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The acquisition of English as an L3 by Catalan/Spanish bilinguals

A study of crosslinguistic influence in third language acquisition

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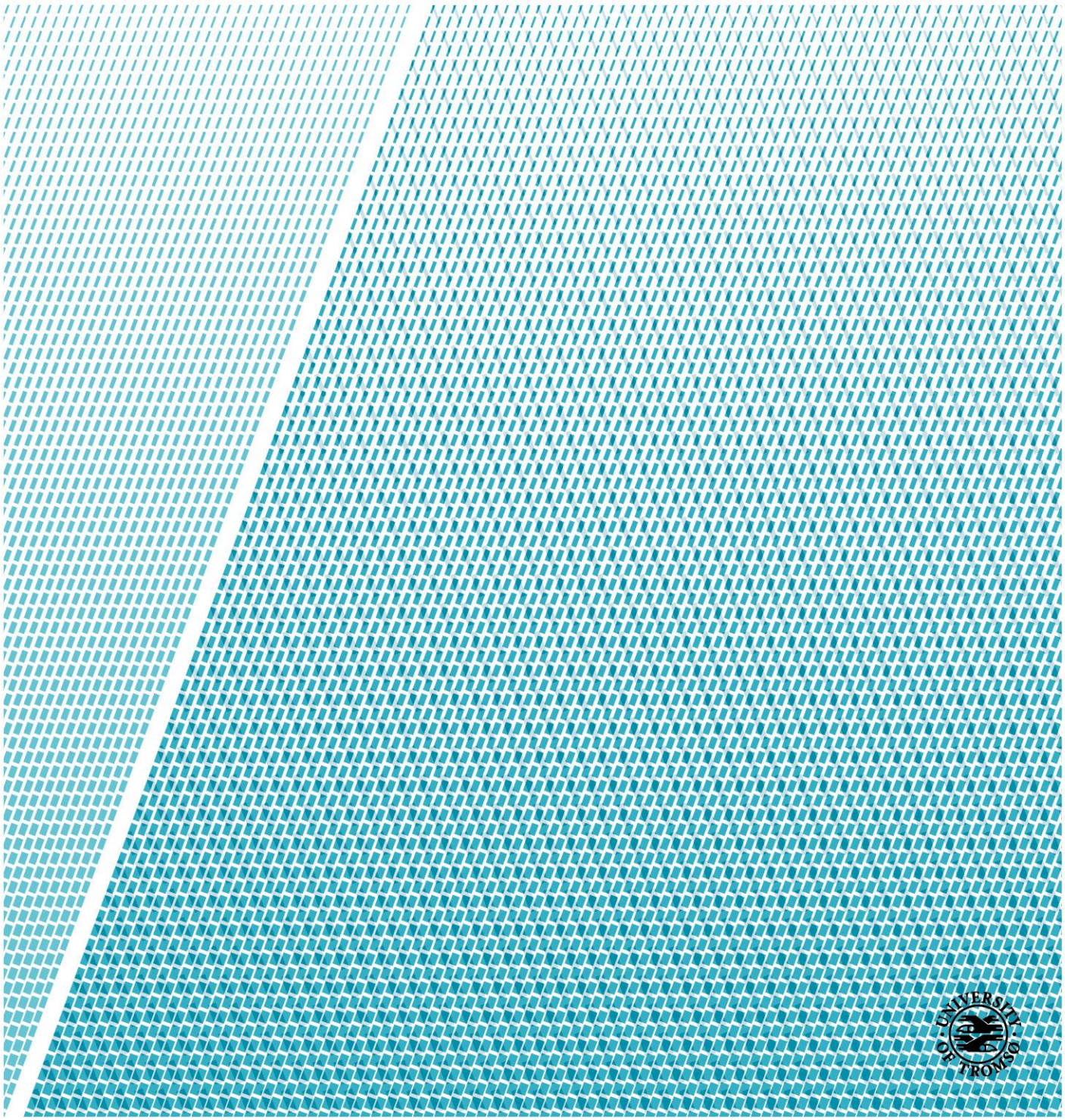

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1. Introduction

While the acquisition of first (L1) and second (L2) languages has been exhaustively researched for years, the study of third language (L3) acquisition is a relatively new aspect of the field. It is important to highlight that by the study of L3 acquisition we refer to the situation where it is assumed that the learner has already acquired, or is acquiring, two languages (Garcia Mayo, 2012). For many years, however, the study of L3 acquisition was not differentiated from the study of L2 acquisition, as all the languages learned after the L1 were considered an L2. The problem with this approach, however, was that it did not take into consideration that having already acquired a language after the L1 produces changes in learning mechanisms and language processing that can influence the acquisition of any posterior language (Jessner, 2006a). The trend of considering any language learned after the L1 an L2, however, has changed in the past decades, and the distinction between L2 and L3 acquisition has gained more importance. The newfound interest in the study of L3 acquisition has also been, to a great extent, due to the increase of multilingual people in the word. In this regard, Flynn, Foley and Vinnitskaya (2004) address the subject of multilingualism and how it is linked to the importance of understanding the processes and mechanisms of language acquisition by claiming that

> every individual by virtue of living within a multilingual and multidialectal community is multilingual in some sense. This means that there is essentially *universal* multilingualism in the world. Yet, our understanding of the language acquisition process be it L1, L2, L3… Ln is very restricted (Flynn et al., 2004:3).

Many social and political developments of the last century have also contributed to an increase of multilingualism in the world. Migration, for example, is a phenomenon that can be traced back to the earliest stages of human history. However, the enormous increase of the number of people leaving their homeland and finding a home in a new country in the past decades has changed the language landscape all around the globe. Immigrants bring their own languages into their host societies, and these have an enormous impact on the languages already spoken there (Garcia Mayo, 2012). Nowadays, for example, it is not uncommon to hear and see languages other than English in the streets of big cities such as London, Paris, or Berlin (Aronin & Singleton, 2012).

Globalization is another important factor in the way language acquisition is being reshaped. We

currently have a different way of accessing, learning, and using languages than the previous generations because as a result to the technological developments of the past few decades, languages now transcend borders like never before. Rothman, Cabrelli Amaro, & de Bot (2015) point out that thanks to globalization, there are now far more multilingual people in the world than monolinguals, and because of this, developed and developing countries are increasingly adopting bilingual education models. Furthermore, in recent years, there has also been an increase in the need to protect and preserve native and minority languages (Aronin & Singleton, 2012). Many communities have made available school education programs in minority languages so that these languages can be preserved, such as the case of Irish in Ireland or of the Sami language in Norway, where a special Sami curriculum has been developed for primary and secondary schools in Sami districts (Norwegian Ministry of Education and Research, 2007).

The major role English plays in the globalized world cannot be denied. In the European Union, for example, English is mandatory from primary school. This means that in most countries within the EU, children start education on a second language from a very early age. English education also continues past primary school; by 2015, for example, 95.8% of the students in upper secondary general education in Europe had English as a second language (Eurostat, 2018). However, given the new linguistic reality of the world, in some cases, by the time students start education in English, some of them might already have had contact with more than just one language. This is not an uncommon occurrence in Norway, for example. According to the information published by Statistics Norway (2018); 17.3% of the total population of this country are immigrants and Norwegian-born to immigrant parents. Furthermore, a significant percentage of the immigrants who arrive in Norway come from non-English speaking countries. According to the latest data published, 10.1% of these immigrants are originally from Asia, Africa, and Latin America (Statistics Norway, 2018). This means that when a child is born in an immigrant family that speaks a different language from Norwegian, they are constantly exposed to this language at home and by the time they start school, Norwegian is their chronological L2. In Norway, English is mandatory from the 1st grade (Norwegian Ministry of Education and Research, 2007). Therefore, by the time English is introduced in the education of these children, this language can be considered their L3, because they have already been in contact with a minimum of two other languages before. This phenomenon is not limited to Norway or Europe either; since English has such a major role in politics and trade in the world, there are also countries in Africa and Asia where people who

already speak at least two languages need to learn English for the purpose of communication (Jessner, 2006b). Yet, as teaching English as an L3 becomes more common in educational settings, the distinction between an L2 and L3 is not yet clear in the classroom, and many of the materials and approaches used for teaching this language are not adapted to the new pedagogical realities (Cummins & Davison, 2007).

Furthermore, as mentioned, the prominence of the use of English is not just limited to Europe. In fact, it has been argued that English has become the *lingua franca* of the world (Aronin & Singleton, 2012:43). People are also exposed to it all the time, mostly thanks to movies, tv shows and music in English being so popular all over the world. Moreover, the spreading of English around the globe does not only have socio- and psycholinguistic consequences for the societies involved; it also affects the structure of the language itself, as new varieties of English emerge as a result of the contact between English and other languages (Jessner, 2006b). Therefore, understanding the mechanisms that apply to the acquisition of English as a third language will not only help to gain a better understanding of the process and mechanisms of language acquisition in the human mind; it can also be a huge contribution to understanding the changes this language undergoes.

As regards the study of language acquisition, it is important to keep in mind that the research on L3 acquisition is more complex because there are additional factors involved. According to Jessner (2006b), for example, the fact that a person has already acquired two languages is not the only aspect to be considered when conducting L3 research. There is also the manner in which the languages involved have been acquired, for example, as the L2 might have been acquired simultaneously with the L1. Additional factors might also include individual aspects such as motivations, learning strategies and the way the learner perceives the new language. Furthermore, it might also be the case that the chronological L1 is not the dominant language of the learner and that, instead, the L2 is the strongest language. Another aspect related to the manner of acquisition is that if L3 learners have learned the L2 in a formal setting, the person already has some degree of metalinguistic awareness and already knows learning strategies that might help them along the way (Bardel & Falk, 2012).

Although all these aspects have been addressed in diverse studies of L3 acquisition in recent years, crosslinguistic influence remains the topic that attracts the attention of most researchers (Jessner, 2006a). Linguists have attempted to explain how the previously acquired languages influence the outcome of the acquisition of the L3 for several years now. However, despite all

the research conducted, it has not yet been possible to identify a single factor that can explain the source of crosslinguistic influence in L3 acquisition (Garcia Mayo, 2012). Nonetheless, linguists have come a long way in studying many of the mechanisms that interact in this process. The current trends of research in the topic of crosslinguistic influence have a strong focus on whether this influence is facilitative or non-facilitative, if it is related to the order of acquisition of the previously acquired languages, and to what degree typology and language relatedness are involved (Garcia Mayo, 2012; Jessner, 2006b).

The present study attempts to investigate crosslinguistic influence in L3 acquisition and also research English as a third language. Our focus is a group of Catalan/Spanish bilinguals who have received very basic English instruction. We believe that this language combination is particularly interesting for two reasons. First, the L1 and L2 are Romance languages which are very typologically similar. In fact, this similarity has presented a challenge at the time of identifying properties where the languages diverge from one another to create the tasks for this study. Second, all our participants are from Osona, a county located in the province of Barcelona. Given the sociolinguistic reality of Catalonia, where both Spanish and Catalan are official languages, most people there are exposed to these languages from a very early age. In the region of Osona, in particular, Catalan is the most dominant language and more than 50% of the population have it as the L1. Nonetheless, Spanish is still spoken and understood by the majority of the population (Illamola i Gómez, 2015). Therefore, the participants of the study constitute a case of having an L1 and L2 which are typologically related and very much in contact.

Our aim is to find evidence of crosslinguistic influence from Catalan and/or Spanish in L3 English. In order to do so, we have subjected the participants to a series of Acceptability Judgment Tasks (AJT) featuring three properties which have different characteristics in each of the languages; the Definiteness Effect (DE), grammatical in Catalan but not Spanish and English; VOS word order, grammatical in both Catalan and Spanish but not in English; and VSO word order, grammatical only in Spanish. We have also formulated a series of predictions regarding what kind of crosslinguistic influence we expect to find according to four of the most prominent models of language acquisition; the Cumulative-Enhancement Model (Flynn, Foley, & Vinnitskaya, 2004), the L2 Status Factor (Bardel & Falk, 2007, 2012), the Typological Primacy Model (Rothman, 2010a, 2013, 2015) and the Linguistic Proximity Model (Westergaard, Mitrofanova, Mykhayly & Rodina, 2016).

The present work is divided into sections as follows: **Section 2** introduces the theoretical background of the research, including the properties of DE, VOS and VSO word order and their characteristics in Catalan, Spanish and English. This section also includes an account of the models of L3 acquisition of interest for our research. **Section 3** includes a description of the present research and the predictions formulated. **Section 4** describes the materials and procedures involved in the study, including the methodology and the characteristics of the tasks and participants. **Section 5** provides an overview of the results obtained from the analysis of the data gathered. These results and how they correlate with our predictions are discussed in depth in **section 6**. The final remarks and the conclusion are featured in **section 7**. The **appendices** at the end of the document include all the relevant additional information related to our work, including the complete tasks and information sent to the participants, the sentences designed for the study and all the results obtained from the analysis performed in the data gathered.

2. Theoretical background

The present study takes a generative approach to language acquisition. Generative linguistics is concerned with the components of language such as syntax, phonology, etc., and how these components are acquired (Garcia Mayo & Rothman 2012). It maintains that the processes behind language acquisition are biological; this means all children are born with an innate linguistic knowledge. Universal Grammar (UG), the theory of the abstract properties of language (Chomsky, 1993), is the backbone of generative linguistics (Antović, 2007). According to UG, the mental representation of language is made up by fundamental Principles and Parameters. These Principles are a set of invariable properties that are shared by all languages, while the Parameters are a set of properties which are specific to each language and define the way in which the Principles are realized (Antović, 2007). This distinction between Principles and Parameters can be illustrated by means of the property of null subjects. The fact that all languages have the structure of subject is a property shared universally by all languages; therefore, a Principle. The fact verb inflection allows the subject to be dropped in some languages, such as Spanish or Italian, while they are always obligatorily marked in other languages, such as English, is a Parameter (de Villiers & Roeper, 2011). While the Principles of UG are innate to the human mind and all children have access to them, the Parameters of each particular language are activated by exposure to said language. Furthermore, according to Chomsky (1993), receiving direct negative evidence, i.e., correcting children when they make a mistake, is not necessary for language acquisition (Hawkins, 1983). Even though since Chomsky first postulated his theory, the notion of Principles and Parameters has undergone changes and reformulations (Boeckx, 2005; Chomsky, 2007), UG still remains, for the most part, a central element of generative linguistics and language acquisition research (de Villiers & Roeper, 2011).

A pressing issue in the study of language acquisition is whether learners still have access to UG after maturation or not (Flynn et al., 2004). Some linguists claim that there is a Critical Period for language acquisition (Lenneberg, 1967). This Critical Period consists of an age frame after which a person acquiring a language is no longer able to access Universal Grammar. This means that those language features that have not been acquired before the end of this Critical Period (generally described as the onset of puberty) will likely never be fully acquired. While the existence of a critical period in the acquisition of the L1 is generally more accepted, there is an ongoing debate among scholars regarding whether it is exclusive to L1 acquisition, or if it

applies to any further language acquisition. Another debate is whether it is possible to acquire native-like proficiency in the acquisition of a language after the L1 (Rothman, 2008). While it is acknowledged that there are different processes and mechanisms involved in child and adult language acquisition, the discussion of whether adult learners still have access to universal grammar is beyond the scope of this work. As we discuss in **section 4.3,** the linguistic background information gathered about the participants indicates that the majority of them have been exposed to their L2 before the age of eleven. Therefore, regardless of whether the Critical Period is applicable or not to L2 acquisition, we can assume that these participants have also had access to the basic features of their L2 as described by UG.

After having briefly discussed the general theoretical approach of our study, we now turn to the description of the properties and theories that serve as theoretical background for our research. In the following sections, we describe the linguistic properties tested and the models of L3 acquisition of interest for this study. In order to properly introduce each topic, we have divided the section into a series of subsections. **Section 2.1** provides an overview the DE and its characteristics in English, Catalan, and Spanish. **Section 2.2** reviews the properties of VSO and VOS word order in each of the three languages. Finally, **Section 2.3** describes the study of L3 acquisition and the models of interest for this work: The Cumulative-Enhancement Model (Flynn, Foley, & Vinnitskaya, 2004), the L2 Status Factor (Bardel & Falk, 2007, 2012), the Typological Primacy Model (Rothman, 2010a, 2013, 2015) and the Linguistic Proximity Model (Westergaard, Mitrofanova, Mykhayly & Rodina, 2016).

2.1. The Definiteness Effect

While it is acknowledged that syntax plays a vital role in encoding the information structure in existential and locative structures, the DE has also been studied as a semantic and pragmatic phenomenon (Abbott, 1993, 2014; Leonetti, 2008). Since the aim of the present work is not to present an in-depth syntactic, semantic or pragmatic analysis of the characteristics of the properties tested, but rather to fit them in the context of our research, we will only focus on the most relevant characteristics of the phenomenon. The aim of this section is to introduce the DE and provide a framework for our study by giving an overview of how the restriction of definiteness affects each of the languages in our research. Since the DE is a complex phenomenon, however, we have divided this section into two sub-sections for greater clarity:

Section 2.1.1 provides an account of the DE in English and **section 2.1.2** describes how the DE works in Spanish and Catalan.

2.1.1. Definiteness Effect in English

It is not possible to introduce the DE without first addressing the topic of existential constructions. Existentials have been defined as constructions that "express the existence or the presence of someone or something in a context" (Bentley, Ciconte, & Cruschina, 2013:15). While the structure, semantics and pragmatics of existential constructions can have different characteristics and constraints depending on the language (McNally, 2011), most researchers agree that they usually tend to follow the pattern *(expletive) (proform) (copula) pivot*[1] *(coda)* (1) (Bentley et al., 2013:15). The order of these components can vary across languages; however, researchers agree that it is very likely that the pivot is a universal element since, so far, all the languages that have been subject of linguistic research display an obligatory pivot. The role of the proform can also vary from language to language, and its use might be obligatory or optional (McNally, 2011).

(1) a. There are some books on the table
PROFORM COPULA PIVOT CODA

b. Ci sono dei libri sul tavolo (Italian)
PROFORM be$_{3PL}$ some books on-the table

c. Hay unos libros sobre la mesa (Spanish)
Have.$_{3SG.PROFORM}$ some books on the table

(Bentley et al., 2013:5)

In English, existential constructions are formed by the form *there* at the beginning of the sentence, followed by a copula and a DP (Maleczki, 2010). Its function is to introduce a new

[1] The term *pivot* is commonly used to designate the noun phrase which immediately follows the copula in these structures and, in most cases, acts as the subject of the sentence. The *coda* is an addition, such as a locative phrase, that can follow the *pivot. Proform* is used to refer to the locative adverbial forms which are commonly accepted and necessary in existentials in some languages (*there* in English, *ci* in Italian, *hi* in Catalan) (Bentley et al., 2013).

