominal subjects is found and classified as redundancy errors related to the task being used to elicit the data (between 27.3% and 0.8%). The results show an overall native-like performance, which is attributed to typological similarity and positive transfer.

Given the scarcity of works on typologically similar languages and, in particular, on studies that consider two [-null subject] languages in contact, this dissertation also seeks to contribute to fill this gap.

3.6 Summary

In this chapter the properties that define L2 acquisition have been reviewed with a focus on i) the effects of L1 transfer; ii) the role played by age of exposure; and iii) the role played by input.

L1 transfer seems to be dependent on the typological similarity between the languages in contact (i.e. the L1 and the L2), which contributes to a twofold classification of transfer: positive and negative. A connection is also found between proficiency and transfer: as proficiency increases transfer related errors decrease. In addition, L1 transfer is also related to the interfaces involved, being the syntax-pragmatics interface the most vulnerable in this case. In view of these interactions, and as we are concerned in the present study with a parametric property (i.e. the availability, or lack therefore, of null subjects), we explore the effects of transfer as well as the role played by proficiency and the vulnerability of the syntax-pragmatics interface.

As for age-related issues, the critical age is a topic that has received a lot of attention within L2 acquisition research. No real agreement has been reached as to where the exact line has to be drawn between early L2 and late L2 acquisition, because different sensitive periods are appreciated depending on the specific issue under analysis, along with the maturational state and cognitive development of the participants involved, among others. Thus, many opt for considering puberty as the end of the critical period, whereas others question its existence to begin with. For the present study, we rely on Meisel's (2008) account of sensitive periods rather than using a fixed chronology to determine the beginning and end of child L2 acquisition. To classify L2 bilinguals, Meisel's (2008) trifold division is followed in combination with what DeKeyser et al. (2010) and Muñoz & Singleton (2011) propose. That is, children that start learning an L2 between the ages of 4 and 8 are considered as early child L2 bilinguals; when this happens between the age of 8 and puberty, they are referred to as late child L2 bilinguals, while those who start learning an L2 after the age of 15-16 are considered to be adult L2 bilinguals. Therefore, this study is concerned with early child L2 bilinguals.

As of input, the L2 acquisition process is constraint by both the type of input speakers are exposed to (both in a naturalistic setting as well as in an institutional context), as well as by input quantity, quality and formality.

These issues have been addressed in different ways in previous studies concerned with the analysis of sentential subjects in speakers with L1s and L2s presenting different parametric options. L1 transfer is closely connected to typological similarity, because the closer the L1 and the L2 are linguistically speaking, the less negative transfer is expected to be found. However, this statement only holds for morphosyntactic issues. Regardless of

typological similarity, the syntax-pragmatics interface seems to be problematic until very advanced stages of proficiency even in the case of typologically similar languages. Since both morphosyntactic and pragmatic properties have to be acquired for a native-like production to occur in L2 acquisition, this makes L2 speakers of typologically similar languages equally vulnerable to discourse conditions.

If [-null subject] and [+null subject] languages are in contact, then negative transfer in the form of overproduction of either overt or null subjects is expected. In addition, interface complexity, as mentioned above, is also present, because even near-native speakers are said to experience difficulties to fully acquire the properties that are required in this interplay. An alternative interpretation of transfer is based on the superset-subset theory, the so-called lexical specialization approach (Fernández Fuertes & Liceras 2018 and Liceras & Fernández Fuertes 2019), based on the fact that, if the L1 is the superset language, it will not cause negative but positive transfer reinforcing the only available option in the L2 (i.e. the overt subject in this case).

CHAPTER 4: METHODOLOGY

The aim of this chapter is to present the research methodology used to elicit the data that constitute the core of the present dissertation. In particular, information pertaining to both the participants as well as the experimental tasks that have been used is provided.

As it has been specified in the previous chapters, this study analyzes the nature of sentential subjects as produced by L2 speakers of English with different L1 backgrounds classified according to language typology: [+null subject] languages such as Spanish and Bosnian and [-null subject] languages such as Danish and English. Following this idea, participants are divided into three experimental groups, depending on their L1, and a control group. Therefore, the experimental English data come from L1 Spanish, L1 Danish and L1 Bosnian speakers and they are compared to those of L1 English speakers. For all the experimental groups, participants have only received L2 English instruction in the primary schools they are attending. The control group consists of L1 English participants from Calgary, Canada.

In order to collect data on English sentential subjects, both oral and written tasks were conducted. The oral task is a semi-guided interview, while the written task is a picture sequence narration. All the selected participants completed both tasks.

The chapter is organized as follows: section 4.1 deals with the description of the participants and the selection criteria that have been applied for each language group. Sections 4.2 and 4.3 provide information about the data protocol, the experiments and the data elicitation process itself. Section 4.4 illustrates the transcribing and coding procedures, followed by a description of the statistical methods used for the data analysis in section 4.5. Finally, in section 4.6 a summary of this chapter is provided.

4.1 Participants

Each participant group is described separately including information about their linguistic profile taking into account both their L1 and their L2. This is preceded by an account of the selection criteria that have been used to recruit participants.

4.1.1 Selection criteria

For this study, three experimental groups, subdivided into two proficiency groups each, and one control group have been recruited. The experimental groups consisted of L2 English speakers, who were first classified into three groups according to their L1 (Spanish, Danish or Bosnian) and then subclassified into two more groups each, according to the time they have been instructed in the L2 (2 years or 4 years) (see below in section 4.1.3 for a more detailed account on the different subclassifications used). Both L2 English children (aged 9-12) and L1 English children (aged 10-11) have participated in this study (see *table 1* below). Ethical approval for data collection has been obtained from the University of Valladolid Research Ethics Board as part of the University of Valladolid Language Acquisition Lab (UVALAL) activities.

In order to be included in the experiment, each participant had to fulfill the following criteria:

i) both parents and the child have to share the same L1 (Spanish, Bosnian or Danish depending on the group). If either of the parents or the child had another L1 or were 2L1 speakers, the participants were removed from the study;

ii) the L2 of the participants had to be English. If participants started learning an L3 at the same time as they started learning the L2, they were removed from the

study. However, if participants learned an L3 as part of the curricula during the 3rd or the 4th year of instruction of the L2, they were not excluded from the study, as data collection started in either the 2nd or the 4th year[8];

iii) the participants only received instruction in the L2 in the school they were attending. That is, only the participants that learned L2 English in educational settings were considered. If the participant had extra English classes at another school and this was not part of the regular curriculum or if they started learning or acquiring it at home, then these participants were removed from the study[9];

iv) the participants who participated in different study-abroad programs (exchange programs) or who have lived in an English-speaking country were also removed from the study. However, short holidays to English-speaking places were not considered as an exclusion criterion;

v) only the participants that had been exposed to L2 English for a period of 2 to 4 years at their primary school were included in this study.

The data were collected in the schools the participants attended in the country where they lived (i.e. Denmark, Bosnia, Spain and Canada). More detailed information about the schools and the L2 instruction they received is provided in the following sections (4.1.4 – 4.1.7).

[8] Only the L1 Danish participants (N:13) who have been instructed in L2 English for 4 years have received L3 instruction during one academic year (60 hours). Since the L3 for all the participants was German, we do not expect this to interfere with our study since German is also a [-null subject] language. The L1 Bosnian participants (N:13) who have been instructed in L2 English for 4 years have received L3 instruction in German only for a couple of months at the time of the data collection (12 hours). We do not consider such a short period of instruction to affect our data.

[9] Private English tutorials are very common in Spain and in Bosnia, both as an aid in order to obtain better grades and as for mere improvement and knowledge of the language.

The criteria established for the selection of the L1 English participants were the following:

i) just the participants who have received only English exposure at home were included. The participants whose parents had L1s other than English or who had another L1 or were heritage speakers were excluded;

ii) only the participants from a monolingual English education system participated. The participants that have taken part in any immersion program were excluded;

iii) only the participants whose age ranged from 10 to 11 were selected in order to match the age of the L2 participants (9-12).

More detailed information about the control group is provided in section 4.1.7. A summary of the participants in this study is provided in *table 2,* where years of instruction refer to instruction in English as an L2:

L1	L2	group	# of participants	age	years of instruction
Spanish	English	1	13	9-10	2
		2	13	11-12	4
Bosnian		1	13	10-11	2
		2	13	11-12	4
Danish		1	13	10-11	2
		2	13	11-12	4
English	N/A	control	13	10-11	N/A

Table 2: Participant groups

In order not to discriminate at the different schools, all the students that wanted to take part in the experiment were allowed to, but the data that have been considered for this study only belong to the participants that fulfilled the selection criteria. Among all the

approved part-takers, 13 participants were selected randomly per group and only their data have been analyzed[10].

4.1.2 Language Background Questionnaire

In order to obtain information about the participant's language history, a Language Background Questionnaire was used. The questionnaire used in this study was created by the UVALAL from the University of Valladolid in collaboration with the Language Acquisition Research Lab (LAR Lab) from the University of Ottawa. It included questions related to i) language history, ii) language choice, iii) language proficiency, and iv) language attitudes. In the design of the Language Background Questionnaire, the indications provided in previous studies on how to obtain this sort of information were taken into account (e.g. Gullberg & Indefrey 2003; Unsworth 2005; Codó et al. 2008; Nortier 2008).

The four different sections included in the Language Background Questionnaire are briefly described below:

i) the *language history* section contains questions about how many languages the participant speaks, when each language has been acquired or learned and in which context;

ii) the *language choice* section is related to the use of each of the languages the participant knows and to how this is so in different contexts (e.g., in which language do they read or play, etc.);

[10] More candidates participated in the experiment (L1 Bosnian n:45; L1 Danish n:37; L1 Spanish n:34), but from the younger L1 Spanish group only 13 met the selection criteria and produced valuable data. In order to obtain more homogeneous results, 13 was established as the number of participants for all groups.

iii) the *language proficiency* section classifies the participants depending on their knowledge of English (i.e. their L2). In addition to the information in the *language history* section, the information provided in the language proficiency section is used to establish or confirm the status of the languages that the participants know as either L1 or L2. Participants are asked to rate their language knowledge in all four skills (writing, reading, speaking and listening) using a 5-point Likert scale (where 1 is bad and 5 is excellent). As an initial filter, only the participants who rated themselves with a three or above in the speaking and writing skills in the case of English as an L2 were considered for this study.

iv) the *language attitudes* section describes the languages according to the values the speaker attaches to them. For example, participants are asked whether or not they like learning and speaking the languages they know (i.e. their L1 and their L2) and whether they consider themselves good or not at learning the L2.

All the participants took the Language Background Questionnaire in their respective L1s and so four different versions of this questionnaire were elaborated (i.e. English, Spanish, Danish and Bosnian). These questionnaires were designed to inform about the participants' linguistic profile, that is, language history (e.g. how and when they have acquired their L1, whether languages other than the L1 are or were part of their language background), self-reported language proficiency (i.e. how good they believe their command of each of the languages is), and language attitudes (e.g. whether they like learning English, think it is useful, etc.). In other words, it measures language status and experience and it constitutes a subjective proficiency measure. Since we were dealing with young children, the parents filled in the questionnaire.

Language Background Questionnaires have been used both in L1, 2L1 and L2 acquisition studies to gather information regarding age of acquisition, manner of acquisition, self-rated proficiency, etc. Li, Sepanski & Zhao (2006), Montrul (2012), Sabourin et al. (2015) and Anderson et al. (2017), among others, argue that Language Background Questionnaires are a valid and reliable language measurement tool. In this dissertation, we have used them in order to obtain the most possible homogenous groups of participants for the study. No standardized proficiency tests were used given the limited time we were given to test children in the Danish and in the Bosnian groups.

4.1.3 Measuring proficiency via MLUw values

Due to certain limitations at the schools where the data were collected, no standardized proficiency tests were run. Therefore, and in addition to the self-rated section of the Language Background Questionnaire, the mean length of utterance (MLU) was calculated for each group of participants in order to better account for their proficiency and in order to compare English proficiency across participant groups, too. The MLU was obtained by calculating the average MLU from the participants' production in the two tasks, which were then used to calculate the average MLU per language group.

The MLU can be measured both in terms of words (MLUw) and in terms of morphemes (MLUm). Both measurements are frequently used in research and are considered as indicators of syntactic and grammatical complexity and thus as an indicator of language development (Ellis 1999; Foster-Cohen 1999; DeThorne et al. 2005; Parker & Brorson 2005; Paradis 2006, among others). Even if initially they were not frequently used in L2 acquisition, different studies have been using them as a valid indicator of proficiency (Håkansson 2001;

Unsworth 2008; Unsworth & Blom 2010; Hawkins & Filipovic 2012; Lundell & Lindqvist 2012, 2014, among others). Therefore, we have also measured the participant's proficiency in the L2 in terms of MLUw values. In *figure 1* and *table 3* below the MLUw values obtained by the participants in the 7 groups are indicated.

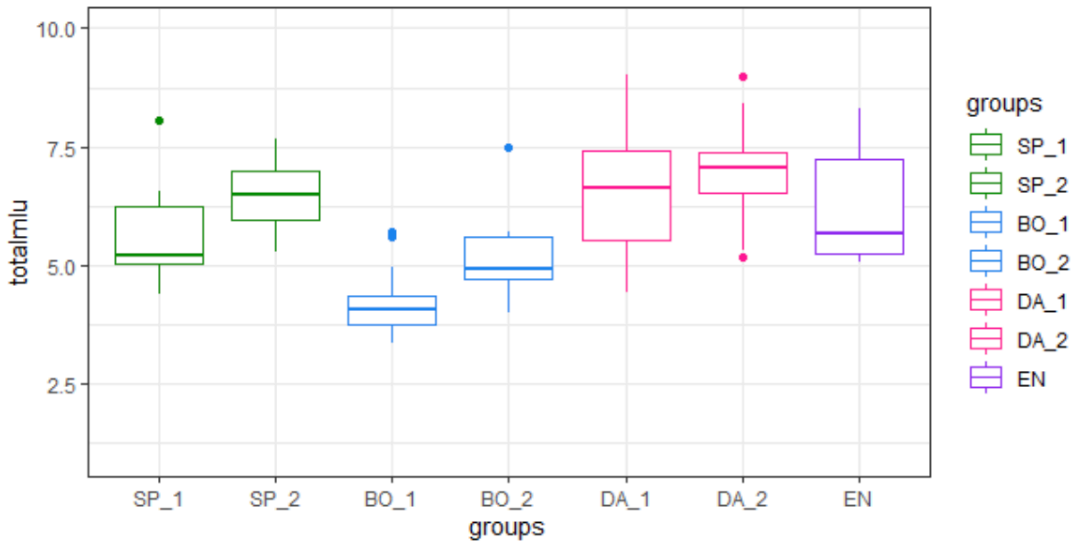


Figure 1. English mean MLUw values per participant group

group	Spanish-group 1	Spanish-group 2	Bosnian-group 1	Bosnian-group 2	Danish-group 1	Danish-group 2	Control group
Mean	5.585	6.561	4.243	5.154	6.607	7.006	6.241
SD	0.99	0.75	0.75	0.88	1.38	1.11	1.18

Table 3: Descriptive statistics for English MLUw values per participant group

To determine whether there are any significant differences between the groups, a one-way ANOVA was conducted after confirming homogeneity of variance of the data ($F_{(3,87)}$=0.697, p=.556). The results show that there is an effect for group ($F_{(1,6)}$=11.63, p<.001). Within each group, the participants who have been instructed for a longer period in their L2 have a higher MLUw. Thus, it can be argued that the participants who have been

exposed longer to L2 English have more developed language skills and are, therefore, more proficient in this sense. However, this increase between the participants in groups 1 and those in groups 2 is found to be significant for the L1 Spanish and L1 Bosnian groups (p<.010) but not for the L1 Danish groups (p=.425).

