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Crosslinguistic influence in L2 English oral production: the effects of cognitive language learning abilities and input

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CROSSLINGUISTIC INFLUENCE IN L2 ENGLISH ORAL PRODUCTION: THE EFFECTS OF COGNITIVE LANGUAGE LEARNING ABILITIES AND INPUT

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To my Mum, MªDolors

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ABSTRACT

The study of crosslinguistic influence (CLI), a phenomenon that emerges due to the interaction of different languages in the learners' mind, has attracted the attention of SLA researchers since the emergence of the field. It is nowadays clear that learners rely on their previously acquired languages when acquiring and when attempting communication using the target language. However, the extent to which previously acquired knowledge percolates into the language being acquired might depend on varied factors, which have been a fundamental concern in CLI research. A great amount of research in the last decades has focused on the study of the factors of *language typology*, *recency of use*, *L2 status* and *proficiency* (e.g. Ringbom, 1987, 2001, 2005; Cenoz, 1997, 2001; Williams & Hammarberg, 1998; Jarvis, 2001; De Angelis & Selinker, 2001; Hammarberg, 2001; Odlin & Jarvis, 2004; Navés *et al* 2005; Sánchez, 2011). Other variables, such as *input* and *cognitive language learning abilities*, which might also be relevant in the appearance of CLI, are under-researched.

The purpose of the present study is, therefore, to contribute to the discussion about the factors that promote or prevent CLI. More precisely, it aims at exploring the role that the factors *cognitive language learning abilities* and *amount* and *type of input* have on the appearance of both lexical and grammatical CLI by analysing 107 Catalan/Spanish learners of EFL. On the one hand, the variable *cognitive language learning ability* considers the learners' WMC, attention span, language aptitude as measured by the Llama F test (Meara, 2005b), as well as their lexical access. On the other hand, the variable *amount* and *type of input* considers the learners' length of language exposure, measured in relation to number of hours of instruction, exposure in naturalistic settings through SA programmes, and cumulative hours of contact outside the classroom. Lexical and grammatical CLI occurrences were identified from an oral task (a film retelling),

and they were further classified according to their type. Following Jarvis (2009), lexical CLI occurrences were classified into *lexemic* and *lemmatic*. Moreover, three cases of grammatical CLI –i.e. *null subjects*, *word order* and *use of articles*- were considered in the present study.

The analysis of the data revealed that CLI can occur at advanced stages of proficiency. However, the learners' *level of proficiency* is indeed an important factor to take into consideration, as it appeared to significantly influence the appearance of transferred items in the data. Regarding the effects of *cognitive language learning abilities* and *input* on the occurrence of CLI, the former did not appear to affect CLI much as compared to the latter. The analysis only showed one statistically significant correlation between *language switches* and the lexical access factor.

Input, on the other hand, seems to explain CLI occurrence to a greater extent, as several statistically significant correlations were obtained in the quantitative analysis of the data. From the input indexes used, the one that had a major effect was 'time spent abroad', since it correlated with the total amount of CLI, the amount of lexical CLI, especially the *lemmatic* type, *language switches* and transfer of *word order.* Additionally, instruction in a classroom setting seemed to have an influence on the amount of *lexemic* CLI and *subcategorization* CLI (the type that involves choice of the wrong complement), and cumulative hours of contact with English on the number of *semantic extensions* produced by the learners.

Finally, the analysis of the interaction of *cognitive language learning abilities* and *input* revealed that those learners with high WM and high input produced fewer cases of CLI than those with low WM and low input. However, no statistically significant differences were found among the other groups.

RESUM

L'estudi de la influència interlingüística, fenomen que sorgeix degut a la interacció de les diferents llengües en la ment dels aprenents, ha atret l'atenció dels investigadors en segones llengües des de l'aparició d'aquesta área d'estudi. Actualment s'ha arribat a la conclusió que els aprenents es recolzen en les llengües que han adquirit prèviament a l'hora d'aprendre i comunicar-se en la llengua meta. No obstant això, el grau en què les llengües adquirides prèviament es filtra en la llengua que s'està aprenent pot dependre de diversos factors, els quals han estat de gran interés en els estudis d'influència entre llengües. Una quantitat important d'estudis en les últimes dècades s'han centrat en l'estudi de factors com la *tipologia lingüística*, l'*ús recent* de les llengües, l'*estatus de la* L2 i la *proficiència* (e.g. Ringbom, 1987, 2001, 2005; Cenoz, 1997, 2001; Williams & Hammarberg, 1998; Jarvis, 2001; De Angelis & Selinker, 2001; Hammarberg, 2001; Odlin & Jarvis, 2004; Navés *et al* 2005; Sánchez, 2011). Altres variables, com l'*input* i les *habilitats cognitives per l'aprenentatge de llengües,* que també podrien ser rellevants en l'aparició de la influència interlingüística, han estat poc investigades.

L'objectiu del present estudi és, per tant, contribuir a la discussió sobre els factors que promouen o impedeixen la interacció entre llengües. Més concretament, es pretén exporar el paper que els factors de les *habilitats cognitives* i la *quantitat* i *tipus d'input* té en l'aparició de la infuència entre llengües de tipus lèxic i gramatical mitjançant l'anàlisi de 107 aprenents d'anglès com a llengua estrangera que tenen el català i castellà com a L1. D'una banda, la variable de les *habilitats cognitives* considera la memòria operativa dels aprenents, la seva capacitat d'atenció, la seva aptitud lingüística determinada pel test Llama F (Meara, 2005), així com el seu accés lèxic. D'altra banda, la variable *quantitat* i *tipus d'input* considera l'exposició a la llengua meta per part dels aprenents,

mesurada tenint en compte el nombre d'hores d'instrucció, l'exposició a la llengua en un entorn natural a través d'estades a l'estranger, i les hores de contacte amb la llengua fora de l'aula. Les ocurrències d'influència interlingüística de tipus lèxic i gramatical van ser identificades a partir d'una tasca oral (la narració d'una pel.lícula), i van ser classificades segons el tipus. Seguint Jarvis (2009), les occurrències de influència lèxica van ser classificades en *lexèmic* i *lemàtic*. D'altra banda, tres casos de influència gramatical –i.e. *el.lisió del subjecte*, *ordre de les paraules* i *ús dels articles*- han estat considerats en el present estudi.

L'anàlisi de les dades ha demostrat que la influència interlingüística pot ocórrer en nivells avançats de proficiència. No obstant això, el nivell de *competència lingüística* dels aprenents és un factor important a tenir en compte, ja que és una variable que ha explicat l'aparició de la influència entre llengües en les dades. Pel que fa referència als efectes de les *habilitats cognitives* i *l'input* i l'aparició de la influència entre llengües, el primer no sembla afectar significativament la influència interlingüística en comparació amb el segon. L'anàlisi de les dades només va mostrar una correlació significativa entre els *préstecs* i el factor de l'accés lèxic.

L'*input*, d'altra banda, sembla explicar l'aparició de la influència entre llengües en major mesura, ja que es van obtenir diverses correlacions estadísticament significatives en l'anàlisi quantitatiu de les dades. Dels índexs d'input utilitzats, el que va resultar tenir un efecte important és el "temps a l'estranger", ja que va correlacionar significativament amb la quantitat total d'ocurrències, el nombre d'ocurrències de influència lèxica, expecialment del tipus *lemàtic*, *préstecs* i transferència de l'*ordre de les paraules*. A més a més, la instrucció a l'aula va tenir una infuència sobre la quantitat de tranferència de tipus *lèxic* i *subcategorització* (del tipus que implica l'elecció del complement erroni), i les hores de contacte amb l'anglès fora de l'aula sobre el nombre de *extensions semàntiques* produïdes pels alumnes.

Finalment, l'anàlisi de la interacció de les *habilitats cognitives* en l'aprenentatge de llengües i l'i*nput*, ha demostrat que aquells aprenents amb una alta memòria operativa i més *input* produeixen menys casos d'influència entre llengües que aquells amb menys memòria operativa i menys exposició a la llengua. No obstant, no s'han trobat diferències significates entre els altres grups.

Paraules clau: anglès com a llengua estrangera, habilitats cognitives per l'aprenentatge de llengües, influència interlingüística, input, producció oral, proficiència.

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CA	Contrastive Analysis
CEM	Cumulative Enhancement Model
CLI	Crosslinguistic Influence
CLIL	Content and Language Integrated Learning
CLIN	Crosslinguistic Interaction
DMM	Dynamic Model of Multilingualism
DST	Dynamic Systems Theory
EFL	English as a Foreign Language
FH	Fluctuation Hypothesis
GJT	Grammaticality Judgment Test
ID	Individual Differences
IL	Interlanguage
ILT	Interlanguage Transfer
L1	First Language
L2	Second Language
L3	Third Language
LoR	Length of Residence
LSFH	L2 Status Factor Hypothesis
LTM	Long-Term Memory
MLAT	Modern Language Aptitude Test
PID	Perceptual Identification Test
PSTM	Phonological Short-Term Memory
QPT	Oxford Quick Placement Test
SA	Study Abroad
SLA	Second Language Acquisition
STM	Short-Term Memory

TF	Target Form
TL	Target Language
TLA	Third Language Acquisition
TPM	Typological Primacy Model
WM	Working Memory
WMC	Working Memory Capacity

CHAPTER 1

INTRODUCTION

1.1. Topic

Crosslinguistic Influe nce (CLI) is a phenomenon that occurs in the language learners' mind caused by the interaction of different languages, which has attracted the attention of Second Language Acquisition (SLA) researchers ever since the emergence of the field in the 1950s. The fact that CLI is still the focus of attention of much research (e.g. Odlin, 2003; De Angelis & Selinker, 2001; De Angelis, 2007; Jarvis & Pavlenko, 2008) reveals its potential to be at the core of the L2 acquisition process. In fact, it has been argued that no account of SLA is complete without acknowledging the role that previously learnt languages has in the acquisition of a new second or foreign language: "It is not the only determinant, however, and may not be the most important, but it is theoretically unsound to attempt a precise specification of its contribution or even try to compare its contribution with that of other factors" (Ellis, 1985: 40). Thus, nowadays everyone agrees on the fact that CLI plays a key role in the process of acquiring a new language. It needs to be considered both as a learning and a communication strategy. That is, learners rely on their previously acquired languages when acquiring and when attempting communication using the target language (TL).

Interestingly, empirical research in the last decades has clearly shown that it is not only the learners' L1 that exerts an influence on the language currently being learnt, but that all the languages that are part of the learners' linguistic repertoire can have an effect on the TL to various degrees (e.g. Ringbom, 1987, 2001; Singleton, 1987; Dewale, 1998; Williams & Hammarberg, 1998; Cenoz, 2001;

Hammarberg, 2001; Jessner, 2006; De Angelis & Dewaele, 2009). Thus, as more languages are incorporated into the system, more factors come into play, and more relationships between the different languages are established. This has led some scholars to frame their research within the *Multilingual Framework,* which has been considered to be a good point of reference in the present dissertation.

The extent to which previously acquired knowledge percolates into the language being acquired might depend on numerous and varied factors, which have been a fundamental concern in CLI research. Some researchers, such as Ringbom (1987, 2001, 2005), Cenoz (1997, 2001), Williams and Hammarberg (1998), Jarvis (2000), De Angelis and Selinker (2001), Hammarberg (2001), Odlin and Jarvis (2004), Navés, Miralpeix and Celaya (2005) and Sánchez (2011a, 2011b), have considered the role of *language typology*, *recency of use*, *L2 status* and *proficiency* as the main factors affecting the appearance of CLI in foreign language production. These have been, indeed, the focus of a great amount of research in the last decades. However, there is still no concluding evidence of the importance of each factor in CLI, or whether there are other factors which might also be relevant in the appearance of CLI, as is the case of the factors of *input* and *cognitive language learning abilities*. Furthermore, the need to investigate the interaction of different factors altogether has also been acknowledged, as more than one might be influencing CLI at the same time, which makes CLI such a complex phenomenon.

Individual differences (ID) have been found to be good predictors of L2 achievement (e.g. Dörney, 2005) and, accordingly, CLI researchers have argued that they might be the cause of the high degree of CLI variation among different learners. Among these IDs, cognitive factors such as intelligence, foreign language aptitude, working memory capacity (WMC) and phonological short-term memory (PSTM) have been found to play a significant part in language learning. However, its influence in relation to the appearance of CLI has been, to our knowledge, scarcely analysed.

Apart from internal factors, external factors such as the learners' own experiences during their language learning history –which includes the quantity and quality of *input* received- can also influence the complex process of learning an additional language (e.g. Krashen, 1981, 1982, 1985; Long, 1982, 1996; Swain, 1995; Gass, 1997). Quantity and quality of *input* might depend to a certain extent on the context in which acquisition takes places. That is, *amount* and *type of input* in a naturalistic context varies from the one learners receive in an instructional setting, as in the former learners are more prone to receive both a higher amount of input and a more interactive and varied type of input. Thus, having access to large amounts of high-quality input has been thought to affect the amount and type of CLI. Although some research has been carried out to confirm this hypothesis, more studies are needed, especially in the area of study abroad (SA).

Spending time in the TL country is considered one of the most effective ways to learn an L2, due to the quantity and the quality of the *input* that such a context offers, especially when compared to traditional classroom settings. Recent research studies (e.g. Freed, 1995, 1998; Lafford, 2004; Dufon & Churchill, 2006; DeKeyser, 2007; Collentine, 2009; Llanes & Muñoz, 2009, 2013; Serrano, Llanes & Tragant, 2011; Pérez-Vidal, 2014) have highlighted the improvements that learners make while abroad, especially in the area of oral production. Despite the importance that this type of context has in language learning, very few empirical studies have directly addressed the issue of how spending time abroad can actually affect the appearance of CLI (see, however, Andria & Serrano, 2013; Andria, 2014).