It is important to note that the terminology used to designate the *pivot* and *coda* can vary across works. Perpiñán (2014, 2015), for example, refers to them as *theme* and *locative.* However, for the sake of consistency we will refer to them as *pivot* and *coda* throughout this study.

referent into the discourse (McNally, 2011). One of the most prominent characteristics of *there*-existentials is the phenomenon known as the DE; i.e., the restriction that the DP that follows the copula must be indefinite (2) (Freeze, 1992; McNally, 1997; Perpiñán, 2014). Our work will only focus on the case of *the;* nonetheless, it is important to point out that this restriction is not limited to this determiner, and that it affects several others, such as *all, every* and *most,* to name a few. Furthermore, it also affects proper names and pronouns (3).

(2) a. There are dogs who enjoy chasing their own tail.

b. There is a cat sitting on my window.

c. There are many answers to that question.

(Mcnally, 1997)

(3) a. *There was the cat on the chair.

b. *There was every guest at the party.

c. *There was Mary at home.

Freeze (1992) argues that it is possible that the restriction of definiteness in existentials applies to affirmative sentences in all languages. Furthermore, Freeze also claims that if the DP that follows the copula is definite, the structure can be considered a predicate locative because "from a syntactic point of view, the predicate locative and existential are equivalent" (1992:557). This theory, however, is not without controversy. According to MacNally (2011), for example, the problem with this analysis is that languages such as Catalan or Italian show that the restriction of definiteness might actually not be universal to all languages. Furthermore, she points out, even within English there are exceptions to the rule; for example, a definite determiner can be the head of a post-copular DP when the internal argument of the complement noun is not modified by a definite determiner (4). Considering these characteristics, McNally believes that it is not possible to ignore semantics and to reduce the study of the DE to a mere syntactic analysis.

(4) a. There was the lid to **a** jar on the counter.

b. *There was the lid to **the** jar on the counter.

(McNally, 1997:29)

The nature of the obligatory proform *there* is another discussed topic. Lyons (2004) describes the existential *there* as a mere semantic filler that carries no meaning at all, is usually not stressed and can even undergo phonological reduction. Freeze (1992) claims that English *there* existential constructions are a unique phenomenon when compared to other languages. Following an analysis of a series of SVO and SOV languages, such as English, Russian, Hindi, Tagalog, and Finish, he attributes this uniqueness to English being the only language in which *there* acts as a "lexically locative existential pronoun in subject position" (Freeze, 1992:524). Abbott, by contrast, agrees with Lyons (2004) and argues that *there* is nothing but a "dummy" element in English existential sentences (Abbott, 1993:43). Her analysis shows how parallel constructions use different words to convey the same idea not only in other languages, (e.g., *es gibt,* in German) but also in different dialects of English (*it is,* in some varieties of African American Vernacular English). For this reason, Abbott argues that while it might not be a coincidence that the word used in English derives from a location word, in Modern English, the existential *there* has just become "something to put at the beginning of the sentence" with the sole purpose of alerting the person addressed that new information is coming (Abbott, 1993:41).

Finally, in order to provide a more accurate description of the complexity of this phenomenon, we should add that Abbott (1993) also argues that context is the ultimate predictor for what kind of DP is allowed in existential sentences and for the type of restrictions these DPs might be subject to. Unlike McNally (2011) who, as mentioned, argues that existentials just serve to introduce a new element into the discourse, Abbott (1993, 2014) claims that there are two types of existential constructions: "noncontextualized existentials" and "contextualized existentials". In the first kind, the DP does not denote something that has been introduced by context but can specify one single entity which can only be identified in one way (5). By contrast, the DP of "contextualized existentials" denotes something that has already been introduced into the discourse by the context, as in the case of (6), where "the book" serves, for example, as reply to the question *What can I use to prop open the door?*

(5) There was the usual crowd at the beach last Sunday.

(Abbott, 1993:44)

(6) There's the book on the table.

(Abbott, 1993:43)

2.1.2. Definiteness Effect in Catalan and Spanish

Existential constructions in Catalan and Spanish follow the core *copula + pivot + coda* pattern described in the previous section (7). However, as regards similarities between the patterns of the two Romance languages and English, it can be argued that Catalan follows a more similar pattern of existentials to English. The reason for this is that while English needs the mandatory proform *there*, Catalan also resorts to the use of a proform, which appears in the form of an overt locative clitic *hi*. It should be noted, however, that while this clitic is necessary whenever the verb is *haver* (8.a), it might be ungrammatical in some contexts with the verb *ésser* (8.b) (Rigau, 1997). In Spanish, existential constructions are, in most cases, expressed with *haber.* However, while Catalan uses *haver* for eventive or enumerative existentials (9.a), Spanish uses *estar* instead (9.b).

(7) a. Hi ha unes claus al calaix (Catalan)
CL COPULA PIVOT CODA

b. [e] Hay unas llaves en el cajón (Spanish)
CL COPULA PIVOT CODA

There are some keys in the drawer

(Perpiñan, 2015:109)

(8) a. Hi havia el president
CL had the president

The president was here/there

b. *Hi era el president
CL was the president

c. El president hi era
The president CL was

The president was here/there

(Rigau, 1997:397)

(9) a. Hi ha en Joan (Catalan)
CL has the Joan

b. (Aquí) está Juan c. *Hay Juan (Spanish)
(here) is Juan have Juan

There is John

(Leonetti, 2008:139)

According to Leonetti (2008), Spanish is one of the most restrictive languages where the DE can be observed. Spanish syntax is not as transparent in its structure as Catalan, and the mechanisms for focus marking are different in both languages. In Spanish, the notion of existence tends to be linked to the often-implicit idea of location, and the subject or complement of these types of phrases is usually an indefinite noun phrase. For this reason, the verb *haber* is preferred for impersonal constructions. Furthermore, while there is no apparent clitic acting as proform in Spanish, it is argued that *ha-y*, the impersonal present tense of *haber*, has a lexicalized locative form *-y* attached which acts an expletive, in the same way some authors argue that *there* acts in English existentials (Perpiñán, 2014). However, *haber* is subject to some constraints and, like in English, the general rule for these existentials is that the complement of the verb can either lack a determiner (10.a) or be preceded by an indefinite determiner (10.b)[2] (Real Academia Española & Asociación de Academias de la Lengua Española (RAE & ASALE), 2010). Following this rule, *haber* does not allow the definite article in the complement (10.c). In the cases where the DP is definite, Spanish can make use of the verb *estar* which does allow definite complements (10.d).

(10) a. Hay libros en la mesa b. Hay un libro en la mesa
have books on the table have a book on the table

There are books on the table *There is a book on the table*

[2] This might not always have been the case, however. Pons Rodriguez (2014) carries out an analysis of the historical use of existentials and locatives in Spanish. The most notable point of the research is that in medieval Spanish, and up to the 16th century, there is evidence of the use of *haber* together with a definite article. These findings show that at some point in history, Spanish might have made a shift from a language not affected by the DE to being subject to the restriction of definiteness.

c.	*Hay	el libro	en la mesa		d. El libro	está	en la mesa.
	have	the book	on the table		The book	is	on the table
	**There is the book on the table.*				*The book is on the table*		

If a Spanish speaker wants to express the existence of a book on the table, they would either utter (10.b) or (10.d), the choice would depend on whether said book has been introduced before. If the case was indeed that the book has previously been referred to in the discourse, then (10.d) would be the answer, otherwise (10.a) would be uttered to indicate that some book is on the table. Just like in English, there are also exceptions to the impossibility of using the definite article in existential constructions with *haber*. Among them; certain nouns can be introduced by a definite article when they have a quantitative value instead of a referential one (11). Furthermore, the definite article is also allowed when the noun is modified by complements that express repetition or habit (12.a), or with abstract nouns which have a sentence as a complement (12.b).

(11)	Hay	el doble	de personas
	have	twice	of people

There is twice the people

(12) a.	Había	la desconfianza	de siempre	en sus caras
	had	the mistrust	of usual	in their faces

There was the usual mistrust on their faces

b.	Hay	el peligro	de que	Isabel note	el cambio
	have	the danger	of that	Isabel notices	the change

There is the danger of Isabel noticing the change

(RAE & ASALE, 2010:288)

Contrary to the case of English and Spanish, the DP that follows the verb can be either definite or indefinite in Catalan (13). Furthermore, unlike English existentials and *haber* Spanish constructions, Catalan also allows proper nouns in pivot position (Villalba, 2016). Longa, Lorenzo & Rigau (1998) argue that this characteristic of Catalan is a clear argument against

the abovementioned claims by Freeze (1992) that the DE is an universal phenomenon across languages.

(13) a. Hi ha les claus al calaix (Catalan)
CL has the keys in-the drawer

b. *Hay las llaves en el cajón (Spanish)
has the keys in the drawer

c. *There are the keys in the drawer

There are keys in the drawer

(Catalan and Spanish sentences from Perpiñan, 2015:111)

However, the flexibility of Catalan is not without constraints, as the language does not allow personal pronouns in pivot position (14). This means that while Catalan is not subject to the DE in the same way Spanish and English are, it is still restrictive when it comes to pronouns in this position (Villalba, 2016). Rigau (1997) attributes this characteristic to the dative subject of the verb *haver+hi*, which, according to him, could restrict the verb to structures with [-person] subject agreement. Freeze (1992), however, claims that while it might appear that *hi* takes on subject position, this is, in fact, not the case because there are instances where the proform can be directly preceded by a negative (15), and negatives cannot come before the subject. Instead, Freeze argues, there is an empty category in the subject position, enabled by the fact that Catalan is a null-subject language.

(14) *Hi ha ella (Catalan)
CL has she

(Rigau, 1997:402)

(15) No hi ha peiz al menu d'avui
NEG CL have fish on-the menu of-today

Isn't there fish on today's menu?

(Freeze, 1992:568)

Finally, one last characteristic for Catalan existentials is that if a locative predicate appears in the sentence, this should take left or right peripheral position, and the clitic *hi* should not be omitted (16) (Longa et al., 1998).

(16) a. A la casa, hi havia un gos
in the house, CL had a dog

b. *A la casa havia un gos
in the house had a dog

There was a dog in the house

(Longa et al., 1998:129)

2.2. Word order: VSO and VOS in Catalan, English, and Spanish

Most languages are usually categorized as either SVO, VSO or SOV. A number of languages also fall in the VOS and OVS category, such as Malagasy (VOS) and Hixkayrana (OVS), although these are found to a much lesser extent (Hawkins, 1983). Catalan, Spanish, and English share the basic SVO word order for main transitive clauses (Wheeler, Yates, & Dols, 1999). However, English is the less flexible of the three, and while nowadays it is possible to still find some archaic expressions such as *till death do us part* which show traces of a SOV order in declarative sentences (Pinker, 1994:238), this language only allows the subject to be in pre-verbal position in main transitive clauses. Catalan and Spanish, by contrast, are more flexible and allow post-verbal subjects in VOS order. The choice of the preferred order usually depends on where in the sentence the speaker puts the focus and on which of its elements the speaker intends to stress (RAE & ASALE, 2010; Wheeler et al., 1999). The similarities in the flexibility regarding word order, however, are not absolute in the two Romance languages. Catalan is more restrictive and, unlike Spanish, does not allow subjects in VSO position (17) (Gallego, 2013).

(17) a. Hojeaba el diario Juan. (Spanish)
V O S
browsed-PST.3.SG the newspaper Juan.

b. Fullejava el diari en Joan (Catalan)
V O S
browsed$_{PST.3.SG}$ the newspaper the Joan

c. Hojeaba Juan el diario. (Spanish)
V S O
browsed$_{PST.3.SG}$ Juan the newspaper.

d. *Fullejava en Joan el diari. (Catalan)
V S O
browsed$_{PST.3.SG}$ the Joan the newspaper

John was browsing the newspaper

(Catalan examples from Gallego, 2013:413)

Balletti (2004) argues that subject inversion is a common phenomenon in Romance languages and that this property is linked to the Null Subject property, i.e., the fact that it is possible to drop the subject in most Romance languages when they appear in pre-verbal position[3]. According to López (2009), however, the fact that Spanish allows VSO while Catalan does not, implies that the differences in syntax regarding word order in these two Romance languages are more complex than what it might be presumed from the surface. Furthermore, while there are a number of theories which try to identify the constraints that make certain languages such as Catalan or Italian more restrictive and not allow the VSO configuration (Belletti, 2004; Gallego, 2013; López, 2009; Ordóñez, 1998, 2007; Sheehan, 2009), this

[3] This claim is reinforced by the fact that French, a Romance language but that does not have the Null Subject property needs a trigger (such as a subjunctive, for example) to allow subject inversion (i). Null Subject languages, by contrast, can freely invert the subject (ii) (Balletti, 2004).

(i) *A parlé Jean.
has spoken Jean.

It faut que parle/parte Jean.
It is necessary that speak/leave (subj) Jean

(ii) Ha hablado Jean
Has spoken Jean

(French examples from Balletti, 2014:18)

discrepancy with the other Romance languages that do allow this word order still remains a topic of discussion.

According to Silva-Corvalán (2014), the position of the subject in declarative sentences in Spanish is related to semantic and pragmatic factors linked to the information structure of the sentence. The traditional SVO word order will probably be chosen in a situation where all the information is new or has already been mentioned (Olarrea, 2013). However, the intention of the speaker regarding which object should be the focus of the sentence is an important factor to decide the preferred word order. It is possible, therefore, that an alternative order such as VSO or VOS is chosen to introduce a new element into the discourse. If the speaker intention is to stress the object, or the action and the object, for example, then the focus will be placed on these elements and VOS will be the preferred word order. Conversely, when the intention is to put focus on the subject, VSO is preferred (Ordóñez, 1998). Going back to the examples above, then, (17.a) can be used to answer a question such as *what was Juan doing when Maria arrived?* or to *what was Juan browsing when Maria arrived?* Meanwhile, (17.c) is a perfectly acceptable answer in Spanish to the question *who was browsing the paper when Maria arrived?* Finally, there is a tendency for the subject of copulative verbs to favor post-verbal position in Spanish, although the reason for this preference is not yet fully understood (Silva-Corvalán, 2014).

As regards English, the structure of main transitive clauses has certainly undergone changes along history (Biberauer & van Kemenade, 2011; Fries, 1940). In Old English, for example, the role of the elements on an actor-action-goal construction such as (18), which in Modern English depends purely on word order, is indicated by different inflected forms that establish the distinction of actor and goal. Fries (1940:200) illustrates the use these inflected forms with (19), where the relation between subject and object is signaled by the nominative case form of *the man* and the accusative case form of *the bear.*

(18) The man struck the bear
The bear struck the man

(Fries, 1940:199)

(19) Sē mann þone beran slōh.
þone beran sē mann slōh.
þone beran slōh sē mann.
Slōh sē mann þone beran.

(Fries, 1940:200)

Consequently, Fries claims that given the use of these inflected forms, in Old English the order of words in a sentence is not important to establish the grammatical relationships of the items within it. Further analysis of the Old English sentence structure shows that while pronominal subjects tend to precede the main verb, non-pronominal subjects usually are Verb Second (V2) in non-subject initial main clauses (20), displaying thus subject-verb inversion. Furthermore, it is claimed that information structure is a major factor which guides the position of subjects in Old English and that the option between V2 or non-V2 is mostly linked to whether the information carried by the subject is new, important or not, has already been mentioned in the discourse, etc. (Biberauer & van Kemenade, 2011; van Kemenade & Westergaard, 2012).

(20) Under Moyses æ moste se bisceop habban an geæwnod wif, ...
under Moses' law should the bishop have an espoused wife

Under Moses' law, a bishop was to have an espoused wife, ...

(Biberauer & Van Kemenade, 2011:20)

Early Middle English also appears to show a pattern where word order depends of information structure. Van Kemenade and Westergaard (2012) carry out an analysis of corpora of this period which shows that V2 appears with new subjects, while non-V2 word order is often used with elements that have already been mentioned in the discourse. However, at some point during Middle English, and following a series of changes in the internal structure of the language, the distinction between old and new information starts to disappear. Van Kemenade and Westergaard (2012) observe in the corpus that somewhere between the years 1240 and 1350, the use of an exclusive non-V2 structure starts to develop. Eventually, English ends up shifting away from having a more flexible structure, and the V2 structure in declarative sentences is lost. By the end of the Middle English period, the language with two possible subject positions has become a language which only allows one subject position in main declarative clauses (Biberauer & van Kemenade, 2011). In Modern English, thus, the

obligatory subject always precedes the verb in the standard declarative sentence structure (Bache, & Davidsen-Nielsen, 2010). Therefore, compared to Spanish and Catalan, present-day English is extremely restrictive regarding word order and does not have a VSO or VOS option to shift the focus of the topic as these languages do. Instead, the language usually resorts to prosodic marking to, for example, introduce a new element into the discourse or highlight important information (Silva-Corvalán, 2014).

Summary of linguistic properties

Up to this point, we have discussed the main characteristics of the properties chosen for the present study. The following section includes a description the most prominent models in the field of L3 acquisition. However, we first close the present section by providing a summary of the aspects of the DE and word order in English, Catalan, and Spanish that are pertinent to the present research.

As regards the main characteristics of existential constructions and the DE in these three languages:

1. Existentials in English are formed by the proform *there* at the beginning of the sentence, followed by a copula -*to be*- and a DP. Aside from a few exceptions, the DP that follows the copula is subject to the DE; i.e., the restriction of definiteness which affects certain determiners in the English language, among them *the*.

2. Catalan has two locative or existential verbs: *ésser* (to be), used for predicate locatives, and *haver* (to have). For existentials, Catalan follows the *proform + copula + pivot + coda* pattern. Catalan also requires the presence of the overt locative clitic *hi*. However, unlike English and Spanish, the general rule is that this language is not subject to the DE, and the DP that follows the copula can be either definite or indefinite.

3. In Spanish, existential constructions are, for the most part, expressed with *haber*, unless we refer to eventive or enumerative existentials, where *estar* takes over. *Haber* constructions are also subject to the DE, like English existentials, and excluding a few cases, the DP following the verb cannot have a definite pronoun.

Regarding the property of word order, the main aspects pertinent to our study are:

1. Catalan, Spanish, and English share the basic SVO word order for main transitive clauses.

2. While English is extremely restrictive regarding alternative word orders in declarative sentences, both Catalan and Spanish are more flexible and allow subjects in final

position with VOS order. This pattern is usually chosen if the speaker wants to stress the object, the action or both.

3. Unlike Catalan and English, Spanish allows postverbal subjects in VSO order. This structure is preferred when the intention is to put focus in the subject. However, it can also be used introduce a new element into the discourse.

2.3. L3 Acquisition

One of the most pressing topics in the study of L3 acquisition is how the previously acquired languages interact in the learning process of the new language and how the outcome of the acquisition is affected. Several linguists (Bardel & Falk, 2007, 2012; Berkes & Flynn, 2012; Flynn et al., 2004; Rothman, 2010a, 2010b, 2013; Rothman et al., 2015; Westergaard et al., 2016) have researched whether properties of the previously acquired languages affect the development of the L3 and, if so, how these languages interact and what processes take place in the mind of the learner. It is generally agreed that the idea of the previously acquired languages having no influence at all can be dismissed, considering all the evidence available in the field that documents transfer from either one or both of the previously acquired languages into the L3 (Cabrelli Amaro & Rothman, 2015). Although some studies have evaluated the possibility of absolute transfer from the L1, this model has not been formally proposed so far. Moreover, as exposed in the coming sections, research has also provided evidence against the idea of a privileged role of the L1.