For group 1 participants, an across groups comparison shows significant differences between the L1 Bosnian and the L1 Spanish groups (p=.027), the L1 Bosnian and the L1 Danish groups (p<.001) and the L1 Bosnian and the L1 English groups (p<.001).

For group 2 participants, an across groups comparison shows significant differences between the L1 Bosnian and the L1 Spanish (p=.016) and the L1 Bosnian and the L1 Danish (p<.001). None of the L2 groups is statistically different from the L1 English group.

These results point towards an overall difference in MLUw terms between groups 1 and groups 2, except for the L1 Danish group. In this last case, however, information on data dispersion, as in *figure 1*, shows that indeed a difference in variability is seen in the L1 Danish group, where group 2 is more homogeneous than group 1. Across language groups, only the L1 Bosnian groups significantly differ from the rest of the L2 groups and from the control group (i.e. the L1 English group).

To sum up, the participants were chosen on the basis of their language background, the time of instruction they have received in L2 English and the fact that they have not spent a long period of time in an English-speaking country. Their MLUw values were included as proficiency measures and they show that across groups of exposure (group 1 vs. group 2) differences are found where the participants in groups 1 show a lower MLUw than those in groups 2. More information about each of the groups appear in the subsequent sections.

4.1.4 L1 Spanish groups

The L2 English data from the L1 Spanish participants were recorded during the month of June 2015. These participants come from a school located in Valladolid (Spain), *Colegio Ave María*. The compulsory Spanish education system follows a model, where the children attend primary school from the age of 6 to 12 followed by secondary school between the age of 12 to 16. Infant education is not compulsory.

This semi-private primary school has implemented the CLIL (Content and Language Integrated Learning) methodology, which involves teaching part of the curriculum by using the second language instead of the students' L1. In the case of the *Colegio Ave María*, two subjects in the curriculum are taught in English: Natural and Social Sciences and Arts as part of the CLIL program[11]. During these classes, not only is the content taught in English, but some reference to English grammar is included, too. That is, on the one hand, these participants receive direct instruction in English during the traditional English language classes (as in a school subject) and, on the other hand, they receive indirect instruction in English in the Natural and Social Sciences and Arts classes.

The participants in this study were selected according to the time of instruction in English they have had, that is, 2 and 4 years. The ones who have been exposed to English during a period of 2 years were about 9 years old (grade 3) and the ones that have been so during a period of 4 years were about 11 years old (grade 5).

The periods dedicated specifically to the teaching of English as an L2 are two per week for both groups, where each period lasts for one hour. Since these were CLIL students,

[11] CLIL promotes linguistic competence and at the same time stimulates cognitive flexibility (Coyle et al. 2010:10). Lasagabaster & Sierra (2009) claim that the CLIL approach provides more exposure to real language usage of the target language and thereby strengthens the ability to process the L2. To be more specific, the L2 is used for teaching curricular content under the same conditions as the L1.

some of the content subjects were also taught in English. Thus, the overall input in English was on average 6.5 hours per week. The participants that have been learning English for 2 years have received a total of 455 hours of instruction and those who have been learning English for 4 years have received a total of 910 hours of instruction. The communication between students and teachers during the English language class and the English content classes was entirely in English. The rest of the subjects were taught in Spanish which was the language children were exposed to and used outside of the school.

4.1.5 L1 Bosnian groups

The L2 English data from the L1 Bosnian participants were recorded during the month of October 2014. These participants come from a public Bosnian primary school called *Aleksa Šantića* located in Banja Luka (Bosnia and Hercegovina). The curricular program follows the 9-year model, where the children start the primary school at the age of 6. The division is made following three cycles: grades 1 to 3 (preparatory); grades 4 to 6 (classroom instruction) and grades 7 to 9 (subject instruction). Two foreign languages are included in the curriculum, where the first to be learned is English (introduced in grade 3) and the second foreign language is usually German (introduced in grade 6).

Two groups (grade 5 (ca. 10 years old) and grade 7 (ca. 12 years old)) were selected according to the time of English instruction they have had, that is, 2 and 4 years. Until grade 4, two periods are dedicated to the first foreign language; in grade 5 it is increased to four periods and in grade 6 they are reduced again to two periods because of the introduction of the second foreign language. Each teaching period lasts for 45 minutes so that the participants received 1.5 hours of English institutional instruction per week during the first 2 years, three

hours in the third year and one hour and a half during the fourth year. The participants that have been learning English for 2 years have received a total of 120 hours of instruction and those who have been learning English for 4 years have received a total of 300 hours of instruction. The rest of the subjects were taught in Bosnian which was the language children were exposed to and used outside of the school.

4.1.6 L1 Danish groups

The L2 English data from the L1 Danish participants from the *Pedersborg skole* in Sorø (Denmark) were recorded during the months of November and December 2014. *Pedersborg skole* is a public Danish primary school from grade 1 (age +/- 6) to grades 9 or 10 (age +/- 16)[12]. This academic period is subdivided as follows: primary education (grades 1 to 6) and lower secondary education (grades 7 to 9/10). *Pedersborg skole* is one of many Danish schools that no longer uses printed books in the classrooms. All the pupils in the school are provided with an iPad that is exclusively used for educational purposes through different educational platforms that are available for primary school teachers such as CFU (*Center for Undervisningsmidler Danmark*, 'Center for Teaching Materials Denmark'). From time to time some books are also used, but they are not the primary source of teaching as is generally the case of Bosnian or Spanish schools.

Two foreign languages are included in the curriculum, where the first to be learned is English (from grade 3) and the second foreign language is German or French (from grade 7). The communication between students and teachers during the English language class is

[12] In Denmark, grade 10 is an optional course. It is specially designed for students who want to go to a lower secondary independent boarding school or students who are still not ready for secondary school. This is a popular option among students in Denmark.

entirely in English, while the rest of the time the participants spend at school, they speak their L1 (i.e. Danish).

Two groups (grade 5 and 7) were selected according to the time of instruction they have received in English, that is, 2 and 4 years. The participants that have been instructed in English during a period of 2 years were about 10 years old and the participants that were so for a period of 4 years were about 12 years old. Each teaching period lasts for 45 minutes and so the participants received one and a half hour of institutional instruction in English per week during the first 2 years and 2 hours and 15 minutes during the 3rd and 4th year. The participants that have been learning English for 2 years have received a total of 120 hours of instruction and those who have been learning English for 4 years have received a total of 300 hours of instruction. The rest of the subjects are taught in Danish which is the language children are exposed to and use outside of the school.

4.1.7 Control group

The control group consists of L1 English participants from the *St. John Paul II* school in Calgary (Canada). The participants selected are in grade 6 and are 10-11 years old. The data obtained from the control group (both oral and written) were recorded during the month of December 2016. The reason why the control group involves students in Canada deals with the availability to collect the data.

Nowadays, monolinguals are rare, especially within a country such as Canada. Following the data available for 2016, 90.5% of the population in Calgary speak English and 67.8% have English as their L1[13]. Only 1.5% are L1 French speakers and the remaining

[13] Census 2016, Statistics Canada: https://www.calgaryeconomicdevelopment.com/research-and-reports/demographics-lp/languages/

33.7% are L1 speakers of other non-official languages in Canada, being Tagalog the most spoken one.

The speakers who participated in this study were all born in Canada. They are all considered monolinguals (i.e. they live in an L1 environment at home and never speak another language). They have never lived in a setting where other languages are spoken, except for short holiday stays.

4.2 Data protocol & fieldwork

Data samples were collected in primary schools situated in Spain, Denmark, Bosnia and Canada. Before collecting the data, the school directors were contacted and the investigator was allowed to get in contact with the teachers and the parents of the specific groups of children that were to be recorded. Since the participants were under the age of consent, the parents were asked to sign a consent form which followed the guidelines established by the University of Valladolid Research Ethics Board, thereby given explicit written consent to the investigator to take data from their children through the use of two linguistic tasks.

Then the English teachers were contacted and a brief meeting was held before the investigators were introduced to the participants in order to inform about the research to be conducted.

Also, a small presentation on language acquisition and language learning was given to the schoolboard, teachers, parents, and the participants to contextualize the study, to stress the importance of their participation and to give them the opportunity to ask any questions

they may have. No mention was made regarding the specific research topic or the structures under analysis in the present investigation as reflected in the two tasks.

Warming-up sessions with the participants also took place at the schools following the indications in the literature (e.g. McDaniel et al. 1995; Thornton 1996; Rice et al. 1999; Unsworth 2005, among others). That is, some time was spent with the participants in some of the English classes in the school so to avoid the observers' paradox (Labov 1972) (i.e. participants do get influenced by the presence of people they are not familiar with and this can influence their production) and for the participants to comfortably and adequately do the experiment with the researcher (Nortier 2008:42).

The investigator was introduced to the children as a language researcher, who is interested in understanding their ability to learn English and it was highly emphasized that she was not their teacher and that the participants were not being examined, since this seemed to be of great concern for some of them. They were conscious of the fact that the investigator could speak their L1, but they were told to use only English to perform the different tasks, although they were allowed to ask for vocabulary.

For the oral task, the role of the investigator was to make the participants understand the task and thereby make them produce full sentences by avoiding asking yes-no questions and guiding the participant towards more elaborated answers.

For the written task, the role of the investigator was to help the participants understand the task and guide the participants to write stories that contained as much information as possible of the actions being performed by the story characters using full sentences.

4.3 Experiments & data collection

In order to obtain the data, two tasks have been designed to elicit oral and written production data through experimental and semi-spontaneous procedures as described below.

4.3.1 Oral task

Semi-spontaneous production data have been elicited via an oral semi-guided interview. The participants have been interviewed individually and voice recorded. The total duration of the interviews selected for the study is 16 hours and 20 minutes, where each individual interview ranged from 10 to 16 minutes maximum.

A protocol was designed to ensure uniformity across participants and across groups as well as to encourage a more naturalistic speech, where the topics proposed by the researcher in most cases were related to the participants' family, hobbies, interests, school, preferences, music, friends, etc. They were also encouraged to talk about any topic of their choice, but most of them only answered the questions asked.

The interviewed participants were allowed to ask for vocabulary, which was always provided to them in the most grammatically neutral form (e.g. verbs were provided in infinitive, nouns in singular, etc.). To encourage their part-taking, they were praised throughout the whole session.

The setting in which the experiment was conducted was known to the participants, since it was as small room or a classroom in the institution where they studied. It was a quiet and well-lighted place, and no interruptions were made during the recordings.

4.3.2 Written task

The experimental written production data have been elicited via a wordless picture sequence task adapted from the *A1-ball* story from the Edmonton Narrative Norms Instrument (ENNI) (Schneider et al. 2005) (see *appendix I*)[14]. The *A1-ball* story illustrates how two characters, a male giraffe and a female elephant, play with a ball near a swimming pool. Accidentally, the giraffe drops the ball and it falls into the water. The elephant jumps, fetches the ball and gives it back to the giraffe, who appears to be very happy.

The changes that have been made to the original ENNI story are related to the characters and their biological gender. Both Spanish and Bosnian are [+gender] languages, and, so, nouns have grammatical gender. In Spanish this division is twofold (i.e. masculine and feminine), whereas in Bosnian it is trifold (i.e. masculine, feminine and neuter). Following Harris (1991) and Roca (1989, 2005, 2006), and Fernández Fuertes et al. (2016) gender is divided into four different domains: semantics, morphology, phonology and syntax[15].

A brief explanation focusing on the point of interest for this dissertation is provided here. What regards semantics, [+animate] nouns have the features [+male] or [+female] in accordance with their biological gender. Gender is semantically arbitrary both in Spanish and in Bosnian. What regards morphology, nouns include word markers, which are the final suffixes that can contribute to transparent gender identification and can, at the same time, be condensed to phonological features that phonetically distinguish between word markers.

[14] The ENNI is a language assessment tool for children developed at the University of Alberta, Canada, and freely available at http://www.rehabresearch.ualberta.ca/enni/.
[15] It is not our aim to discuss thoroughly these domains in this dissertation. An exhaustive account is provided by the authors.

What regards syntax, it is related to the masculine/feminine distinction, where masculine is typically the default gender.

Following the theory put forward by Harris (1991), grammatical gender can be systemized into three classes, i.e. inner-core, outer-core and residue, based on the relations established between grammatical gender and morphological markers. For example, in Spanish the inner-core class comprises nouns that end in *-a* and that are feminine (*la casa* 'the house') and nouns that end in *-o* and that are masculine (*el libro* 'the book'). The outer-core class corresponds to nouns that have no word marker (masculine *el sol* 'the sun' and feminine *la madre* 'the mother'). Residue nous are those that have word markers other than the canonical ones (e.g. masculine *el bikini* 'the bikini' and feminine *la tribu* 'the tribe'). What regards gender assignment in Bosnian, it also depends mainly on word markers (Progovac 2005 and Halilovic 2017) and the same three classes presented above can be applied with neuter gender also included in the classification. The canonical word markers (i.e. inner-core) are *–a* for feminine (*stolica* 'chair'), *-o* (*selo* 'village') and *–e* (*dijete* 'child') for neuter and consonants for masculine (*kamion* 'lorry' or *brat* 'hermano').

Applying the class distinction above and considering the biological gender characterization in the *A1-ball* story, the Spanish noun *jirafa* [-masculine] and the Bosnian noun *žirafa* [-masculine] are classified as residue, because grammatical gender and the word marker do not correlate with inner-core criteria. In order to mark the biological gender of a giraffe, *macho/mužijak* (male) or *hembra/ženka* (female) have to be added. What regards gender in the Spanish noun, *elefante* (elephant) is used for the masculine being the female counterpart *elefanta* (female elephant). The same distinction occurs in the Bosnian noun *slon* [+masculine] and *slonica* [+feminine]. Both feminine nouns in the two languages belong to the inner-core class.

Thus, the problem arises within the combination of grammatical, morphological and biological gender and how they are represented as male (giraffe) and female (elephant) characters in the original ENNI story. To avoid a possible gender conflict or confusion in the reference between these two characters with subject pronouns as *he* or *she*, the sex of the characters was interchanged, as shown in 2*b* compared to 2*a*. The character playing with the ball is the female character and this is changed from being the elephant in the original version to being the giraffe in the adapted version (so that now both the Spanish and the Bosnian equivalent nouns for giraffe are inner-core nouns as they are female, feminine and with the morphological marker -*a*); while the character who is watching is changed from being the giraffe in the original version to being the elephant in the adapted version (so that now both the Spanish and the Bosnian equivalent nouns for elephant belong to the core, outer-core in Spanish and inner-core in Bosnian). Hence, the output cannot be considered to be differently affected by gender references from the participants' L1s.

Figure 2a. Original ENNI story

Figure 2b. Adapted ENNI story

The A1-ball story consists of five pictures that showed an elephant and a giraffe playing with a ball (see *appendix I* for the original story and *appendix II* for the adapted

story). The participants first saw the sequence of five pictures (only the adapted version of the story) and then they were asked to narrate the story in their own words.