The purpose of the present doctoral dissertation is, thus, to contribute to filling in the above-mentioned gaps by focusing on underexplored factors that might affect the occurrence of CLI. More precisely, it aims at exploring the role that the factors *cognitive language learning abilities* and *amount* and *type of input* have on the appearance of both lexical and grammatical CLI by analysing Catalan/Spanish learners of English as a Foreign Language (EFL). Thus, this

study attempts to contribute to the discussion about the factors that promote or prevent CLI. On the one hand, the variable *cognitive language learning ability* considers the learners' WMC, attention span, language aptitude as measured by the Llama F test (Meara, 2005b), as well as their lexical access. On the other hand, the variable *amount* and *type of input* considers the learners' length of language exposure, measured in relation to number of hours of instruction, exposure in naturalistic settings through SA programmes, and cumulative hours of contact outside the classroom.

1.2. Structure of the dissertation

The present introduction is followed by six chapters. The first two chapters (chapter 2 and 3) deal with the theoretical background to the present study. The literature review is followed by the actual study (chapter 4 to chapter 7), as will be detailed below.

Chapter 2 offers a broad perspective on the nature of CLI, with a special focus on the relevance of CLI within SLA. It tackles the main areas of research that studies have dealt with in the field in the last decades. After a brief introduction (section 2.1), the chapter focuses on the definition of the phenomenon (section 2.2), and continues with an account of the main issues in the area of multilingualism and multilingual acquisition in relation to the phenomenon under study (section 2.3). Afterwards, the evolution of CLI perspectives and important landmarks, as well as the description of some of the factors that have been considered to affect the appearance of CLI, are introduced (section 2.4). Finally, relevant issues in relation to both lexical and grammatical CLI are introduced in section 2.5. The chapter closes with a summary of the main points dealt with in the chapter.

Chapter 3 is the second literature review chapter, in which the factors that are directly analysed in the present dissertation –i.e. *cognitive language learning abilities* and *input*- are discussed in detail. It starts with a brief introduction to the topic (section 3.1) and continues with the discussion of the role of *cognitive language learning abilities* in SLA, and a description of how the conceptualization of this internal factor has changed in the last years. Then, the few studies that have analysed its relation to CLI are revised, and their potential role in the occurrence of CLI is discussed (section 3.2). After this section on *cognitive language learning abilities*, the importance of *input* in language learning is examined (section 3.3). The first part of the section briefly deals with how *input* has been considered by different SLA theories, and it continues with a discussion on the importance of *type* and *amount of input* when learning an L2. The section continues with a revision of previous studies that have examined the relation between this external factor and the appearance of CLI.

After these theoretical chapters, the present study is described. Chapter 4 (The study: Research questions and method) presents the methodology, the procedures and the analysis used in the present dissertation in order to answer the research questions that have guided the study. After a brief introduction (section 4.1), the section that follows (section 4.2) is devoted to the aims and to the research questions, as well as to the hypotheses proposed. The first research question seeks to answer whether *cognitive language learning abilities* have an influence on the amount and type of lexical and grammatical CLI in English oral production. That is, whether CLI is related to the results learners obtain in the different cognitive tests –i.e. Reading and Digit Span test, Lexical Access test, Llama F and Attention Span test. The second research question focuses on the effects of *amount* and *type of input* (measured in relation to number of hours of instruction, exposure in a naturalistic setting through SA programmes and cumulative hours of contact outside the classroom) on amount and type of CLI.

Finally, the third research question inquires into the interaction of *cognitive language learning abilities* effects and *input* effects.

The section concerned with the method (section 4.3) describes the main features of the participants –both the experimental group and the control group of native speakers-, the different instruments used to collect the data –i.e. the proficiency tests, cognitive tests, input instruments and an oral narrative-, as well as the procedure of the data collection. The type of analysis performed is described in section 4.4, which includes the classification employed in the present study. Moreover, the way in which the cases of the grammatical items analysed –i.e. *null subjects, word order*, and *use of articles*- is presented. The section follows with some methodological considerations in CLI research that have shaped the methodological design of this dissertation, as well as the description of the statistical analysis performed.

The results from both the quantitative and qualitative analysis are presented in Chapter 5. After the introduction to the chapter, section 5.2 offers the description of the data on CLI, which is followed by the qualitative and statistical results for the first research question concerning the relation between *cognitive language learning abilities* and CLI (section 5.3). Section 5.4 is dedicated to the results for the second research question regarding the role of *input* in the occurrence of CLI. This is followed by the results for the third research question about the interaction of *cognitive abilities* and *input* (section 5.5). The chapter closes with the summary of the main results.

The focus of Chapter 6 is on the discussion of the results reported in chapter 5. The brief introduction to the chapter is followed by the discussion of the results in relation to previous findings. First, the discussion focuses on the data on CLI (section 6.2), and then on the relation between *cognitive abilities* and CLI (section 6.3) and the relation between *input* and CLI (section 6.4). The findings concerning the third research question –i.e. interaction of *cognitive*

language learning abilities and *input-* are then analysed and discussed in section 6.5. Finally, a summary of the main points tackled in the chapter is presented.

Finally, chapter 7 provides a conclusion in which the aims and the main findings of the present doctoral dissertation are summarised (section 7.1). The chapter continues by pointing out some limitations of the current study, as well as some ideas for further research (section 7.2). The thesis closes with the References and the Appendices, which include the instruments used, some data samples and a coding example.

CHAPTER 2

CROSSLINGUISTIC INFLUENCE AND

MULTILINGUALISM

"It is quite an illusion to think, as even literate people sometimes do, that meanings are the same in all languages, that languages differ only in the forms used for those meanings." *(Lado 1957: 77)*

2.1. Introduction

The aim of this chapter is to offer a broad perspective on the nature of CLI, as well as to point to the main areas of research that studies have dealt with in the field so far. First, a definition of CLI will be given in order to establish the frame for the present study (section 2.2). The chapter follows with the topic of multilingual acquisition and the different models that try to describe the factors and processes involved in multilingual acquisition, where special emphasis on CLI in multilingual settings is given (section 2.3). In the third place, in section 2.4, a brief history of the development of research on CLI is provided, in which recent areas will be pointed out, followed by the analysis of some of the factors that constrain the appearance of CLI. Those factors that are the focus of study in the present dissertation –*input* and *cognitive language learning abilities*- are going to be extensively presented in chapter 3. Finally, we shall discuss several relevant issues both in the area of lexical and semantic CLI and of grammatical CLI (section 2.5). The first type analysed is lexical CLI, and the focus is on issues such as the difference between native and non-native transfer, *transfer of form* and *transfer of meaning*, transfer of content and function words, and lexical word choice transfer. The chapter closes with the issue of grammatical CLI, with a

special focus on the analysis of *null subjects*, *word order*, and *use of articles*, which are the grammatical issues analysed in the present dissertation.

2.2. Defining crosslinguistic influence

CLI is caused by the interaction of the different languages processed within the same mind. The complexity of the phenomenon of CLI has led to the use of varied terminology in different periods and by different researchers. While the first works referred to the phenomenon as "interference", defined as "instances of language deviation from the norms of either language which occur in the speech of bilinguals as a result of their familiarity with more than one language" (Weinreich, 1953: 1), later studies preferred the use of the term "transfer". The former mainly referred to "negative transfer" as native language influence was considered to be an impediment to the production of correct TL forms; but as has been extensively acknowledged, "positive transfer" also plays an important role in language learning.

Other researchers, such as Sharwood Smith (1983) and Kellerman and Sharwood Smith (1986) coined the term "crosslinguistic influence", since both "interference" and "transfer" were connected to behaviourist theories and, moreover, they considered that the term "transfer" was not broad enough to cover all aspects of L1 influence. For these researchers the term "crosslinguistic influence" included "under one heading such phenomena as 'transfer', 'interference', 'avoidance', 'borrowing' and L2-related aspects on language loss" (Kellerman & Sharwood Smith, 1986: 1). Although "crosslinguistic influence" is nowadays widely used, the term "transfer" has also persisted. Nevertheless, at present "transfer" is not connected to behaviourist theories any longer, and has broadened its definition to include all those phenomena that Kellerman and Sharwood Smith (1986) considered to be important. For this reason, and

following other studies –e.g. Odlin (2003) and Ellis (2008)- in the present dissertation "crosslinguistic influence" and "transfer" are going to be used interchangeably with no difference in meaning.

Different definitions of transfer can be found in the literature. Odlin (1989: 27) defined transfer as "the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired", and Gass and Selinker (1993: 54) as a "psychological process whereby prior learning is carried over into a new learning situation". These often cited definitions of CLI are broad and, thus, include different and varied manifestations of the phenomenon: positive and facilitative transfer, negative transfer phenomena such as *underproduction* or *overproduction* of a particular structure, production errors such as *borrowings*, *calques* or *lexical inventions*, or misinterpretations during comprehension. All these terms are going to be defined and explained in following sections when analysing the different types of CLI.

More recent definitions also consider different languages and different directionalities, as is the case in Jarvis and Pavlenko (2008), Ellis (2008) and Jarvis (2009), who have defined CLI as "the influence of a person's knowledge of one language on that person's knowledge or use of another language" (Jarvis & Pavlenko, 2008: 1), or "the influence that a person's knowledge of one language has on that person's recognition, interpretation, processing, storage and production of words in another language" (Jarvis, 2009: 99). Ellis (2008: 351), following Selinker's (1983), Odlin's (1989) and Jarvis' (2000) definitions, goes in the same line by considering CLI "any instance of learner data where a statistically significant correlation (or probability-based relation) is shown to exist between some feature of the target language and any other language that has been previously acquired". Evidence of significance is, thus, needed in order to validate any claim on language transfer.

Since the late nineties and within the framework of multilingualism, novel terminology has been coined due to the rise in new interactions among the different languages in the mind of the language learners. This is the case of the term "Interlanguage Transfer" (ILT) (De Angelis & Selinker, 2001), also called "lateral transfer" by Jarvis and Pavlenko (2008), which has been defined by De Angelis and Selinker (2001: 43) as "the influence of a non-native language on another non-native language" or the "transfer from one interlanguage to another". In a multilingual context other types of language transfer can take place, as is the case of the so called "combined CLI", which occurs when "two or more languages interact with one another and concur in influencing the target language, or when one language influences another, and the already influenced language in turn influences another language in the process of being acquired" (De Angelis, 2007: 21). Additionally, Herdina and Jessner (2000, 2002) and Jessner (2003, 2008) have referred to the transfer phenomena as 'Cross-linguistic Interaction' (CLIN), a dynamic feature of the multilingual systems that encompasses all the known transfer phenomena as well as the cognitive effects of multilingual development, and which will be further analysed when discussing the *Dynamic Model of Multilingualism* (DMM) in section 2.3.2.3.

Although the importance of the mother tongue cannot be neglected (see Ellis, 1985 and Ringbom, 1987, among others), studies on Third Language Acquisition (TLA) in the last decades have provided evidence that prior L2 knowledge can actually be the source of influence when acquiring a new language (Ringbom, 1987; Singleton, 1987; Dewale, 1998; Williams & Hammarberg, 1998; Cenoz, 2001; Hammarberg, 2001; Jessner, 2006; De Angelis & Dewaele, 2009). That is, when learners are faced with a new language, they rely on all prior knowledge in order to facilitate learning; thus, they try to relate new information to what they already know, since, as De Angelis (2007: 17) claims, "thinking that a bilingual or multilingual individual will rely exclusively on the L1 during the acquisition process is both improbable and unfeasible". Most

research studies nowadays follow the premise that all linguistic systems in the speaker's mind interact in interlanguage (IL) production. As De Angelis and Selinker (2001), for instance, point out, the speaker of several languages can potentially mix the components of all of them, and has the task of keeping the languages apart in production. However, Ringbom (2005) asserts that the fact that language transfer can occur from non-native languages -i.e. ILT - does not mean that it is manifested in the same way as L1 influence, as will be analysed in section 2.5.2.2.

As pointed out above, less research into the role of non-native languages has been carried out in comparison with the empirical studies on native language influence. However, as seen in the definitions presented in this section, it can be inferred that researchers have fully accepted the role that non-native languages play in the acquisition of an additional language, and some work on the development of models that account for the existence of several languages in the mind of the learners and their interaction have begun to be shaped, as shall be present in detail in section 2.3.2.

This influence that previously learnt languages can have on the knowledge of a new one can be manifested in different and varied ways, ranging from more obvious realizations –e.g. everyone's awareness of foreign accents or the use of a word from another language, which results in non-target manifestations- to more subtle realizations, such as word choice, in which the result is a target one, but perhaps not the preferred option by native speakers of the language.

In popular thinking, there are a number of generally accepted beliefs regarding the degree of difficulty involved in learning one language or another and the time needed to do so. However, scientific research on the topic is needed in order to empirically analyse these common beliefs on language learning. CLI was, in fact, as Ellis (2008) mentions, the first factor that received serious attention in SLA research. Although there have been several changes in the way transfer has been conceived throughout the different periods and different

approaches, as will be pointed out in subsequent sections, nowadays, in general terms, and as Gass and Selinker (1992) point out, CLI is considered just one side of the process of language acquisition, since learners, apart from using the knowledge that they have from the L1 and the other acquired languages, also generate hypotheses from the L2 input.