Discussion remains, however, around the topic of crosslinguistic influence and its nature. Is it only from the latest acquired language? Is it from the most typologically similar language? Is it from both languages? Is crosslinguistic influence always facilitative, or can it also be non-facilitative? This section presents an overview of four models in the field of L3 acquisition which attempt to address these questions; The Cumulative-Enhancement Model (Flynn et al., 2004), which argues that crosslinguistic influence can come from either of the previously acquired languages; the L2 Status Factor (Bardel & Falk, 2007, 2012), which argues for crosslinguistic influence from the latest acquired language; the Typological Primacy Model (Rothman, 2010a, 2013, 2015), which claims that transfer occurs from the most typoologically symilar language to the L3; and the Linguistic Proximity Model (Westergaard, et al., 2016), which claims that crosslinguistic influence occurs property by property.

2.3.1. The Cumulative-Enhancement Model

The Cumulative-Enhancement Model (CEM) first appears on a study that seeks to address the question of whether the L1 is the only language that plays a role in the development of the L3 or if, by contrast, all previously acquired languages have an effect (Flynn et al., 2004). The CEM is based on the hypothesis that in the acquisition of an Ln, the L1 is not actually more

available than the other previously acquired languages. Instead, Flynn et al. (2004) claim that language learning is cumulative and that all the previously acquired languages can play a role in the acquisition of a new language. Furthermore, according to the CEM, the previously acquired languages can have a positive effect on the acquisition of new languages, which makes subsequent acquisition of other languages easier.

In order to test their theory, Flynn et al. focus on the acquisition of English relative clauses in adults and children who are learning English as an L3 and have Kazakh as L1 and Russian as L2. All three languages are SVO, however, while Kazakh is a head-final, left-branching language, Russian and English are both head-initial, right-branching languages. Therefore, the L3 of the participants of this study shares its characteristics with the L2 and not with the L1. Flynn et al. (2004) argue that if the participants were to be influenced by a language that shares the characteristics of the L3, then, this influence should come from Russian, the L2, and not from the L1 Kazakh. Furthermore, they compare the behavior of these participants with that of the participants of two previous studies by Flynn (1983, 1987 as cited in Flynn et al., 2004); Japanese L1 and Spanish L1 speakers learning English L2. In these studies, Spanish matches English in that both are head-initial, right branching languages, while Japanese is head-final and left-branching. Flynn et al. claim that the patterns of acquisition of English that they find in the adult Kazakh L1/Russian L2 learners match the patterns of the Spanish L1 learners of English of the previous studies. They suggest that these results show that any of the previously acquired languages can play a role in the acquisition of the L3, not just the L1. Furthermore, they argue that the role of the previously acquired languages can either be neutral or enhance the acquisition of the new language, but it should not have a negative impact on its development. They acknowledge, however, the need for further research on the topic, because the study is not conclusive on whether the last language learned has a more prevalent role.

In order to further investigate the role of the last learned language, Berkes and Flynn (2012) set up a follow-up study that focuses on the acquisition of the English Complementizer Phrase. This time, they compare the results of production data from a L2 acquisition study of L2 learners of English who have German L1 with the results of an L3 study of Hungarian L1/German L2 learners of English L3. German differs from English and Hungarian in the order of the constituents in a relative clause; therefore, this time, the features of the L3 are similar to the ones of the L1 and not to the ones of the L2 as in the study by Flynn et al (2004). The results show evidence in favor of facilitative transfer from Hungarian L1 into English, and Berkes and Flynn argue these findings further support the CEM. Furthermore, the comparison of the results

of the L2 and L3 studies shows that learners follow different patterns in the development of their English. This, Berkes and Flynn argue, is evidence against the theory that the last acquired language has a more prevalent role in the acquisition of the L3; because if that were the case, L1 Hungarian speakers would have shown evidence of transfer from L2 German into their L3 English, which does not occur.

2.3.2. The L2 Status Factor

According to the L2 Status Factor (Bardel & Falk, 2007, 2012), the L2 has prevalence over the L1 and can be a source of both negative and positive transfer in the acquisition of the L3. The foundations for this theory were first introduced by Williams & Hammarberg (1998) in a very early case study of the lexicon in L3 acquisition, which focuses on the language switches of an adult learner of Swedish with English L1 and German L2. Williams & Hammarberg observe that the language switches produced by the participant come mostly from German, the L2, and attribute this to the manner of acquisition. The claim is that since the L1 and L2 are acquired in different ways, it is very likely that the same mechanisms that apply to the acquisition of the L2 are activated in the acquisition of the L3. Another claim is that there might be a natural tendency to suppress the L1 in the process of acquisition, since "using a 'foreign' language would be a better strategy in acquiring another 'foreign' language" (Williams & Hammarberg, 1998:323). Bardel & Falk (2007, 2012) follow up on this theory and propose a neurolinguistic approach based on the notion by Paradis (2004) that human beings have two types of memory that are activated by different parts of the brain; declarative memory and procedural memory. According to this approach, declarative memory stores metalinguistic knowledge (vocabulary, conscious knowledge about facts, etc.) while procedural memory drives implicit linguistic knowledge (phonology, morphology, etc.). Since the acquisition of the L1 is implicit, then, the hypothesis is that it is driven by procedural memory. The acquisition of the L2 (if conducted in a formal setting), by contrast, is driven by explicit knowledge and, therefore, by declarative memory. Since the acquisition of the L3 takes place in the same way as the acquisition of the L2, declarative memory should also be involved in the process of the acquisition of this language (Bardel & Falk, 2012).

Bardel & Falk (2007) test the L2 Status Factor on a study that focuses on the first stages in the acquisition of negation in Swedish and Dutch as L3, two V2 languages where negation is post-verbal in the main clause. The research focuses on the placement of sentence negation in two

groups of learners; one whose L1 is V2 but the L2 is not, and another whose L2 is V2 but the L1 is not. According to the results, the groups tested behave differently regarding placement of negation. None of the participants who have a V2 L1 transfer the pattern of negation in a systematic manner to their L3, even when the L3 is also V2. According to Bardel and Falk, the behavior of the participants cannot be accounted for by typological proximity between the L1 and L3. Instead, since the participants who have a V2 L2 show evidence of transfer of this language to their L3, they claim that the L2 seems to act as a filter which does not allow access to the L1. Bardel and Falk conclude that these different patterns could be driven by a combination of the typological proximity of the L2 and L3 and the L2 knowledge these learners have.

Finally, it should be noted that Bardel & Falk (2012) claim that the L2 status factor is important for the study of language acquisition in the setting of adults learning in a formal environment, such as a classroom. However, they believe that it is likely that other mechanisms apply to early bilinguals learning an L2 in a naturalistic setting, such as the case of children who are exposed to two languages since early childhood because they grow up in an environment where their parents speak a different language from the rest of the society. In the case of simultaneous bilinguals, the L2 might resemble the L1 in its characteristics, and therefore, it might have a different impact on the process of acquisition of the L3 than the L2 of those who have learned the language in a formal setting. This possibility is tested by Falk, Lindqvist, and Bardel (2015) on a study about the role of metalinguistic knowledge in L3 acquisition. According to the results of the research, a high level of metalinguistic knowledge of the L1 does seem to be a factor for transfer in the initial stages of L3 language acquisition. Furthermore, Falk at al. also argue that the performance of the participants shows that when a speaker reaches a very high level of proficiency in the L2, this language might lose its L2 status and, therefore, the L2 Status Factor might not apply in such cases.

2.3.3. The Typological Primacy Model

An early idea of full transfer from the most typologically close language in the early stages of the acquisition of the L3 was first introduced by Leung (2003). This hypothesis comes from work that compares the performance of Cantonese/English bilinguals who are acquiring French as an L3, where participants show evidence of transfer from English, the most typologically similar language. Following the same principles, Rothman (2010a, 2013, 2015) argues that

neither the CEM nor the L2 Status Factor can account for the initial stages[4] and development of the L3 grammar and proposes a model of L3 acquisition called the Typological Primacy Model (TPM). This model predicts that typology is a decisive factor for transfer in the initial stages of L3 acquisition; i.e., the speaker will transfer the language they unconsciously perceive to be the most typologically close to the L3. Like the L2 Status Factor, the TPM assumes that transfer is not always necessarily facilitative. According to this model, transfer will occur from whichever language available is perceived to be the most typologically similar to the L3. Moreover, this process might take place even when, in fact, the other language actually has features and structures which are more useful for the acquisition of the L3 (Rothman, 2013).

In order to test the TPM, Rothman (2010b) examines word order and relative clause high/low attachment preference at the initial stages of the acquisition of L3 Brazilian Portuguese. The participants of the study are L1 English/L2 Spanish and L1 Spanish/L2 English bilinguals. Even though transfer from English would be facilitative due to the characteristics of the properties tested, the results show that both groups transfer from Spanish, the Romance language. Furthermore, this transfer takes place regardless of whether Spanish is the L1 or the L2 of the participants. Since Brazilian Portuguese is also a Romance language and more typologically similar to Spanish than English, Rothman concludes that the results provide evidence in favor of the TPM model.

Ever since the first postulation of the model, Rothman has further developed the TPM (Cabrelli Amaro & Rothman, 2015; Rothman, 2013). Regarding the mechanisms that drive language acquisition, he argues that they seek "cognitive economy" (Rothman, 2013:219), which means that the mind will try to simplify the process of language acquisition by using that which is available from previous linguistic knowledge. Furthermore, for the sake of cognitive economy, transfer is not a gradual process according to the TPM. Instead, the entire linguistic system of either the L1 or L2 is transferred as soon as the parser has received enough input to evaluate which of them is more similar to the L3.

Furthermore, Rothman (2013) has established a series of linguistic cues that the mind of the learner uses to identify the system which will end up being completely transferred. These cues follow a hierarchy, made up by the lexicon, phonology, functional morphology and, finally, syntactic structure. According to Rothman, lexical similarities are on the first step of the

[4] The initial states, according to the TPM, are defined as "the beginning of the L3 acquisition process, that is, the initial developing L3 interlanguage grammar" (González Alonso & Rothman, 2017).

hierarchy, because they are easier to identify than phonological or morphological similarities, which require more knowledge of the language. Phonetic and phonological cues are the second step on the ladder, and the learner will use them if it is not possible to identify the most useful language by means of the lexicon. Rothman argues that phonetic and phonological information is "readily and unambiguously available to the L3 in abundance from the very beginning of exposure" (Rothman, 2013:240). Furthermore, he claims that the phonetic and phonological similarities can be identified with a little amount of input, even if the languages are not very obviously typologically similar as, for example, in the case of Chinese-Japanese bilinguals acquiring Spanish. Rothman argues that the parser could detect the fact that the Spanish vowel system is more similar to the Japanese one thanks to a single phonological feature that both these languages share, but Chinese does not have. If neither lexical nor phonetic and phonological similarities are enough to identify the most typologically similar language, functional morphology is the next cue, although it would require a higher degree of exposure to the L3 than the previous two. Finally, if functional morphology were not sufficient either, the learner can resort to the syntactic structure. This appears last in the hierarchy because the learner would need a deeper linguistic competence to identify these cues. According to Rothman (2013), at the earlier stages, the parser should be able to perceive basic properties, such as word order or null subjects, which will help them determine which is the most typologically similar language. However, when these basic properties are not enough to make the distinction, lexical, phonological, or morphological similarities can aid the parser to detect more complex properties, such as the presence of a clitic pronoun in a Romance Language, at the earlier stages.

Finally, it is important to highlight that in the TPM there is a distinction between the concept of crosslinguistic influence and the concept of transfer. According to this distinction, crosslinguistic influence can be a temporary lapsus of performance that occurs when of one of the previously acquired languages affects processing, but that does not affect the mental representation of the new language (González Alonso & Rothman, 2016). Transfer, by contrast, is related to the mental representation of the developing grammar. González Alonso and Rothman (2017:230) define transfer as the "initial hypotheses about mental grammatical representations for the target grammar copied from a source of specific previous experience". Therefore, according to this definition, on the initial stages of exposure to L2 English, for example, an L1 Spanish speaker will develop an interlanguage grammar for English with a

syntactic structure in place for gender because the property of gender would be transferred from the L1 Spanish (Gonzalez Alonso & Rothman, 2016).

2.3.4. The Linguistic Proximity Model

Westergaard et al., (2016) claim that structural similarity is the main factor in L3 acquisition. They do not agree that transfer can only occur from the most typologically similar language, as the TPM claims. Instead, they propose that crosslinguistic influence can come from both previously learned languages, in a model called the Linguistic Proximity Model (LPM). The main postulation of this model is that the similarities of "abstract linguistic properties" between the languages are the main reason why crosslinguistic influence occurs, regardless of the order of acquisition of the other languages (Westergaard et al., 2016:5). This means that all these previously acquired languages are active, interact with one another and can be accessed by the learner. Furthermore, according to this model, since crosslinguistic influence takes place property by property, it can be both facilitative and non-facilitative. The LPM predicts that facilitative crosslinguistic influence occurs when there is a linguistic property in the input of the language being learned, in this case, the L3, that is structurally similar to a linguistic property of one of the previously acquired languages. Non-facilitative influence, by contrast, occurs when a property of these languages is mistakenly believed to be similar to a property of the L3.

Evidence to support this model comes from a study that compares the behavior of Norwegian/Russian bilinguals acquiring English L3, with the behavior of Norwegian L1 and Russian L1 speakers who are learning L2 English. Russian and Norwegian are two typologically distant languages, while Norwegian is more typologically similar to English. In this case, Westergaard et al. test two properties related to verb-second word order; one, in declarative sentences, which only occurs in Norwegian; the other, in *wh*-questions, where the verb is inverted in English and Norwegian but not in Russian (Westergaard et al., 2016:6). The results of the research show that the L3 learners behave differently from the L2 learners. On the one hand, there is evidence of a facilitative effect from Russian, despite the typological proximity of Norwegian and English. On the other hand, there is also evidence of non-facilitative influence from Norwegian.

This study shows that the previously acquired languages have both facilitative and non-facilitative influence on the L3. In keeping with the predictions of the LPM, this suggests that

both languages remain active in the acquisition of the L3 and that, rather than occurring because one language is more typologically similar to the L3 than the other, crosslinguistic influence takes place property-by-property.

Summary of the models of L3 acquisition

In this section, we have discussed the linguistic properties and the models of L3 acquisition that are of relevance for our study. Before turning to the characteristics of the present research, we summarize the main postulations of the models discussed in this section that are relevant for our research:

I. **CEM** (Flynn et al., 2004): Crosslinguistic influence can come from both the L1 and the L2. Language learning is cumulative and the previously acquired languages can either have a positive effect on the acquisition of the new languages or remain neutral. This model does not make predictions for non-facilitative influence.

II. **L2 status factor** (Bardel & Falk, 2007, 2012): The L2 has prevalence over the L1 in L3 acquisition. This is because the L1 and L2 are acquired in different ways; while the acquisition of the L1 is implicit and driven by procedural memory, the acquisition of the L2 is usually explicit and driven by declarative memory. Since the acquisition of the L3 takes place in similar ways as the acquisition of L2, declarative memory is also involved in the process of acquisition of the L3. Any crosslinguistic influence that might occur can be either facilitative or non-facilitative.

III. **TPM** (Rothman, 2010a, 2013, 2015): Wholesale transfer occurs from the most typologically similar language to the L3. In the first stages of acquisition, the mind of the learner uses cues from the input to evaluate which of the previously acquired languages is more similar to the L3 following a hierarchy of lexicon, phonology, morphology, and syntax. The selected language will be completely transferred to the L3 for the sake of cognitive economy. Both facilitative and non-facilitative transfer are expected to occur.

IV. **LPM** (Westergaard et al., 2016): All the previously acquired languages are active and can be accessed by the learner. Crosslinguistic influence occurs property by property and can be facilitative and non-facilitative. The order of acquisition is not a factor as influence can come from either the L1 or L2. It rather depends on the similarities of each linguistic property and the properties of the L3.

3. The present research

The aim of this research is to find evidence of crosslinguistic influence from Spanish and/or Catalan in the L3 English of Catalan/Spanish bilinguals. In this section, we describe our predictions according to each of the models of L3 acquisition presented in the previous section. However, before addressing them, we would like to introduce some clarifications regarding how we interpret crosslinguistic influence from Catalan and Spanish and about the typological similarity between these languages and the L3, English.

As a way of reminder of the properties tested, we mention once more that the DE is grammatical in Catalan, but ungrammatical in Spanish and English. VOS word order is grammatical in both Spanish and Catalan but ungrammatical in English. Finally, VSO word order is grammatical in Spanish but ungrammatical in Catalan and English. Considering these characteristics, we can assume that:

a. Acceptance of the DE in English may be due to crosslinguistic influence from Catalan.

b. Acceptance of VOS order may indicate influence from either Spanish or Catalan, or both languages, as English is very restrictive of its word order and only SVO should be accepted.

c. Acceptance of VSO order may be an indicator of crosslinguistic influence from Spanish.

As regards typological similarity between the L1 and L2, it should be mentioned that while Catalan and Spanish are two very similar Romance languages, this research follows Puig-Mayenco and Marsden (2018) in the assumption that Catalan should be considered more typologically similar to English than Spanish. Following the hierarchy of cues set up by Rothman (2013), Puig-Mayenco and Marsden (2018:22) argue that there are certain phonological and phonotactic cues of Catalan that would make the parser consider this language to be closer to English than Spanish. Both Catalan and English have more word-final consonants and monosyllabic words than Spanish. Furthermore, although of different characteristics, both Catalan and English have a vowel reduction process which is not found in Spanish. It is important to highlight that Puig-Mayenco and Marsden admit that while this

evidence helps determine what would motivate transfer of Catalan into English, more research is needed to determine if subtle phonological characteristics such as sharing consonant distribution and a vowel reduction process do indeed lead to learners perceiving Catalan as the most similar language to English. Additionally, there is the issue of whether our participants could have picked up this similarity since, as we discuss in the coming section, they only received a limited amount of English instruction before taking part in our research. However, as Rothman (2013) points out, research has shown that this might indeed be possible. His argument is backed by a study carried out by Cabrelli Amaro (2013), which shows that even after having received less than two weeks of exposure to an L3, learners can detect differences and similarities in phonological properties between the L3 and the other previously acquired languages. While we agree with Puig-Mayenco and Marsden (2018) and believe that more research is needed to reach a firmer conclusion on the matter, in the context of this research, we find it fitting to follow their argument and assume that Catalan is the more typologically similar language to English.