In line with the suggestions proposed by Ellis &Yuan (2004), the participants had one planning session with their teachers before the written task. During these sessions, they were instructed in their L1s on how to write a story based on a picture sequence. Other previous sessions, which were also part of their curriculum, were dedicated to teaching the children writing skills and providing them with tools to improve their narrative (e.g. Hedge 2000; Ellis & Yuan 2004; Kuiken & Vedder 2011; Ellis 2014, among others).

A warm up session was then held in both English and their native language in order to make sure that they completely understood the task. In the warm up session these steps were followed:

i) a random picture of both characters (Mary giraffe and Tom elephant) was shown to the participants (as in examples 33 and 34 below):

33) (*with giraffe picture*) This is Mary Giraffe. She is very happy and likes to play. Every day she goes out to play with her friend Tom Elephant.

34) (*with elephant picture*) This is Tom Elephant. He is also very happy and likes to play with Mary Giraffe. He runs home every day after school to play with her.

ii) using these pictures, a brief introduction to each character was provided in English including the description provided in 33) and 34) above for each picture as well as the following one in 3):

35) "Tom Elephant and Mary Giraffe are friends. They are two friends who go to the same school and live in the same street. They have been friends since they were very small"[16].

iii) the participants were asked to describe orally and in their L1 what they could see in these two pictures and what they thought about the two characters.

The purpose of the warm up session was to familiarize the participants with these characters and make them more confident when writing their story.

The data elicitation procedure of this task was the following:

i) explanation of the task in the participants' L1;

ii) warm up session in English and in the participants' L1 when necessary (see the steps presented above);

[16] In these descriptions full DPs were used to introduce the referent and then subsequent mentions are done via pronouns, as the standard form of referentiality followed in English. Null pronouns are used in coordinated structures.

iii) a pen and a piece of paper was distributed for the participants to write down their story;

iv) the sequence of five pictures was projected on a screen;

v) participants were allowed to ask any questions regarding the procedure, the pictures or the vocabulary;

vi) the sequence of five pictures was projected on a screen two more times;

vii) once there were no doubts, the pictures were no longer available for the participants to see;

viii) the participants were then asked to write the story as they have understood it;

ix) the participants were allowed to ask for vocabulary throughout the whole writing session.

In the case of the school in Bosnia, no projectors were available. Thus, a poster (size: A2) was printed and laminated for each of the five pictures. The data elicitation procedure for the L1 Bosnian groups was the following:

i) explanation of the task in Bosnian;

ii) warm up session in English and in the participants' L1 when necessary (see the steps presented above);

iii) a pen and a piece of paper were distributed for the participants to write their story;

iv) the sequence of five pictures was hung on the blackboard for 20 minutes approximately;

v) participants were allowed to ask any questions regarding the procedure, the pictures or the vocabulary;

vi) once there were no doubts, the pictures were no longer available for the participants to see;

vii) the participants were then asked to write the story as they have understood it;

viii) the participants were allowed to ask for vocabulary throughout the whole writing session.

For all the groups, the task was conducted in a classroom where the whole class participated together. It was actually considered and perceived as yet another class activity, so that the participants would not feel like they were being examined and would perform the task in a more natural and relaxed environment for them. The fact that this was not an exam has been specially highlighted. They were reminded that they were not going to be graded for part-taking and that the activity was not part of the evaluations that their own school followed.

4.3.3 Pilot study

For each of the tasks, two pilot studies were run to check for any errors or difficulties that the data collection procedure might entail. They also served as a practice session for the investigator, too.

The first pilot study was run on participants that attended a private language school, the *One Way School of Languages*, in Valladolid. The profile of these participants coincides with the L1 Spanish groups. Three participants had received 2 years of English instruction (i.e. as L1 Spanish-group 1) and four participants had received 4 years of English instruction (i.e. as L1 Spanish-group 2). Four L1 Spanish participants who had received instruction in English for 1 year have also participated in the pilot study, but their production could not be

analyzed because they did not produce one single complete sentence. After 2 years of instruction, participants started producing complete sentences and, accordingly, the production of subjects could be analyzed. In order to see a development in production, the next set of data collected was from participants who have been instructed in English for 4 years. The data collected from this pilot study have not been used in this dissertation, but some amendments were made to the way the tasks were implemented.

The second pilot study was run on English heritage speakers from the *International School in Valladolid*. It was run following exactly the same procedure that have later been used for the data collection for this dissertation.

Regarding the written task, the purpose of this pilot study in particular was to help establish the number of times that the picture sequences were to be projected. The participants felt most comfortable with three projections. They stated that it helped them mentally to create a story while the pictures were being projected and, then, they only had to write the story on the sheet of paper provided. Both the participants from the private language school and the heritage speakers did both tasks, the oral one and the written one.

4.4 Transcription & coding procedure

Both the oral and the written production tasks have been transcribed in CHAT (Codes for the Human Analysis of Transcripts) format and analyzed using the CLAN (Computerized Language ANalysis) software. Both CHAT and CLAN are the resource tools used in CHILDES (MacWhinney 2000) and TalkBank (MacWhinney 2019). CHAT is a transcription format used for transcribing linguistic data. Data transcribed in CHAT can be analyzed by using a series of inbuilt programs, which form part of CLAN. These programs

facilitate different automatic calculations and searches on selected CHAT data (for example the MLU program is used to calculate the MLUm or the MLUw). The use of this specific format was also chosen, because our intention is to contribute these data to TalkBank.

Once the data for each participant and for each task were transcribed, sentential subjects were isolated and classified in terms of i) form, ii) grammaticality, iii) S-V agreement, and iv) adequacy in terms of referentiality, as shown in *table 4* and as described below.

Form	DPs	
	proper names	
	overt pronouns	
	null pronouns	grammatical
		ungrammatical
Agreement	grammatical	person & number
	ungrammatical	non-inflected form: omission of 3rd person -s marker
		non-inflected form: infinitive
		use of singular forms for plural
		use of plural forms for singular
		use of 3rd person for 1st person
		null lexical verb
		null auxiliary verb
		null past tense
		null copula
Adequacy	adequate	DP used for reference introduction
		DP used for reference reintroduction
		null pronoun used for reference maintenance
		pronoun used for reference maintenance
	non-adequate	DP used for reference maintenance
		pronoun used reference introduction
		pronoun used for reference reintroduction

Table 4: Data codification variables

In terms of form, sentential subjects were codified into five categories as illustrated in examples 36 to 40:

36) *CHI: *my mother* is a chef [full DPs]
(oral L1 Danish-group 2; SODKVIIB.13; 13 years)

37) *CHI: *Tom* jumped down in the pool [proper names]
(written L1 Danish-group; SODKVC.02; 10 years)

38) *CHI: *he* found a ball [overt personal pronouns]
(oral L1 Bosnian-group 2; BLBOVII2.01; 12 years)

39) *CHI: we paint and *Ø*[17] draw [null pronouns in coordinated structures]
(oral L1 Spanish-group 2; VAESVA.09; 11 years)

40) *CHI: *Ø* adopt a baby lion [null ungrammatical personal pronouns]
(written L1 Spanish-group 2; VAESVB10; 11 years)

Being the focus set on referential sentential subjects, expletive subjects, as in 41, and null subjects in imperative constructions, as in 42, were excluded from the analysis.

41) *CHI: *it* was raining (oral L1 Danish-group 2; SODKVIIB.09; 13 years)

42) *CHI: *Ø* help me! (written L1 Danish-group 2; SODKVIIB.01; 11 years)

In terms of grammaticality, sentential subjects were codified into two categories: grammatical (as in 36 to 39 above) and ungrammatical (e.g. null subjects that are not found in coordinated structures, as in 40). In this case only grammaticality of the subject was considered so that, if other mistakes appear in the sentence, they were disregarded and, as long as the subject was correct, the example was tagged as grammatical. Other factors that were not related to subject expression and that were not taken into consideration when determining grammaticality include the ones in 43 to 46:

43) *CHI: *him* have a job [correct/incorrect case assignment]
(oral L1 Bosnian-group 2; BLBOVII2.10; 12 years)

44) *CHI: *Marry* plays with Tom [spelling mistakes]
(written L1 Danish-group 1; SODKVIIB.02; 11 years)

45) *CHI: yes, I like *Ø* [omission of objects]
(oral L1 Spanish-group 2; VAESVA.09; 11 years)

46) *CHI: and that baby was *daymon* [made-up words]
(written L1 Bosnian-group 1; BLBOVII2.01; 10 years)

[17] *Ø* is the symbol used to mark the omission of a category (i.e. subjects, auxiliary verbs, main verbs, etc.).

In terms of S-V agreement, both grammatical and ungrammatical S-V agreement was coded for. S-V agreement is grammatical when person and number are checked correctly as in adult native grammar. Lack of S-V agreement involves both omission cases and non-finite forms, as in 47 to 50:

47) *CHI: she *work* in the lab [omission of –s markers]
(oral L1 Danish-group 2; SODKVIIB.08; 13 years)

48) *CHI: Tom *be* decide swimming [use of non-inflected forms]
(written L1 Bosnian-group 1; BLBOV2.11, 10 years)

49) *CHI: I *Ø* elevens years old [omission of copula verbs]
(oral L1 Spanish-group 2; VAESVA.03; 11 years)

50) *CHI: I *Ø* not like English [omission of auxiliary verbs]
(oral L1 Bosnian-group 1; BLBOVII2.05; 10 years)

In the case of adequacy, sentential subjects were also classified in terms of their pragmatic adequacy by relying on the three formal categories (i.e. DPs, overt pronouns and null pronouns) and their compliance with the adult native grammar rules in a given linguistic context. Thus, each subject form is classified according to its usage (either adequate or non-adequate) in relation to their referent as follows. DPs were adequate if used for referent introduction, that is, when the referent was introduced for the first time, as in 51; for referent reintroduction, when the referent was introduced beforehand, but a DP is needed to restate the referent; or for disambiguation, as in 52.

51) *CHI: one sunny day *Mary and Tom* go to pool
(written L1 Bosnian-group 1; BLBOV2.14; 12 years)

52) *Previous context*:
*CHI: Mary giraffe and Tom elephant was playing with ball
*CHI: But the ball was fall in the water and they couldn't take

Example:
*CHI: *Tom elephant* jumped to the water to tooks the ball
(written L1 Spanish-group 2; VAESVB.09; 11 years)

DPs were inadequate if used for reference maintenance when the same DP is repeated where a pronoun is expected, as in 53.

53) *Previous context*:
*CHI: Mary and Tom was out for a walk and they stop beside a little pool to play with a ball

Example:
*CHI: Mary and Tom plays with a ball (oral L1 Danish-group 2; SODKVC.01; 13 years)

Overt pronouns were adequate if used for reference maintenance, as in 54.

54) *Previous context:*
*CHI: but Tom Elephant jumped to the swimming pool and Ø took the ball

Example:
*CHI: *he* gave the ball to Mary Giraffe (written L1 Spanish-group 2; VAESVA.08; 11 years)

Overt pronouns were not adequate if used for referent introduction, when the referent has not been previously mentioned, as in 55,

55) *Previous context: there is no previous context as this is the first sentence produced by the participant*

Example:
*CHI: *they* were very good friends. (written Control group; COCA12; 10 years)

or when they are used for reference reintroduction that results in ambiguity because the referent cannot be identified.

56) *Previous context:*
*CHI: the last we have done a bit of Guy Forks when he was a catholic terrorist.
*CHI: they tried to explode the whole the House of Parliament.
*CHI: while the king was inside.
*CHI: he meant that the Bibel@s:dan should be read in English and not only Latin.

Example:
*CHI: so *he* decided to try to kill him (oral L1 Danish-group 1; SODKVC06; 11 years)

The referent for the overt pronoun used in 56 cannot be identified because various 3rd person singular masculine referents have been previously mentioned. In this case it is not clear if *he* refers to Guy Forks or to the king.

Null pronouns were only adequate if used for reference maintenance in coordinated structures, as in 57. If a null pronoun is used in any other context, it was codified as ungrammatical, as in 58.

57) *CHI: I can go for a walk with a dog and *Ø* play with a dog
(oral L1 Danish-group; SODKVC.13; 11 years)

58) *CHI: today *Ø* are very happy (oral L1 Spanish-group 1; VAESIIIB.12; 8 years)

Other examples that have been excluded from the study include cases like the ones in 59-62:

59) *CHI: Mary *xxx* to get out [incomplete sentences]
(oral L1 English group; COCA.15; 12 years)

60) *CHI: *ovaj@s:bos* sing (.) sings [codeswitching involving subjects]
(oral L1 Bosnian-group 1; BLBOV2.15; 11 years)

61) *CHI: *who* was happy [wh-pronouns in subject position]
(oral L1 Bosnian-group 2; BLBOVII2.02; 13 years)

62) *CHI: you are welcome [fixed expressions]
(oral L1 Danish-group 2; BLBOVII2.13, 13 years)

These examples were excluded either because i) they did not provide sufficient information regarding the form or the referent of the subject; ii) they were not entirely in English (i.e. they included code-switching); iii) they involve other mechanisms that can interact with word-order (i.e. the use of wh- pronouns in subject position); and iv) they were not instances of the participants' productive language.

4.5 Statistical methods for data analyses

The statistical analysis was conducted in the following manner. Different statistical tests have been run using R, version 3.6.2 (R Core Team, 2017). As the results from the Levene's Test for homogeneity of variance showed lack of homoscedasticity, two GLMMs (General Linear Mixed Models) were fitted using the lme() function in the lmerTest package; one test was fitted for the grammaticality of subjects (p<.001) and another test for the adequacy of the grammatical subjects (p<.001).

The omnibus ANOVA tests conducted are based on the GMMLs and they are reported without the effect size, because, due to the way that variance is partitioned in GLMMs, there is no agreement as to how to calculate standard effect sizes for individual model terms such as main effects or interactions (Richardson 2011; Singmann & Kellen 2015 and Rights & Sterba 2019). However, a GLMM that permits the introduction of random effects to create the model was run with a view to refining the sources of variance. Therefore, the main focus is on the fixed effects and their interactions.

For grammaticality, the amount of grammatical subjects produced was calculated in percentages before introducing them as response variables in the model. L1 with four levels (i.e. Spanish, Bosnian, Danish and English), time of instruction (i.e. 2 years and 4 years) and modality (i.e. oral and written) were used as fixed effects variables. Participant was introduced as a variable of random effects which accounts for 14% of the overall variance. In order to explore the differences between groups, the F ratio values were obtained from the omnibus ANOVA tests. When significant results for main effects and interaction effects were observed, the follow-up pairwise comparisons were conducted adjusting the p-values with the Bonferroni method.

For adequacy the same procedure was followed. The amount of adequate subjects produced was calculated in percentages from the total of overall grammatical subjects before introducing them as response variables in the model. L1 with four levels (i.e. Spanish, Bosnian, Danish and English), time of instruction (i.e. 2 years and 4 years) and modality (i.e. oral and written) were used as fixed effects variables. Participant was introduced as a variable of random effects, although the results did not detect this variable as a source of variability of the response variable. In order to explore the differences between groups, the *F* ratio values were obtained from the omnibus ANOVA tests. When significant results for main effects and interaction effects were observed, the follow-up pairwise comparisons were conducted adjusting the *p*-values with the Bonferroni method.