Although, as pointed out above, the importance of language transfer is usually acknowledged, it is still quite common to come across the comment that CLI is just resorting to a language that the language learner knows when there is a lack of knowledge in the language currently being acquired[1]. It cannot be denied that transfer from one language to the other can be caused by the speaker's ignorance of a certain form or structure, as early studies –e.g. Corder (1983)- highlighted. However, as much more recent research has shown –e.g. Kellerman (1983, 1995), Odlin (1989, 2003)- CLI is more than just a communication strategy; it is a learning strategy by which learners formulate hypotheses on the language being acquired based on the knowledge they have of those previously learnt. This results, for example, in hybrid structures, in the association of a TL form with a meaning from another language, or the preference of certain forms or structures[2]. Moreover, CLI involves complex cognitive processes, as the present dissertation will try to show.

To sum up, language transfer plays a prominent role in the process of acquiring a new language. It needs to be considered both as a learning and a communication strategy. That is, learners rely on their previously acquired languages when acquiring and when trying to communicate using the TL. Furthermore, plenty of studies have shown that it is not only the learners' L1 that influences the TL, but that all previously acquired ones can inevitably affect the

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[1] This belief, known as the *Ignorance Hypothesis*, was introduced by Newmark (1966) and Newmark & Reibel (1968), and followed by Dulay and Burt (1974) and Krashen (1981, 1983).

[2] Although it is important to differentiate between L1-like (or other languages) patterns that emerge spontaneously and the ones that the learner consciously uses as a communication strategy, it is sometimes difficult to discern them.

additional language. This idea is clearly expressed in the different definitions of CLI that have been reviewed above. Additionally, a discussion of the varied terms that can be found in the literature has been provided, which has revealed that both the terms "transfer" and "crosslinguistic influence" are the ones that have persisted and that are used more frequently nowadays without any difference in meaning. The use of these different terms are evidence that the conceptualization of the phenomenon has considerably changed and been redefined since it arose, and increased in importance within a multilingual context, as will be discussed in the following section, which begins with a definition of multilingualism and multilingual acquisition.

2.3. Multilingualism and multilingual acquisition

2.3.1. Multilingual acquisition vs. second language acquisition

Multilingual acquisition consists of "the consecutive and simultaneous acquisition of three or more languages" (Cenoz, 2000: 39), or in other words, "the acquisition of languages other than the first or second" (Cenoz, 2005: 1). Multilingual acquisition has often been considered as a variation of fields such as bilingualism and SLA. Nevertheless, nowadays, as pointed out by several scholars such as De Angelis and Selinker (2001), Cenoz (2003a, 2013), and De Angelis (2007), TLA has become a recognised field by itself. Additionally, as the field of multilingual acquisition is a much more recent field than SLA, there are still many issues in the area of CLI in multilingual contexts that need to be explored.

The fact that the study of multilingual acquisition has attracted more interest in the last years can be explained through a number of reasons. Nowadays, being monolingual is the exception and, moreover, having a good

command of more than two languages is by no means an uncommon situation. It is indeed a frequent achievement to a great amount of people around the world (De Angelis, 2007). Therefore, as Hufeisen (2005) posits, studies on language acquisition need to go beyond the acquisition of the first foreign language to mark the end of an era in where theoreticians have been working on models which only account for the acquisition of two languages, hardly reflecting the reality of language learners today. The studies on multilingual acquisition have reached the conclusion that polyglots or multilingual learners are different from L2 learners and that, therefore, they should not be compared to them, as will be further explored below (see e.g. Cook, 2008); in short, "there is something special about having more than two languages" (De Bot & Jaensch, 2015: 130). For the above-mentioned reasons, and taking into account the context is which the present dissertation has been carried out and its learners, who have knowledge of at least three languages, it has been considered pertinent to take the *Multilingual Acquisition* framework as a point of reference.

As pointed out in several research studies, this increase in the number of languages known by the same individual is due to several reasons. On the one hand, it is due to the spread of English all around the world for international communication due to the historical, political, economic and technological development that has taken place in the last decades (Grosjean, 1992; Cook, 1995, Cenoz & Genesee, 1998; Jessner, 1999; Cenoz, 2005). On the other hand, it might be due to the mobility of the world population and the recognition of the autochthonous minority languages in some European regions, such Galicia, Frisia, the Basque Country, Brittany, Wales, Ireland or Catalonia -location of the present study- (Cenoz, 1997, 2005), which makes speakers increase their linguistic repertoires.

With the increase in the number of languages that multilingual acquisition presupposes, the complexity of language learning becomes more evident when compared to the acquisition of a second language. Although multilingual

acquisition shares some features with SLA, there are also some important differences between them. Multilingual acquisition is more complex and diverse than SLA because

> "it implicates all the factors and processes associated with second language acquisition as well as unique and potentially more complex factors and effects associated with the interactions that can take place among the multiple languages being learned, and the processes and effects of learning them" (Cenoz, 1997: 278).

A great part of the complexity of multilingual acquisition relies on the different directional relations that can appear when the learner has knowledge of more than two languages. While L2 learners, as discussed in Cenoz, Hufeisen and Jessner (2001), have only two systems that can influence each other (L1 ⇔ L2), *substratum transfer* (Odlin, 1989) –i.e. transfer from L1 to L2- being the one that has been most widely investigated, in multilingual acquisition other directional relations can take place –i.e. the L3 can influence and be influenced both by the L1 (L1 ⇔ L3) and the L2 (L2 ⇔ L3), giving rise to the phenomenon of ILT, as mentioned in the previous section when defining the phenomenon of language transfer. It is also worth mentioning that in multilingual acquisition, apart from the one-to-one association typically found when the learner has knowledge of only two languages, a many-to-one association is possible –i.e. *combined CLI* (De Angelis, 2007), as discussed in section 2.2. It should be noticed that identifying and separating these multiple sources of influence is methodologically challenging.

Within the field of multilingual acquisition different and diverse areas have begun to be investigated, one of them being the study of the effects of bilingualism on TLA. These studies, which began as early as the 1960's (e.g. Peal & Lambert, 1962) but which were not fully developed until the late 1990's, have acknowledged advantages of bilingual speakers over monolinguals when acquiring an additional language (see Cenoz, 2003a). These advantages are due to the learning strategies that bilinguals have, as well as to the skills they have

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developed to compensate for the lack of knowledge -e.g. *language switches, foreignizings, literal translations, approximations, descriptions, word coinages* (Poulisse, Bongaerts & Kellerman 1987)-, to their metalinguistic awareness, their communicative sensibility, and also to the fact that they have a wider linguistic repertoire that they can use as a basis when acquiring an additional language (Nayak, Hansen, Krueger & McLaughlin, 1990; Baker, 1996; Jessner, 1999, 2006, 2008; Hufesein, 2000; Herdina & Jessner, 2002; Cenoz, 2005). However, this is not the only area analysed within the field of multilingual acquisition; areas such as child trilingualism (see Hoffmann, 1985; Quay, 2001) or tertiary education (see Genesee, 1998; Hoffman, 1998) have also been the focus of much research. Additionally, the study of CLI has also been at the heart of multilingual studies, which have examined the interplay between all the languages that are part of the learner's linguistic repertoire and analysed the different factors that condition the selection of the source of transfer (e.g. Williams & Hammarberg, 1998; De Angelis & Selinker, 2001; Ringbom, 2007; Bardel & Falk, 2007; Falk & Bardel, 2011; Rothman, 2010, 2011, 2015).

The study of CLI in multilinguals, as discussed by de Angelis (2007), offers the possibility to re-examine the hypotheses that had been formulated for L1 influence in light of subsequent languages and, thus, confirm or refute them. The set of new studies on CLI in multilingual contexts allows the exploration of new dimensions and of new language directionalities that can only be explored when more than two languages are present in the mind of the learner, as has been pointed out in section 2.2 when defining CLI. This is so as "the impact of the […] L1 in learning or using a […] L2 is fundamentally (qualitatively) different from the impact of the L1 and L2 on learning an L3" (De Bot & Jaensch, 2015: 130). Moreover, the phenomenon of language transfer has been considered as an important side of multilingual acquisition by different models that try to capture the complexity of multilingual acquisition, as we will discuss in the following section.

2.3.2. Models of multilingualism

There exist different models that attempt to describe the varied and complex factors involved in the process of multilingual acquisition. It is not within the scope of the present dissertation to describe all the models that have been developed in the area of multilingual acquisition; instead, a selection of some models will be offered. We have considered these models to efficiently describe the issues tackled in the present study, such as the factors involved in the language acquisition process or the selection of a language in detriment of others. The ones that are presented and described in the following subsections - i.e. the *Factor Model* (Hufeisen, 2005), the *Polyglot Speaking Model* (Williams & Hammarberg, 1997, 1998; Hammarberg, 2001), the *DMM* (Herdina & Jessner, 2000, 2002), and the *Multicompetence Framework* (Cook, 1991, 1992, 1997, 1999, 2002, 2003, 2008) tackle different aspects of multilingual acquisition, including the issues under analysis in the present dissertation and, as we shall see, complement one another to describe the features and processes involved in multilingual acquisition.

2.3.2.1. Factor Model

In her *Factor Model*, Hufeisen (2005) attempts to identify the different factors that play an important role in the language acquisition process. She proposes that there are several factors that start influencing the language learning process as more languages are incorporated in the learners' linguistic repertoire, as can be seen in Figure 1 below.

While the factors that play a decisive role during the acquisition of the L1 are *neurophysiologic factors* and the *input* from the environment, in learning the first foreign language other elements come into play: *affective factors* -such as

motivation, anxiety, self-perceived language proficiency, perceived distance between the languages, attitudes, and individual life experiences–, *cognitive factors* –such as language awareness, metalinguistic awareness and learning strategies-, as well as the *influence from the L1*. The addition of another foreign language causes further complexity, since other components become decisive influences in the process of language acquisition. These are *individual learner factors*, such as age, life experience and learning experiences, which might also play a role in the acquisition of the first foreign language; and other factors that start having an influence on the acquisition of the second foreign language, such as *specific experiences in learning foreign languages, learning and communication strategies*, as well as the influence that the knowledge of the previous acquired languages -i.e. the L1 and the first foreign language- can have on the acquisition of a new language.

L2 Acquisition

L3 Acquisition

L1 Acquisition

Neurophysiological Factors

External Factors: learning environment, type and amount of input

Affective Factors: motivation, anxiety,self-perceived proficiency, perceived distance between the languages, attitudes, individual life experiences

Cognitive Factors: language awareness, metalinguistic awareness, learning awareness, learner type awareness, learning strategies, individual learning experiences

Linguistic Factors: L1

Foreign language specific Factors: Individual foreign language learning experiences and strategies, previous language interlanguages, interlanguage of target language

Linguistic Factors: L1, L2

Figure 1- Factor Model (adapted from Hufeisen, 2005: 38)

From all these factors, we can observe that the language acquisition process becomes more complex as more languages are incorporated in the linguistic repertoire, since more relations among the different languages are established and other factors come into play. One of the latter that adds to this complexity of multilingual acquisition is the linguistic factor –i.e. L1 and L2 CLI, which become a main and direct influence in TLA. The complexity of multilingual acquisition is illustrated in Figure 1 above. Moreover, it is clear that both L1 and L2 acquisition are comprised within L3 acquisition, and, thus, can exert a great impact on the latter, which means that all previously learnt languages can affect the language currently being acquired. This idea is particularly relevant in the present dissertation, in which the participants are Catalan/Spanish bilingual speakers learning English. Therefore, both languages are expected to exert an influence on their English production. Moreover, as shall be described in chapter 4, many of the participants in the present study have knowledge of more than one foreign language, the maximum being four, thus many of them boasting up to six languages. This fact allows us to highlight the need to frame the present dissertation within the *Multilingual Acquisition* framework, as complex relations might be established in our learners' multilingual minds.

2.3.2.2. Polyglot Speaking Model

The *Polyglot Speaking Model* by Williams and Hammarberg (1997, 1998) and Hammarberg (2001) sets out to identify the specific functions that each language has in the multilingual learner's repertoire. By observing Sarah Williams' language learning process over approximately two years, the authors found out that the influence of some of the languages she knew –i.e. Spanish, Italian and French- was minimal in her Swedish oral production-, but the influence of others –i.e. English and German- was considerable. Moreover, it was found that the type

of influence exercised by English and German was different, as will be more extensively discussed in section 2.4.2.3 when dealing with the factor of *L2 status*. Whereas L1 English was used for metalinguistic comments and was, thus, an *external instrumental language*, German worked as a source language (a *default supplier language*), that is, she resorted to German when she had not acquired a word in Swedish, and so she derived rules in Swedish from German ones. In addition, L1 English had a long-term influence on her L3 Swedish. The influence of L2 German, on the other hand, decreased as the learner obtained more proficiency in the L3. The L3 gradually took over of both instrumental and supplier functions.

Although it is not within the scope of the present dissertation to analyse the roles that each of the languages might have, this model is an excellent example of the importance of both L1 CLI and ILT and of the complex relations that are established in the learners' linguistic repertoire. However, it is also important to take into consideration that Williams and Hammarberg's (1997, 1998) and Hammarberg's (2001) studies and, thus, this model, are based on the analysis of the production of one single learner, also the co-author of the study and a linguist herself.