Therefore, considering the features of Catalan and Spanish and provided that the grammars of the L1 of the participants is not influenced by the L2 and vice versa, we formulate the following predictions in relation to each of the models of L3 acquisition previously discussed. These predictions are summarised in **table 1**:

- **CEM** (Flynn et al., 2004); according to this model, crosslinguistic influence can come from the L1 and L2, and it should either be facilitative or remain neutral. Therefore, in this case, whether the condition tested is grammatical in Catalan or Spanish should not affect the way participants rate the ungrammatical sentences in the English test. We can expect participants to perform well in rating grammatical sentences on the DE feature; however, they should not accept ungrammatical sentences on this feature since the fact that the DE is grammatical in Catalan should not affect their English. Furthermore, they should not accept ungrammatical VSO or VOS sentences either, even though VSO is grammatical in Spanish and VOS is grammatical in both languages.

- **L2 Status Factor** (Bardel & Falk, 2007, 2012); this model predicts that crosslinguistic influence comes from the last acquired language and that it can be facilitative or non-facilitative. Therefore, in this case, we should expect to find a difference between the way CL/L2 and SP/L2 rate the grammatical and ungrammatical sentences. We can anticipate,

for example, that CL/L2 speakers could have problems rating ungrammatical sentences in English with a definite DP on the DE condition because this property is grammatical in Catalan. On the other hand, SP/L2 speakers should not have problems with this condition, but they could be expected to have problems rating sentences with the ungrammatical VSO and VOS word orders.

- **TPM** (Rothman, 2010a, 2013, 2015); this model predicts that transfer occurs from the most typologically similar language to the L3 and that non-facilitative transfer should be expected. In this case, then, we could expect participants to behave at least uniformly in the way they rate grammatical or ungrammatical sentences for each condition, since all influence should come from one of the languages and not both. As mentioned above, for the purposes of this research, we follow Puig-Mayenco and Marsden (2018) and assume that evidence of crosslinguistic transfer from Catalan can be interpreted in favor of the TPM. Considering this, all participants should have problems rating existential sentences with a definite DP as incorrect in English, because Catalan is not subject to the restriction of definiteness in existentials like Spanish and English. They should also accept ungrammatical VOS sentences, as this word order is also grammatical in Catalan. They should not have problems, however, with rating ungrammatical sentences with the VSO order, since this property is not grammatical in Catalan.

- **LPM** (Westergaard et al., 2016); according to this model, crosslinguistic influence can be facilitative and non-facilitative, can come from either the L1 or L2 and depends on the similarities of each linguistic property between these languages and the L3. In this case, then, we should expect to find influence of both Spanish and Catalan in the way participants rate the sentences, regardless of their L1 or L2. Therefore, we would expect them, on the one hand, to accept the DE to a certain degree due to influence from Catalan and also to accept VSO due to influence from Spanish. On the other hand, as the VOS word order is grammatical in both Catalan and Spanish, acceptance of this property would indicate influence from either or both these languages.

Property	CEM	L2 Status Factor		TPM	LPM
	Either facilitative or neutral CLI	*CLI from CL/L2*	*CLI from SP/L2*	*CL full transfer in all participants*	*Property by property*
DE	Reject due influence from SP	Accept	Reject	Accept	Accept due influence from CL
VSO	Reject due influence from CL	Reject	Accept	Reject	Accept due influence from SP
VOS	Reject despite CL and SP	Accept	Accept	Accept	Accept due to influence from either CL or SP, or both

Table 1. *Summary of predictions*

So far, we have presented the theoretical background for our study by examining the characteristics of the properties investigated in the three languages involved in our research. We have also discussed the models of L3 acquisition of our interest and formulated the aims and predictions for our work. We now turn to the characteristics of the present study. The coming sections include an overview of the tasks, materials, and procedures of the research and a description of the participants. Afterward, we present a description of the results, followed by the discussion of the findings.

4. Materials and procedures

4.1. Methodology

As mentioned in the previous section, the aim of this study is to find evidence of crosslinguistic influence in the acquisition of L3 English by Catalan/Spanish bilinguals. For this purpose, we have subjected the participants to a series of AJTs. This research method consists of presenting a group of grammatical and ungrammatical sentences in a given language to the participants, who must rate them as acceptable or unacceptable (Mckercher & Jaswal, 2012; Vafaee, Suzuki, & Kachisnke, 2017). This methodology is one of the most widespread methods in the research of Ln acquisition, even though there is also an ongoing debate regarding to what extent these tasks can accurately reflect the competence of the participants (Mandell, 1999; Schütze, 2016; Tabatabaei & Dehghani, 2012; Vafaee et al., 2017).

It has been argued, for example, that the responses of the participants can be unreliable since they can be biased by external factors such as the fact that some people might just be better at processing sentences than others (Tabatabaei & Dehghani, 2012). Another risk is that participants might judge a sentence as ungrammatical simply because said sentence is difficult to process, as Dabrowska (2010:4) illustrates by means of the known sentence *the horse raced past the barn fell.* It is important, therefore, to be aware of the external factors that might influence the judgments of the participants and try to control them as much as possible. Researchers should then, for example, take into consideration the complexity of the lexicon used in the sentences, make sure the sentences have a similar length, etc (Dabrowska, 2010).

Despite the disagreements regarding the usefulness of these tasks, research has found them to be reliable in the study of language acquisition (Mandell, 1999), and AJTs remain one of the most widely used methods to collect quantitative data (Johnson, 2008). The simplicity of this method also makes it particularly useful to study syntactic, semantic, and morphological aspects of language acquisition when no other procedures which involve the use of more advanced technology are available (Mckercher & Jaswal, 2012). In addition, AJTs have two significant advantages. The first is that the use of ungrammatical sentences allows researchers to gather data that does not exist in natural language, which provides a better insight into the linguistic competence of the participants (Tabatabaei & Dehghani, 2012). The second advantage is that the data is collected in a simple manner since it only requires participants to accept or reject a series of sentences presented to them. Consequently, this data can simply be

coded as "acceptance" or "rejection" of grammatical/ungrammatical sentences for the posterior analysis (Mckercher & Jaswal, 2012:158). Finally, AJTs are considered to be a useful method in the research of language acquisition, because they allow researchers to study the language competence in an isolated way from production (Tabatabaei & Dehghani, 2012). This last advantage is particularly useful for us, given that testing production was not a possibility in our study.

4.2. Study

As we mention in **section 2**, the properties chosen for this research are the DE, and VSO and VOS word orders. As previously described, Catalan and Spanish are two Romance languages which are very similar both in lexicon and structure. English, a Germanic Language, is the most typologically distant of the three. As a reminder of how the properties tested work in each language, we should add once more that existential constructions with a definite article preceding the DP can occur in Catalan, but not in Spanish and English. VSO word order can occur in Spanish, but not in the other two languages. Finally, VOS order can occur both in Spanish and Catalan, but not in English. This information is summarized in **table 2.** We further discuss these conditions considering the results of the data analysis in **section 6.**

Feature	Catalan	English	Spanish
Definiteness Effect (DE)	✓	×	×
VSO word order	×	×	✓
VOS word order	✓	×	✓

Table 2. *Summary of the properties tested. (✓= grammatical, ×= ungrammatical)*

The task used to gather the data contained a total of 68 sentences, which were randomized and sent to the participants in the form of a questionnaire designed with the online survey platform, QuestBack **(appendices 1 to 5)**. All the words that made up the sentences had previously been introduced to the participants during their English instruction. Furthermore, our participants had only gone through the very first stages of English instruction and their vocabulary was extremely limited, therefore, the sentences used in the tasks were narrowed to a very simple vocabulary. We were careful not to include any words that had not been previously instructed

to avoid lack of lexical understanding to be a factor in the way participants would judge the sentences.

The questionnaire was divided into three parts. The first part consisted of a series of AJTs for the three properties in English. The task included twelve test sentences for the DE (21) and twelve test sentences for VSO word order (22). It also included twelve test sentences for VOS word order (23), which can occur both in Catalan and Spanish, but not in English. The purpose of including this property was to evaluate how subjects would perform with a word order shared both by the L1 and L2 but not present in the L3. As mentioned in **section 3,** finding evidence of influence from a property shared by both Catalan and Spanish but not present in English would be a clear indicator of crosslinguistic influence from one or both the previously acquired languages, as neither of these word orders should be accepted in English. For all three properties, the twelve sets of sentences were made up of six grammatical sentences and their ungrammatical counterparts. This means that the grammatical sentences of the DE condition in English consisted of existentials with *there + to be + indefinite DP* (20.a), and that all the grammatical counterparts of the VSO and VOS word order condition were SVO (22.a and 23.a).

(21) **Definiteness effect**

a. There are apples in the blue bag.
b. *There are the apples in the blue bag.

(22) **VSO word order**

a. Today the boy wears a black t-shirt.
b. *Today wears the boy a black t-shirt.

(23) **VOS word order**

a. Every Sunday the family eats pasta.
b. *Ever Sunday eats pasta the family.

Furthermore, we believed that the lack of an element preceding the verb in ungrammatical sentences in the word order condition would make a sentence such as *eats pasta the family* too recognizable as ungrammatical, therefore we did not include sentences of this type. Instead, as the examples above indicate, all the sentences used for the VSO and VOS condition were

introduced by temporal deictics, such as *every day, every Sunday, etc.* Temporal deictics can introduce a sentence in both Catalan and Spanish, this usually occurs when the speakers want to refer to a specific point in time or provide a framework for the situation being described (RAE & ASALE, 2010; Wheeler et al., 1999), so this structure would already be known by participants. Finally, the task also included eight filler sentences with a word order which is ungrammatical in all three languages (24). The full list of test sentences in the English tasks is available in **appendix 7.**

(24) **Filler**

a. *The doctor a small car has.

The second part of the experiment was designed to test the DE condition in the L1 and L2 of the participants with the aim of evaluating the state of their Catalan and Spanish. This second task was included because the study of the previously acquired languages is of vital importance when conducting studies in L3 acquisition. As mentioned, the defining characteristic of L3 acquisition is that those who are learning an L3 already have the representations of two other languages in their mind (Garcia Mayo, 2012). Therefore, in L3 acquisition, it is not only important to take into consideration the characteristics of the L1 and L2 but also vital to evaluate if the representations of the grammar of these languages has been affected in some way by the other language, as this might have an impact on their performance (Falk & Bardel, 2010).

In order to assess if the participants would recognize existential constructions with the DE as grammatical in Catalan but ungrammatical in Spanish, we included eight additional sentences for Catalan and eight for Spanish. Four of these sentences were grammatical and four were ungrammatical. In the case of the Catalan test, the ungrammatical sentences were the counterpart of the grammatical ones. As discussed in **section 2.1.2**, existential constructions in Catalan require a clitic and allow DPs with a definite article (25.a). The lack of a clitic (25.b) makes this construction ungrammatical. Spanish, by contrast, does not allow definite articles with *haber* in existential constructions (26.b). Unfortunately, we made the mistake of making the grammatical sentences locative constructions with *estar* (26.a), and the ungrammatical existentials with *haber*. We erroneously believed that a grammatical *haber* construction with an indefinite DP would make the ungrammaticality of *haber* + a definite DP too obvious for a native Spanish speaker. While we were still able to use the data obtained from the

ungrammatical sentences, this mistake made it impossible to use the data gathered from the grammatical sentences in the analysis, because locative *estar* is a different construction from the one tested in the other two languages. Therefore, the data collected from the grammatical sentences in Spanish was excluded from the final analysis. It should also be mentioned that this was a valuable lesson learned to be taken into consideration in any future research.

(25) **Catalan DE sentences**

a. Hi ha les taragones a la nevera.
CL has the oranges in the fridge.

There are oranges in the fridge

b. *Ha les taragones a la nevera.
has the oranges in the fridge.

There are oranges in the fridge.

(26) **Spanish DE sentences**

a. Las rosas están al lado de la puerta.
the roses are next to the door.

The roses are next to the door

b. *Hay las rosas al lado de la puerta.
has the roses next to the door.

There are roses next to the door

Finally, the Spanish and Catalan tasks also included four filler sentences with ungrammatical word order (SOV) in each language (27). The complete list of sentences for the Catalan and Spanish tasks can be found on **appendices 8** and **9**.

(27) **Catalan and Spanish fillers**

a. *L'home el pa talla cada dia. (Catalan)
the man the grass cuts every day

The man cuts the grass every day

b. *La abuela una tarta de frutas prepara. (Spanish)
the grandmother a fruitcake makes

Grandmother makes a fruitcake

We discuss in the introduction to this section that one of the strongest arguments against the usefulness of AJTs is the fact that external factors could bias the way participants rate sentences, and the importance of controlling these factors as much as possible. One of these potential biases in our study was the possibility of Catalan having a priming effect on the participants when they completed the Spanish questionnaire, and vice versa. Aiming to control for this influence and to prevent an effect on the posterior analysis of the data, two questionnaires were created. Both of these questionnaires included the English tasks at the beginning; however, in one of them, the Catalan tasks preceded the Spanish ones, immediately after the English tasks and, in the other, the Spanish tasks appeared before the Catalan tasks, immediately after the English ones.

The entire questionnaire was set up so that four sentences would appear per page. Participants were asked to rank the sentences on a scale of 1. wrong, 2. a bit wrong, 3. a bit right and 4. right. No "I don't know" or "not sure" option was made available. Research has shown that when presented with these kinds of options, participants can be reluctant to select them, preferring to guess the reply instead (Tabatabaei & Dehghani, 2012). The Catalan and Spanish questionnaires had the exact same format as the English one, and participants were asked to rate the sentences using the same scale.

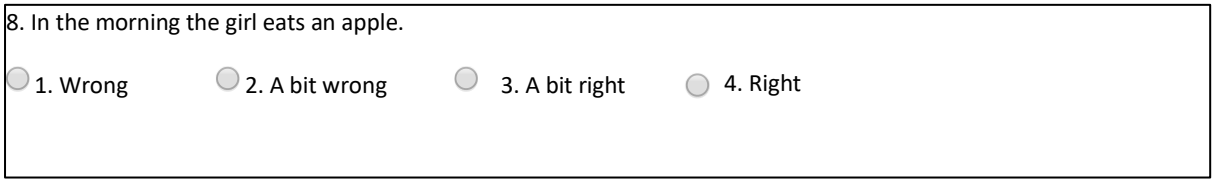

Figure 1. *Caption of task sentence in English.*

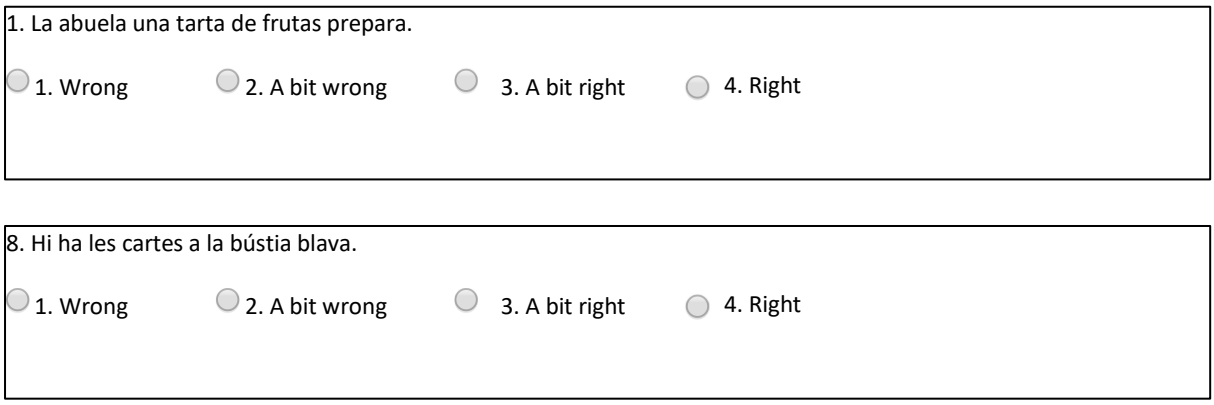

Figure 2. *Captions of task sentences in Spanish (1) and Catalan (8).*

Taking into consideration any previous linguistic experiences participants of a study might have had in the past is also an important aspect of L3 acquisition research (Rothman, 2013). It is important to assess, for example, if participants might have previously acquired another language, because having an additional language representation might influence the results. Therefore, the last part of the task consisted of a brief set of questions designed to gather the linguistic background information from the participants **(appendix 5).** Since this task was completely anonymous and no personal information from the subjects, such as sex or age, was collected, we also needed to include these questions to determine the L1 and L2 of the respondents. Finally, in addition to asking whether they spoke or had ever studied any additional language apart from the ones being tested, the questionnaire also included a series of questions regarding how often participants used their L1 and L2 and how they rated their comprehension and production levels of the L1 and L2.

4.3. Participants

All the subjects who participated in the study were part of a larger group recruited by Eloi Puig-Mayenco as part of a project of third language acquisition research for his Ph.D. project. Puig-Mayenco recruited the participants in Osona, a region of Catalonia located in the northeast of Spain. The dominant language of this region is Catalan; according to the data generated by a demographic survey carried out in 2007, 58.85% of the population have Catalan as their first language and 24.35%, Spanish. Only 6.76% of the population declares having both Spanish and Catalan as first languages (Illamola i Gómez, 2015). Furthermore, as regards the use of the

languages, according to the last report published by the Institute of Statistics of Catalonia (Idescat, 2017), more than 90% of the population of Osona can understand Catalan and more than 80% can speak it. Only 6.8% present of the population declares that they do not understand the language. As regards Spanish, data from the survey carried out in 2007 also shows that more than 90% of the population can understand and speak the language. Furthermore, there are no registered reports about not understanding Spanish language in the survey (Illamola i Gómez, 2015).

All the participants in our study were recruited via the City Council of Manlleu (Ajuntament de Manlleu). Those who signed up for the project received basic English instruction over a period of two months in a course that was designed by Puig-Mayenco. All the participants were either L1 Spanish/L2 Catalan or L1 Catalan/L2 Spanish bilinguals, and they had had little to no exposure to English before the course.

As mentioned in the previous section, two questionnaires were created in order to prevent Spanish from priming Catalan and vice versa on the Spanish and Catalan tasks. Therefore, our participants were randomly divided into two groups and sent an email to access either one of these questionnaires. The email contained a link to the QuestBack questionnaire site, a summary of the purposes of the experiment and a note indicating that all the information would be collected anonymously **(appendix 6)**. The QuestBack was set so that no information or IP addresses from those who participated would be collected. Once they clicked on the link, participants were first presented with a brief set of instructions. Given that the instructions appeared immediately before the test, and that all the participants had already been tested by Puig-Mayenco for his own research and were familiar with the steps to follow, we decided to keep the instructions in English to avoid any priming effects from Catalan or Spanish.

A total of 32 participants responded to the questionnaire, however, the results of two of them had to be excluded because they failed to report their native language. Out of the remaining 30, seventeen reported having Catalan as a native language and thirteen, Spanish. Furthermore, 27 participants reported having started learning their L2 before the age of eleven**.** The remaining three participants, on the other hand, reported having started to learn the language between the age of eleven and fifteen. At the same time, almost all subjects reported their comprehension skills of the L2 to be either "excellent" or "very good", and the same was reported of their production skills. However, despite this generalized high self-assessment of comprehension and production, the replies to the question regarding whether they frequently used their L2

were not uniform. Eleven out of the 30 participants reported either “never” or “almost never” using their L2, five reported only using it “once in a while” and fourteen, “every day”. It should be noted that since the data was collected anonymously these questions were included to get a more accurate idea of the linguistic background of these participants, as mentioned in the previous section. However, since the aim of the present research was not to find a correlation between age of acquisition or frequency of use and crosslinguistic influence, no additional information other than the L1 and L2 of the participants was included in the posterior analyses of the data.