Once again, in order to obtain results related to the preference of subject type (i.e. overt, grammatical-null and ungrammatical-null), the overall subject production was calculated in percentages: L1 with four levels (i.e. Spanish, Bosnia, Danish and English), time of instruction (i.e. 2 years and 4 years), modality (i.e. oral and written) and subject type (i.e. overt, grammatical-null y ungrammatical-null) were used as fixed effects variables. Participant was introduced as a variable of random effects, which account for 4% of the overall variance. In order to explore the differences between groups, the F ratio values were obtained from the omnibus ANOVA tests. When significant results for main effects and interaction effects were observed, the follow-up pairwise comparisons were conducted adjusting the *p*-values with the Bonferroni method.

4.6 Summary

This chapter has outlined the methodology followed to implement this study. Information has been provided regarding i) the participants (including the selection criteria

used and their linguistic profile), ii) the tasks used to elicit the oral and written production data, iii) the extraction and codification procedures used, and iv) the statistical analyses conducted.

The participants that took part in this study are divided into three groups depending on their L1 (i.e. L1 Spanish, L1 Bosnian and L1 Danish). All of these participants are L2 English speakers. They were further divided into two subgroups depending on the time of instruction they have received in L2 English (i.e. 2 years and 4 years).

A summary of the linguistic profile of the different participant groups is provided in *table 5* below where years/hours of instruction correspond to L2 English instruction at school.

group	age	years of instruction	hours of instruction	mean MLUw
Spanish-group 1	9-10	2	455	5.585
Spanish-group 2	11-12	4	910	6.561
Bosnian-group 1	10-11	2	120	4.243
Bosnian-group 2	11-12	4	300	5.154
Danish-group 1	10-11	2	120	6.607
Danish-group 2	11-12	4	300	7.006
Control group	10-11	n/a	n/a	6.241

Table 5: Summary of the participants' linguistic profile

To elicit data from these participants, two different task modalities were used: oral and written. The overall number of utterances obtained from the participants is 11,196. Nonetheless, since the aim of this dissertation is to account for sentential subjects, only full sentences were analyzed. Therefore, a total amount of 6,051 tokens (i.e. sentences) constitute the corpus of analysis for the present study and were compiled and codified in an Excel spread sheet (v. 2013). The Excel database was later exported to R, version 3.6.2 (R Core Team, 2017), in order to run the statistical analyses. Results obtained and the statistical analyses implemented are discussed in chapter 6.

CHAPTER 5: RESEARCH QUESTIONS & HYPOTHESES

In this chapter, the aim of the study in form of research questions and hypotheses is put forward. Section 5.1 deals with the main research questions, whereas section 5.2 deals with the hypotheses that are related to these research questions. Subsequently, the potential outputs are presented in order to further explain and specify the issues that might arise in relation to each specific research question and hypothesis at stake.

5.1 Research questions

This dissertation deals with the effects of transfer that may surface in relation to sentential subjects when typologically similar or typologically different languages are in contact in an L2 English context. The aim is to account for how the oral and the written production of the L2 English speakers might be influenced, either positively or negatively, by typological similarity and time of instruction in L2 English. We particularly seek to answer i) whether the availability of both null and overt subjects in the participants' [+null subject] L1s has an effect on the production of sentential subjects in L2 English and ii) whether the overt subject requirement in the participants' [-null subject] L1s has an effect on the production of sentential subjects in L2 English. That is, the focus is placed on how typological similarity of a specific linguistic property affects the oral and written production of L2 English sentential subjects.

In this line and in the light of the literature previously considered (chapters 2 and 3), the research questions that have guided this research are the following:

i) What is the role, if any, played by typological similarity?

ii) What is the role, if any, played by the different availability of subject types across languages?

iii) What is the role, if any, played by task modality?

iv) What is the role, if any, played by the time of instruction in L2 English?

5.2 Hypotheses

Considering these research questions, the following hypotheses are formulated:

i) Hypothesis #1: typological similarity and transfer

Following the proposal put forward by Liceras & Alba de la Fuente (2015), the closer the languages in contact are typologically and linguistically speaking, the lower rates of ungrammatical and non-adequate structures are expected. Since English and Danish are both [-null subject] languages, which means that both require their subjects to be overt, thus no ungrammatical or non-adequate cases are expected in the L2 English of L1 Danish speakers. English and Danish are both typologically proximate and typologically similar. Typological proximity and typological similarity are expected to function as facilitators (i.e. leading to positive transfer).

On the other hand, since Spanish and Bosnian are both [+null subject] languages, which means that both allow their subjects to be null or overt, thus, ungrammatical and non-adequate cases are expected in the L2 English of L1 Spanish and L1 Bosnian speakers. Given the difference in typological similarity between this language pair and the L2, negative transfer is expected.

Previous works on L2 acquisition have mainly focused on typologically proximate languages (see chapter 3, section 3.6). As a consequence, studies on typologically similar languages are scarce, especially in the case of [-null subject]

languages in contact, a gap that this dissertation intends to address. Furthermore, and even if the contact between typologically different languages has been much explored, this dissertation includes in this case the analysis of an under-studied language: Bosnian.

ii) Hypothesis #2: The different availability of subject types between the L1 and the L2

Taking as point of departure Holmberg's (2005) and Sheehan's (2006) analyses, Fernández Fuertes & Liceras (2018) and Liceras & Fernández Fuertes (2019) argue that the availability of two subject types (null and overt) in one of the languages of the bilingual can be seen as having a facilitating effect for the acquisition of a one subject type language (i.e. English). Their study deals with Spanish as a two subject type language which we extend here to Bosnian. Their proposal in terms of the directionality of transfer (from the superset language, Spanish or Bosnian, to the subset language, English) and the effect of transfer (i.e. positive) is backed up by the 2L1 data they analyze. If this proposal is applied to L2 acquisition, the prediction will be that the production of L1 Spanish and L1 Bosnian participants will not include an overproduction of null subjects in English (i.e. no negative transfer will occur) as these speakers' L1s are superset languages when compared to English. That is, transfer will have a positive effect by reinforcing the only possibility in English, the overt subject. Since Danish and English do not defer in terms of availability of subject types, both being two subject type languages, the realization of overt subjects in the L2 English of L1 Danish speakers is expected to be grammatical (i.e. positive transfer will occur).

Previous findings on the 2L1 acquisition of [+/-null subject] languages have confirmed this hypothesis, but it has not been tested against L2 data and using these language pairs.

iii) Hypothesis #3: modality (oral vs. written)

Since oral production is elicited in real time, it is cognitively more demanding, compared to written data where more time can be spent on formulation. This has been found to be true in adult production (e.g. Niu 2009; Payant and Kim 2017; Gracía Mayo & Imaz Agirre 2018, among others). However, different studies have shown that children perform better in oral than in written tasks, because they have to use more cognitive load to write leaving less resources for the formulation (e.g. Kellog 1996; Granfeldt 2008; Kuiken & Vedder 2011; Williams 2012, among others). When written tasks are used and in order to counterbalance the extra effort they involve, testing typically involves warm-up sessions as well as sessions where children are provided with tools on how to plan the writing of a story (e.g. Hedge 2000; Ellis & Yuan 2004; Kuiken & Vedder 2011; Ellis 2014, among others). For the present study, we have used such warm-up and planning sessions.

We predict that the participants will show a more accurate production in the oral than in the written task, due to the fact that writing can be more demanding for children and that this will not be overcome by using pre-training.

Previous findings comparing L2 oral and written data have mainly dealt with adult production, but not much has been said about children, which will be a further contribution of the present investigation.

iv) Hypothesis #4: time of instruction

The two groups under study differ in the time of instruction in L2 English that they have received: 2 years in the case of group 1 and 4 years in the case of group 2. Previous findings have shown that the longer the speakers have been instructed in a foreign language the better their performance gets (e.g. Gathercole 2002; 2016; Muñoz 2006; Blom & Baayan 2012; Unsworth 2016; Muñoz et al. 2018, among others). The assumption is that there will be a correlation between time of instruction and grammaticality/adequacy; that is, that the longer L2 learners have been instructed in the L2, the fewer ungrammatical and non-adequate structures they will produce (i.e. lower amount of negative transfer). Thus, we hypothesize that the participants who have been instructed in L2 English for a period of 4 years will outperform the participants who have been instructed in L2 English for 2 years.

CHAPTER 6: DATA ANALYSIS & DISCUSSION

The aim of this chapter is to account for the various sets of data analyzed in this dissertation in order to provide an answer to the research questions that guide this study. The results presented include both the production of the experimental groups (i.e. from [+null subject] and [-null subject] language backgrounds: Spanish, Bosnian and Danish) and that of the control group (i.e. monolingual speakers of a [-null subject] language, English), in order to account for L2 English sentential subject production. The analysis is done by taking into account the participant groups' overall production of sentential subjects in the two tasks, oral and written. The total number of subjects produced is 6,071 out of which 5,774 are grammatical. Out of these grammatical subjects, 5,408 are classified as adequate in terms of their pragmatic-discursive properties. The analyses provided take into account the following criteria as per the hypotheses formulated: typological similarity between the L2 and the participants' L1 ([+/- null subject] languages), sentential subject types (overt and null), task modality (oral and written) and time of instruction in L2 English (2 and 4 years). Detailed information regarding the classification and codification of the data is provided in chapter 4.4 (Transcription and coding procedure).

This chapter is divided into two main sections and a summary section. Section 6.1 offers a first approach to the data: it describes the main effects obtained from the statistical analyses and explains them in the view of the research questions raised. Section 6.2 provides a comparison between the different variables of analysis: it offers a series of pairwise comparisons performed in order to address the four hypotheses formulated. Finally, section 6.3 provides a summary of the main findings.

6.1 Overall approach to the data: main effects and interactions

To run the statistical analyses, two General Linear Mixed Models (GLMMs) were fitted: one that focuses on the grammaticality of the subjects produced (i.e. grammatical vs. ungrammatical subjects) and one that is concerned with the adequacy of the grammatical subjects (i.e. adequate vs. non-adequate subjects). In both cases, the GLMMs integrate variables such as L1, time of instruction and modality as fixed effects and participants as a random effect.

As of grammaticality of the sentential subjects produced, a summary of this fitted model appears in *table 6*.

fixed effect[18]	*estimate*	*SE*	*t*	*df*	*p*
(Intercept)	91.948	2.410	38.148	164.327	<0.001
modality written	- 0.025	3.144	- 0.008	84.000	0.994
L1 Danish	3.772	3.409	1.107	164.327	0.270
L1 Spanish	- 16.584	3.409	- 4.865	164.327	<0.001
L1 English	7.085	3.409	2.079	164.327	0.039
time of instruction 4 years	0.455	3.409	0.134	164.327	0.894
modality written: L1 Danish	2.381	4.446	0.536	84.000	0.594
modality written: L1 Spanish	16.017	4.446	3.603	84.000	0.001
modality written: L1 English	- 0.824	4.446	- 0.185	84.000	0.853
modality written: time of instruction 4 years	6.803	4.446	1.530	84.000	0.130
L1 Danish: time of instruction 4 years	1.052	4.821	0.218	164.327	0.828
L1 Spanish: time of instruction 4 years	14.006	4.821	2.905	164.327	0.004
modality written: L1 Danish: time of instruction 4 years	- 9.006	6.287	- 1.432	84.000	0.156
modality written: L1 Spanish: time of instruction 4 years	- 18.185	6.287	- 2.892	84.000	0.005

Table 6: Summary of the GLMM fixed effects for grammaticality

From this model, an omnibus ANOVA test was run to detect main and interaction effects. The main effects are significant for modality ($F_{(1,84)}$=12.169, p<.001), L1

[18] The reference parameters that the GLMM used for the fixed effects are the following: i) for modality: oral; ii) for L1: Bosnian; and iii) for time of instruction: 2 years.

($F_{(3,84)}$=13.662, p<.001) and time of instruction ($F_{(1,84)}$=8.478, p=.004). A three-way interaction effect is observed between modality, L1 and time of instruction ($F_{(2,84)}$=4.182, p=.018).

Fixed effects[19]	*estimate*	*SE*	*t*	*df*	*p*
(Intercept)	54.792	3.667	14.943	168.000	<0.001
modality oral	34.910	5.185	6.732	168.000	<0.001
L1 Danish	25.511	5.185	4.920	168.000	<0.001
L1 Spanish	20.061	5.185	3.869	168.000	0.000
L1 English	30.846	5.185	5.949	168.000	<0.001
time of instruction 4 years	34.555	5.185	6.664	168.000	<0.001
modality oral: L1 Danish	- 17.973	7.333	- 2.451	168.000	0.015
modality oral: L1 Spanish	- 12.693	7.333	- 1.731	168.000	0.085
modality oral: L1 English	- 20.548	7.333	- 2.802	168.000	0.005
modality oral: time of instruction 4 years	- 30.595	7.333	- 4.172	168.000	<0.001
L1 Danish: time of instruction 4 years	- 39.012	7.333	- 5.320	168.000	<0.001
L1 Spanish: time of instruction 4 years	- 54.846	7.333	- 7.479	168.000	<0.001
modality oral: L1 Danish: time of instruction 4 years	37.317	10.371	3.598	168.000	0.000
modality oral: L1 Spanish: time of instruction 4 years	51.158	10.371	4.933	168.000	<0.001

Table 7: Summary of the GLMM fixed effects for adequacy

As of adequacy, a summary of the results appears in *table 7*. From this model, an omnibus ANOVA test was run to detect main and interaction effects. The main effects are significant for modality ($F_{(1,168)}$=112.005, p<.001) and for L1 ($F_{(3,168)}$=7.199, p=.000), but not for time of instruction ($F_{(1,168)}$=1.6473, p=.201). Nonetheless, time of instruction was significant in interaction with modality and L1 (i.e. a significant three-way interaction is observed between modality, L1 and time of instruction; $F_{(2,168)}$=13.02, p<.001).

Apart from showing different interaction effects, the summaries of the GLMMs (*table 6* and *table 7*) also show an effect in the analyses conducted for L1, modality and time of

[19] The reference parameters that the GLMM used for the fixed effects are the following: i) for modality: written; ii) for L1: Bosnian; and iii) for time of instruction: 2 years.

instruction for both grammaticality and adequacy conditions. These effects are related to the four research questions in the following sense: i) the effect of the L1 indicates that, when analyzing the results related to transfer and typological similarity (research question #1 and hypothesis #1) along with the superset and subset classification of the language pairs and, thus, the availability of null and overt subjects (i.e. research question #2 and hypothesis #2), there is a difference among the L1s in terms of whether they are [+null subject] or [-null subject] languages; ii) the effect of the task modality (research question #3 and hypothesis #3) indicates that there is a difference between the oral and the written data obtained; and iii) the effect of time of instruction (research question #4 and hypothesis #4) indicates that there is a difference between the participants that have been instructed in L2 English for a period of 2 years and those that have been so for a period of 4 years. For a more in-depth analysis of these effects, pairwise comparisons were run and analyzed in relation to the hypotheses formulated.

These effects, therefore, yield a positive answer to the four research questions in that these L2 English speakers' production is shaped by their L1, by the modality of the task used to elicit the data and by the time of instruction these speakers have had in English. For a more in-depth analysis of these effects and to actually be able to address the specific role played by the L1, task modality and time of instruction, pairwise comparisons are described and analyzed in the following section.