2.3.2.3. Dynamic Model of Multilingualism

The focus of the *DMM* by Herdina and Jessner (2000, 2002), which applies the *Dynamic Systems Theory* (DST)[3] to multilingual acquisition, is on general overall processes found in multilingual acquisition. This model presents multilingualism as a nonlinear and dynamic process of language development, in

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[3] The DST, known in sciences such as neurology and psychology, is presented as an adequate methodological tool to investigate multilingualism by the DMM, and it can be regarded as the first step in the use of this method in research on multilingualism (see Herdina & Jessner, 2002 and Jessner, 2008 for an extensive review of the topic).

which the language systems that the speaker possesses influence those that are developing, as also emphasized by the previous described models and in works by De Bot (2008, 2012), Larsen-Freeman and Cameron (2008) and Verspoor, Lowie and de Bot (2012).

According to this model, all types of language acquisition are part of a holistic and autodynamic system. In other words, each language in the multilingual system constitutes a part of the complete system and is not equivalent to the language of the monolingual speaker –in line with Cook's *Multicompetence Framework* (see below). The authors of the model also emphasize the idea that each of the languages of a multilingual is simultaneously influenced by a number of variables; each of which affects all the others, as well as itself[4]. The totality of factors that affect any of the languages is what the authors refer to as *Crosslinguistic Interaction* (Herdina and Jessner, 2000, 2002; Jessner, 2003, 2008), which is a wider concept than CLI, as it encompasses all the known transfer phenomena as well as the cognitive effects of multilingual development.

The notion of 'multilingual language proficiency' is also of importance within the model, and it is in agreement with Cummins' (1991) *Interdependence Hypothesis* and his idea of the 'Common Underlying Proficiency' that is developed by bilinguals through contact with the different languages. According to this model, all languages, apart from having surface features –i.e. automatized conversational features, such as pronunciation or fluency-, contain elements (i.e. skills and metalinguistic knowledge), involved in cognitively demanding tasks, which are common to all languages and that are transferable one to the other. Accordingly, any change produced in one of the languages will affect the other; that is, the learning of elements from a language affects the whole system. In the DMM, the multilingual language proficiency is also characterized by the interaction between the different language systems and the so called 'multilingualism factor', which is based on the changes in language awareness

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[4] See Jessner, Megens and Graus (2016) for a recent account of the complexity of multilingual acquisition and the varied factors that affect CLI.

and the development of language strategies through increased exposure to language acquisition. Language awareness has been considered as a crucial factor that contributes to the effects that bilingualism can have on L3 acquisition.

The followers of this model also support the idea that the process of language acquisition is influenced by several internal as well as external factors. These two types are analysed in the present study; more specifically, the learners' *cognitive abilities* (internal factor) and *input* (external factor) are the variables that guide the present dissertation. Herdina and Jessner (2000, 2002) further argue that the influence of the different factors can only be partially anticipated, as they differ among individuals and they interact with one another. This idea points to the complexity of the language acquisition process, which is affected by a high number of components. This is the reason why disentangling the net of factors and, thus, fully understanding language acquisition is so complex.

2.3.2.4. Multicompetence Framework

An important landmark in the last years that should also be pointed out has been the acceptance of Cook's *Multicompetence Framework* (1991, 1992, 1997, 1999, 2002, 2003, 2008), which refers to "the knowledge of two languages in one mind" (Cook, 2008: 17). This framework asserts that those who have knowledge of more than one language have a state of mind different from two monolingual states, as they have a different vocabulary network that combines two or more different languages. That is, the linguistic competence of multilinguals is characterised by increased metalinguistic awareness, greater creativity and cognitive flexibility, and more diversified mental abilities (Cook, 2008).

Cook's *Multicompetence Framework* draws on Grosjean's view of bilingualism. Against the fractional view of bilingualism, which supported that individuals have separate competencies for their two languages and that these

competencies are similar to those that monolinguals have, and thus bilinguals are seen as two monolinguals within the same person, Grosjean (1985, 1989, 1992, 1997, 1998, 2001, 2004) proposed an argument that was also adopted by Cook. He stated that a bilingual is not the sum of two monolinguals, but a specific speaker with a unique and complete linguistic system. According to this view, and also in line with the DMM, the mind of a bilingual should be conceived as a whole whose competencies in the two languages are part of an intact system, that is, they are not separate entities.

Thus, the mind of those who have knowledge of an L2 is different from that of the monolingual speaker. For this reason, the knowledge that a multilingual has of his L1 is different from the knowledge that a monolingual speaker has. This claim is supported by Ewert's (2008) study, which looks for differences in L1 syntactic competence of Polish monolingual and Polish-French bilingual teenagers in a bilingual programme in Poland. Participants in the study had to rate 25 items that contained four versions of the same sentence from the most natural to the least natural-sounding one. The authors found out that bilinguals differed from their monolingual peers with regard to the frequency with which they chose the desired standard and the non-standard forms.

Cook has very pertinently argued that in SLA the language learner has been seen as a failure for not achieving the level of a native speaker; however, if the L2 learner's IL is independent, it should not be measured against the native (Cook, 1999). He insists on the fact that features of L2 learners –e.g. *code-switching* and *lexical access errors*- should not be considered as failures, but as evidence of the unique and flexible linguistic configuration of multilingual speakers. He claims that "ultimate attainment is a monolingual standard rather than an L2 standard" (Cook, 2002: 6). This common practice of assessing L2 performance or competence according to ideal monolingual norms is referred in the literature as the 'monolingual bias' (Cook, 1997) or as the 'comparative fallacy in interlanguage studies' (Bley Vroman, 1983). It is for all these reasons that Cook

prefers the term 'L2 user' instead of 'L2 learner' to counteract the implications that the term 'L2 learner' has, that is, that people learning an L2 are learners all their lives because they can never get to the standards of the native speakers. Although we agree with Cook's establishment of the use of the term 'L2 user' – defined as "any person who uses another language than his or her first language (L1)" (Cook, 2002: 1) -, in the present dissertation both terms are used interchangeably.

The *Multicompetence Framework* allows us to understand the reason why multilinguals do not perform in the same way as monolingual speakers in all the languages they know (e.g. they usually code-switch), and, as Jarvis and Pavlenko (2008) point out, to theorise about the interaction of the different languages in the speaker's mind. As the mind of a multilingual contains information from different languages, it is logical to assume that all this information might be integrated in the multilingual mind in some way or another, and that influence from one language to another might occur. These issues will be extensively discussed in the section that follows.

2.3.3. The multilingual lexicon and the multilingual speech production process

The mental lexicon is 'a memory system in which a vast number of words, accumulated in the course of time, has been stored' (Hulstijn, 2000: 210). While the first studies on the mental lexicon focused on the processing of the monolingual L1 lexicon, more recent studies have focused their attention on the bilingual and multilingual lexicon, since, as pointed out in section 2.3.1, it has been acknowledged that multilingualism is the norm in language learning. Therefore, studies on the mental lexicon need to account for phenomena such as code-switching, CLI, lexical errors and language loss (Ecke, 2001).

For some years, considerable research studies on the bilingual mental lexicon have been carried out in order to establish its organisation and development, as well as the relation that exists between the L1 and L2 lexicons, and the degree of separation and integration of the two systems. The connections that exist in the mental lexicon of bilinguals, as highlighted by Hufeisen (2005), have become more complex for multilinguals, since two other criteria have been added: one or more languages and the degree of closeness that these new added languages has to the L1 and the other non-native languages. Furthermore, these new words can be associated with any of the languages in the learners' linguistic repertoire, or with all of them. To sum up, what makes word production in multilinguals different is the configuration of their lexical networks, which is more complex as compared to that of monolinguals or bilinguals, as well as the number of possible sources and directions for transfer (Ecke, 2015).

Studies have fluctuated between those that state that the lexical knowledge from different languages is stored together, those which assert that it is kept separately, or those that posit that there is an overlap between the languages. Additionally, a question that has also been debated is to what extent the linguistic information is integrated. Hulstijn (2000) summarised the debate on similarities and differences between the L1 and L2 lexicons in four different hypotheses:

1) L1 and L2 words are stored together in a single store –*extended system hypothesis*;

2) words are stored separately –*dual system hypothesis*;

3) similar words, such as cognates, are stored in the same store whereas language-specific stores are stored separately –*tripartite hypothesis*; and finally,

4) L1 and L2 words are stored in different subsets, which are stored in a common store –*subset hypothesis*.

Moreover, Pavičić (2008) has argued that the relationship between L1 and L2 words in the mental lexicon may vary from one speaker to the other, which means that each individual may use the organisational resources in the mental lexicon in a different way, depending on different factors, such as the way the word has been acquired, or the perception of similarity between the L1 and L2 word. Hufeisen (2005) comments on the fact that the learners´ competence can also determine the access to a particular lexical item. That is, beginners will access new words in the L2 through the L1 and associate them to the same conceptual features. On the other hand, more advanced learners will connect new lexical entries more directly with the concept and less strongly with the L1 equivalent.

The first framework that accounted for the processes that occur in bilingual speakers is Green's (1986) model, although it does not solely account for the production of lexical items. It is proposed that the different languages in the bilingual mind can be activated to different levels. That is, they can be *selected* (language selected to be used), *active* (languages that can play some influence) or *dormant* (without any influence). This position is also taken by De Bot (1992), who applied Levelt's (1989) model of the monolingual speaker to the bilingual speaker, according to which the selected language is determined in the conceptualiser. However, due to a lack of knowledge in the selected language, another accessible language might be activated at the same time. Thus, the utterances are thought to be produced in parallel in all the steps of formulation; however, they might not be passed on to the articulator. In this way, the active language may interact with the selected language, leading language transfer to appear.

Grosjean (1995, 1997, 2001) also referred to the level of activation as the *Language Mode Hypothesis*, according to which if a language is highly activated it can be more easily selected during production and, thus, be the source language in CLI. The speaker, thus, selects a language for communication (the *base*

language), which is the most highly activated one as it governs language processing, and the other languages (the *guest languages*) remain less activated depending on their position on the *language mode continuum*, ranging from low activation to nearly total activation. This position depends on different and varied factors, which include language proficiency, presence of monolinguals, degree of formality, and type of vocabulary needed, among others.

Dewaele (1998) also makes reference to the level of activation to account for the origin of *lexical inventions* in French with traces of Dutch, French and English, and points out that the language with the highest level of activation is the one that provides the lexical information, and that learners do not have access to lemmas from languages that have a lower level of activation. A similar position is also taken by studies on word recognition (e.g. van Heuven, 2005), which are in favour of a bilingual model of word recognition with an integrated lexicon, in which the two languages are never completely off-line, but always present some level of activation. The issue of activation of the languages has also been dealt with in the area of grammar by Sharwood Smith and Truscott within the theoretical framework of "Modular-On-Line-Growth and Use of Language" –a psycholinguistic approach to CLI and grammatical development (Truscott & Sharwood Smith, 2004; Sharwood Smith & Truscott, 2005, 2008).

Although it was not within the scope of this section to present a complete review of the vast literature on the mental lexicon, the models presented here have shown how the different languages in the learners' minds might be interrelated. Moreover, these models are useful in order to understand why and how the phenomenon of CLI occurs, and why some languages in the linguistic repertoire are preferred over others as the source language in transfer.

To summarize, scholars in the field of SLA have started to study the process of multilingual acquisition in the last decades, as in general terms speakers have increased the number of languages in their linguistic repertoires. The studies have revealed that the process of acquiring an additional language

becomes more complex as more languages are incorporated in the system, as more factors come into play and, thus, more relationships between the different languages are established. This has led scholars to assert that learners acquiring their first second language cannot be treated in the same way as those learning their second or subsequent second languages. Since the participants in the present study are all multilingual learners, the *Multilingual Framework* is a valid point of reference in the present dissertation, as has been pointed out above.

2.4. Crosslinguistic influence in multilingual acquisition

2.4.1. The development of research on CLI

It was not until the mid-twentieth century that scholars began to study CLI as a linguistic and psycholinguistic phenomenon and to consider it as a feature of language learning necessary to be analysed[5]. From the 1940s to the 1960s the studies by Fries (1945), Weinreich (1953), Lado (1957), and Vildomec (1963), following a behaviourist approach[6], supported the idea that the L1 habits would influence L2 learning and, thus, transfer was considered as a crucial factor in SLA. The focus of these studies, which pertain to the school of Contrastive Analysis (CA), was the comparison of the grammatical systems of the L1 and the L2 and the predictions of errors due to differences between the two systems. It was expected that in areas where the two languages were the same, learning was

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[5] See Jarvis and Pavlenko (2008) for a general description of the development of research on CLI, and De Angelis and Dewaele (2009) for a review of psycholinguistic research on CLI.

[6] See Celaya (1992), Jessner (1996), Lightbown and Spada (2000), Doughty and Long (2003), Ellis (2008), Ortega (2009), Ritchie and Bhatia (2009) for an overview of theories in SLA.

facilitated, and where the structures of the L1 and L2 differed, language learners would have more difficulty due to negative transfer from the L1.

One of the most important contributions in these first years is Weinreich's (1953) book, "Languages in Contact", in which he analysed different types of transfer –which he called *interference*-, and listed different methods for identifying and quantifying transfer. He placed emphasis on, though, to negative transfer –i.e. how one language could "interfere" with the acquisition of a new one. Vildomec's (1963) book, entitled "Multilingualism", is also of great importance for the development of CLI research because of its application of the behaviourist framework into language learning. Moreover, as De Angelis and Dewaele (2009) point out, Vildomec discussed already in the 1960s issues such as the existence of non-native CLI and of simultaneous influence of more than one language, an idea that would prove to be true some time later.