Only three participants reported having taken an English course before the one organized for the purposes of the research carried out by Puig-Mayenco, but in all three cases, it was reported that these were very basic courses and only lasted between two and seven months. Finally, only three participants answered that they had studied another language besides English during their life; one reported having studied Latin in school, another having studied Latin and Greek, also in school; and the third one, having taken a sign language course seven years ago. Since all of them reported not using these languages at all in the present and having none or very poor comprehension and production skills, we did not believe this information to be significant for our research and, therefore, we decided to ignore it when we carried out the analysis of the data.

5. Results

The information gathered in QuestBack was analyzed with the statistics program R. As discussed in **section 3,** the aim of this research was to determine whether there is evidence of crosslinguistic influence from Catalan and Spanish into L3 English. The analysis of the data was carried out to find out if there were significant differences in the way participants rated each condition (DE, VSO, and VOS word order) which could suggest crosslinguistic influence from these languages. As mentioned, participants were asked to rate all the sentences on a scale of one to four with the following references; 1. wrong, 2. a bit wrong, 3. a bit right and 4. right. Therefore, for the purposes of our research, a 1. or 2. rating for ungrammatical sentences means that participants are rating the sentences correctly, while 3. or 4. means they are rating them incorrectly. For the grammatical sentences, on the other hand, 1. or 2. means an incorrect judgment while 3. and 4. means a correct judgment. Given the characteristics of each of the languages, evidence of crosslinguistic influence from Catalan would entail acceptance of ungrammatical sentences with the DE. Crosslinguistic influence from Spanish would entail acceptance of the VSO word order. Finally, acceptance of the VOS order could suggest crosslinguistic influence from both Catalan and Spanish or either one of these languages.

The following sections include a report of the results. In order to organize the report, we have divided the section into three subsections. **Section 5.1** presents an analysis of the performance of the participants in the Catalan and Spanish sentences for the DE. This analysis is aimed to evaluate the possible effect of Catalan on the Spanish of the participants and vice versa. **Section 5.2** includes an analysis by condition of the English tasks, first focused on the performance of the entire group and, then, of each of the groups discriminated by L1. Finally, as the results of the initial data analysis of the Spanish and Catalan languages suggest that some of the participants might have the representation of their Spanish affected by their Catalan, we have carried out a follow-up analysis, focusing only on the behavior of the participants who have not presented issues with the Spanish and Catalan tasks. This analysis is described in **Section 5.3**.

5.1. Spanish and Catalan tasks

The results of the Catalan and Spanish tasks were analyzed by means of the statistics program R; however, not all the sentences were included since, as mentioned in **section 4.2**, the grammatical sentences in Spanish were not the counterpart of the grammatical ones. Therefore, we had to exclude these sentences from the analysis, as these ratings did not really provide any information on whether participants could recognize the grammatical use of *haber* + indefinite DPs. For this reason, we only carried out an analysis comparing the ratings of the grammatical Catalan sentences (27) and the ungrammatical Spanish sentences (28) which feature a definite DP with the verb *haber* (to have).

(28) Hi ha les taragones a la nevera. (Catalan)
CL has the oranges in the fridge.

There are oranges in the fridge

(29) *Hay las rosas al lado de la puerta. (Spanish)
has the roses next to the door.

There are roses next to the door

We carried out a likelihood ratio test using ANOVA to compare the performance of the participants with and without L1 as a factor. The test was conducted by using the library package lme4 (Winter, 2013). The results of the Spanish and Catalan tests, summarized in **table 2**, indicate that there is no significant effect in the way participants rate sentences when the L1 is included as a factor ($\chi 2$ (2) = 0.049, p = 0.97). In general, both groups perform very well when rating grammatical Catalan sentences as correct (CL mean score = 3.44; SP mean score = 3.26). However, neither of them performs at ceiling when rating ungrammatical Spanish sentences (CL mean score = 2.39; SP mean score = 2.44), as illustrated in **figure 3.** This rate of acceptability of ungrammatical sentences in Spanish suggests that the representation of this language might be affected by Catalan in some of the participants since, as mentioned, existential constructions with definite DPs should not be accepted in this language.

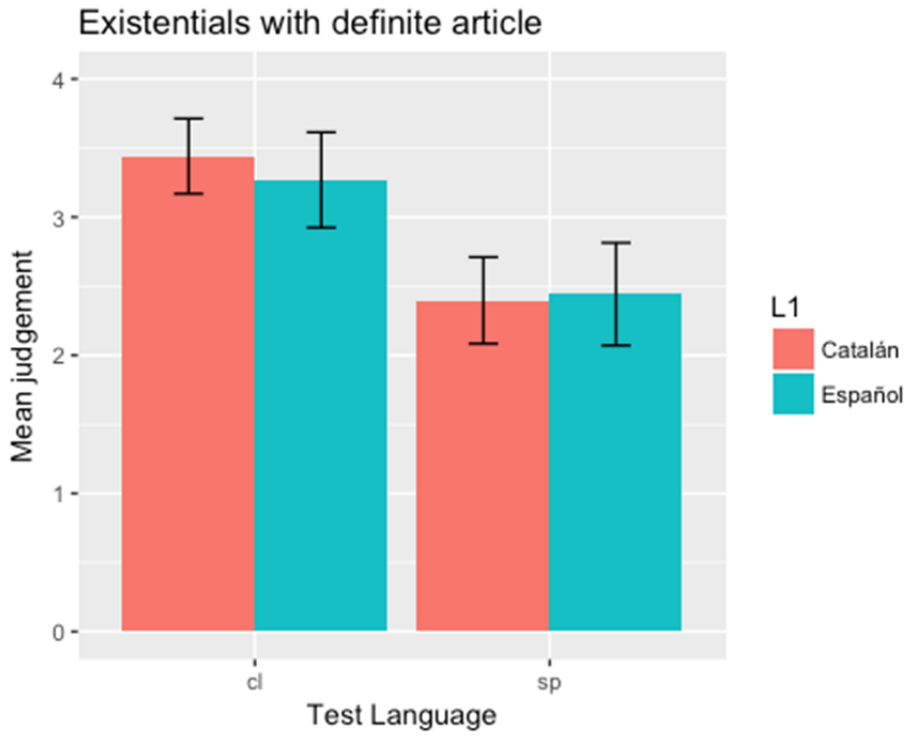

Figure 3. *Mean judgments of CL grammatical and SP ungrammatical sentences discriminated by L1 (Español = L1 Spanish, Catalán = L1 Catalan).*

L1	Grammatical Sentences	Ungrammatical Sentences
	Catalan	*Spanish*
Catalan	3.44	2.39
Spanish	3.26	2.44

Table 3. *Mean scores of grammatical Catalan vs. ungrammatical Spanish sentences.*

5.2. English task

5.2.1. Grammatical sentences

The data analysis of the English tasks was conducted through a linear mixed effect model with random intercept for participant (CL L1/SP L2, SP L1/CL L2) and condition (DE, VSO, VOS). The aim of this analysis was to evaluate the relationship between each of these conditions and the way participants rate each sentence. We then compared the means of the two groups, CL/L1 and SP/L1, obtained from the rating participants gave the sentences in each condition and

conducted a likelihood ratio test using the ANOVA function to compare the models with and without L1 as a factor. The detailed results of all the statistical analyses are available in **appendix 10** to **12.**

The overall results of the study show that all participants perform almost at peak when rating grammatical sentences (mean score = 3.62), as illustrated in **figure 4.** Furthermore, as **figure 5** shows, this performance is irrespective of their L1 (CL mean score = 3.63; SP mean score = 3.62) regardless of the condition tested.

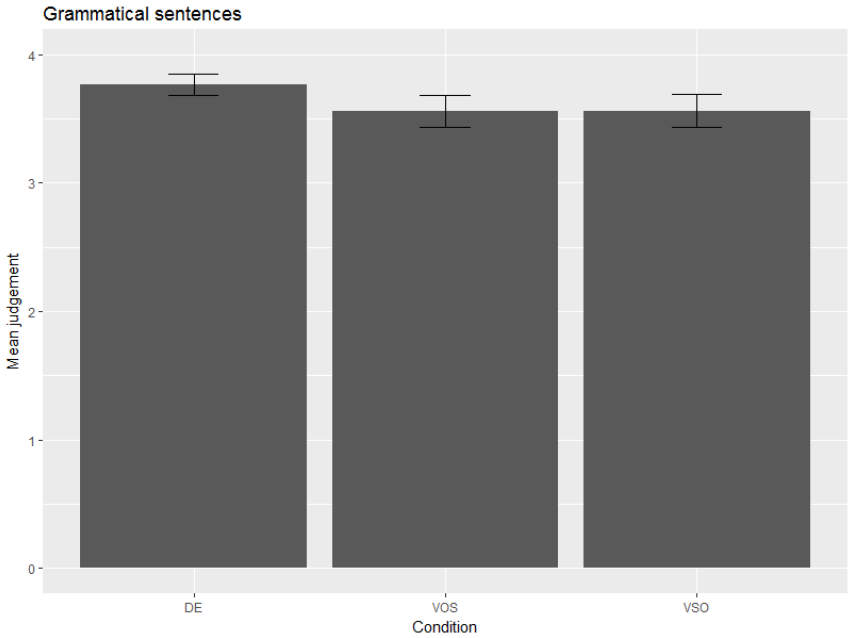

Figure 4. *Mean judgments of grammatical sentences by condition.*

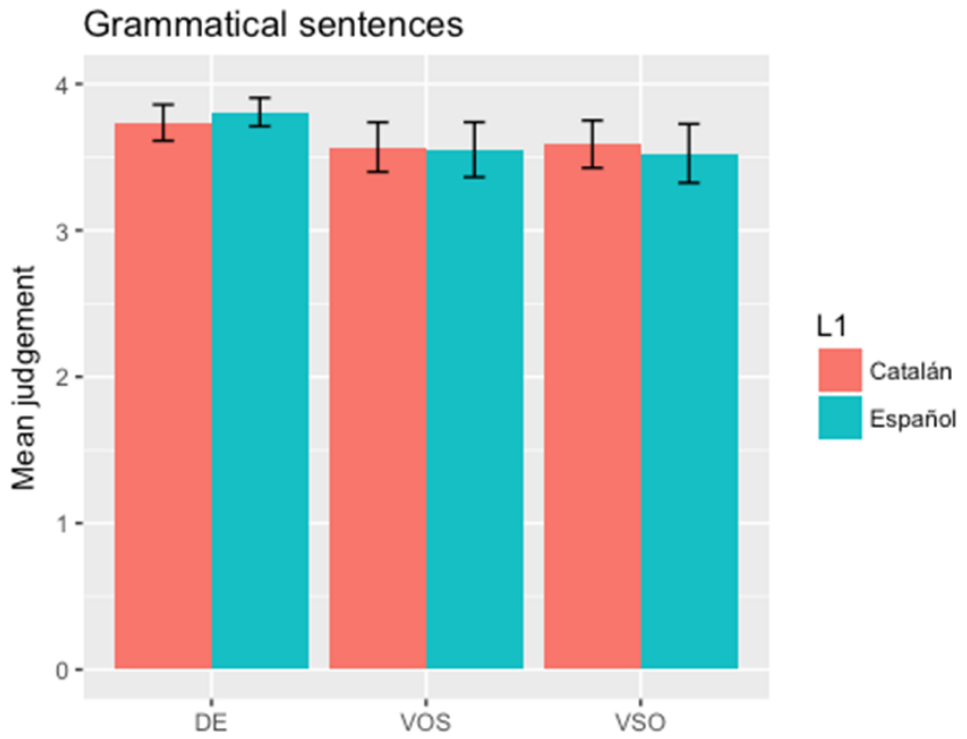

Figure 5. *Mean judgments of grammatical sentences by condition discriminated by L1 (Español = L1 Spanish, Catalán = L1 Catalan).*

5.2.2. Ungrammatical sentences

As we can observe in **figure 6,** the performance of the participants when rating ungrammatical sentences is not as uniform as when rating their grammatical counterparts. The score for the ungrammatical fillers is, in general, low (mean score = 1.46). In the DE condition, participants almost uniformly rate ungrammatical sentences as grammatical (mean score = 3.79). By contrast, participants perform better at word order. The analysis of the data of VSO, grammatical in Spanish but not in Catalan, and VOS, grammatical in both languages, sentences shows a slight difference between the way participants rate VSO (mean score = 1.30), and the way they rate VOS (mean score = 2.03). These results are summarized in **table 4.**

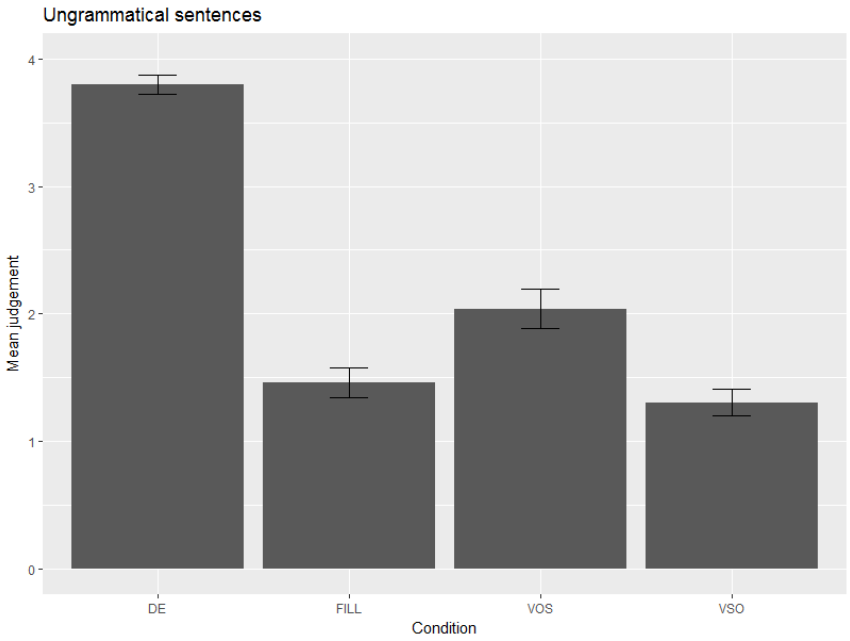

Figure 6. *Mean judgments of ungrammatical sentences by condition.*

Property	Mean Scores
DE	3.79
VSO	1.30
VOS	2.03
Fillers	1.46

Table 4. *Mean scores of ungrammatical sentences.*

As the initial evaluation of the data suggested that participants seemed to prefer VOS word order, we carried out an additional test by means of a degrees of freedom Satterwaithe method (confidence level = 0.95) to compare the results obtained from the rating of VSO and VOS sentences. The results obtained show that, on average, participants are indeed slightly better at rating VSO sentences as ungrammatical (M = 1.30, SE = 0.07) than VOS sentences (M = 2.03, SE = 0.07); however, this is not statistically significant. This contrast analysis was carried out through a tukey method for comparing a family of 4 estimates, t(25.89) = 6.83, p = <.0001. Furthermore, the same analysis was carried out to contrast the performance of the ungrammatical fillers and the VOS and VSO condition. The results of the analysis between the fillers and the VSO condition show that participants are more acceptant of the ungrammatical

VOS order, t(25.89) = -5.74, p = <.0001. The results of the comparison between the fillers and the VSO condition, however, show that they are slightly more acceptant of the ungrammatical fillers than of the VSO order t(25.89) = 1.56, p = 0.41.

Finally, to evaluate the interaction between the L1 and the rating of the sentences, we carried out a likelihood ratio test using ANOVA. This analysis was conducted using the library package lme4 (Winter, 2013). The results indicate that there is no significant effect in the way participants rate sentences when the L1 is included as factor ($\chi 2$ (4) = 5.83, p = 0.2121). CL/L1 participants are slightly better at rating the ungrammatical sentences (mean score = 2,04) than SP/L1 participants (mean score = 2,16), but this difference is not statistically significant, as illustrated in **figure 7.**

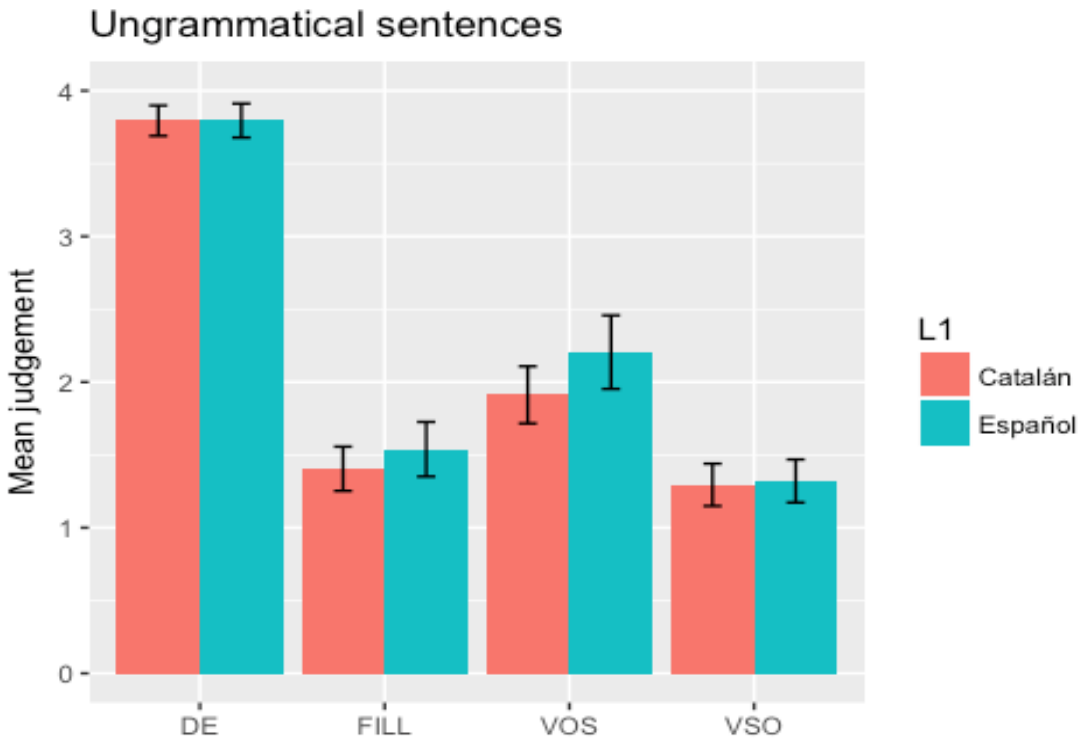

Figure 7. *Mean judgments of ungrammatical sentences per condition and discriminated by L1 (Español = L1 Spanish, Catalán = L1 Catalan).*

5.3. Follow-up analysis

So far, our results show that there might be an indication of crosslinguistic influence from Catalan in the way participants rate ungrammatical sentences, particularly in the way they rate

these sentences in the DE condition. However, as the data from the Catalan and Spanish tasks suggests, it is possible that the Spanish of these participants is affected by their Catalan. If the case is indeed that the L1 or L2 of these participants is affected by the other language this would affect the way they rate the English sentences. Therefore, it is not possible for us to argue in favor of crosslinguistic influence into the L3. In order address this issue, we conducted a follow-up analysis which does not include the results of those participants who present problems recognizing ungrammatical DE sentences in the Catalan and Spanish tasks.