6.2 Break-down of the data analysis: pairwise comparisons

The three-way interaction between L1, modality and time of instruction is explored next and, in order to do so, it is broken down into different pairwise comparisons of the

variables under analysis. Since these variables are captured in the four hypotheses presented in chapter 5, the subsequent analysis is done by addressing each of these hypotheses in the light of the pairwise comparison analysis. In each case, first a brief summary of the hypothesis is provided, followed by the results obtained and, finally, by the corresponding discussion.

6.2.1 Hypothesis #1: transfer due to typological similarity

In language contact situations with an L2 being acquired after the L1 and in an institutional context, L2 learners typically rely on their L1. The more similarities the learners are able to identify between the two languages (i.e. their L1 and the L2), the more grammatical and adequate their L2 production will be. Therefore, the first issue examined is the influence of the learners' L1. Displayed in *table 8* is the overall distribution of grammatical (example 63) and ungrammatical subjects (example 64) considering the typological similarity of the learners' L1 (i.e. [+/-null subject] languages) when compared to that of the L2 (i.e. English as a [-null subject] language).

63) *my favorite subject* is P E (oral L1 Bosnian-group 1; BLBOV2.11, 10 years)

64) *Ø* is a good teacher (oral L1 Bosnian-group 2; BLBOVII2.04, 12 years)

typology	L1	grammatical		ungrammatical		total
		% [# of cases]	SD	% [# of cases]	SD	% [# of cases]
[+null]	Spanish	87.07 [1,105]	12.2	12.93 [164]	12.2	100 [1,269]
	Bosnian	95.59 [1,386]	7.65	4.41 [64]	7.65	100 [1,450]
[-null]	Danish	97.46 [2,183]	3.82	2.54 [57]	3.82	100 [2,240]
	English [control]	98.92 [1,100]	1.74	1.08 [12]	1.74	100 [1,112]

Table 8: Distribution of subjects per language group: grammaticality

Being both Spanish and Bosnian [+null subject] languages, these participants are expected to produce a greater number of ungrammatical subjects in comparison with the participants whose L1 is a [-null subject] language (i.e. Danish), because the L2, English, is a [-null subject] language. The vast majority of the subjects produced by the three L2 groups, as in *table 8*, are grammatical. The L1 Spanish group produces the highest rate of ungrammatical subjects (12.93%) followed by the L1 Bosnian group (4.41%) and the L1 Danish group (2.54%). Some ungrammatical subjects are also found in the case of the control group although the rate is very low (1.08%). Thus, the [+null subject] language group produces the most ungrammatical subjects, as expected, even though the differences between the L1 Bosnian group and the [-null subject] language groups are not that sizable.

language groups	grammaticality
L1 Spanish vs. L1 Bosnian	.007*
L1 Spanish vs. L1 Danish	<.001*
L1 Spanish vs. L1 English	<.001*
L1 Bosnian vs. L1 Danish	.502
L1 Bosnian vs. L1 English	.233
L1 Danish vs. L1 English	1.000

Table 9: Comparisons across participant groups: grammaticality

From the general ANOVA test in the GLMM model, a pairwise comparison with a Bonferroni adjustment has been made and a summary of the *p*-values is provided in *table 9*. In the case of grammaticality, the analysis shows a statistically significant difference between the L1 Spanish and the L1 Bosnian groups (p=.007), the L1 Spanish and the L1 Danish groups (p<.001) and the L1 Spanish and the L1 English groups (p<.001). Initially, these results seem to indicate that typological similarity, at least what regards the L1 Spanish

speakers, plays a role in the production rate of grammatical subjects. If typological similarity should be the main effect to influence grammaticality, the L1 Bosnian group should perform similarly to the L1 Spanish group and different from the L1 English group, which is not the case. The production of the L1 Bosnian participants is, in fact, more native-like. In other words, only the L1 Spanish group's ungrammaticality rate makes this group statistically different from the L1 English control group (p<.001). The L1 Bosnian and the L1 Danish groups produce native-like subjects much in the same proportion as the natives, while the L1 Spanish group does not.

Displayed in *table 10* is the overall distribution of adequate subjects, as in 65, and non-adequate subjects, as in 66, also considering the typology of the L1 ([+/-null subject] languages):

65) *Pervious context:*
*CHI: we have a dog.
*CHI: his name is Sofus.

Example:
*CHI: *he* is a beagle (oral L1 Danish-group 2; SODKVIIB.11; 13 years)

66) *Pervious context:*
*CHI: Mary and Tom are playing. Mary is watching Tom. Tom has a ball.

Example:
*CHI: *Tom* hit the ball in the water. (written L1 Danish-group 1; SODKVC13; 11 years)

typology	L1	adequate		non-adequate		total
		% [# of cases]	SD	% [# of cases]	SD	% [# of cases]
[+null]	Spanish	90.50 [1,000]	6.65	9.50 [105]	6.65	100 [1,105]
	Bosnian	91.63 [1,270]	12.46	8.37 [116]	12.46	100 [1,386]
[-null]	Danish	95.97 [2,095]	3.77	4.03 [88]	3.77	100 [2,183]
	English [control]	94.82 [1,043]	3.55	5.18 [57]	3.55	100 [1,100]

Table 10: Distribution of subjects per language group: adequacy

What regards the production of adequate subjects, the same rationale used to address grammaticality applies: the participants whose L1s are [+null subject] languages are expected to produce a greater number of non-adequate subjects in comparison with the participants whose L1 is a [-null subject] language, because the L2 (i.e. English) is a [-null subject] language. In this case, the similarity between the participant groups with [+null subject] L1s is more pronounced. Both the L1 Spanish and the L1 Bosnian groups produce a similar number of non-adequate subjects; the L1 Spanish group produced 9.50% while the L1 Bosnian group 8.37%. *De novo*, both [-null subject] groups (Danish and English) produce the least non-adequate subjects, as expected.

Language groups	adequacy
L1 Spanish vs. L1 Bosnian	.719
L1 Spanish vs. L1 Danish	<.001*
L1 Spanish vs. L1 English	.007*
L1 Bosnian vs. L1 Danish	<.001*
L1 Bosnian vs. L1 English	.016*
L1 Danish vs. L1 English	.589

Table 11: Comparisons across participant groups: adequacy

A pairwise comparison with a Bonferroni adjustment in the case of adequacy shows that typological similarity plays a role. In a comparison across groups (see *table 11*), both the L1 Spanish and the L1 Bosnian groups are statistically different both from the L1 Danish group (the L1 Spanish vs. the L1 Danish group: $p<.001$; and the L1 Bosnian vs. the L1 Danish group: $p<.001$) and from the L1 English group (the L1 Spanish vs. the L1 English group: $p=.007$; and the L1 Bosnian vs. the L1 English group $p=.016$). The L1 Danish group produces the lowest number of non-adequate subjects (4.03%). Their results are even slightly better

than the results produced by the L1 English group (5.18%), but this difference is found to be statistically not significant (p=.589). These results indicate that the production of the L1 Spanish and the L1 Bosnian groups in terms of adequacy differs from that of the L1 English group, while that of the L1 Danish group is native-like.

Previous studies on transfer and typology have argued that transfer is affected by typological similarity rather than typological proximity (Rothman 2010, Rothman & Cabrelli Amaro 2010, Montrul et al. 2010, Liceras & Alba de la Fuente 2015, Cuza et al. 2018, among others). These studies have proven that when typologically similar languages are in contact, the L1 can facilitate the acquisition of the L2, an idea captured under the Facilitation Hypothesis (Gundel & Tarone 1992). In the same vein, typological difference can produce lower L2 learnability, a fact also argued by Schepens et al. (2016).

If typological similarity is at stake, then the L1 Spanish and L1 the Bosnian groups (i.e. both with [+null subject] L1s), on the one hand, and the L1 Danish and the L1 English groups (i.e. both with [-null subject] L1s), on the other, should pattern similarly. What regards grammaticality, our results show that the L1 Danish and the L1 English groups pattern alike. Therefore, it can be argued that in the case of [-null subject] languages (i.e. L1 Danish), the L1 functions as a facilitator. The results for adequacy show that the L1 Spanish and the L1 Bosnian groups, on the one hand, and the L1 Danish and the L1 English groups, on the other hand, pattern alike. Thus, in the case of adequacy, it can be argued that typological similarity does play a role, because the L1 Danish group shows a more native-like production, which suggests that the L1 has a facilitating effect in the acquisition of English as an L2. In the case of the L1 Spanish and the L1 Bosnian groups, since they significantly produce more non-adequate subjects, it can be argued that the fact that their L1 is [+null subject] is a conditioning factor. Therefore, for the [+null subject] language groups, typological similarity

only plays a role in the case of adequacy. In the case of the [-null subject] language group, typological similarity functions as a facilitator in the case of both grammaticality and adequacy.

The production of adequate subjects is not only contingent on the acquisition of the syntactic properties that characterize sentential subjects in each language. It also involves the combination and mastery of other linguistic domains which, therefore, places the production of adequate subjects at the interface level. In fact, this has been argued to be behind the problems learners have when mastering sentential subjects, as suggested in different L2 studies (Sorace 2005; Tsimpli & Sorace 2006; Sorace & Filiaci 2006, among others). Therefore, the distinction between grammaticality and adequacy as part of the data classification procedure allows for a more refined analyses of the production of sentential subjects by the L2 English speakers. In particular, the classification based on this distinction i) involves a separation between purely grammatical issues and the interface conditions that interact with these syntactic requirements; and consequently, ii) gives the possibility to determine whether the interface at stake (i.e. syntax-pragmatics) is a conditioning factor in the production of speakers with [+null subject] L1s as well as in that of speakers with [-null subject] L1s; or rather, iii) whether purely syntactic constraints is what explains the speakers' production without their being affected by pragmatic factors.

We take the argumentation above to consider that results for adequacy are, in fact, the ones that capture in a more refined way the sensitivity that the speakers have to the linguistic properties that constrain sentential subjects in English. Therefore, our data lend support to the fact that typological similarity plays a role in the acquisition of L2 English subjects, which results in the confirmation of hypothesis #1.

6.2.2 Hypothesis #2: The different availability of subject types between the L1 and the L2

Under this hypothesis, the focus is placed on the number of subject types available in the participants' L1s when compared to those in the language under analysis (i.e. L2 English). The two [-null subject] language groups under consideration (i.e. L1 Danish and L2 English) represent the subset option (i.e. only one subject type is available, the overt subject), while the availability of two subject types (i.e. null and overt) in the two [+null subject] language groups under consideration (i.e. L1 Spanish and L1 Bosnian) makes them the superset option. The prediction is that transfer will take place from the superset languages with a very specific outcome: to facilitate the production of overt subjects in English as an L2. That is, no overproduction of null subjects is expected (i.e. no negative transfer is expected) from L1 Spanish or L1 Bosnian into L2 English. In the case of Danish, as a one subject type language, no overproduction is expected either given that English is also a one subject type language (i.e. positive transfer is expected).

As shown in *table 12*, the vast majority of subjects produced by all four groups are grammatical and overt, as in 65. This distribution is also illustrated in *figure 3*. The production of grammatical null subjects, as in 66, is the highest in the L1 English group (10.16%), followed by the L1 Danish group (5.67%). The L1 Spanish and the L1 Bosnian groups produce grammatical null subjects in less than 3% of the cases. The L1 Spanish group produces the greatest number of ungrammatical subjects (12.92%), as in 67, followed by the L1 Bosnian group (4.41%). The L1 Danish and L1 English groups produce ungrammatical subjects in less than 3% of the cases.

65) *CHI: *I* play with my brother in the garden (oral L1 Spanish-group 1; VAESIIIA01; 9 years)

66) *CHI: we have study and *Ø* look the book (oral L1 Spanish-group 1; VAESIIIB10; 9 years)

67) *CHI: today Ø go to the swimming pool of my house

(oral L1 Spanish-group 1; VAESIIIA02; 9 years)

	grammatical				ungrammatical		
	overt		null				
	% [# of cases]	SD	% [# of cases]	SD	% [# of cases]	SD	
Spanish	84.16 [1,068]	4.69	2.92 [37]	4.69	12.92 [164]	12.20	100 [1,269]
Bosnian	93.45 [1,355]	2.29	2.14 [31]	2.29	4.41 [64]	7.65	100 [1,450]
Danish	91.79 [2,056]	4.48	5.67 [127]	4.48	2.54 [57]	3.82	100 [2,240]
English [control]	88.77 [987]	3.27	10.16 [113]	3.27	1.07 [12]	1.74	100 [1,112]

Table 12: Distribution of subjects per language group: subject types

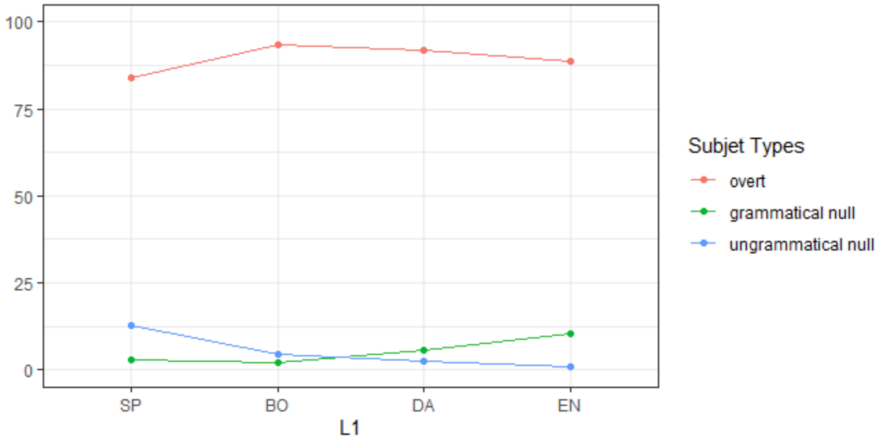


Figure 3: Distribution of subjects per language group: subject types

A pairwise comparison with a Tukey adjustment and the summary of the *p*-values provided in *table 13* show that within groups significant differences are found for all groups between the overt grammatical subject rates and the null grammatical subject rates ($p<.001$) and between the overt grammatical subject rates and the null ungrammatical subject rates ($p<.001$).

language groups	overt vs grammatical null	overt vs ungrammatical null	grammatical null vs ungrammatical null
L1 Spanish	<.001*	<.001*	.998
L1 Bosnian	<.001*	<.001*	1.000
L1 Danish	<.001*	<.001*	1.000
L1 English	<.001*	<.001*	.992

Table 13: Comparisons within participant groups: subject types (overt and null)

A comparison across groups, as in *table 14*, shows that in the case of null subjects a significant difference is found between the L1 Spanish and L1 Danish groups (p<.001). Both the L1 Spanish (p<.001) and the L1 Bosnian (p=.011) groups differ from the L1 English group. However, the production of the L1 Danish and the L1 English groups is similar.

language groups	overt	grammatical null	ungrammatical null
L1 Spanish vs. L1 Bosnian	.597	1.000	.999
L1 Spanish vs. L1 Danish	<.001*	.999	.999
L1 Spanish vs. L1 English	<.001*	.992	.999
L1 Bosnian vs. L1 Danish	1.000	.999	1.000
L1 Bosnian vs. L1 English	.011*	.989	1.000
L1 Danish vs. L1 English	1.000	1.000	1.000

Table 14: Comparisons across participant groups: subject types (overt and null)

These results show that, for all languages under study, the production of overt subjects is predominant and the production of null subjects (both grammatical and ungrammatical) is low. These results are in line with all groups adhering to the one subject type requirement of English (i.e. overt subjects), null grammatical subjects being marginal. However, the contrasting point is the significant difference in the experimental groups between the one subject type group (i.e. L1 Danish) and the two subject type groups (i.e. L1 Spanish and L1 Bosnian).