The importance of language transfer was not always acknowledged, and some approaches denied and challenged its existence. This was due to the fact that it proved to be inadequate as learners failed to present errors predicted by CA, and as the majority of the errors that learners produced did not always arise from crosslinguistic differences, but were due to transfer of training, simplification or overgeneralization, that is, due to the creative construction process (Dulay, Burt & Krashen, 1982). Moreover, it was found that differences between languages did not always lead to significant learning difficulties, and that certain similarities did not always seem to help language learning. This challenge to the behaviourist approach happened as early as the 1950s and 1960s in the United States, where some researchers, such as Chomsky (1959), following an innatist approach, proposed that learners are able to generate structures that they have not heard before; they thus claimed that the linguistic production of learners can be described from a series of rules and innate processes that allow the production of infinite expressions. It was stated, then, that children are born with an innate capacity for language development –i.e. the language acquisition

device. Other researchers, such as Dulay and Burt (1974) and Felix (1980), following a minimalist line, also saw language acquisition as a creative process guided by innate and universal mechanisms, where L2 acquisition was considered as a similar process to L1 acquisition, and where the native language was not seen to drive SLA.

After these studies that questioned the role of language transfer, a great number of publications appeared in the 1980's which constitute a crucial development in the field. A highly important event during this period is the seminal conference entitled 'Language Transfer in Language Learning' at the University of Michigan (1981), which constitutes the reappraisal of the role of CLI. Kellerman (1977, 1979, 1983, 1984), Gass and Selinker (1983), Kellerman and Sharwood Smith (1986), Ringbom (1987), Dechert and Raupach (1989), and Odlin (1989) are key works in this period, in which CLI gains importance and where L1 transfer was considered only as one possible explanation of L2 acquisition.

One of the main findings was the recognition that non-target forms are not the only outcome of CLI, since the consequences of CLI can also be positive leading to faster language acquisition, or to the underproduction, overproduction or preference for certain language structures (e.g. Schachter, 1974; Dagut & Laufer, 1985; Hulstijn & Marchena, 1989; Sjöholm, 1995), as has been mentioned in section 2.2. It was also acknowledged that CLI can affect both the rate and route of acquisition (e.g. Zobl, 1982; Stauble, 1984) and that, in opposition to the CA Hypothesis, differences between the languages do not only lead to difficulties or CLI to appear, but can also make structures easier to acquire (e.g. Kleinmann, 1977).

Additionally, some factors, as will be further developed in section 2.4.2, were acknowledged to constrain the appearance of CLI, such as age, language distance or prototypicality (e.g. Kellerman, 1978, 1983; Ringbom, 1978; Zobl, 1983; Celaya & Torras, 2001; Cenoz, 2001). Moreover, transfer effects were found not only in language forms but also in the functions associated with the forms and in

the ways language is used –i.e. pragmatics (e.g. Olshtain, 1983; Takahashi & Beebe, 1987; Kasper, 1992; Barón & Celaya, 2010; Celaya & Barón, 2015). Research has also shown that learners' individual differences -e.g. aptitude or anxiety-, one of the main topics in the present dissertation, can affect the types and the extent of CLI when the learner is using the language that is being acquired.

More recently, theoretical models that account for the appearance of language transfer have been developed. Some of these theoretical models that seek to explain the interaction of the different languages have been described in previous sections, especially in section 2.3.2 of the present chapter, where four different models that tackle different aspects of CLI have been discussed. CLI research has also tried to explain how the mind operates when several languages are involved, and how the mind acquires, treats, stores, organizes and uses all the linguistic information that language learners possess (De Angelis, 2007). They have tried to analyse how languages are activated in the brain and how one language can be activated in detriment of another and, thus, interfere with the use of another language. This is the area of study of the bilingual processing models, which seek to explain the ways in which different levels of activation allow speakers to select certain languages, inhibit or unsuccessfully inhibit other (see section 2.3.3).

2.4.2. Factors that constrain the appearance of CLI

The analysis of the different variables that constrain the appearance of CLI has been -and still is- one of the most widely studied issues in the field; however, there are still factors that need to be further researched to have a complete picture of the nature of CLI. This is the main objective of the present dissertation.

Some language-related elements that determine the appearance of lexical, as well as of grammatical CLI, have been identified in the literature. Thus, according to Gabrys-Barker (2006), CLI can occur in four different situations:

(1) When the language learner has not acquired a TL lexical item, which might be due to insufficient access to target input.

(2) When the learner has acquired a TL item that cannot be accessed at the moment of performance, which might be especially outstanding in oral production. In this case, as Ecke (2015) highlights, the target word might be automatically replaced by an item from a non-target language.

(3) When the learner has not acquired the sufficient rules.

(4) When the rules that the learner has acquired can only be approximated, that is to say, when the language rules cannot account for the totality of language processes.

Apart from the above-mentioned factors, there are also linguistic, psycholinguistic, social, sociolinguistic, and individual variables that converge to cause CLI. These have been the focus of a large amount of research on multilingual acquisition. Thus, factors such as *typological distance* (e.g. Andersen, 1983; Kellerman, 1983, 1995; Ringbom, 1987, 2001, 2006, 2007; Cenoz, 1997, 2001; De Angelis & Selinker, 2001; Odlin & Jarvis, 2004; Ó Laoire and Singleton, 2009; Rothman & Cabrelli Amaro, 2010; Rothman, 2011, 2015), *degree of markedness* (e.g. Kellerman, 1983; Gass, 1984) *L2 status* (e.g. Williams & Hammarberg, 1998; De Angelis & Selinker, 2001; Hammarberg, 2001; Bardel & Falk, 2007; Falk & Bardel, 2011), *language of input* (e.g. Gabrys-Barker, 2006), *recency* (e.g. Hammarberg, 2001), *context and formality* of the situation (e.g. Dewaele, 2001), *proficiency* (e.g. Kellerman, 1983; Ringbom, 1987; Williams & Hammarberg, 1998; Hammarberg, 2001; Tremblay, 2006), *age* and *grade* (e.g. Celaya & Torras, 2001; Celaya, Torras & Pérez-Vidal, 2001; Cenoz, 2001; Navés, Torras & Celaya, 2003; Navés *et al.* 2005; Pfenninger & Singleton, 2016), *order of acquisition of the languages* (e.g. Dewaele, 1998) and *cognitive mode* (e.g. Dewaele, 1998, 2001; Grosjean, 1995, 2001), among others, have been taken into account in the study of CLI[7].

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[7] This is not a complete list of all the factors in the extensive literature on CLI; it is just a selection of some of them based on the degree of appearance in the studies and on the

Some researchers, as Ringbom (1987, 2001, 2005), Cenoz (1997, 2001), Williams and Hammarberg (1998), Jarvis (2000), De Angelis and Selinker (2001), Hammarberg (2001), Odlin and Jarvis (2004), Navés *et al.* (2005) and Sánchez (2011a, 2011b) have considered the role of *language typology* or *language distance*, *recency of use*, *L2 status* and *proficiency* as the main factors affecting the appearance of CLI in a foreign language production. These are the variables that have been most widely researched in CLI studies, and will, therefore, be described here. However, there is still no concluding evidence of the importance each component has in CLI, or whether there are others which might also play a key role in the appearance of CLI. The above-mentioned factors are those that will be the object of in-depth description in the following subsections, as they have also been considered relevant in the context of the present study.

One of the most recent, extensive and structured descriptions of the factors that interact with transfer is the one presented by Jarvis and Pavlenko (2008), a classification that has been followed and adapted in the present dissertation. These researchers classify the variables that have been established as indicators of CLI into five categories:

(1) *Linguistic* and *psycholinguistic factors*, which include *crosslinguistic similarity*, *area of language acquisition* and *use, frequency, recency*, and *salience, markedness* and *prototypicalty*, and *linguistic context*.

(2) *Cognitive, attentional*, and *developmental factors*, in which factors related to the *level of maturity*, the *developmental* and *universal processes of language acquisition*, the *cognitive language abilities*, and the *attention to and awareness of language* are included.

(3) Factors related to cumulative *language experience* and *knowledge*, which include five different categories, which are *age, length, frequency* and *intensity of language exposure, length of residence, general level of proficiency*, and, finally, *number* and *order of acquired languages*.

number of researchers that mention them and, thus, consider them as important in the transfer process.

(4) Factors related to the *learning environment*.

(5) Factors related to *language use*.

Some of the above-mentioned items have received a great deal of attention in transfer studies. Others, on the contrary, have been the focus of very few studies, as is the case of the two factors under analysis in the present dissertation –i.e. *input* and *cognitive abilities*, which will be the focus of the following chapter.

An in-depth exploration of all the factors that interact with CLI is certainly beyond the scope of the present dissertation. In this section we will provide a general overview of the variables that can promote or constrain the appearance of CLI that have been considered to play an important role in the context of the present study, leaving, as already mentioned, for the next chapter a more extensive review of the factors under analysis in the present study. A distinction has been established in the present dissertation between *linguistic and psycholinguistic factors*, *factors related to language experience and knowledge*, and *cognitive factors* (see Table 1 below), following and adapting Jarvis and Pavlenko's (2008) classification.

The first group –i.e. the *linguistic and psycholinguistic factors*- according to Javis and Pavlenko (2008), refer to different ways in which CLI is affected due to source and target language features. Included in this group in the present dissertation are *language distance*, *recency of use*, and *status of the L2*.

The second group, as described by Jarvis and Pavlenko (2008), contains everything related to the language experience and the knowledge that the language learner has acquired throughout his or her language learning history. Included in this group are *general level of proficiency*, and *learning environmental factors* or *input* received. The '*input*' factor, as already acknowledged, will be extensively described in the following chapter.

Linguistic and Psycholinguistic factors	Language distance
	Recency of use
	Status of the L2
Factors related to language experience and knowledge	Level of proficiency
	INPUT
Cognitive factors	**COGNITIVE LANGUAGE LEARNING ABILITIES**

Table 1- Factors affecting CLI (adapted from Jarvis & Pavlenko, 2008)

Finally, the third group is the so called *cognitive factors*, which, according to Jarvis and Pavlenko (2008) embraces those factors related to the processes involved in the storage and processing of new knowledge about language and to the abilities that each learner has of acquiring a new language. C*ognitive language learning abilities*, the other main variable in this dissertation and, thus, analysed in the following chapter, is included in the latter group.

In the following subsections, thus, *language distance*, *recency of use*, *status of the L2* and *general level of proficiency* will be described. In the review, different studies will be presented; however, the discussion will focus on some studies that show the importance of more than one factor: Ringbom (1987, 2001), who mainly discusses the issues of *language typology* and *proficiency*, Cenoz (1997, 2001), who focuses on *language typology*, *recency of use* and *proficiency*, De Angelis and Selinker's (2001) study, which tackles the variables of *typology* and *L2 status*, Williams and Hammarberg (1998) and Hammarberg (2001), who discuss the four factors, and Jarvis (2000) and Odlin and Jarvis' (2004) studies, which mainly focus on the variables of *language distance* and *proficiency*. These studies indicate the need to investigate different factors altogether, as more than one might be influencing language transfer at the same time; "having the identification of a single source for CLI as an objective might not be realistic in any case" (Ecke, 2015: 155).

2.4.2.1. Language distance

The terms *language distance*, *crosslinguistic similarity* or *language typology* refer to the objective distance between languages and language families. This has proved to be influential in the choice of the source language in CLI in many studies; that is, language learners prefer transferring from a language that is typologically closer to the language being acquired rather than from a less closely related one (e.g. Ringbom, 1987, 2001, 2006, 2007; Bild & Swain, 1989; Dewaele, 1998; Cenoz, 2000; Hufeisen, 2000; Ecke, 2001; Odlin, & Jarvis, 2004; De Angelis, 2005a, 2005b; Ortega, 2008a, 2008b; Rothman & Cabrelli Amaro, 2010; Rothman, 2011, 2015; just to mention a few), especially when the languages involved are similar as regards phonetics, lexis and syntax (e.g. Singleton, 1987; Möhle, 1989; De Angelis & Selinker, 2001; Ecke, 2001). Therefore, we can assert that CLI normally occurs from a typologically similar language, and rarely from an unrelated one. This has been the conclusion of different types of research studies with typologically related (e.g. Ecke, 2001; Ortega, 2008a; Ortega, 2008b; Ortega & Celaya, 2013) and unrelated languages (e.g. Cenoz, 1997, 2001, 2005; Lasagabaster, 2000)[8].

Additionally, although objective measures between languages can be established, what matters in many cases is the subjective judgments of language distance made by learners, as interview studies, such as Missler (2000) and Hufeisen (2000) based on self-reports, have shown. That is, the closer a language is felt by the learner, the more chances there are for transfer to appear. This is what Kellerman (1983, 1984) referred to as *psychotypology*. Research studies indicate that "when everything else is equal, transfer will most likely result from a learner's judgement (made consciously or unconsciously) that particular structures in a previously learned language are quite like –if not the same as– structures in the target language" (Odlin, 1989: 142). Kellerman (1983: 128)

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[8] See De Angelis (2007) for a complete review of studies on language distance with a special focus on the degree of relatedness between languages.

argued that language transfer depends on language *psychotypolgy*, as well as on the *degree of markedness* or *transferability*[9]:

> "Whether an L1 form will enjoy new life as an IL form will depend on two interacting factors, namely, the learners' perception of the nature of (areas of) the L2, their 'psychotypology', and of the degree of 'markedness' of a given structure. It is hypothesized that transfer will be constrained (1) when L1 and L2 are perceived as sufficiently unrelated and (2) when a particular L2 structure is perceived as sufficiently 'marked'"[10].