This new analysis does not include the data gathered from those who scored a mean ranting above three in the Spanish and Catalan tasks; i.e., those participants who find ungrammatical sentences in these two languages acceptable. Furthermore, we have also removed the data from those participants who scored a mean rating above 2.5 in the ungrammatical English fillers, as this suggests that they might have problems to parse basic word order in English.

As a result, a total of eleven participants were excluded from the follow-up test. The resulting dataset consisted of eleven Catalan L1 and eight Spanish L1 participants. One more time, we analyzed the data using the statistics program R. This time, however, we used an ordinal regression model (Magiafico, 2016). Two ordinal regression models with random intercepts for subject and item were run; one with the L1 as a factor and one without it. A likelihood ratio test was then applied to compare the results. The results obtained reveal, as illustrated in the figures below, that the L1 is not a factor in the way sentences are rated ($p = 0,91$). The histogram in **figure 8** shows the performance of the participants when rating English grammatical sentences, discriminated by Catalan L1 and Spanish L1 speakers. **Figure 9** shows the performance when rating English ungrammatical sentences, also discriminated according to Catalan L1 and Spanish L1 participants.

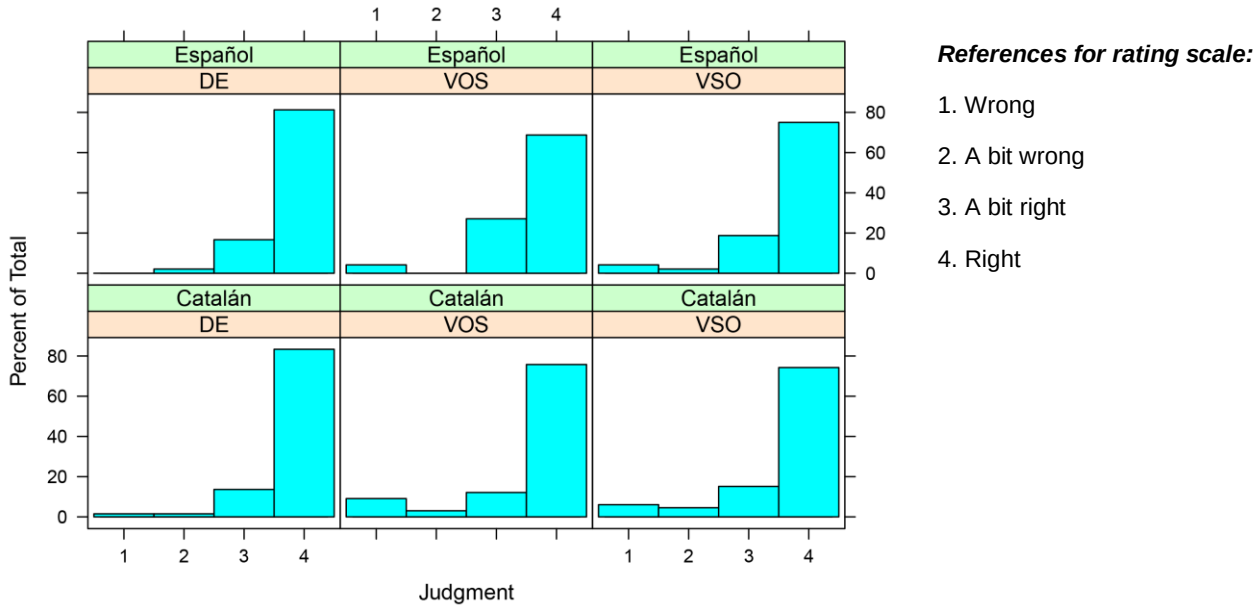

Figure 8. *Rating of grammatical English sentences discriminated by L1 (Español = L1 Spanish, Catalán = L1 Catalan) and condition.*

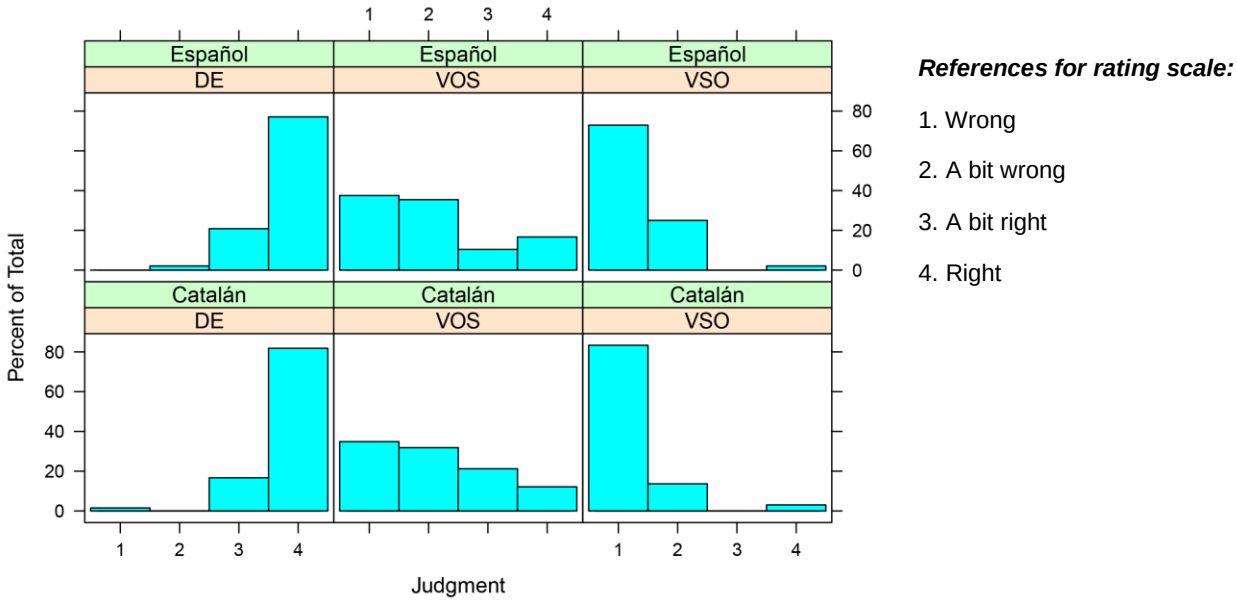

Figure 9. *Rating of ungrammatical English sentences discriminated by L1 (Español = L1 Spanish, Catalán = L1 Catalan) and condition.*

We also tested the effect of condition (DE, VOS, and VSO) and grammaticality, and the interaction of these variables by means of likelihood ratio tests. The results show that there is a main effect of condition and a main effect of grammaticality. Furthermore, there is also interaction between the two factors ($p < 0.001$). After the main effect of grammaticality and

condition was established, the dataset was split into grammatical and ungrammatical sentences and further models were applied to each of the sets. Likelihood ratio tests were once again applied to analyze the effect of condition. As the lower section of **figure 10** shows, there is no significant difference between the DE, VSO, and VOS in the way grammatical sentences **(y)** are rated. However, as **figure 10** also displays, ungrammatical sentences **(n)** do show a main effect of condition ($p < 0.001$). Following these results, we carried out a posthoc test with lsmeans by doing a pairwise comparison of the 3 conditions; DE, VSO, and VOS. The results show that the DE has significantly higher scores than VOS (SE = 0.39, z = 10.569, p <.0001) and VSO (SE = 0.40, z = 15.684, p < .0001). Furthermore, VOS also shows higher scores than VSO (SE = 0.38, z = 5.773, p <.0001).

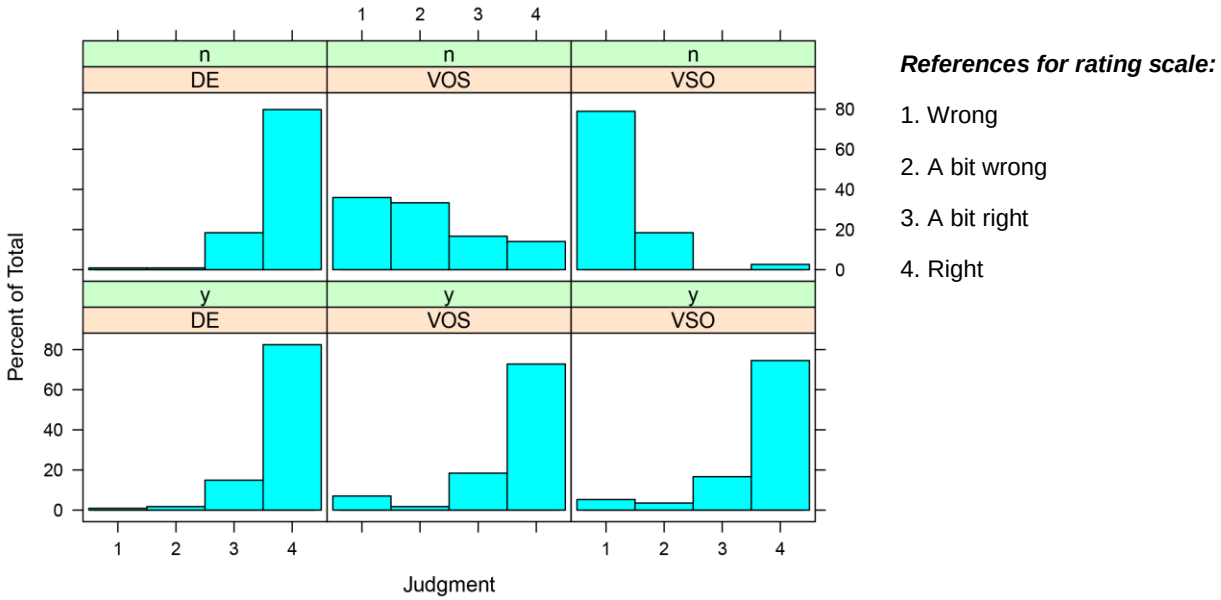

Figure 10. *Performance in ungrammatical (n) and grammatical (y) sentences discriminated by condition.*

6. Discussion

With the aim of finding evidence of crosslinguistic influence in the acquisition of English as a third language in Catalan/Spanish bilinguals, we carried out a series of AJTs and asked participants to rate sentences as acceptable or unacceptable. As previously mentioned, according to the characteristics of each language tested, acceptance of ungrammatical sentences with the DE condition may be an indicator of crosslinguistic influence from Catalan, while acceptance of VSO word order might be an indicator of crosslinguistic influence from Spanish. Acceptance of VOS word order may be an indicator of influence from both Catalan and Spanish or either one of these languages.

Furthermore, taking into consideration the information discussed in **section 2** regarding the existing models of L3 acquisition and about the characteristics of the conditions tested in Spanish, Catalan, and English, we formulated a series of predictions regarding the behavior we expected to encounter according to each of the models. These predictions are discussed in detail in **section 3**; however, as a reminder of the key concepts**,** we include, one more time, **table 1** from that section to provide a summary before turning to the discussion.

Property	**CEM**	**L2 Status Factor**		**TPM**	**LPM**
	Either facilitative or neutral CLI	*CLI from CL/L2*	*CLI from SP/L2*	*CL full transfer in all participants*	*Property by property*
DE	Reject due influence from SP	Accept	Reject	Accept	Accept due influence from CL
VSO	Reject due influence from CL	Reject	Accept	Reject	Accept due influence from SP
VOS	Reject despite CL and SP	Accept	Accept	Accept	Accept due to influence from either CL or SP, or both

Table 1. *Summary of predictions.*

The data obtained from the grammatical sentences in English shows that the group performs at peak when rating the sentences in all three conditions tested. Therefore, at this early stage, it is not possible to formulate an argument for crosslinguistic influence. While this data suggests

that participants seem to be able to recognize the grammatical SVO word order and existential sentences without a definite DP in English, this is not enough evidence to conclude that they have an accurate representation of the grammatical structures of these properties in English. Moreover, peak performance in the rating of grammatical sentences in this type of task is not an unusual finding, and the fact that participants accept these sentences does not necessarily mean we can assume that they consider them to be grammatical. One possible explanation for this behavior, for example, is that their proficiency level in English is so low that they cannot parse these sentences correctly and, therefore, they just accept all of them. Furthermore, other factors might be also involved when participants perform so well with grammatical sentences (Dabrowska, 2010; Tremblay, 2005). One such factor might be that although Catalan and Spanish are more flexible in word order than English, SVO is still the most commonly used pattern in all three languages since, as pointed out in **section 2.2**, VSO and VOS are more marked word orders, which are usually only used in specific contexts. It is not a strange finding, then, that participants find the SVO word order natural in English too.

Regarding the ungrammatical sentences; the initial data analysis shows low mean scores for acceptance of the two word orders (VOS = 2,03, VSO = 1,30). This suggests that, for the most part, participants do not find these structures correct in English. Furthermore, while the initial results of the comparative analysis of the ratings of VSO and VOS sentences show that they might have a slight preference for VOS over VSO, this difference does not turn out to be statistically significant after further analysis. Therefore, at this point, it is not yet possible to make an argument in favor or against crosslinguistic influence from Catalan or Spanish in the word order condition.

The data obtained by the DE condition, by contrast, shows a widespread acceptance of ungrammatical sentences (mean score = 3.79). Most of the participants rate existential constructions with definite DPs as correct even though this construction is ungrammatical in English. These results are even more interesting considering the data obtained from the Catalan and Spanish tests. This data shows that while the participants have no problems correctly rating Catalan grammatical sentences with definite DPs, their performance is not as uniform when they rate ungrammatical sentences in Spanish with *haber + definite pronoun + DP*. Once again, this behavior is contrary to what we had anticipated since Spanish, like English, is subject to the restriction of definiteness in existentials. We expected participants to rate these sentences as ungrammatical without problems because we had assumed that this is a construction that could be easily recognizable as such by a native, or even an advanced, speaker of Spanish.

The results of the Spanish tasks, however, suggest to us that Catalan might have influenced the Spanish representation of some of these participants, and this, in turn, could have influenced the way participants rate English sentences. In order to eliminate this factor, we have carried out a follow-up analysis of the English tasks. As described in **section 5.3,** this analysis does not include the data from those participants who find ungrammatical Spanish sentences acceptable. It also excludes the data from those participants whose score in rating ungrammatical fillers in English suggests they might have problems to parse simple sentences in this language.

The results obtained from this follow-up analysis show that even after excluding those who rate ungrammatical sentences in Spanish as acceptable, most of the remaining participants still rate the DE condition as grammatical in English. Considering that this property is grammatical in Catalan and that these participants seem to have a correct representation of this property in Spanish, we believe that these results allow for an argument in favor of crosslinguistic influence from Catalan. Regarding the VSO and VOS conditions, the preference for the VOS is also more evident in the follow-up analysis. However, it is still not possible to make a case in favor of crosslinguistic influence regarding this property because, unfortunately, we lack word order data in Spanish and Catalan. Fearing the task would be too long for the participants, we made the mistake of not including a task, like the one we included for the DE condition, to collect data from Spanish and Catalan word order. Therefore, it should be noted that any possible argument from the data gathered in English, in favor or against crosslinguistic influence, is incomplete without more accurate information regarding the representation of the property of word order in the Catalan and Spanish of the participants.

After having considered the results and shortcoming of our study, we can now turn to the discussion of our initial predictions regarding the behavior expected from the participants according to each of the models of L3 acquisition.

According to the predictions formulated for the **CEM**, the participants should have rejected the DE due to influence from Spanish. Furthermore, we also expected them to reject the VSO word order due to influence from Catalan. The VOS, although grammatical in both Catalan and Spanish, should not have been a source of non-facilitative influence according to this model. The data obtained from the word order tasks shows, however, that there is a certain degree of acceptability not only of the VOS but also the VSO. Furthermore, most of the participants also accept the DE, and this is true even after having taken away the data from those participants

who present problems rating ungrammatical sentences with this property in the Spanish tasks. Therefore, in this regard, we do not find that the predictions of the CEM have been fulfilled.

Regarding the **L2 Status Factor,** we predicted that participants with Catalan as L2 would accept both the DE and VOS word order because these properties are grammatical in this language. We also predicted that Catalan/L2 speakers would reject VSO because this word order is ungrammatical in their L2. Participants with Spanish as L2, by contrast, were expected to reject the DE, which is ungrammatical in this language, and accept VSO and VOS, both grammatical word orders in Spanish. The data shows, however, that there is not a significant difference in the way participants with Catalan L1/Spanish L2 and Spanish L1/Catalan L2 rate the English ungrammatical sentences. This is especially evident in the DE property, where most of the participants rate ungrammatical constructions with definite DPs as grammatical, regardless of whether Catalan is their L2 or not. The predictions for the L2 Status Factor, therefore, have not been fulfilled either.

The **TPM** predicts full transfer from the most typologically close language. Considering that Spanish and Catalan are two typologically very similar languages, the lexicon (i.e., the first level on the hierarchy of cues proposed by Rothman (2013)) would not be enough to identify which of them is most typologically similar to English. Therefore, the parser would have to move on to the second level on the scale, phonology, to make the distinction. A discussed in **section 3,** for the purposes of this research, we have followed the argument of Puig-Mayenco and Marsden (2018) and considered Catalan as the more similar language. This similarity was established in their research based on Catalan and English sharing a vowel reduction process which is not found in Spanish. For this reason, we predicted full transfer from Catalan to occur and expected participants to accept both the DE and VOS, which are grammatical in Catalan, and reject the VSO, ungrammatical in this language.

In keeping with our first prediction, the results show that participants do indeed accept the ungrammatical sentences in the DE condition. Furthermore, this behavior is consistent regardless of whether Catalan is the L1 or not. However, while participants also accept, to a certain degree, the VSO and VOS word orders, the data obtained from this condition does not allow us to make a case in favor of the TPM. As we mentioned, VSO is ungrammatical in Catalan so this rejection could be taken as a sign of facilitative crosslinguistic influence from this language. However, if the case were indeed that there was wholesale transfer from Catalan, as the TPM predicts, one might have also expected some non-facilitative crosslinguistic

influence from this language in the way participants rate the VOS order. Therefore, the acceptability rate of the VOS condition should have been similar to the one of the DE condition because the VOS word order is grammatical in Catalan as well. However, the rating of VOS ungrammatical sentences does not correlate with the rating of the DE, as **figure 10** from the previous section illustrates (repeated below for convenience). Instead, as the low acceptance scores indicate, participants are not keen to accept this construction as grammatical.