These results are in line with what Fernández Fuertes & Liceras (2018) and Liceras & Fernández Fuertes (2019) propose regarding how the existence and directionality of cross-linguistic influence is shaped when superset and subset languages are in contact. The

availability of two subject types (null and overt) in one of the languages, that is, the superset language (Spanish and Bosnian in this case), has a facilitating effect in the acquisition of a one subject type language, that is, the subset language (English in this case). In the view of our data, and what regards the [+null subject] languages, no negative transfer is found in that participants in the two groups do not overproduce null subjects. That is, overt subjects, as the only available option in English, are reinforced and their rate is never below 80%. The highest rate of ungrammatical null subjects is indeed produced by these groups of participants, but, nonetheless, the production of these illicit null subjects when compared to the overall subject production is still considered low (i.e. below 13%). In other words, the overt subject rate is very high and the ungrammatical null subject rate very low, being this difference statistically significant for all groups.

What regards the [-null subject] language group, positive transfer is found, in that, the production of overt subjects in the L1 Danish group is even higher than the production found in the case of the L1 English speakers. Furthermore, the production of ungrammatical null subjects is very low for both groups (i.e. below 3%).

These results, and in particular those of the Spanish and the Bosnian groups, show that indeed Liceras & Fernández Fuertes' proposal also works for L2 acquisition. In particular, their characterization of cross-linguistic influence in terms of both directionality and outcome is reflected in i) the superset language (i.e. Spanish and Bosnian) exerting influence on the subset language (i.e. English as an L2); and in ii) this influence having a positive outcome given the high subject production rate when compared to the subject omission rate. Accordingly, in the light of these results, hypothesis #2 is confirmed.

6.2.3 Hypothesis #3: modality (oral vs. written)

An analysis of the distribution of subjects across tasks in order to discuss the role of task modality has also been performed to address hypothesis #3. It has been argued that, in the case of children, there is a difference in cognitive load between oral and written production. Therefore, more grammatical and adequate structures are expected in the task that is least demanding, the oral task.

L1	oral					written				
	grammatical		ungrammatical		total % [# of cases]	grammatical		ungrammatical		total % [# of cases]
	% [# of cases]	SD	% [# of cases]	SD		% [# of cases]	SD	% [# of cases]	SD	
Spanish	85.76 [873]	14.99	14.24 [145]	14.99	100 [1,018]	92.43 [232]	9.38	7.57 [19]	9.38	100 [251]
Bosnian	94.99 [1,023]	10.17	5.01 [54]	10.17	100 [1,077]	97.32 [363]	9.73	2.68 [10]	9.73	100 [373]
Danish	97.27 [1,853]	4.43	2.73 [52]	4.43	100 [1,905]	98.51 [330]	6.21	1.49 [5]	6.21	100 [335]
English [control]	98.95 [662]	2.15	1.05 [7]	2.15	100 [669]	98.87 [438]	3.98	1.13 [5]	3.98	100 [443]

Table 15: Distribution of subjects per language group: modality and grammaticality

As shown in *table 15*, the rate of the grammatical subjects produced in both tasks is very high. The L1 Spanish and the L1 Bosnian participants perform better in the written task than in the oral task. For the L1 Danish participants, this difference is only slightly better in the written task (i.e. 1.24%). The production of the L1 Danish and the L1 English participants in both tasks is at ceiling (i.e. above 97% for the L1 Danish and above 98% for the L1 English). The greatest difference between tasks is found within the L1 Spanish group, where the participants produce 85.75% of grammatical subjects in the oral task and 92.43% in the written task (a 6.68% difference). This is followed by the L1 Bosnian speakers who produce

from 94.99% in the oral and 97.32% in the written task (a 2.33% difference). For the other two participant groups (i.e. L1 Danish and L1 English), this difference is even smaller (1.24% for the L1 Danish and 0.08% for the L1 English group). Hence, it can be argued that the participants of [+null subject] languages perform better in the written task, while for the participants of [-null subject] languages there is no great difference between the oral and the written task.

language groups	oral vs written
L1 Spanish	<.001*
L1 Bosnian	.713
L1 Danish	.048
L1 English	.795

Table 16: Comparisons within participant groups: modality

A pairwise comparison with a Bonferroni adjustment, as in *table 16,* shows that within groups, modality only plays a role for the L1 Spanish participants for whom a significant difference is found between the oral and written production (p<.001).

language groups	oral	written
L1 Spanish vs. L1Bosnian	<.001*	1.000
L1 Spanish vs. L1 Danish	<.001*	.420
L1 Spanish vs. L1 English	<.001*	.394
L1 Bosnian vs. L1 Danish	1.000	.579
L1 Bosnian vs. L1 English	.338	.547
L1 Danish vs. L1 English	1.000	1.000

Table 17: Comparisons across participant groups: modality and grammaticality

Across groups, as in *table 17*, a significant difference in the case of the oral task is found between the L1 Spanish and the L1 Bosnian groups (p<.001), the L1 Spanish and the L1 Danish groups (p<.001) and the L1 Spanish and the L1 English groups (p<.001). On the contrary, no significant difference is found in the written task across groups.

In the light of the above, it can be argued that the results for grammaticality are not in line with studies that argue that written tasks are more demanding for children than oral tasks (e.g. Kellog 1996; Granfeldt 2008; Kuiken & Vedder 2011; Williams 2012, among others).

L1	oral					written				
	adequate		non-adequate		total	adequate		non-adequate		total
	% [# of cases]	SD	% [# of cases]	SD	% [# of cases]	% [# of cases]	SD	% [# of cases]	SD	% [# of cases]
Spanish	97.48 [850]	3.64	2.53 [22]	3.64	100 [872]	64.38 [150]	22.73	35.62 [83]	22.73	100 [233]
Bosnian	95.99 [982]	10.79	4.01 [41]	10.79	100 [1,023]	79.34 [288]	27.05	20.66 [75]	27.05	100 [363]
Danish	99.14 [1,837]	4.48	0.86 [16]	4.48	100 [1,853]	78.18 [258]	11.58	21.82 [72]	11.58	100 [330]
English [control]	100 [662]	0.00	0 [0]	0.00	100 [662]	87.05 [383]	12.08	12.95 [57]	12.08	100 [440]

Table 18: Distribution of subjects per language group: modality and adequacy

Results for adequacy are shown in *table 18*. Within participant groups, modality plays a role for all the L2 groups in that they all perform considerably better in the oral task than in the written task. These results are in line with what previous studies on modality in child L2 acquisition have indicated: children perform better in oral tasks.

The greatest difference across tasks is found within the L1 Spanish group, who produces 97.48% of adequate subjects in the oral task and 64.38% in the written task. The L1 Bosnian group produces 95.99% of adequate subjects in the oral task and 79.34% in the written task. These results are similar to those of the L1 Danish group, who produces 99.14% of adequate subjects in the oral task and 78.18% in the written task. A pairwise comparison with a Bonferroni adjustment points to significant differences between the oral and the

written production of the L1 Spanish group (p<.001), the L1 Bosnian group (p<.001), the L1 Danish group (p<.001) and the L1 English group (p=.017), as in *table 19*.

language groups	oral vs written
L1 Spanish	<.001*
L1 Bosnian	<.001*
L1 Danish	<.001*
L1 English	.017*

Table 19: Comparisons within participant groups: modality and adequacy

Across groups, as in *table 20*, no significant difference is found in the oral task. Nonetheless, in the written task, significant differences appear between the L1 Danish group and the L1 Spanish group (p=.008) and the L1 English group and the L1 Bosnian group (p=.043) and the L1 English group and the L1 Spanish group (p<.001). That is, the L1 Spanish and the L1 Bosnian groups differ from the L1 English group (i.e. their production is less native-like), while the L1 Danish group does not differ from the L1 English group (i.e. their production is native-like).

language groups	oral	written
L1 Spanish vs. L1Bosnian	.506	.396
L1 Spanish vs. L1 Danish	.999	.008*
L1 Spanish vs. L1 English	.949	<.001*
L1 Bosnian vs. L1 Danish	.506	.624
L1 Bosnian vs. L1 English	.374	.043*
L1 Danish vs. L1 English	.989	.459

Table 20: Comparisons across participant groups: modality and adequacy

As attested in previous studies, children typically perform better in oral than in written tasks due to the higher cognitive load associated to written tasks (e.g. Kellog 1996; Granfeldt 2008; Kuiken & Vedder 2011; Williams 2012, among others). This is what is seen in the data presented in the case of adequacy.

What regards grammaticality, only the L1 Spanish group performs significantly better in the written task than in the oral task. The production of the rest of the groups is very similar in both tasks, indicating that there is no actual clear difference between their performance in the oral task when compared to that in the written task. However, in the case of adequacy, all the L2 groups perform better in the oral task than in the written task. This difference is statistically significant even in the L1 group.

As previously seen in hypothesis #1, in the case of modality the double analysis is terms of grammaticality and adequacy has also proven to be essential for a more refined analysis of the production of sentential subjects by these L2 speakers. As before, differences across participant groups clearly emerge in terms of adequacy when comparing written and oral production, which again points to properties located at interfaces being especially vulnerable. What regards purely grammatical issues, these L2 speakers have obtained very high rates, but when other factors, such as pragmatics, are involved, the acquisition seems to be more problematic in the written production. In the case of the oral data, no such effect is seen.

Therefore, in the light of the results for adequacy, the written task seems to be more demanding for all groups (including the control group), and so, hypothesis #3 receives confirmation.

6.2.4 Hypothesis #4: time of instruction

As different studies have previously shown, time of instruction in the L2 correlates with better performance. That is, the longer L2 learners have been instructed in the L2, the more native-like their performance becomes. In this dissertation, a better performance is interpreted as a more grammatical and more adequate production of sentential subjects.

Under hypothesis #4, participants who have been instructed in L2 English for 4 years (group 2) are expected to outperform, in terms of both grammaticality and adequacy, those participants who have been instructed in L2 English for a period of 2 years (group 1).

In order to provide a more refined account of the effect of time instruction, a series of interactions will also be included to address hypothesis #4: the interaction between time of instruction and L1 (to account for the effect of typological similarity between groups 1 and groups 2), the interaction between time of instruction and MLU (to account for proficiency differences between groups 1 and groups 2) and the interaction between time of instruction and modality (to account for cognitive load effects that could affect groups 1 and groups 2).

In the case of grammaticality, a pairwise comparison with a Bonferroni adjustment shows that the production of grammatical subjects increases the longer the participants have been instructed in L2 English, as illustrated in *table 21*. Initially, a global effect (excluding the L1s of the participants) is found between the participants in group 1 and the participants in group 2 (p=.020) and between the participants in group 1 and the participants in the control group (p<.001). No significant difference is found between the participants in group 2 and the participants in the control group (p=.353). This indicates that the production of sentential subjects in group 2 participant is similar to that of the native controls.

	grammatical		ungrammatical		total	
L1	% [# of cases]	SD	% [# of cases]	SD	% [# of cases]	MLU
Spanish #1	82.60 [375]	13.58	17.40 [79]	13.58	100 [454]	5.585
Spanish #2	89.58 [730]	7.53	10.42 [85]	7.53	100 [815]	6.561
Bosnian #1	93.14 [380]	8.98	6.86 [28]	8.98	100 [408]	4.243
Bosnian #2	96.55 [1,006]	5.86	3.45 [36]	5.86	100 [1,042]	5.154
Danish #1	97.24 [951]	5.12	2.76 [27]	5.12	100 [978]	6.607
Danish #2	97.62 [1,232]	1.52	2.38 [30]	1.52	100 [1,262]	7.006
English [control]	98.93 [1,100]	1.74	1.07 [12]	1.74	100 [1,112]	6.241

Table 21: Distribution of subjects per language group: time of instruction and grammaticality

If the L1 factor is included in the analysis, the results diverge. Within language groups, the difference between grammatical subject rates and ungrammatical subject rates ranges from a 6.98% difference in the L1 Spanish groups (between 82.60% and 89.58%) and a 3.14% in the L1 Bosnian groups (between 93.14% and 96.55%) to a 0.34% difference in the L1 Danish groups (between 97.24% and 97.62%). A within group comparison, as in *table 22*, shows a significant interaction in the L1 Spanish groups only (p=.002). That is, a significant increase in the rate of grammatical subjects is produced from group 1 to group 2 in the case of the L1 Spanish participants only. In contrast, for the L1 Bosnian and the L1 Danish speakers, the rate of grammatical subjects is not significantly affected by the time of instruction.

language groups	group 1 vs group 2
L1 Spanish	.002*
L1 Bosnian	.288
L1 Danish	.986

Table 22: Comparisons within participant groups: time of instruction and grammaticality

The MLUw is used to see whether there are any significant differences between the groups in terms of proficiency. It is argued that the longer the learners have been exposed to the L2, the more proficient they would get and, consequently, this should be reflected in a higher MLUw value. Thus, the effect observed above where differences across groups appear can also be related to the groups' MLUw values, since significant MLUw differences are found between the two L1 Spanish groups and the two L1 Bosnian groups (see *table 3*). In the case of the L1 Danish groups, since no significant difference is found between the two groups' MLUw values (see *table 3*), the results for the L1 Danish participants should not significantly differ, and this is indeed what the data in *table 22* show. Therefore, there is an interaction between MLUw and time of instruction in that all the participants in group 2 that show higher MLUw values are the ones that show an increase in grammaticality rates (i.e. the L1 Spanish and the L1 Bosnian groups). Likewise, the participants in group 2 that do not differ in MLUw terms from the participants in group 1 consequently do not show an increase in grammaticality rates (i.e. the L1 Danish group). This points to MLUw as a valid indication of proficiency in the case of these L2 speakers.

To analyze any possible interactions between L1 and grammaticality, an across group comparison, as in *table 23*, was conducted showing that the L1 Spanish-group 1 produces the highest number of ungrammatical subjects when compared to the L1 Bosnian-group 1 (p=.005) and the L1 Danish-group 1 (p<.001). The L1 Spanish-group 1 also differs from the L1 English group. Thus, a hierarchy can be established as follows from most grammatical to least grammatical: Danish > Bosnian > Spanish. The same hierarchy can be established for group 2 participants in the amount of ungrammatical subjects they produce. Nonetheless, statistically, this difference across the groups 2 is not significant (p>.005).

language groups	group 1	group 2
L1 Spanish vs. L1 Bosnian	.005*	.479
L1 Spanish vs. L1 Danish	<.001*	.182
L1 Spanish vs. L1 English	<.001*	.350
L1 Bosnian vs. L1 Danish	.214	.934
L1 Bosnian vs. L1 English	.306	.099
L1 Danish vs. L1 English	.999	.999

Table 23: Comparisons across participant groups: time of instruction and grammaticality

The comparison across groups in terms of their adequacy rates does not follow the same pattern as for grammaticality, since the production of adequate subjects does not increase the longer the participants have been instructed in English as an L2, except for the L1 Bosnian groups (*table 24*).