Kellerman's notion of *psychotypology* has been recently reintroduced by Rothman (2010, 2011, 2015) in his *Typological Primacy Model* (TPM), which argues that (perceived) typological distance between the languages has a great effect on the choice of the source language in language transfer; that is, the structural proximity between the L3 and the L1 and/or L2 is the main determinant of CLI. This model has had an important influence within the generativist framework.

Following Kellerman's line of thought, Ringbom (2005, 2007) defined the characteristics of *perceived similarity*. For Ringbom, perceived similarity is not symmetrical (speakers of X may find it easier to understand Y than speakers of Y to understand X); it is a fuzzy concept, broader in scope and with more variation as compared to objective similarity; and it is more difficult to grasp because of individual learner variation. Ringbom also establishes three main types of *crosslinguistic similarities* relations that the learner is faced with. That is, learners might sometimes be able to establish a one-to-one relationship with a unit in another language when they perceive that an item in the TL is formally or semantically similar to a form in their L1 or some other known language.

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[9] The degree of markedness refers to the degree to which a form is marked, that is, special or specific to a particular language. Kellerman (1979) showed that learners preferred 'transparent' uses; that is, learners were more willing to transfer 'core' or 'unmarked' meanings than 'language specific' or 'marked' forms.

[10] The notion of *psychotypology* and *markedness* is related to Andersen's (1983) "Transfer to Somewhere Principle", which states that transfer will occur only if a specific structure is perceived to have a counterpart in the TL or if it is perceived to be compatible with natural acquisitional principles.

Learners might also perceive a difference relation when an item in the TL is seen as different from an L1 form, even if there is an underlying similarity between them. In other situations, though, learners might not be able to relate target units to prior linguistic knowledge, which can cause a delay in the learning process. Although *psychotypology* can perfectly account for the importance of *typological distance*, another important issue to take into account is that languages that are close to each other are more likely to be activated at the same time because of their similarities at the lexeme and lemma levels (Cenoz, 2005).

It is also important to highlight that, according to the *Cognate Facilitation Hypothesis*, the acquisition of lexis is relatively easy in the case of closely related languages because of the presence of *cognates* (Helms-Park & Dronjic, 2016); whereas the situation changes completely if the languages are not typologically related (Ringbom, 1987; Manczak-Wohlfeld, 2006; Singleton, 2006). The presence of *cognates* frequently leads the learner to produce fully acceptable words in the TL and, thus, positive transfer occurs. However, in these instances a researcher can seldom recognize that lexical CLI has taken place. Therefore, we can conclude that CLI is more noticeable when the results are non-acceptable target words. Additionally, as discussed by Odlin (1989), a clear advantage of lexical similarity is found in reading comprehension, since learners can comprehend texts more rapidly when they can easily relate foreign language vocabulary to the previously learnt lexis.

Even if *typological similarity* of the L2 in relation to the L3 as a reason for transfer is emphasized by different researchers, this does not mean that CLI cannot occur from an unrelated language, since some cases have been documented in the literature. In these cases learners may just assume that items in the TL work in the same way as in their previously acquired ones and, thus, transfer them in their productions[11] (Kellerman, 1995; Ringbom, 2005). Moreover, as discussed by Haastrup (2010), similarities might exist in particular sub-

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[11] This is what Kellerman (1995) called `Transfer to Nowhere´. He acknowledged that transfer can be caused by assumed similarities that do not exist.

features in typologically unrelated languages, which could result in transfer. Thus, De Angelis and Selinker (2001) and De Angelis (2007) mention the possibility of transferring, on some occasions, from an L2 that is typologically distant from the L3, even when learners are users of other more closely related languages. As the above-mentioned researchers highlight, this is shown in Selinker and Baumgartner-Cohen's study (1995), in which some influence from French and Hebrew was found on the German production of a native speaker of English. It should be highlighted, though, that in the above mentioned studies on the preference for the typologically similar language as the source in CLI, some cases of transfer from more distant languages were also found. For example, in Ringbom's (1987) study some influence from Finnish was documented in the English productions of the participants. In the same line, in Ortega and Celaya (2013) some instances of CLI from L1 English were found in the participants' oral productions in L3 Catalan. This suggests that although CLI favours from the most similar language, the distant language might also exert some influence as it might be an active language in the learners' linguistic repertoire.

As extensively acknowledged in the literature, *language distance* is a variable that needs to be taken into account in any study on CLI, especially in multilingual contexts. However, given the participants' characteristics of the present study, it is not one that will be directly addressed.

2.4.2.2. Recency and frequency of use

Although *language distance* has been the most widely studied factor in CLI research, quite a few studies have dealt with the factor named *recency* and *frequency of use*. This term refers to how recently a language has been last used, and it is thought to be another variable that may affect the choice of the source language in CLI. That is, speakers might be more likely to borrow lexical items or

grammatical structures from a language they use actively than from a language they may know but do not use in an active way, due to the easy access to this linguistic information stored in the mind (Dewaele, 1998; Poulisse, 1999; Hammarberg, 2001; Cenoz, 2001).

Recency and *frequency of use* are taken into consideration in the context of the present study, since the language that our participants use more frequently in their daily lives is their L1 (Catalan/Spanish), as they are learning their additional languages as foreign and not as second languages. Being immersed in the L1 community does not allow them to use their non-native languages in an active way.

Some studies, such as Poulisse's (1999) study of Dutch speakers' slips of the tongue in their English performance, analyse the effects of *recency* taking only two languages into consideration (L1 and L2). Other studies, on the other hand, analyse its effect in multilingual contexts where more than two languages are involved, which provides a clearer analysis of the effects of *recency of use*. This is the case of Williams and Hammarberg's (1998) and Dewaele's (1998) studies. The results of the former show that the language that the participant under study had acquired most recently –i.e. German– had a greater effect on her Swedish production rather than the language she used more frequently. Other factors, though, need to be taken into consideration in this study since they might also have had an influence on these results –i.e. the high proficiency in German, as well as the relatedness between German and Swedish.

It is also important to highlight that the influence from a non-native language in L3 production might only be relevant if the learner has been recently exposed to it and has had a high amount of L2 exposure. Ringbom (1986) cites Stedje's (1977) study of L1 Finnish speakers with L2 Swedish learning L3 German while living in Sweden as an example of this situation. The study shows that while L2 Swedish has little influence on the learners' L3 German syntax at the beginning, the L2 syntactic influence increases the longer the learners live in

Sweden. Hammarberg (2001) further noticed that while L1 influence persists over a period of time, L2 influence weakens more rapidly. This is an indication that L2 CLI is a superficial process. In his study, Hammarberg found out that whereas switches into L1 English occurred during the whole period of recording, German switches disappeared after one year and a half. Switches into other L2s only occurred during the first two months and a half.

Dewaele's (1998) study is also in line with these results; that is, the language that has been acquired just before the TL is the one that has a greater influence on the language currently being acquired. Thus, what matters is the order in which the languages have been learnt. Dewaele analysed *lexical inventions* in the French productions of Dutch learners with knowledge of English. Some of the participants had learnt L2 English before L3 French, and others L2 French before L3 English. In this way, Dewaele found out that those who had learnt L2 French before L3 English relied more on Dutch than on English in their French *lexical inventions*, as compared to those who had learnt L2 English before L3 French, who tended to rely more on their English than on their Dutch.

De Angelis (2007) mentions Shanon's (1991) proposal, which declares the existence of a *last language recency effect*. According to this idea, the language that most influences the language currently being acquired is the one that the learner last learned. This hypothesis, though, as highlighted by De Angelis (2007), must be approached with caution and does not find much support in the literature, since there are plenty of studies, such as De Angelis and Selinker (2001), that show instances of transfer from languages that had not been used for a long time. Furthermore, this *recency* factor might as well be a case of transfer of training if the techniques used in L2 learning are still active during L3 acquisition.

2.4.2.3. Status of the L2

Another factor that can determine the presence of CLI is the *status of the L2* or the *foreign language effect* (e.g. Meisel, 1983; Schmidt & Frota, 1986; De Angelis & Selinker, 2001; Hammarberg, 2001; De Angelis, 2005b, 2007; Bardel & Falk, 2007; Falk & Bardel, 2011; Sánchez, 2011a, 2011b, 2015); that is, the L2 can be activated instead of the L1 for the learner's desire to suppress the L1 even if the non-native language is quite distant. According to these authors, using an L2 form might be a better strategy in acquiring another foreign language, since learners might not want to sound as if they are using their L1. Furthermore, it has been argued that the non-native languages are represented and processed differently from the L1. Therefore, it is expected that the more similar processing routes of the non-native languages, as compared to the L1, would affect each other more than the L1 (see Bardel & Falk, 2012).

De Angelis (2005b, 2007) proposes that there are two constraints that block L1 influence in favour of non-native language influence: *perception of correctness* and *association of foreignness*. She asserts that

> "perception of correctness predicts that multilinguals resist incorporating L1 information into the target language as L1 information is perceived to be incorrect from the start, and this results in an increased acceptance level for non-native words into the target language" (De Angelis, 2007: 29).

When a learner has a command of more than one non-native language, the influence of these languages might be favoured in the acquisition of another non-native language, since they are generally perceived to be closer to each other than to the L1. *Association of foreignness* is then a cognitive constraint, and, thus, a cognitive mode called "talk foreign" or "foreign language mode" might exist (Selinker & Baumgartner-Cohen, 1995; De Angelis & Selinker, 2001). De Angelis (2007) contrasts this idea with Williams and Hammarberg's (1998) proposal, which considers *association of foreignness* to be a deliberate strategy that the learner can control.

Schmidt and Frota (1986) is an early study that tackles the issue of the *status of the L2.* Although they did not use the same term, they noted the influence of this factor in their study on L3 Portuguese, in which they found cases of Arabic influence in the area of lexis rather than influence from L1 English on L3 Portuguese. In the same line, Williams and Hammarberg (1998) studied the similarities and differences in the occurrence of L1 English and L2 German in non-adapted language switches in L3 Swedish, and postulated that there are different acquisition mechanisms for L1 and L2. Therefore, when an additional non-native language is learned, the L2 mechanism is activated. In this research study, as previously seen, they found out that English and German were similar in terms of *proficiency*, *typology* and *recency*, the only difference being *L2 status*[12]. The authors pointed out that *L2 status* was the variable that determined the *default supplier* role for German (used to supply material for lexical constructions in the L3 and activated in parallel to the L3) and the *instrumental* role for English (used with a metalinguistic function and kept separate from the L3). They, thus, concluded that the L2 might be more frequently activated than the L1 as a *supplier language* in the first stages of L3 acquisition if the factors of *proficiency*, *typology* and *recency* are at a sufficient level (Williams & Hammarberg, 1998)[13].

Bouvy's (2000) analysis of the written production of L1 French learners of English with knowledge of German or Dutch also suggests that the L2s were the *supplier languages* in word construction attempts. On the other hand, the learners' L1, French, seemed to be blocked. However, we should also take into account when analysing these results that the typology of the languages involved could also have had an influence. Likewise, Sánchez's (2015) four-year longitudinal analysis of blends produced by 93 Catalan/Spanish of L3 English with L2 German also suggests that the language that is activated in parallel with the L3 is

[12] Although they assert that English and German are similar in terms of typology to Swedish, German is objectively closer to Swedish than English is, especially as regards lexical constructions, as Hammarberg (2001) points out.
[13] Problematic issues of these results have already been discussed in section 2.3.2.2. of the present chapter.

the learners' L2, as German was found to be the only source of blending in the data. The author argues that the fact that her participants added German prefixes and suffixes to L3 English stems indicates that they were accessing the number, tense and aspect information contained in the L2 lemma. In this study the learners' L1 also seems to be blocked; however, as Sánchez warns in the discussion of her results, her analysis cannot reveal whether the factor that makes the learners transfer from their L2 German is *L2 status* or *language typology*.

It has also been noted that with increasing proficiency in the L3, the L1 might become the stronger source of influence, as shown in Hammarberg and Hammarberg's (1993) and Wrembel's (2010) studies on phonological influence. Cenoz's (2003b) study also seems to suggest that the different non-native languages can take on different roles in L3 production. In this study she found out that Basque, which is the main language at school in the context of her study, was mainly used as an interactional strategy when learners needed to address the researcher, and Spanish was primarily used in transfer lapses.

L2 status has been studied in interaction with other variables; and the results have yielded conflicting results. That is, some studies indicate that *language typology* overrides *L2 status* (e.g. Jarvis & Odlin, 2000; Cenoz, 2001; Ó Laoire and Singleton, 2009), but others show evidence of a distant L2 influencing the L3 more than a close L1, as in Stedje's (1977) and Bono's (2011) studies. In Cenoz's (2001) study, in the case of L1 Basque and L2 Spanish, the use of the L2 in L3 English production can be explained both in terms of *L2 status* and *language distance*. On the other hand, in the case of L1 Spanish and L2 Basque, the L2 could be preferred because of its *L2 status*, but the L1 is typologically closer to English and, thus, the preferred one. Similar results were obtained in Ó Laoire and Singleton's (2009) study. In their study of L3 French production by L1 English and L2 Irish speakers and English-Irish bilinguals, they found out that the L2 factor was a minor one, since the learners relied upon English most of the times,

despite the fact that they had long experience with Irish. According to their view, these results are due to the *psychotypological factor*.