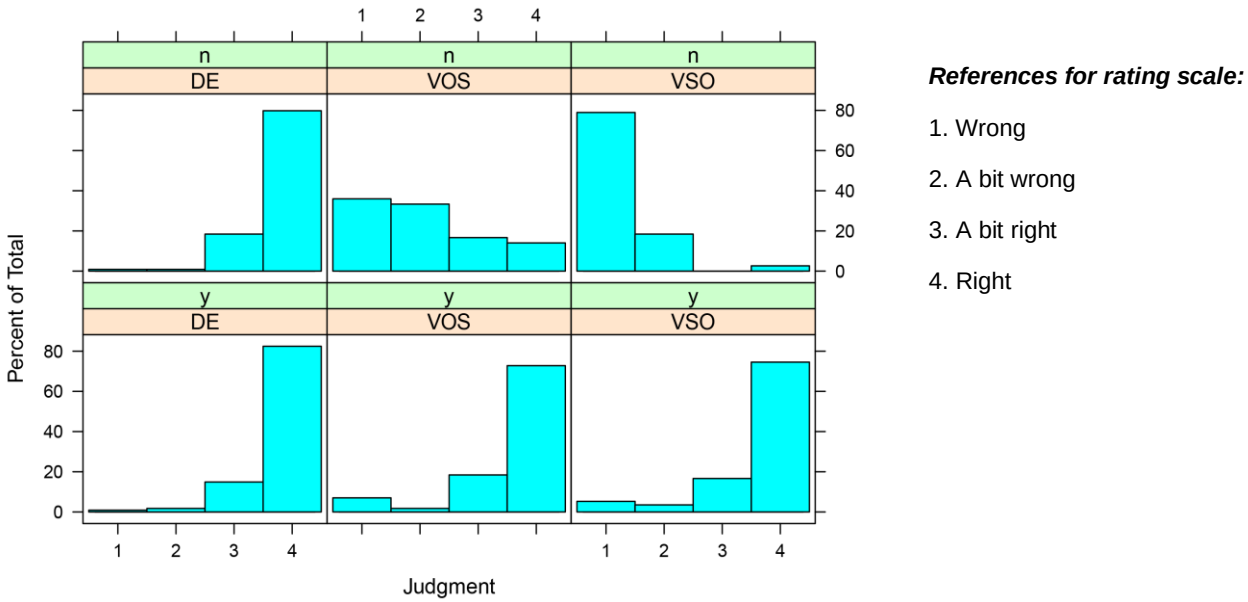

Figure 10. *Performance in ungrammatical (n) and grammatical (y) sentences discriminated by condition.*

Another reason that does not allow us to discuss in favor of the TPM is that while the data obtained from the DE condition allows for an argument in favor of crosslinguistic influence from Catalan, the same is not true for the VSO and VOS conditions. As mentioned, we do not have data gathered from this property from Catalan and Spanish tasks as we do from the DE, unfortunately. Considering all these aspects, we believe that while it is possible to argue in favor of transfer from Catalan, the data obtained from the word order condition is not enough to allow us to make an argument in favor of wholesale transfer from this language. It is, therefore not possible for us to claim that the study provides evidence in favor of the TPM.

It should be noted, however, that our research does not provide evidence against this model either, particularly if we take into consideration the issue of the *initial stages*. According to Rothman (2010a), the TPM only accounts for the initial stages of L3 language acquisition. He states that it is only when the learner is at the very first stages of the acquisition process that

wholesale transfer from the most typologically similar language takes place. As Westergaard et. al. (2016) state, one issue with this postulate is that it is not very clear after how much exposure the learners are past the initial stages. It is therefore difficult to ascertain that our participants are indeed at the initial stages of their acquisition of English. We do know that they had had little or no exposure to English before taking part in the course organized by Puig-Mayenco, and that during the two-month course, they received exposure to very basic aspects of the grammar and vocabulary of this language. However, there is the question of how easy the properties tested are to acquire.

One might argue that word order is a relatively easy property to acquire, even with a limited amount of exposure to the new language (Grey Williams and Rebuschat, 2014; Silva-Corvalán, 2014). It could be the case that these participants have already picked up that English has the basic SVO word order even after such a short time of exposure. This might not be impossible since learners have been shown to pick up aspects of morphosyntax of a foreign language after incidental exposure despite only having been exposed auditory input. Grey et al. (2014), for example, research the effects of incidental exposure[5] in the acquisition of syntax in adults. This study focuses the acquisition of word order and case marking in a semiartificial language called Japlish by English L1 speakers who are either advanced or beginner learners of Spanish. Japlish is a semiartificial language which shares the verb-final word order of Japanese and the same case marking rules as this language, where nouns are case marked for subject, object, and indirect object. However, the language uses the English lexicon. The study consists of two instances. In the first instance, participants are exposed to a series of sentences in the Japlish language and are asked if these sentences are acceptable or not. Whenever they make an incorrect assessment, they hear a brief tone which indicates that their answer is not correct; however, no explanation is given as to why this is the case. The second part of the task consists of a series of AJTs to assess the property of word order, where participants have to decide whether sentences are acceptable or unacceptable, and of a picture-matching task to assess the property of case marking. The results of the study show that while case marking seems to be a more difficult feature to learn, many of the participants seem to be able learn the word order of the Japlish language, just from the auditory stimulus they have previously received. Grey et al., argue that their study provides evidence that is possible to learn aspects of a new syntax from the input without receiving any specific instructions about how the rules work.

[5] Incidental exposure, in this case, refers to the fact that the participants do not know that there is a test and they are not told that they should be learning a particular structure (Grey et al., 2014).

Another issue to consider is that although VSO is grammatical in Spanish and VOS is grammatical in both Spanish and Catalan, the most commonly used word order in these languages is still SVO, just like in English. We discuss in **section 2.2** that these alternative word orders are more marked and only used in specific contexts of the discourse. It might not be surprising, therefore, that the participants find SVO to be the most natural word order in English. By contrast, it is possible that the other more marked orders might appear strange to them when they occur in the isolated sentences in English, as they lack the appropriate discourse context.

Furthermore, during their English instruction, these participants would have been exposed to instances of SVO order and even if they were never explicitly told that VOS and VSO are not allowed in English, they would have never received any kind of input in declarative sentences to make them consider them as a possibility. In fact, the role of indirect negative influence has been researched in language acquisition. Dahl (2004), for example, researches impersonal passive constructions with post-verbal noun phrases and passive constructions with intransitive verbs in L2 acquisition. Both of these structures are ungrammatical in English but grammatical in Norwegian (Dahl, 2004:28). A part of this study focuses on whether it is possible that L1 Norwegian learners of L2 English realize that the impersonal passive constructions with post-verbal noun phrases are ungrammatical in English by the frequency in which they receive input with personal passives where the noun phrase is on subject position. The results of the study show that the participants do not accept the ungrammatical passive forms in English as most of them correct them into personal passives. Dahl argues that the lack of these structures in the English input received by the learners might have helped them reason these differences between Norwegian and English. Although the evidence gathered in our study is not enough to ascertain that our L3 learner might have picked up that VOS and VSO word order are ungrammatical in English from the input they received in during their English instruction, the research conducted by Dahl (2004) shows that the role of input should not be dismissed. Therefore, considering these issues, we believe that more evidence is needed to conclude that these participants are still at the initial stages of acquisition of English and that the word order property has not yet been acquired by them, in order to completely dismiss the TPM.

As regards the **LPM**, this model predicts crosslinguistic influence, facilitative or non-facilitative, from both languages. In this case, we expected that participants would accept the DE to a certain degree, due to influence Catalan. We also expected them to accept the VSO due to influence from Spanish, and accept the VOS due to influence from either Catalan and

Spanish or both. Considering the results of the analysis of our data, we believe that it is possible to dismiss influence from Spanish in the way participants rate ungrammatical sentences for the DE, as most of them accept them as grammatical.

It is not possible, however, to link crosslinguistic influence to the way participants rate the word order sentences, as the discussion of the TPM states. While one might argue that the fact that the participants to a certain extent accept ungrammatical VOS sentences could allow argument in favor of some degree of crosslinguistic influence from Spanish, it is not possible to assert this claim because we lack the data about this property in Spanish and Catalan to do so. Additionally, unlike in Westergaard et al. (2016), our study lacks control groups of only Catalan/English and Spanish/English bilinguals to compare the results. Westergaard et al. are able to establish the presence of both facilitative and non-facilitative crosslinguistic influence from both the previous languages of their participants, Russian and Norwegian, into English. This is possible thanks to the use of bilingual controls and the comparison of their behavior with that of the L3 group, which shows differences in the way the bilinguals and L3 learners behave. Unfortunately, the nature of our study did not allow us to include such control groups which, we believe, could have provided a clearer insight into the possibility of crosslinguistic influence from Spanish.

Finally, it should be mentioned that our results seem to be in line with those of Puig-Mayenco and Marsden (2018) in their study of the acquisition of English in Spanish/Catalan bilinguals. By focusing on the polarity item *anything*, they too investigate crosslinguistic influence, and also address the question of whether L3 language acquisition varies across early and late bilinguals. Their study compares learners who have been exposed to Catalan and Spanish from birth with learners whose first exposure to Spanish occurred from age 7 onwards at primary school. The results show that the participants transfer from Catalan, the language that, as we describe in **section 3**, they have established to be most typologically similar to the L3. Puig-Mayenco and Marden argue that these results could provide further evidence of the TPM. However, they also admit that they do not rule out other models and argue that further research where different properties are tested in participants with the same language combination could provide further insights on this matter. Evidence of transfer from Spanish in future research, they argue, could support the LPM, for example. Although the participants in our study are also Catalan/Spanish bilinguals acquiring L3 English, our research has failed to provide such evidence. However, while our data does not show clear evidence in favor of the LPM, we also believe that our study does not provide enough evidence against this model either, as it does

not completely dismiss any kind of influence from Spanish. We believe that further research which includes additional tasks to better asses the L1 and L2 of the participants and bilingual control groups might still provide evidence of crosslinguistic influence from Spanish and, therefore, contribute to supporting the LPM.

In summary, the data gathered from the AJTs carried out by the participants shows the following results regarding the models of L3 acquisition of interest for this research:

- **CEM:** No evidence in favor of this model. Participants show non-facilitative influence from Catalan in the rating of ungrammatical sentences for the DE condition.
- **L2 Status Factor:** No evidence in favor. All participants show non-facilitative influence from Catalan in rating ungrammatical DE sentences, regardless of whether Catalan is their L2 or not.
- **TPM:** No evidence in favor or against. There is no evidence in favor of wholesale transfer from Catalan as predicted, because participants do not accept ungrammatical VOS sentences at the same rate they accept the DE condition. The data gathered is not enough to further analyze their behavior regarding word order. Participants might also be past the initial stages and could have already acquired this property.
- **LPM:** No evidence in favor or against. The data gathered shows crosslinguistic influence from Catalan, but there is insufficient data to allow an argument in favor or against crosslinguistic influence from Spanish.

6.1. The role of the previously acquired languages in L3 acquisition

As mentioned, the follow-up analysis does not include the data gathered from those participants who accept ungrammatical sentences with the DE in Spanish. We believe that an attempt to clarify this behavior is important to further understand the importance of the representation of the L1 and L2 grammars when researching L3 acquisition and, in this regard, we would like to include a brief final note regarding the data gathered from the Catalan and Spanish tasks as the question that remains is if the strong typological similarity of Spanish and Catalan can affect the way the speakers perceive each of these languages and, therefore, have an impact on the acquisition of another language.

Previous studies have researched the acquisition of the property of DE. Among them, we find that of the acquisition of English by Turkish and Russian Speakers (White, Belikova, Hagstrom, Kupisch, & Özçelik, 2012). This study investigates if L1 Turkish and Russian speakers learning English at intermediate and advanced levels have acquired the DE. Turkish is a language that has an indefinite article but no definite article; Russian, by contrast, has no articles. The restriction of definiteness occurs in both languages, but it does not apply to as many contexts as in English. White et al. argue that given the characteristics of the L1, the DE could be a difficult property to acquire for these English learners. However, the results show that both groups of learners perform native-like in the tasks, and White et al. conclude the participants have acquired the property. The same conclusion is reached in another study by White (2003). This time, she conducts a case study of an adult native speaker of Turkish learning English. The results also show that despite making errors in the use of articles, the subject performs native-like and also seems to have acquired the DE. Despite the differences between the L1 and L2 of the participants of these studies, the results of both suggest that the DE is a relatively easy property to acquire in bilinguals. As illustrated in **section 2.1.2**, sentences with the verb *haber* followed by a definite DP are ungrammatical in Spanish. Given that for a native speaker these constructions should sound very strange, we had initially expected our participants to rate these ungrammatical sentences as incorrect without problem, as we expected this property to be fully acquired in their Catalan and Spanish. Instead, the data discussed in **section 5.1** shows that this does not seem to be the case for all participants as some of them have problems rating ungrammatical sentences in Spanish.

This behavior leads us to infer that their representation of Spanish might be to a certain extent affected by their Catalan. In fact, this idea correlates with the findings of Perpiñán (2015) in the research of Spanish as an L2 in Catalan natives. This research focuses on location and existential constructions in the Spanish of Catalan/Spanish bilinguals. The participants of the study are Catalan-dominant bilinguals. The study also includes control groups composed of Spanish native speakers. According to the results, the Spanish control speakers respect the DE and cannot form existential sentences with *haber* + a definite DP in an oral production task. This is in keeping with the characteristics of Spanish, where *haber* cannot occur with definite DPs. Bilinguals, by contrast, show that their grammars are different from that of Spanish monolinguals, as they both produce sentences with define DPs and accept them in the AJTs presented to them. Perpiñan argues that this behavior can be attributed to the fact that the grammar of Spanish/Catalan bilinguals works in a different way from the grammar of

monolinguals. In the discussion, she argues that these languages are so typologically similar that there is a possibility that this is a new variety of Spanish spoken by Spanish/Catalan bilinguals. This does not seem impossible to us, especially if we consider that in this part of Catalonia there are almost no monolingual speakers and that the contact within Catalan and Spanish is unavoidable in this region (Adli, 2010). Therefore, such a variety of Spanish would have some characteristics that differ from those of general Spanish, and this could explain behaviors such as the ones in our study.

Furthermore, according to Rothman et al. (2015), once a language has been acquired, the knowledge the speaker has of it might still be subject to change. There is even evidence to support this idea; Cabrelli Amaro and Rothman (2015), for example, argue that the Spanish of the participants of their study of Brazilian Portuguese in English/Spanish bilinguals might have suffered some kind of attrition or problem of accessibility as it seems to allow the property of raising over an intervening dative experiencer shared by Portuguese and English but which is not grammatical in Spanish.

While Cabrelli Amaro and Rothman (2015) and Perpiñan (2015) admit that the possibilities they propose cannot be accounted for by their respective studies, they still believe that they should be further explored in future research. Unfortunately, we do not have enough data regarding the Spanish linguistic system of these participants to make any further contributions, nor was the intent of this research to produce it. However, we believe that this is certainly a very interesting topic for further analysis because if it were the case that the Spanish of these participants has undergone changes or some type of attrition due to the contact with Catalan, these findings would also help to further understand the behavior regarding word order in this study. Furthermore, finding out more about the mental representation of the grammars in bilinguals whose L1 and L2 are so closely related would also be an important contribution to the study of L3 acquisition, as it would certainly provide further insights to explain behaviors that cannot solely be accounted for by crosslinguistic influence from the L1 or L2.

7. Conclusion

The aim of this study was to find evidence of crosslinguistic influence from Catalan and Spanish into English L3. In order to achieve this, we subjected a group of Catalan/Spanish bilinguals to a series of AJTs. These tasks included grammatical and ungrammatical sentences in English featuring the properties of DE, grammatical only in Catalan; VOS word order, grammatical in Catalan and Spanish but not in English; and VSO word order, grammatical only in Spanish. Participants were asked to rate the sentences presented to them as acceptable or unacceptable, and the data gathered from these tasks was then analyzed and contrasted against a series of predictions formulated according to four models of L3 acquisition. These models were the following: The CEM, according to which crosslinguistic influence can come from the L1 or L2 and it should be either facilitative or remain neutral; the L2 Status Factor, which predicts crosslinguistic influence from the last acquired language; the TPM, which predicts wholesale transfer from the most typologically similar language to the L3 and expects this transfer to be both facilitative and non-facilitative; and the LPM, according to which crosslinguistic influence can come from either the L1 or L2, takes place property by property and can be facilitative or non-facilitative.

Our results fail to provide evidence in favor the CEM, as participants show evidence of non-facilitative influence from Catalan into English in the way they judge ungrammatical sentences with the DE condition in English. The predictions for the L2 Status Factor have not been corroborated either since the behavior of participants is consistent regardless of whether Catalan or Spanish is their L2. As regards the TPM and LPM, our study has failed to provide evidence in favor or against these models. Although there appears to be clear evidence in favor of crosslinguistic influence from Catalan in the way participants rate ungrammatical sentences in the DE condition, their behavior in rating VOS and VSO does not allow for an argument in favor of wholesale transfer from Catalan, as the TPM would have predicted. Furthermore, while their behaviour regarding the VOS could to a certain degree be attributed to influence from Spanish, the lack of data from a Spanish and Catalan task in this condition and from a control group of Spanish/English and Catalan/English bilinguals, does not allow for an argument in favour of the LPM either. Nonetheless, it is not ruled out that further research which accounts from these factors can provide evidence in favor of crosslinguistic influence from Spanish.

While we acknowledge that certain flaws in the design of our study have prevented us from gathering more accurate data which could have further contributed to these models of L3 acquisition, we believe that our research does allow for some additional insights. An important aspect is not to reject the individual differences participants might present in their L1 and L2. The results of our tasks for the DE in Catalan and Spanish show that some of the participants seem to have problems with this property in Spanish, and after removing these participants from the data analysis, we have been able to obtain clearer results regarding the judgment of the tasks in English. This also highlights the importance of collecting accurate information not only about general proficiency but also regarding the status of the properties tested in the L1 and L2 of the participants. It is important to rule out any possible influence of the L1 in the L2 or vice versa, as this might also affect the outcome of the acquisition of the L3. This is particularly important when the L1 and L2 are typologically related, as in our study.

Another important aspect is to assess how easy the properties tested are to be acquired, particularly when testing models such as the TPM and LPM. Our data suggests that it is possible that our participants might have already acquired the basic SVO structure of English. This is enforced by the fact that this word order is also present and most commonly used in their L1 and L2. While the CEM, L2 Status Factor and LPM make no prediction regarding at which stages of the acquisition process crosslinguistic influence is expected to occur, the TPM claims that wholesale transfer from the language that is perceived to be the most typologically similar to the L3 takes place in the very initial stages of acquisition process. Therefore, it is important to establish at which stages of the acquisition process the participants are, in order to make accurate predictions. Unfortunately, this is not an easy task, because regardless of the exposure to the L3 that the participants might have received, not all of them might be at the same stages. In addition, there is the fact that some properties are simply easier to acquire than others, as might be the case of word order in our study.