L1	adequate		non-adequate		total	MLU
	% [# of cases]	SD	% [# of cases]	SD	% [# of cases]	
Spanish #1	92.27 [346]	7.03	7.73 [29]	7.03	100 [375]	5.585
Spanish #2	89.59 [654]	6.34	10.41 [76]	6.34	100 [730]	6.561
Bosnian #1	83.16 [316]	11.73	16.84 [64]	11.73	100 [380]	4.243
Bosnian #2	94.83 [954]	9.28	5.17 [52]	9.28	100 [1,006]	5.154
Danish #1	96.00 [913]	4.68	4.00 [38]	4.68	100 [951]	6.607
Danish #2	95.94 [1,182]	2.49	4.06 [50]	2.49	100 [1,232]	7.006
English [control]	94.82 [1,043]	3.55	5.18 [57]	3.55	100 [1,100]	6.241

Table 24: Distribution of subjects per language group: time of instruction and adequacy

In both the L1 Danish and the L1 Spanish groups, group 1 slightly outperforms group 2 while both groups show a very high adequacy rate: in the L1 Danish groups, group 1 produces a 96% of adequate subjects and group 2 a 95.94%; and in the L1 Spanish groups, group 1 has a 92.27% and group 2 89.59%. Only in the L1 Bosnian groups adequacy increases as time of instruction increases and group 1 (83.16%) performs better than group 2

(94.83%). Therefore, no effect is found between the production of participants in groups 1 and those in groups 2, except for the L1 Bosnian groups (p<.001) (*table 25*).

language groups	group 1 vs group 2
L1 Spanish	.230
L1 Bosnian	<.001*
L1 Danish	1.000

Table 25: Comparisons within participant groups: time of instruction and adequacy

If MLUw rates are correlated with adequacy rates, the L1 Spanish and the L1 Bosnian groups should show significant differences from group 1 to group 2 since MLUw differences are found in terms of time of instruction for both language groups (see *table 3*). The L1 Danish groups, however, should behave quite similarly in terms of adequacy, since no significant differences appear in their MLU rates (*table 3*). Therefore, again, there is an interaction between MLUw and time of instruction in that the group that shows higher MLUw values also shows an increase in adequacy rates (i.e. the L1 Bosnian groups). Likewise, the participants in group 2 that do not differ in MLUw terms from those in group 1 consequently do not show an increase in adequacy rates (i.e. the L1 Danish).

To analyze any possible interactions between L1 and adequacy, comparisons within each group and across languages were also conducted. These comparisons are detailed in *table 26* below. What regards participants in group 1, the L1 Bosnian participants differ from the rest of the groups and, what regards participants in group 2, the L1 Spanish participants differ from those in the rest of the language groups.

language groups	group 1	group 2
L1 Spanish vs. L1Bosnian	.002*	<.001*
L1 Spanish vs. L1 Danish	1.000	.012*
L1 Spanish vs. L1 English	.773	<.001*
L1 Bosnian vs. L1 Danish	.001*	1.000
L1 Bosnian vs. L1 English	<.001*	.999
L1 Danish vs. L1 English	.993	.960

Table 26: Comparisons across participant groups: time of instruction and adequacy

For all participants in group 2, a significant difference, in terms of adequate subjects produced, is found between the L1 Spanish and the L1 Bosnian groups (p<.001), the L1 Spanish and the L1 Danish groups (p=.012) and the L1 Spanish and the L1 English groups (p<.001). These results point towards a correlation between L1 and time of exposure.

So far, our data show that there is an increase in the production of grammatical subjects the longer the L2 participants have been instructed in L2 English. Thus, time of instruction plays a role in the acquisition of grammatical subjects in L2 English for these participants. Nonetheless, this increase in production is only significant in the case of the L1 Spanish group. What regards the production of adequate subjects, the longer the participants have been instructed in L2 English does not necessarily mean that their production improves. This is true for all groups except for the L1 Bosnian group. In their case, the longer they have been instructed the better their performance is (being this difference statistically significant).

To shed more light on the possible effect of time of L2 instruction in the speakers' production, an analysis of the effect of time of instruction considering modality has also been performed. Results for grammaticality are displayed in *table 27* and *figure 4*.

L1	oral				total % [# of cases]	written				total % [# of cases]
	grammatical		ungrammatical			grammatical		ungrammatical		
	% [# of cases]	SD	% [# of cases]	SD		% [# of cases]	SD	% [# of cases]	SD	
Spanish #1	80.66 [292]	17.11	19.34 [70]	17.11	100 [362]	90.22 [83]	8.59	9.78 [9]	8.59	100 [92]
Spanish #2	88.57 [581]	7.88	11.43 [75]	7.88	100 [656]	93.71 [149]	10.22	6.29 [10]	10.22	100 [159]
Bosnian #1	93.24 [276]	7.97	6.76 [20]	7.97	100 [296]	92.86 [104]	12.84	7.14 [8]	12.84	100 [112]
Bosnian #2	95.65 [747]	12.33	4.35 [34]	12.33	100 [781]	99.23 [259]	2.01	0.77 [2]	2.01	100 [261]
Danish #1	96.92 [819]	5.98	3.08 [26]	5.98	100 [845]	99.24 [132]	6.93	0.76 [1]	6.93	100 [133]
Danish #2	97.55 [1,034]	1.97	2.45 [26]	1.97	100 [1,060]	98.01 [198]	5.65	1.98 [4]	5.65	100 [202]
English [control]	98.95 [662]	2.15	1.05 [7]	2.15	100 [669]	98.87 [438]	3.98	1.13 [5]	3.98	100 [443]

Table 27: Distribution of subjects per language group: time of instruction, modality and grammaticality

These results show once again that the production of grammatical subjects is very high in both tasks and within all groups. In the oral task, the participants in group 2 outperform the participants in group 1; nonetheless these differences are found not to be statistically significant ($p>.005$). In the written task, all groups 2 outperform groups 1, expect for the L1 Danish-group 1 which outperforms the L1 Danish-group 2. However, none of these differences are found to be statistically significant.

Across tasks, the greatest difference is found in the L1 Spanish-group 1 between the oral task (80.66%) and the written task (90.22%), followed by the L1 Spanish-group 2 between the oral task (88.57%) and written task (93.71%). The greatest difference is a 3.58% found between the oral task and the written task in the L1 Danish-group 1. For the rest of the groups the difference between the oral task and the written task is below 3%. In all the groups, except for the L1 Bosnian-group 1 and the L1 English group, the participants produce more grammatical subjects in the written task than in the oral task.

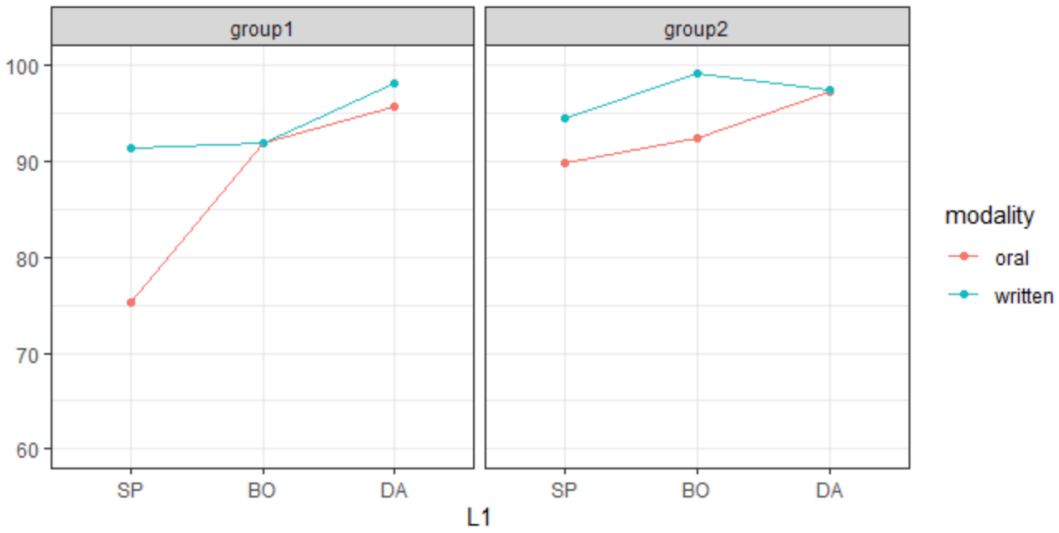


Figure 4: Distribution of subjects per language group: time of instruction, modality and grammaticality

Statistically, modality has an effect within the L1 Spanish-group 1, as depicted in *table 28*. That is, in the case of the L1 Spanish-group 1 participants, the distribution of grammatical subjects is different in the oral task when compared to the written task with a more grammatical production in the case of the written task (p=.011). No such difference is found in the other groups.

language groups	group 1 oral vs written	group 2 oral vs written
L1 Spanish	0.011*	0.414
L1 Bosnian	0.912	0.055
L1 Danish	0.396	0.782

Table 28: Comparisons within participant groups: time of instruction, modality and grammaticality

In other words, modality is a conditioning factor only for the L1 Spanish-group 1 with the production of significantly more grammatical subjects in the written task.

Results for adequacy are shown in *table 29* and depicted in *figure 5*.

L1	oral				total % [# of cases]	written				total % [# of cases]
	adequate		non-adequate			adequate		non-adequate		
	% [# of cases]	SD	% [# of cases]	SD		% [# of cases]	SD	% [# of cases]	SD	
Spanish #1	96.92 [283]	3.90	3.08 [9]	3.90	100 [292]	75.90 [63]	22.58	24.10 [20]	22.58	100 [83]
Spanish #2	97.76 [568]	3.53	2.24 [13]	3.53	100 [581]	57.72 [86]	18.54	42.28 [63]	18.54	100 [149]
Bosnian #1	92.75 [256]	11.22	7.25 [20]	11.22	100 [276]	57.69 [60]	27.42	42.31 [44]	27.42	100 [104]
Bosnian #2	97.19 [726]	10.40	2.81 [21]	10.40	100 [747]	88.03 [228]	11.20	11.97 [31]	11.20	100 [259]
Danish #1	98.78 [809]	6.20	1.22 [10]	6.20	100 [819]	78.79 [104]	11.19	21.21 [28]	11.19	100 [132]
Danish #2	99.42 [1,028]	0.85	0.58 [6]	0.85	100 [1,034]	77.78 [154]	11.99	22.22 [44]	11.99	100 [198]
English [control]	100 [662]	0.00	0 [0]	0.00	100 [662]	86.99 [381]	12.08	13.01 [57]	12.08	100 [438]

Table 29: Distribution of subjects per language group: time of instruction, modality and adequacy

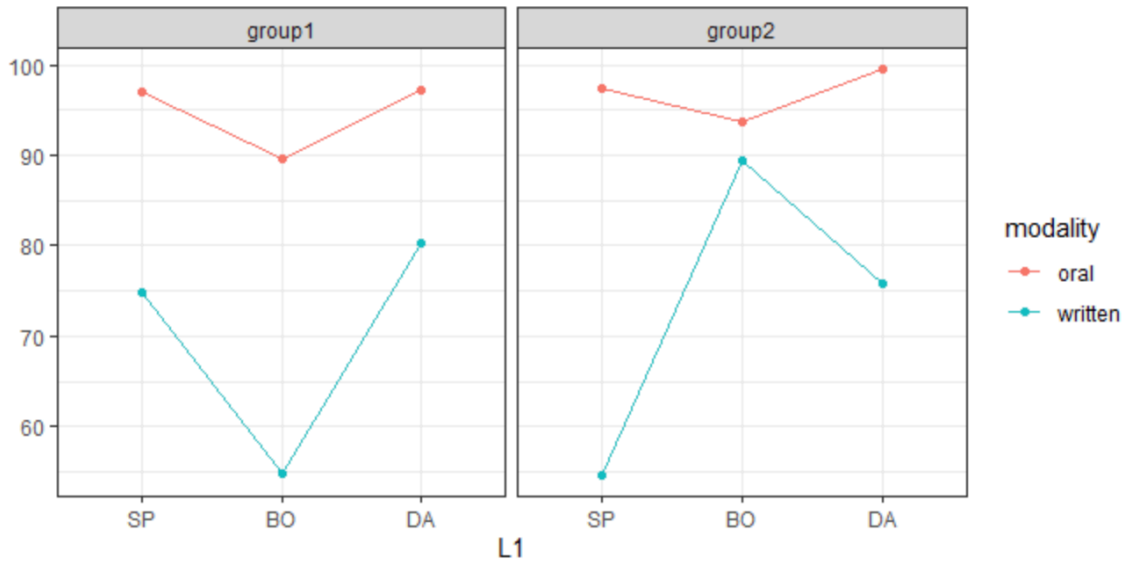


Figure 5: Distribution of subjects per language group: time of instruction, modality and adequacy

The results within tasks show that, in the case of the oral tasks, groups 2 outperform groups 1. However, none of these differences are found to be statistically significant. Within the written task, group 2 (57.69%) outperforms group 1 (88.03%) only for the L1 Bosnian participants. For the L1 Spanish participants, group 1 participants (75.90%) outperform those

in group 2 (57.72%). These two comparisons are found to be significant for the L1 Bosnian groups (p<.001) as well as for the L1 Spanish groups (p<.001), as illustrated in *table 30* below. The L1 Danish-group 1 (78.79%) outperforms group 2 (77.78%), but this difference is found not to be significant. Thus, what regards adequacy within the oral and the written task, time of instruction does not seem to be a conditioning factor.

language groups	group 1 vs group 2 oral	group 1 vs group 2 written
L1 Spanish	.960	<.001*
L1 Bosnian	.467	<.001*
L1 Danish	.677	.413

Table 30: Comparisons within participant groups: time of instruction, modality and adequacy

In light of the results provided above, since time of instruction (measured not only in terms of amount of years exposed to institutional L2 English but also in terms of the participants' MLUw values) is found to be a conditioning factor only for the L1 Spanish participants in the production of grammatical subjects and for the L1 Bosnian speakers in the production of adequate subjects, we cannot conclude that time of instruction, on its own, is a conditioning factor. Indeed, results show an increase in both grammaticality and adequacy in the production of participants in group 2 when compared to those in group 1. However, these differences do not reach statistical significance (with the two exceptions mentioned above: the L1 Spanish participants in the case of grammaticality and for the L1 Bosnian participants in the case of adequacy). Thus, our results do not go in line with previous studies claiming that higher proficiency correlates with better performance in the L2 (e.g. Ringbom 2007, 2016; Blom & Baayan 2012; Montrul & Ionin 2012; Gathercole 2002, 2016; Unsworth 2016; Llinàs-Grau & Bel 2019, among others). Since the production of grammatical subjects is so high, adequacy was expected to be conditioned by the time of instruction; that is the longer

the time of instruction, the more adequate the production. Since adequacy involves interfaces, it is considered to be more complex and, therefore, acquired later (Sorace & Filiaci 2006; Rothman 2009; White 2009; 2011; Cuza & Frank 2010; Sánchez et al. 2010; Zdorenko & Paradis 2011; Müller 2017, among many others). However, our data do not seem to go in this direction.

Furthermore, since the production of grammatical subjects is very high in all groups, our data point in the same direction suggested by previous studies in that, indeed, children do not omit subjects in their L2 English (e.g. Park 2004; Pladevall Ballester 2012, 2016).

If modality is also considered along with time of instruction, again it is a conditioning factor only within grammaticality and only for the L1 Spanish participants. For adequacy there are no differences neither in the oral nor in the written task. Thus, time of instruction cannot be considered a conditioning factor in its interaction with modality either. These results, therefore, involve that hypothesis #4 is to be rejected.