Bono (2011) analysed lexical intrusions in French L1 speakers' productions of L3 Spanish; the participants, who had English and German as their L2s, mostly borrowed from English and occasionally from German. In the same line, recent research on CLI in L3 acquisition by Sánchez (2011a, 2011b, 2015) showed the *status of the L2* to be a powerful factor, exceeding the influence of the factor of *language typology,* since even if the learner's L1s (Spanish and Catalan) shared the same syntactic structure under analysis with L3 English, they preferred transferring from their L2 German. However, it should be noted that the factor of *language typology* is conceived differently in Sánchez's (2011a, 2011b, 2015). That is, whereas in the first studies mentioned above *language typology* refers to the degree of relatedness between the languages as a whole, Sánchez only takes into account the degree of relatedness between the syntactic structures analysed. If the languages as a whole are considered, participants in Sánchez's study would be transferring from the language that is typologically more similar -i.e. German.

The focus of Sánchez's (2011a, 2011b, 2015) studies is on grammatical or morphosyntactic transfer, as compared to the studies previously discussed, which mainly analysed CLI at the lexical level. Some scholars have argued that the dominant role of the L2 as the source of transfer is also evident at the morphosyntactic level. Bardel and Falk (2007) have even postulated within their *L2 Status Factor Hypothesis* (LSFH) that the L2 may function as a filter, blocking in this way transfer from the L1 in the initial stages of L3 acquisition. The exclusivity of L2 transfer that they postulate might be due to the cognitive and sociolinguistic aspects involved in learning the L2 and the L3, as regards age of onset, context of learning, and the degree of metalinguistic knowledge involved in learning.

2.4.2.4. General level of proficiency

The last factor that will be analysed in this chapter is *general level of proficiency*, which has extensively been shown to be a key variable that has a great influence in the occurrence of CLI. It is a factor that is taken into account in the present study to control for the extent to which learners rely on their previously acquired languages. Proficiency needs to be taken into consideration, not only in the TL but also in the other languages that the learner has a command of, which can have an effect on language transfer (e.g. Odlin & Jarvis, 2004).

Researchers like Poulisse and Bongaerts (1994), Navés *et al*. (2005) and Celaya (2006) have found that non-standard forms and switches produced by learners are related to their proficiency in the language being acquired. That is, learners with higher proficiency will rely less on their mother tongues in *language switches*. Poulisse and Bongaerts (1994), for example, obtained this result by exploring *unintentional language switches* in L2 English production by Dutch L1 learners with different proficiency levels –i.e. advanced, intermediate and low-intermediate. Their results point to a decrease in the number of *language switches* with an increase of language proficiency. While most studies have focused on lexis, Hall and Reyes Durán (2009) focus on syntactic frame representations by L1 Spanish learners of English. Nevertheless, their results are in the same line, as they were able to show that learners rely less on their L1 in their verb frame representations as their proficiency increases.

Such results confirm early ideas on the use of CLI as a strategy consisting in the use of a previously learnt language to fill a lexical or syntactic gap in the L2 (Ringbom, 1986, 1987; Fuller, 1999). Learners have not acquired an L2-frame of reference yet, and "have very little else to rely on than the hypothesis that the L2 will in many, or at least in some, respects work in a similar way to [their] L2 (Ringbom, 1987: 63). Following a language processing perspective, on the other hand, Poulisee and Bongaerts (1994) explain this result in terms of the activation

of the lexical items. Thus, in beginner learners, L1 lexical items reach the level of activation required before the corresponding L2 items.

In the same line but within the *Multilingual Acquisition Framework*, it has been proved that less proficient learners in the L3 transfer more elements than learners with a higher level of proficiency (e.g. Ringbom, 1987; Williams & Hammarberg, 1998; Fuller, 1999; Hammarberg, 2001; Dewaele, 2001). That is, the influence of the L1 and L2 on the L3 is stronger in the early stages of learning, and it decreases as learning progresses and a higher level of proficiency is acquired. Ortega and Celaya's (2013) study with English learners of L3 Catalan is in line with the aforementioned results; in other words, they found that the higher the level of proficiency in L2 Spanish and L3 English, the fewer instances of lexical CLI their participants produced. It is suggested, then, that a high language proficiency level allows learners to keep all their languages apart and, therefore, less interaction among them takes place. A recent longitudinal study on the effects of starting age by Pfenninger and Singleton (2016) confirms the above-mentioned results. Their analysis of oral and written data by 200 Swiss learners of EFL revealed that the group of late starters, who were less proficient as regards lexis and semantics, transferred more elements from their previously acquired languages –i.e. German and French- than the group of early starters, who were more proficient.

Nevertheless, the opposite result was obtained in Cenoz's (2001) study on the factors affecting *borrowings* and *foreignisings* or *lexical inventions,* in which the older and, thus, more proficient learners presented a higher amount of CLI as compared to those less proficient, contradicting in this way previous studies on transfer. According to the author, this may be due to the limited proficiency of all the learners in her sample. We should, nevertheless, also take into account that *lexical inventions* are more present in higher proficiency levels; learners need a higher command of the language in order to produce this type of CLI (Celaya, 2006). The types of transfer that occur at early stages of proficiency are different

to the ones found in more advanced stages, due to the different needs learners have. A revealing study in this respect is Celaya's (2006) seven-year longitudinal study on lexical CLI. By analysing the written production of Catalan/Spanish learners of EFL, she found that lexical CLI –as measured by *misspelling*, *borrowings* and *coinages*- decreased as L2 proficiency increased; there was, however, one type of lexical CLI –i.e. *calques*- that did not follow this pattern, as its amount increased with increasing proficiency. This finding led Celaya to conclude that not all types of transfer develop in the same way, and that they may depend on proficiency in the TL. Navés *et al.*'s (2005) study also focuses on the analysis of specific types of lexical CLI –i.e. *borrowings* and *lexical inventions*- and the role that proficiency might have in their appearance. By analysing Catalan/Spanish bilingual learners of EFL at different school grades, they found a significant decrease of *borrowings* as proficiency increased; however, the decrease of *lexical inventions* did not appear to be statistically significant.

This variation in the results on the role of *proficiency* might be a consequence of methodological differences among different studies; that is, it might be due to the ways in which proficiency and CLI were measured, the languages under investigation, or on the specific proficiency levels analysed. This idea is in line with Jarvis' (2000) assertion that there are different ways in which proficiency can affect CLI: proficiency can cause CLI to decrease, increase, remain constant, decrease nonlinearly, increase nonlinearly, or remain continually fluctuating. In Andria's (2014) study of experiential verbs, traces of L1 Catalan/Spanish were detected in L2 Greek even at advanced proficiency levels; however, L1 influence decreased as proficiency increased. Additionally, the results indicated that although the acquisition of experiential verbs progressed linearly up at the first stages, it then remained constant.

In TLA we also need to take into consideration *proficiency* in the non-native language(s), as it is thought that learners might only extensively rely on a source language they have a good knowledge of (e.g. Singleton, 1987; Williams and

Hammarberg, 1998; Odlin & Jarvis, 2004; Ecke & Hall, 2013). According to the aforementioned researchers, an advanced learner of the L2 will be able to use the L2 strategies that are normally borrowed from the L1. Thus, no L3 forms are borrowed from the L2 unless proficiency in the latter is high. This might be due to the fact that well-mastered L2s might lose their status of an L2 and behave more like an L1 (Falk & Bardel, 2010). This can be particularly true in cases where the L1 is perceived as being more similar to the L3 than the L2 is, as in Tremblay's (2006) study. A good example of the importance of *proficiency* in the non-native language would be Singleton's (1987) study, in which the learner researched was a native speaker of English learning French with some knowledge of Spanish, Irish and Latin. Spanish, which was the only language which the learner was highly proficient in, proved to be the main source in CLI on his French IL. Likewise, Ecke and Hall's (2013) study on tip-of-the tongues revealed that most cases of CLI originated from L1 German and L2 English (languages the participants were highly proficient in), whereas CLI from the less stable L2s –i.e. Spanish and Russian- was very infrequent. In the same line, Tremblay's (2006) results show that, since the French proficiency of the English participants was too low, French did not become an important source of CLI in German production.

Tremblay (2006), moreover, asserts that unless the learner has achieved a high level of automatization in the L2, the influence that the L2 has on the L3 is negative. Nevertheless, high proficiency in the L2 is not enough for the L2 to become automatized, exposure to the L2 is needed. Ringbom (1987) also mentions automatization as playing an important role, especially in oral communication. He argues that a certain degree of automatization must be reached by the learner to be able to take advantage of the L2 in learning an L3. Others scholars, such as Ringbom (2007) and Jarvis (2009), further point out that a high level of proficiency in the L2 is only needed in cases of transfer of meaning (see section 2.5.2.3).

Contrary to the studies just mentioned, other researchers argue that having a high level of proficiency in the L2 is not a requirement for it to become a source language in transfer. In her investigation of CLI in L3 EFL by Catalan/Spanish learners with German as their L2, Sánchez (2011a) found that even at low levels of proficiency in the L2 her participants produced ILT of verb phrase headedness into L3 English. This result is in accordance with Shanon's (1991) study, in which the most recently acquired language and, thus, the weakest one, was the source language in CLI. This observation, though, applies to lexical *borrowings* that are not adapted to the TL, which can come from previously acquired languages in which the learner has low proficiency (Ringbom, 1986). Hall's *Parasitic Model* (Hall, 2002; Hall and Ecke, 2003) allows for the possibility of transferring from unstable L2s, as discussed by Ecke (2015); that is, "if the learner detects similarity between a new L3 form and an already represented form of the L2, parasitic connections are to be expected" (Ecke, 2015: 153).

To sum up, the factor of CLI or language transfer is an important factor that has without any doubt a crucial impact on the acquisition of any additional language. This has become evident since the first studies in the 1960s. Additionally, CLI itself can also be influenced by varied factors that might determine both the amount and the type of influence. Different factors have been identified in the literature as affecting language transfer, the most important being *language distance*, *recency and frequency of use*, *status of the L2* and *general level of proficiency*. The analysis of the factors discussed above has especially focused on the area of lexis -as it is the area that has been most widely studied in CLI research- and grammar. These two areas will be extensively analysed in what follows.

2.5. Types of crosslinguistic influence

2.5.1. Introduction

The present study focuses on the analysis of lexical and grammatical CLI; and these are the types that will be thus extensively presented here.

Transfer in the different language areas does not behave in the same way, as a result of the assumptions that learners might have. In general terms, according to Ringbom (2007), learners expect the individual items –i.e. lexical items- of the language being acquired to be different from those in the L1 or the other languages on their repertoire. However, they might assume that the system of the TL (phonemes, grammatical structures and pragmatics) will work in a similar way as their L1. Therefore, they might be prone to transfer them from their mother tongue. Moreover, the occurrence of CLI in the different subsystems can also vary as a consequence of different elements: the directionality of CLI, the cognitive level and type of knowledge involved, the intention of the speaker, and the mode and channel of the language that is being used. Furthermore, language universals, typological distance, proficiency and type of task can also affect the prevalence of CLI in the different areas of language use (Jarvis & Pavlenko, 2008)[14].

A description of the features of CLI in lexis and grammar together with some key studies are presented in detail in the following sections.

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[14] See section 2.4.2 for a revision of the main factors that constrain the appearance of CLI.

2.5.2. Lexical and semantic CLI

2.5.2.1. What does Lexical CLI refer to?

CLI from the languages known by the learner into the language currently being acquired is clearly shown in lexis. This type of CLI has been defined by De Angelis and Selinker (2001: 43) as "the use of an entire non-target word in the production of the target language, and by Jarvis and Pavlenko (2008: 72) as "the influence of word knowledge in one language on a person's knowledge or use of words in another language". Jarvis (2009: 99) elaborates on this latter definition and defines the phenomenon as "the influence that a person's knowledge of one language has on that person's recognition, interpretation, processing, storage and production of words in another language". Whereas the former definition only considers lexical CLI cases in which non-target words are used, the two other definitions include more cases in which lexical CLI can occur, such as the use of multiword combinations. In other words, a specific word can be a completely correct word in the TL, but not be used in specific linguistic contexts by native speakers. Jarvis' definitions are, thus, the ones that will be followed in the present dissertation.

The reason why CLI in the area of lexis is so common might be that L2 learners have already developed conceptual and semantic systems in the previously learnt languages. This is why, especially at the first stages, language learners connect the new words to already existing equivalents in the L1 or previously learnt languages. Thus, according to Pavičić (2008), learners form a kind of 'equivalence hypothesis' that enables them to learn the new language without having to go back and learn how to categorise the world again. Nevertheless, this equivalent formation can lead learners to erroneous conclusions –i.e. lead to negative transfer to appear-, since lexical units in

different languages might not be exact equivalents. They might also have different permissible grammatical contexts, belong to different word classes, be *false friends*, or might not be equivalents at all (Swan, 1997).

In order to be able to discuss lexical CLI it is necessary to establish what having knowledge of words entails; that is, what it means to know a word, since this might not be as easy as just knowing its form. According to Ringbom (1987), Pavičić (2008), Jarvis and Pavlenko (2008) and Jarvis (2009), knowledge of lexical items consists of several components: *accessibility* (the ability to access a word in the lexicon), *morphophonology* (knowledge of how a word is pronounced and spelled), *syntax* (knowledge of the syntactic constrains of words), *semantics* (knowledge of the different meanings of words), *collocation* (knowledge of multiword combinations), *association* (knowledge of a word associations to other words). Moreover, knowing a word also means having knowledge of how frequently the word occurs, how formal it is (Nation, 1990, 2001), as well as knowing the mental concepts with which a word is associated (Jarvis & Pavlenko, 2008; Jarvis, 2009). All these dimensions that constitute the knowledge of lexical items can actually be transferred. Therefore, CLI does not only manifest as non-target forms, but also as *overproduction*, *underproduction*, *frequency of use*, or *lexical word choice*.