Finally, L2 research should not be completely dismissed in the study of L3 acquisition. We have discussed the importance of including bilingual control groups. This is especially important when dealing with models such as the LPM, which predict that crosslinguistic influence takes place property by property. In our case, a comparative analysis of the behavior of L2 English/L1 Catalan and L2English/L1 Spanish bilinguals could have contributed to point out the differences in behavior between bilinguals and multilinguals and provide further insight into the possibility of crosslinguistic influence from Spanish.

In summary, while the predictions for the CEM and L2 Status Factor are not borne out, our study does not provide clear evidence in favor or against the TPM or LPM. However, our results have allowed for some further remarks regarding the nature of crosslinguistic influence and the role of the background languages in L3 acquisition. The research of language acquisition is a fascinating field; however, it is important to consider that given its characteristics, L3 acquisition is an extremely complex process as the learner has two previously acquired systems available to interact with the new language, as opposed to L2 learners who only have one. As de Bot and Jaensch (2017) argue, if we want to properly understand the processes and mechanisms of acquisition, languages should not be studied in isolation. Instead, a number of additional factors, such as the ones discussed above, should be considered when conducting research if we want to provide more accurate results that can bring new insights into the field.

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Appendix

Appendix 1: Instructions

English, Catalan and Spanish exercise

Welcome!

This is the English exercise.

You will read a series of sentences. Are these sentences right or wrong? You can choose between:

1. Wrong
2. A bit wrong
3. A bit right
4. Right

After English, there are also some sentences in Catalán and Spanish to do the same. The total time of the exercise is around 15 minutes.

Please, click "next" to continue...

Thank you for your help!

Appendix 2: English questionnaire

1. Every night the student watches TV.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

2. There are the pineapples in the box.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

3. Every morning eats the man a pear.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

4. Today wears a blue t-shirt the doctor.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

5. There are apples in the blue bag.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

6. The girl an old phone uses to speak.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

7. Today wears the boy a black t-shirt.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

8. In the morning the girl eats an apple.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

9. Every day the girl brings a new pen.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

10. There are the pears in the green plate.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

11. All the family red trousers wears.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

12. Every day the boy buys a croissant.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

13. Today the doctor wears a blue t-shirt.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

14. The man a sandwich eats at home.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

15. Today brings the student an apple.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

16. There are doctors in the hospital.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

17. There are the pens on the small table.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

18. Every day the girl brings pineapples.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

19. Today the boy wears a black t-shirt.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

20. The boy a pizza with cheese eats.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

21. Every day buys the boy a croissant.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

22. There are pineapples in the box.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

23. The doctor a small black car has.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

24. Every night the teacher sings a song.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

25. Every Sunday eats pasta the family.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

26. Every morning the man eats a pear.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

27. There are computers in the room.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

28. The teacher green apples likes.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

29. Every day brings a new pen the girl.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

30. There are the doctors in the hospital.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

31. In the morning eats an apple the girl.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

32. Today the student brings an apple.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

33. Every night watches TV the student.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

34. There are pears in the green plate.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

35. Today the woman makes a big pizza.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

36. The student a long letter writes.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

37. There are pens on the small table.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

38. Every day brings the girl pineapples.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

39. The woman a new yellow t-shirt buys.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

40. Every Sunday the family eats pasta.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

41. There are the computers in the room.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

42. Today makes a big pizza the woman.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

43. Every night sings the teacher a song.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

44. There are the apples in the blue bag.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

Appendix 3: Catalan questionnaire

1. L’home el pa talla cada dia.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

2. Ha les cartes a la bústia blava.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

3. L'studiant les solucions copia.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

4. Hi ha les taronges a la nevera.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

5. Ha els diaris sobre la taula.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

6. Ha les fotos al primer calaix.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

7. La noia sabates noves compra.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

8. Hi ha les cartes a la bústia blava.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

9. Ha les taronges a la nevera.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

10. Hi ha les fotos al primer calaix.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

11. El polític campanya fa a la ciutat.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

12. Hi ha els diaris sobre la taula.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

Appendix 4: Spanish questionnaire

1. La abuela una tarta de frutas prepara.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

2. Las rosas están al lado de la puerta.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

3. Hay los coches afuera del edificio.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

4. El doctor guardapolvo blanco usa.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

5. Las escobas están dentro del armario.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

6. El cocinero los fideos pone en la salsa.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

7. Hay las revistas arriba del escritorio.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

8. Los coches están afuera del edificio.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

9. Hay las escobas dentro del armario

1. Wrong 2. A bit wrong 3. A bit right 4. Right

10. Las revistas están arriba del escritorio.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

11. La maestra la tarea corrige con rojo.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

12. Hay las rosas al lado de la puerta.

1. Wrong 2. A bit wrong 3. A bit right 4. Right

Appendix 5: Background information questionnaire

¡Muchas gracias por participar en el ejercicio!

Por último, le solicitamos responder a este breve cuestionario sobre los idiomas que usted habla. Esta información es también muy importante para la investigación, por eso, le agradecemos si puede utilizar algunos minutos más de su tiempo para completar el cuestionario.

1. ¿Cuál es su lengua materna?

- ○ Catalán
- ○ Español
- ○ Otro (por favor, especifique) _____

2. ¿Cuál es su segunda lengua?

- ○ Catalán
- ○ Español
- ○ Otro (por favor, especifique) _____

3. ¿A qué edad comenzó a aprender su segunda lengua?

_____

4. ¿Con qué regularidad utiliza su segunda lengua?

○ Todos los días ○ De vez en cuando ○ Casi nunca ○ Nunca

5. ¿Cómo de definiría su nivel de comprensión en su segunda lengua?

○ Excelente ○ Muy bueno ○ Bueno ○ Regular ○ Malo

6. ¿Cómo de definiría su nivel de producción en su segunda lengua?

○ Excelente ○ Muy bueno ○ Bueno ○ Regular ○ Malo

7. ¿Estudió inglés en el pasado?

- Sí
- No

Si respondió sí a la pregunta 7, por favor responda a la pregunta 8 y 9, si no continúe con la 10.

8. ¿Dónde estudió inglés en el pasado?

- a. escuela
- b. instituto
- c. lecciones privadas
- d. curso de idioma
- e. curso en internet
- f. otro (por favor, especifique)

9. Si estudió inglés en el pasado:

- a. ¿hace cuánto tiempo fue?
- b. ¿Qué nivel alcanzó? (básico, intermedio, avanzado)
- c. ¿Ha vuelto a usar el idioma desde ese entonces? ¿Con qué frecuencia?
- f. Otro (por favor, especifique)

10. ¿Habla o ha estudiado algún otro idioma aparte de los ya mencionados?

- Sí
- No

11. Si habla otro idioma aparte de los ya mencionados, por favor especifique:

a. ¿cuál/es?

b. ¿Lo/s utiliza con regularidad?

c. ¿A qué edad comenzó a aprenderlo/s?

d. ¿Cómo definiría su nivel de comprensión? (excelente, bueno, muy bueno, regular, malo, muy malo)

e. ¿Cómo definiría su nivel de producción? (excelente, bueno, muy bueno, regular, malo, muy malo)

Appendix 6: Information letter

Estimado participante,

¡Muchas gracias por brindar su tiempo para participar en este ejercicio! Por favor lea con atención la información y los pasos a seguir antes de comenzar.

El objetivo de este proyecto es llevar a cabo una evaluación sobre la adquisición del inglés como tercera lengua en personas cuya lengua madre y segunda lengua son el catalán y el español. Se trata de un proyecto para mi tesis de maestría "Adquisición del inglés como tercera lengua en hablantes de catalán y español", que estoy llevando a cabo como estudiante de **UiT - The Arctic University of Norway, Tromsø** (Universidad de Tromsø).

La participación en este proyecto es completamente voluntaria. El cuestionario ha sido diseñado para mantener anónima la identidad del participante en todo momento, y no se publicará ningún tipo de información sobre los participantes.

Si tiene alguna consulta o desea recibir más información sobre el proyecto, puede ponerse en contacto escribiendo a la siguiente dirección mgo019@post.uit.no.

Al hacer clic en el siguiente link queda declarado que he recibido y leído la información del presente proyecto y estoy dispuesto a participar.

https://response.questback.com/mariapaulagorgone/4c7rdqqsjr

Maria Paula Gorgone

Estudiante de Maestría

UiT – The Arctic University of Norway

Appendix 7: English sentences

Definiteness Effect

Grammatical	Ungrammatical
There are pineapples in the box.	There are the pineapples in the box.
There are apples in the blue bag.	There are the apples in the blue bag.
There are pears in the green plate.	There are the pears in the green plate.
There are doctors in the hospital.	There are the doctors in the hospital.
There are pens on the small table.	There are the pens on the small table.
There are computers in the room.	There are the computers in the room.

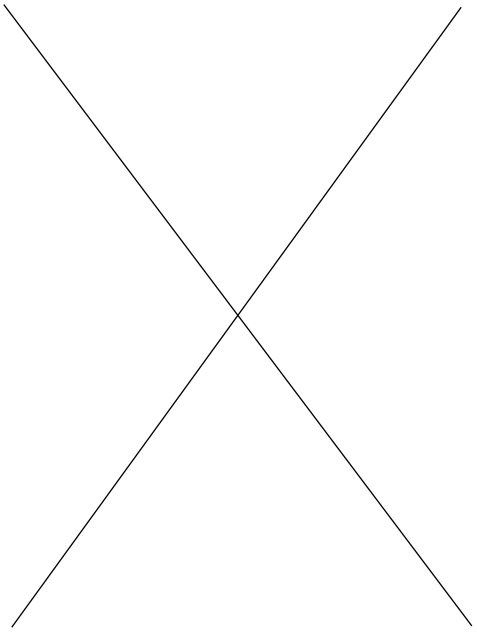
VSO Word order

Grammatical (SVO)	Ungrammatical
Every morning the man eats a pear.	Every morning eats the man a pear.
Today the boy wears a black t-shirt.	Today wears the boy a black t-shirt.
Every day the boy buys a croissant.	Every day buys the boy a croissant.
Today the student brings an apple.	Today brings the student an apple.
Every day the girl brings pineapples.	Every day brings the girl pineapples.
Every night the teacher sings a song.	Every night sings the teacher a song.

VOS Word order

Grammatical (SVO)	Ungrammatical
Every night the student watches TV.	Every night watches TV the student.
Today the doctor wears a blue t-shirt.	Today wears a blue t-shirt the doctor.
In the morning the girl eats an apple.	In the morning eats an apple the girl.
Every day the girl brings a new pen.	Every day brings a new pen the girl.
Every Sunday the family eats pasta.	Every Sunday eats pasta the family.
Today the woman makes a big pizza.	Today makes a big pizza the woman.

Fillers

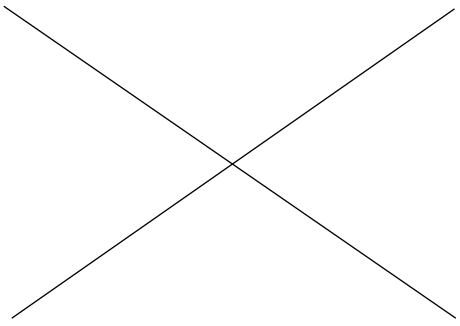
Grammatical	Ungrammatical
	The girl an old phone uses to speak.
	All the family red trousers wears.
	The man a sandwich eats at home.
	The boy a pizza with cheese eats.
	The doctor a small black car has.
	The teacher green apples likes.
	The student a long letter writes.
	The woman a new yellow t-shirt buys.

Appendix 8: Catalan sentences

Definiteness Effect

Grammatical	Ungrammatical
Hi ha les cartes a la bústia blava.	Ha les cartes a la bústia blava.
Hi ha les taronges a la nevera.	Ha les taronges a la nevera.
Hi ha els diaris sobre la taula.	Ha els diaris sobre la taula.
Hi ha les fotos al primer calaix.	Ha les fotos al primer calaix.

Fillers

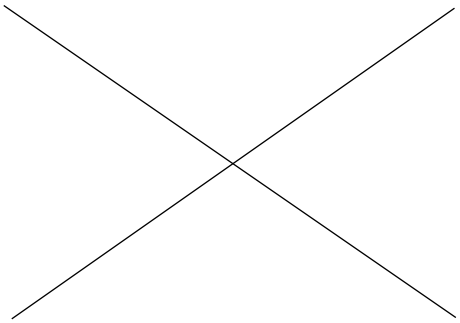
Grammatical	**Ungrammatical**
	L’home el pa talla cada dia.
	L'studiant les solucions copia.
	La noia sabates noves compra.
	El polític campanya fa a la ciutat.

Appendix 9: Spanish sentences

Definiteness Effect

Grammatical (disregarded in the analysis)	Ungrammatical
Las rosas están al lado de la puerta.	Hay las rosas al lado de la puerta.
Los coches están afuera del edificio.	Hay los coches afuera del edificio.
Las escobas están dentro del armario.	Hay las escobas dentro del armario.
Las revistas están arriba del escritorio.	Hay las revistas arriba del escritorio.

Fillers

Grammatical	**Ungrammatical**
	La abuela una tarta de frutas prepara.
	El doctor guardapolvo blanco usa.
	El cocinero los fideos pone en la salsa.
	La maestra la tarea corrige con rojo.

Appendix 10: Results of data analysis 1

Mixed effect model with random intercepts for participant and item

Fixed effects

	Estimate	Std. Error	t value
(Intercept)	3.7941176	0.0973033	38.99
condFILL	-2.3897059	0.1223962	-19.52
condVOS	-1.8823529	0.130847	-14.39
condVSO	-2.5	0.130847	-19.11
L1Español	0.0007541	0.1308007	0.01
condFILL:L1Español	0.1332956	0.1620978	0.82
condVOS:L1Español	0.2926094	0.1732898	1.69
condVSO:L1Español	0.025641	0.1732898	0.15

Correlation of Fixed Effects

	(Intr)	cnFILL	cndVOS	cndVSO	L1Espñ	cFILL	cVOS:L
condFILL	-0.719						
condVOS	-0.672	0.535					
condVSO	-0.672	0.535	0.5				
L1Español	-0.583	0.406	0.38	0.38			
cndFILL:L1E	0.413	-0.574	-0.307	-0.307	-0.708		
cndVOS:L1Es	0.386	-0.307	-0.574	-0.287	-0.662	0.535	
cndVSO:L1Es	0.386	-0.307	-0.287	-0.574	-0.662	0.535	0.5

Comparison between Catalan L1 and Spanish L1 for the different conditions with lsmeans

cond = DE

L1	lsmean	SE	df	lower.CL	upper.CL
Catalán	3.794118	0.0973033	60.28	3.599501	3.988734
Español	3.794872	0.1083933	84.23	3.579328	4.010415

cond =FILL

L1	lsmean	SE	df	lower.CL	upper.CL
Catalán	1.404412	0.08560266	58.11	1.233066	1.575757
Español	1.538462	0.09543847	77.6	1.348443	1.72848

cond = VOS

L1	lsmean	SE	df	lower.CL	upper.CL
Catalán	1.911765	0.0973033	60.28	1.717148	2.106381
Español	2.205128	0.1083933	84.23	1.989585	2.420672

cond = VSO

L1	lsmean	SE	df	lower.CL	upper.CL
Catalán	1.294118	0.0973033	60.28	1.099501	1.488734
Español	1.320513	0.1083933	84.23	1.104969	1.536056

Degrees-of-freedom method: satterthwaite

Confidence level: 0.95

contrasts

cond = DE:

contrast	estimate	SE	df	t.ratio	p.value
Catalán - Español	-0.000754148	0.1308007	240.92	-0.006	0.9954

cond = FILL:

contrast	estimate	SE	df	t.ratio	p.value
Catalán - Español	-0.134049774	0.1155645	159.91	-1.16	0.2478

cond = VOS:

contrast	estimate	SE	df	t.ratio	p.value
Catalán - Español	-0.293363499	0.1308007	240.92	-2.243	0.0258

cond = VSO:

contrast	estimate	SE	df	t.ratio	p.value
Catalán - Español	-0.026395174	0.1308007	240.92	-0.202	0.8402

Random effects

Groups	Name	Variance	Std.Dev.
Participant	(Intercept)	0.01857	0.1363
item	(Intercept)	0.01227	0.1108
Residual		0.66687	0.8166

Fixed effects:

	Estimate	Std. Error	t value
(Intercept)	3.7944	0.0798	47.55
condFILL	-2.3319	0.1003	-23.25
condVOS	-1.7556	0.1072	-16.37
condVSO	-2.4889	0.1072	-23.21

Correlation of Fixed Effects:

	(Intr)	cnFILL	cndVOS
condFILL	-0.718		
condVOS	-0.672	0.535	
condVSO	-0.672	0.535	0.5

ANOVA (model with L1 as a factor, model, vs. model without L1 as factor, model0)

	Df	AIC	BIC	logLik	deviance	Chisq	Chi	Df	Pr(>Chisq)
model0	7	1939.1	1971.7	-962.56	1925.1				
model	11	1941.3	1992.5	-959.65	1919.3	5.8319		4	0.2121

Comparison between VOS and VSO

lsmeans

cond	lsmean	SE	df	lower.CL	upper.CL
DE	3.794444	0.07980337	29.78	3.631414	3.957475
FILL	1.4625	0.07022225	30.38	1.319162	1.605838
VOS	2.038889	0.07980337	29.78	1.875858	2.20192
VSO	1.305556	0.07980337	29.78	1.142525	1.468586

Degrees-of-freedom method: satterthwaite
Confidence level: 0.95

contrast	estimate	SE	df	t.ratio	p.value
DE - FILL	2.3319444	0.100309	25.89	23.248	<.0001
DE - VOS	1.7555556	0.1072348	25.89	16.371	<.0001
DE - VSO	2.4888889	0.1072348	25.89	23.21	<.0001
FILL - VOS	-0.5763889	0.100309	25.89	-5.746	<.0001
FILL - VSO	0.1569444	0.100309	25.89	1.565	0.4155
VOS - VSO	0.7333333	0.1072348	25.89	6.839	<.0001

Appendix 11: Results of data analysis – Spanish and Catalan tasks

Comparison of Catalan (cl) and Spanish (sp) data

y = grammatical sentences

n = ungrammatical sentences

Catalán L1

	cl	sp
n	1.632353	2.39706
y	3.441176	3.33824

Español L1

	cl	sp
n	1.788462	2.44231
y	3.269231	3.11539

	cl (y)	sp (n)
Catalán	3.441176	2.39706
Español	3.269231	2.44231

Appendix 11: Results of data analysis – Follow-up

Effect of L1 on judgmentes

Likelihood ratio tests of cumulative link models

	no.par	AIC	logLik	LR.stat	df	Pr(>Chisq)
model0	8	7166.3	-3575.1			
model	9	7168.3	-3575.1	0.0126	1	0.9107

Comparison of conditions

lsmeans

contrast	estimate	SE	df	z.ratio	p.value
DE - VOS	4.156842	0.3933151	NA	10.569	<.0001
DE - VSO	6.378214	0.4066787	NA	15.684	<.0001
VOS - VSO	2.221371	0.3847575	NA	5.773	<.0001