6.3 Summary of main findings

In this chapter, the results obtained have been analyzed and discussed in the light of the hypotheses initially formulated. This final section offers a summary of these results, and provides an answer to the four research questions raised in chapter 5. *Table 31* summarizes the main findings.

RQ	topic	condition	summary	effect
#1	typological similarity	grammaticality	results at ceiling	⊗
		adequacy	syntax-pragmatic interface	✓
#2	availability of subject types	superset vs subset	shared option reinforced	✓
#3	modality	grammaticality	results at ceiling	⊗
		adequacy	written task more demanding	✓
#4	time of instruction	grammaticality	no difference between groups	⊗
		adequacy		

Table 31: Summary of the results per research question

As previously pointed out, in the case of L2 acquisition, learners tend to rely on their L1. The amount of transfer will then depend on the typological similarities that can be established between the L1 and the L2. Thus, the more similar the languages are the less transfer is expected. Being the languages in contact in this dissertation both typologically different (as is the case of L1 Spanish and L1 Bosnian) and typologically similar (as is the case of L1 Danish) to the L2 English, the following research question was raised:

- RQ#1: What is the role, if any, played by typological similarity?

Our data show that, in the case of grammaticality, the production of grammatical subjects was at ceiling for all participants. These results indicate that pure syntactic constrains related to sentential subjects are mastered very early. However, when the syntax-pragmatic interface is involved, in what regards the adequacy of these subjects, the felicitous production rate declines and the similarity between the [+null subject] and [-null subject] groups is evident; the [+null subject] language groups produce more non-adequate subjects in comparison to the [-null subject] language group. This is, thus, an indicator that typological

similarity is a conditioning factor in both the [+null subject] and the [-null subject] language groups.

In a similar vein, to check for the directionality and type of transfer (i.e. positive or negative), the prediction is that the directionality of transfer will occur from the superset (Spanish and Bosnian) to the subset language (English). This is captured in research question #2:

- RQ#2: What is the role, if any, played by the different availability of subject types between the L1 and the L2?

Both in the case of superset and subset languages, the production of overt subjects is much higher than the production of null subjects (both grammatical and ungrammatical). Thus, our data show that the superset L1s have a facilitating effect, because the shared option is reinforced (i.e. the overt subject type as the only possibility in English and as one of the two options available in Spanish or Bosnian). That is, positive transfer is found in all cases although attributed to different factors: to the L1s being superset languages (in the case of the L1 SP and L1BO groups) and to the same parametric option of the languages in contact (in the case of the L1 DA group).

To check for further effects that might cause or account for L1 transfer (as previously discussed in research question #1 and hypothesis #1) modality was also analyzed. Different studies claim that in the case of child L2 acquisition, written tasks are more demanding due to the extra cognitive load required. Hence, both more grammatical and more adequate structures should be present in the oral data. This is addressed in research question #3:

- RQ#3: What is the role, if any, played by task modality?

In line with the results obtained in research question #1, no effect was found for grammaticality, but adequacy has proven to be crucial in the analysis of the data obtained.

The results for adequacy in the written task are proven to be poorer for all groups, regardless of the L1. These results indicate that it is the addition of the extra cognitive load required to perform written tasks as well as of the extra difficulty involved when interface conditions are at play what triggers the increase of non-adequate subjects.

Furthermore, time of instruction (measured both in years of instruction and MLUw values), which is expected to correlated with better performance, was also accounted for both in terms of L1 and modality effects, as in research question #4:

- RQ#4: What is the role, if any, played by the time of instruction in L2 English?

In view of the results observed in the present study, time of instruction does not affect the production of grammatical subjects as the production of grammatical subjects is very high. Neither could any plausible conclusions be reached in the case of adequacy in this respect. To shed more light on the possible effect of time of instruction, modality was added. But still time of instruction in interaction with modality does not seem to be a conditioning factor either. Therefore, considering our data, neither time of instruction alone nor in interaction with L1 or modality can be said to play a role in the L2 acquisition of sentential subjects for these participants.

CHAPTER 7: CONCLUSION

Taking formal proposals on sentential subjects as a point of departure, this dissertation has offered an analysis of transfer in the case of two contact situations (typologically similar and typologically different languages) and considering three variables: L1 ([+/- null subject]), modality (oral vs. written data) and time of L2 instruction in English (2 vs. 4 years). To do so the L2 English sentential subjects produced by 26 L1 Spanish, 26 L1 Bosnian and 26 L1 Danish children have been analyzed and compared to a control group.

Sentential subjects have received a great deal of attention in formal studies (e.g. Perlmutter 1971; Chomsky & Lasnik 1977; Jaeggli 1981, 1982, 1984; Rizzi 1982, 1997, 2005; Chomsky 1981; Phinney 1987; Platzack 1987; Liceras 1989; Jaeggli & Safir 1989; Bel 2001; Belletti 2001, 2004; Holmberg 2005, 2010; Sheehan 2006; Camacho 2006, 2008, 2011, 2013, 2016; Holmberg & Roberts 2011) and in acquisition works. In the case of acquisition, the analyses have targeted monolingual as well as bilingual speakers and both simultaneous bilinguals (e.g. Montrul 2004; Liceras et al. 2008; Cuza 2013; Cuza & Camacho 2017; Fernández Fuertes & Liceras 2018 and Liceras & Fernández Fuertes 2019) and sequential bilinguals (e.g. Lozano 2002; Park 2004 Montrul & Rodríguez-Louro 2006; Rothman 2008, 2009; Montrul et al. 2009; Pladevall Ballester 2012, 2016; Cuza et al. 2013; Quesada 2014; Mitkovska & Bužarovska 2018). In bilingual acquisition studies, the focus has been mainly placed in situations in which the two languages in contact exhibit the two opposite values of the Null Subject Parameter with a reference to subject omission or subject overproduction rates as a result of cross-linguistic influence, as well as to residual non-adult/non-native production as a result of the vulnerability of the syntax-pragmatics interface (e.g. Sorace & Serratrice 2009; Montrul & Rodríguez-Louro 2006; Sánchez et al. 2010; Cuza & Frank

2011). Fewer studies have focused on whether two languages that have the same value of the Null Subject Parameter influence each other, and, if so, how (e.g. in the case of two [+null subject] languages, Bini 1993; Margaza & Bel 2006; Sorace & Filiaci 2006; Bel et al. 2016; Lozano 2018; and, in case of two [-null subject] languages, White 1985; Liceras 1989; Liceras & Alba de la Fuente 2015; Mujcinovic 2015).

From a formal point of view, Holmberg (2005) and Sheehan (2006) state that [+null subject] languages are superset to [-null subject] languages, in that superset languages have two possible realizations of the subject (i.e. overt and null), whereas subset languages have only one option (i.e. the phonologically realized one). Based on the so-called lexical specialization approach, Fernández Fuertes & Liceras (2018) and Liceras & Fernández Fuertes (2019) argue that the superset language causes acceleration in the production of overt subjects (i.e. the shared option) in the subset language, accounting both for directionality and effect of crosslinguistic influence. When the two languages in contact only allow overt subjects, an acceleration should also take place, since the same option is reinforced.

Viewing the results obtained in the context of the formal proposals and previous acquisition works discussed, the following conclusions are reached in the present investigation. What regards typological similarity, previous studies have indicated that the more similar the languages are, the less negative transfer is expected to occur in language contact situations (e.g. Rothman 2010; Rothman & Cabrelli Amaro 2010; Montrul et al. 2010; Liceras & Alba de la Fuente 2015; Cuza et al. 2018). Our data show that typological similarity is a conditioning factor in the case of both the [+null subject] language groups and the [-null subject] language groups. In particular, the L1 Danish group (i.e. [-null subject] language) produces both grammatical and adequate subjects in a high proportion. Considering that their production is native-like, positive transfer can be argued to occur from

these participants' L1 Danish into L2 English. In other words, L1 Danish functions as a facilitator. In the case of the [+null subject] language groups, both produce a high amount of grammatical subjects. However, the L1 Spanish and the L1 Bosnian participants also produce significantly more non-adequate subjects than the L1 Danish and the L1 English groups. Consequently, it can be argued that their L1 is a conditioning factor, in that their production is less native-like because of negative transfer from their L1s into L2 English. Thus, typological similarity is not a conditioning factor when it comes to core grammatical properties (i.e. the production of grammatical subjects, that is, of overt subjects, is at ceiling for all groups and no significant differences appear). However, typological similarity does play a role when taking into account syntax-pragmatics interface related issues (i.e. the [+null subject] groups produce significantly more non-adequate subjects).

The availability of different subject types, when comparing the L1 and the L2, also has a bearing on L1 transfer. Previous studies (e.g. Holmberg 2005; Sheehan 2006; Fernández Fuertes & Liceras 2018 and Liceras & Fernández Fuertes 2019) point to the fact that transfer will take place from the superset language to the subset language facilitating the production of overt subjects (i.e. the shared option of the Null Subject Parameter). Our data show that overt subjects are the favored option for all language groups, regardless of whether the participants' L1 is a [+null subject] language or a [-null subject] language. The production of null subjects (grammatical or ungrammatical) is scarce. Thus, the availability of two subject types (i.e. in the superset languages, Spanish and Bosnian) has a facilitating effect in the acquisition of a one subject type language (i.e. the subset language, English). In the light of these results, it could be argued that the lexical specialization approach, as proposed by Fernández Fuertes & Liceras (2018) and Liceras & Fernández Fuertes (2019) for 2L1 acquisition, also holds for L2 acquisition. However, as pointed out above, interface

conditions might alter this facilitating effect and, thus, explain the difference between grammaticality and acceptability that we find in the data.

What regards modality, previous studies have indicated that in the case of child L2 acquisition, and as opposed to adults, written tasks are more demanding due to the fact that more cognitive load is required (e.g. Kellog 1996; Granfeldt 2008; Kuiken & Vedder 2011; Williams 2012). Our data point in this direction, too, and the written task results are in fact worse for all language groups in the case of adequacy.

What regards time of instruction, the longer the learners have been instructed the better their performance is expected to be (e.g. Gathercole 2002, 2016; Muñoz 2006; Blom & Baayan 2012; Unsworth 2016; Muñoz et al. 2018). That is, they should produce more grammatical and adequate subjects. Our data, however, did not show any effect for time of instruction, neither considering the amount of years exposed to L2 English instruction nor considering the groups' MLUw values as a sign of linguistic development. To gain further insight on these results, and since modality was proven to be a conditioning factor, the interaction between time of instruction and modality was explored. Nonetheless, no effect was found. Hence, our data point to time of instruction not being a conditioning factor in the L2 acquisition of sentential subjects for these participant groups.

This dissertation offers a series of contributions. In the case of the languages under investigation: i) it deals with the contact between typologically different languages, as in previous studies, but it focuses on under-studied languages (such as Bosnian (also Serbian-Croatian-Bosnian or SCB)); ii) in the case of the contact between typologically different languages, it compares under-studied languages (such as Bosnian) with languages that have been long studied (such as Spanish); and iii) it analyzes the contact between typologically similar languages that have also been under-studied (such as Danish).

This study also offers a new perspective in the analysis of L2 data in terms of two formal proposals on sentential subjects: the so-called superset-subset approach and the so-called lexical specialization approach. These have been previously used in the analysis of 2L1 bilingual data but have not been tested against L2 data. Therefore, the present study shows how these formal proposals can also account for the L2 English data of the three groups of participants under investigation. Furthermore, it concludes, as in the case of 2L1 acquisition studies, that there is positive transfer from the superset language (i.e. Spanish and Bosnian) to the subset language (i.e. English).

The data collected for this study focuses on production and, as opposed to previous works, it targets both oral and written production. It offers, therefore, a more comprehensive approach to this linguistic skill and it allows us to further address the differences between these two linguist modes in the case of child speech. To the best of our knowledge, this has not been addressed before, neither in the case of child L2 acquisition nor in the analysis of sentential subjects for this population. Furthermore, the data compiled for this dissertation will be made available via TalkBank (MacWhinney 2019), so that they can be used by the research community for further analyses and comparisons.

A further novelty of this study is the use of the MLUw as an indicator of proficiency in the case of L2 participants. Indeed, the MLUw have been used to determine language development in the case of child 2L1 acquisition (as well as L1 acquisition). However, its potential in the analysis of the production of L2 children has not been explored so far. In fact, as shown in this study, MLUw has been proven to be a valid indicator and a more reliable one than time of instruction.

In the present investigation, however, some issues have been left unexplored. These include, among others, the combination of data elicited via a different methodology (e.g.

judgment data, processing data) which could allow us to gain further insight into the representational nature of subjects in these participants; or the use of standardized proficiency tests that we were unable to implement in this case. These issues will be taken into consideration in future works.

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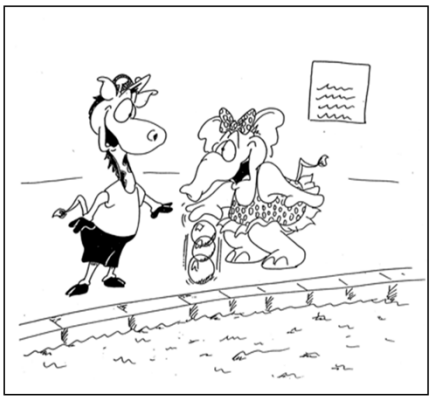
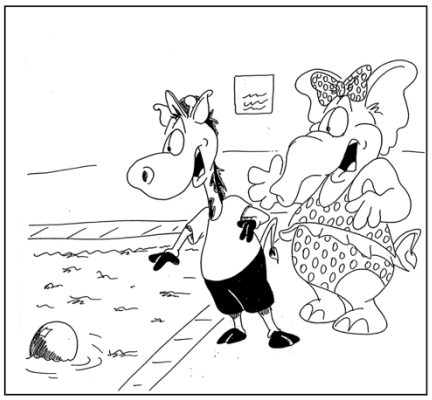
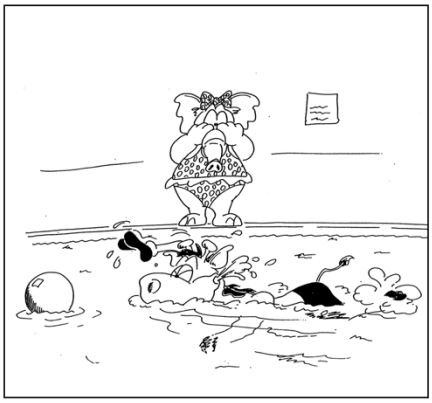
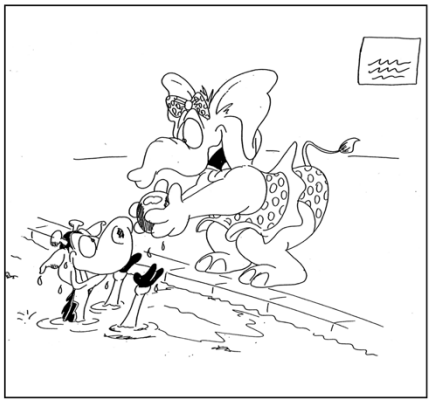
APPENDIX I

A1-ball story from the Edmonton Narrative Norms Instrument (ENNI) (Schneider et al. 2005)









APPENDIX II

A1-ball story adapted by Damir Pavelic.