Moreover, all these components show that a large variety of CLI phenomena can actually take place. This variety is captured in Hall's (2002) and Hall and Ecke's (2003) *Parasitic Model*, which states that in L3 vocabulary acquisition learners connect the new words with existing representations whenever they are able to detect any kind of similarity; this connection, in turn, can be made with forms of the L1 or L2, or even with words within the L3, at any of the three representational levels –i.e at the meaning or concept level, at the frame level (the syntactic frame that specifies the subcategorization scheme) or at form level –phonological or orthographic- (see Ecke, 2015). This suggests that transfer effects might originate at any of these three levels, resulting in different

types of CLI. However, the amount of connections, as acknowledged by Ecke (2015), might depend on different factors -e.g. learner factors, learning factors or language factors- (see section 2.4.2)

The ways in which lexical CLI has been studied are varied, as are the topics within the field. In what follows only the issues that have been considered of relevance for the present dissertation will be discussed. Thus, the following subsections present some insights into the issues of *native* vs. *non-native influence*, *transfer of form* vs. *transfer of meaning*, *transfer of content* vs. *function forms*, and *lexical word choice transfer*.

2.5.2.2. Native vs. non-native influence

CLI has been found to occur from both the learners' native and non-native languages. The selection of the source language of influence might depend on the *typological factor*, as discussed in section 2.4.2.1. The *psychotypological factor* in lexical CLI is clearly illustrated in Ringbom's (1987) study on translation of single lexical items by 1054 L3 English learners in Finnish and Swedish grammar schools in Finland. He found that although both groups of learners (Finns and Swedes) were influenced by both languages –i.e. Swedish and Finnish-, the proportions in both groups were different; that is, while Finnish learners are influenced by their knowledge of their L2 Swedish to a great extent, Swedish learners show an insignificant influence from their L2 Finnish, although they are quite fluent in this language. The author concludes that there is very little in Finnish that a Swedish speaker can perceive as similar to English and, therefore, this language is not very often chosen as the source language of CLI. Finnish shares indeed very few similarities with English. On the contrary, Swedish and English share many close cognates, among other similarities, which makes

people with knowledge of Swedish assume strong similarities between the two languages.

The importance of the *typological factor* is also evident in Ortega (2008a), in which the languages of the participants' repertoire were English, Spanish and Catalan. The analysis of the oral and written production of 21 English learners of L3 Catalan with some knowledge of Spanish revealed that L2 Spanish –a language very similar to Catalan typologically- was by far the main source language in lexical CLI rather than L1 English. Ortega and Celaya (2013) obtained very similar results in their analysis of lexical CLI in the oral production of 12 learners with the same language combinations. Ortega's (2008b) results point to the same direction. That is, *typological distance* was found to be one of the main factors that determined the source language of transfer of CLI in the oral production of Catalan and English by native Spanish speakers with some knowledge of French and German.

In the same line, the analysis of CLI in Cenoz's (1997, 2001, 2005) studies indicates that native speakers of Basque and Spanish borrow more lexical items from Spanish than from Basque in their productions of L3 English, independently of their L1. Thus, learners prefer transferring elements from an Indo-European language (Spanish) than from a non-Indo-European one (Basque). The results also demonstrate that *typological similarity* between the languages is a much more powerful factor than the effect of the mother tongue.

However, some scholars, such as Ringbom (1987), have asserted that the native language vocabulary of learners has a greater influence on the language currently being acquired than the L2 lexicon. Ringbom (2007) highlights that this is due to the fact that learners have already learnt how their world and environment is reflected through language; therefore, "it is natural for learners to ascribe L1-based semantic properties and conceptual content to L2 words: they are reluctant to modify their conceptual L1-based system when learning another language" (Ringbom, 2007: 71).

Apart from the L1, nonetheless, as studies within the field of TLA have shown, non-native languages can also play an important part in lexical transfer, and it is indeed in the area of lexis where ILT mainly occurs. Ringbom (1987), for instance, in the above mentioned study with L1 Swedish and L2 Finnish learners of English and L1 Finnish and L2 Swedish learners, found instances of L2 influence in both groups of learners (Swedes and Finns). Bouvy (2000) has argued that ILT is limited to specific parts of speech, such as lexis, and almost exclusively consists of a process of *relexification*, that is, "the replacement of lexical items in L3 by those in L2, leaving the syntactic structure unaffected" (Bouvy, 2000: 144). Accordingly, Ringbom (2001) has pointed out that the fact that ILT is more frequent in lexis than in other parts of speech is due to the crosslinguistic identification of single word forms, which happens when there is formal similarity between languages.

Other authors, such as Ecke (2001), have also shown that in the area of lexis the L2 can have a higher influence than the L1 on L3 production, especially on oral production. Ecke argues that when the learner tries to recall an L3 word, it might happen that he/she fails in doing so; therefore, the learner automatically activates an L2 form to the detriment of the L1 equivalent. This choice could be explained in terms of *language distance*. He argues, though, that this is not only due to *psychotypology*, since he found cases in which the L2 was activated even when L3 and L1 equivalents showed a greater similarity as compared to the L2. Other factors, such as the *foreign language effect* or *last language effect*, could also have played an important role in the selection of the source language, as extensively discussed in section 2.4.2.3. This is not the case when the learner does not have to communicate instantly, as happens in written production. If this is the case, the learner has sufficient time to recognise that the retrieved word is not an L3 form and then he/she might change it into an L3 structure.

2.5.2.3. Transfer of form vs. transfer of meaning

Another issue that is worth highlighting in the area of lexical transfer is the distinction between *transfer of form* and *transfer of meaning* when considering the influence that the native language and non-native languages can have into the TL. The occurrence of these two types of transfer might vary to a great extent depending on the proficiency of the learners (e.g. Ringbom, 1986, 1987, 2001; Muñoz and Celaya, 2007), as will be further explained in this section.

Lexical transfer, according to Ringbom (1987) comprises both *transfer of form* (or *formal transfer)* and *transfer of meaning (*or *semantic transfer)*. Following Ringbom´s definitions, *transfer of form* originates from learners´ assumptions regarding formal similarities between the source and TL; and it is produced when the learner activates or is influenced by a similar word in the L1 or another known language instead of the one in the TL. *Semantic transfer*, on the other hand, can occur regardless of observed similarities and even when differences have been noticed. That is,

> "learners tend to assume that any two given languages are *formally different* until or unless they observe evidence of similarities, yet they tend to assume that any two given languages are *semantically similar* until or unless they become aware of the differences" (Jarvis & Pavlenko, 2008: 78).

Ringbom's (1987, 2001) distinction between *transfer of form* and *transfer of meaning* has been more recently reconceptualised by Jarvis (2009), who distinguishes between *lexemic* and *lemmatic* transfer. As this is the framework that has been adopted in the present dissertation, it will be described and discussed here in detail. Jarvis (2009) draws on Kempen and Hoenkamp (1987) distinction between *lexeme,* which is related to the phonological and graphemic forms of words, and *lemma,* which specifies semantic and syntactic properties. Based on this distinction, Jarvis (2009) distinguishes two broad types of lexical transfer: *lexemic* and *lemmatic transfer*. While the former includes transfer of the phonological and graphemic structure of words, the latter is related to the

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semantic and syntactic properties. As discussed by Jarvis (2009), including these two types of properties –i.e. semantic and syntactic- within the same heading has advantages, since some syntagmatic specifications of words, such as collocational knowledge, phrasal verbs and fixed expressions, involve both semantic and syntactic properties.

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                    ┌─────────────┐
                    │   Lexemic   │
                    │  Transfer   │
                    └─────────────┘
          ┌───────────────┼───────────────┐
   ┌──────────────┐ ┌──────────────┐ ┌──────────────┐
   │    False     │ │              │ │              │
   │   Cognates   │ │  Borrowings  │ │   Coinages   │
   └──────────────┘ └──────────────┘ └──────────────┘
```
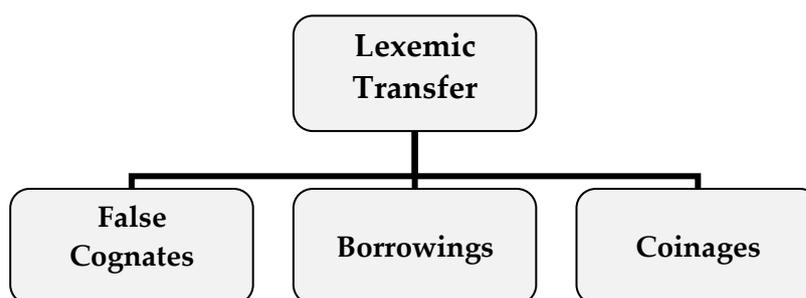
Figure 2- Types of lexemic transfer (Jarvis, 2009)

Lexemic transfer, which corresponds to *transfer of form* in Ringbom's (1987, 2001) framework, reflects "lexeme-level links and processes, in the sense that they appear to be induced largely by formal cross-linguistic lexemic similarities and/or by levels of lexeme activation" (Jarvis, 2009: 112). This kind of CLI includes, therefore, cases of *false cognates*, *unintentional language switches* or *borrowings*, and *coinages* or *blends* (see Figure 2 above). While the first two types involve the use of an inappropriate word, the latter refers to the modification of the word stem to make the word similar to a word in the TL or to the blending of two morphemes or words from different languages, which is the most obvious manifestation of cross-language activation (see Sánchez, 2015).

Lemmatic transfer (see Figure 3 below), on the other hand, includes the types of *semantic transfer* described by Ringbom (1987, 2001) –i.e. *semantic extensions*, which are cases in which polysemy is represented in different ways in the languages involved, and *calques* or *loan translations*, which refer to directly translated compound words, idioms and fixed expressions. *Lemmatic transfer*, however, includes two further types that are related to the collocational and

syntactic constraints on words –i.e. *collocational transfer*, which is related to the co-occurrence of words, and *subcategorization transfer*, which refers to cases where either the wrong type of complement or the wrong specific word within the complement are chosen.
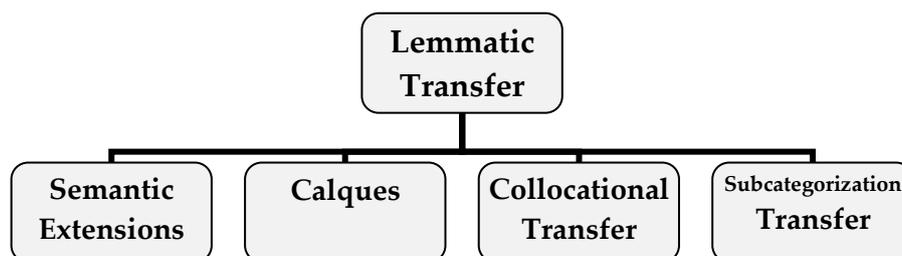
Figure 3- Types of lemmatic transfer (Jarvis, 2009)

As noted by Jarvis (2009: 116), *collocational transfer* is not normally considered as a type of semantic transfer in the literature; this type of CLI is, however, closely related to calques, "(perhaps forming a continuum), and one of the advantages of the notion of *lemmatic transfer* is that it allows us to bring these two phenomena together under the same umbrella". For Jarvis (2009: 113), "what combines all four categories is the notion that a person's knowledge of a lemma includes the word's semantic and syntactic constraints". These four types, therefore, result from the ways that speakers build up lexical representations in different languages. As this is the framework that has been adopted as a starting point in the classification of the different types of CLI, further details and examples of each of the types are going to be added in chapter 4, when describing how the different cases of CLI have been analysed in the present study.

According to Jarvis and Pavlenko (2008), there seem to be different constraints that govern the transferability of formal versus semantic properties of words. They cite, for instance, Biskup's study (1992) as an example of this. By analysing the L2 English lexical errors that German and Polish speakers made, Biskup (1992) found that the errors made by the German speakers reflected *formal*

transfer, and that *semantic transfer*, on the other hand, was extensively seen in those errors made by the Polish speakers. This led him to conclude that while *transfer of form* is more likely to appear when the languages involved are closely related, *transfer of meaning* might more often occur when the languages are typologically distant. Accordingly, in De Angelis and Selinker's (2001) study, *transfer of form* exceeded instances of *transfer of meaning*, which the authors attributed to the typological relatedness of the languages involved in the study.

Additionally, these different constraints that affect the occurrence of *formal* versus *semantic CLI* are clearly noticed in studies where the participants involved have knowledge of at least two previous languages that are typologically different. With this type of studies it is possible to analyse which of the languages has a greater influence on the learners' formal and semantic transferences. As has been previously seen, Ringbom's (1978, 1987, 2001) studies on the lexical errors produced by Finnish and Swedish speakers are indeed in this direction. That is, he found that while formal errors of both Finnish and Swedish speakers reflected influence from Swedish, their semantic errors reflected influence from the learners' L1.

In Ringbom's studies, lexical errors due to non-native language influence seem to be the result of assumed crosslinguistic formal similarity between the source and TL (*false friends*, *language switches*, *relexifications* and *blends*). On the other hand, instances of *transfer of meaning* (*loan translations* and *semantic extensions*) due to non-native influence were almost absent. This led him to conclude that when meaning transfer occurs it is the result of L1 influence: "Whenever semantic properties of a word are wrongly transferred to the target language, they are not made on the basis of an L2, not even an L2 closely related to the target language" (Ringbom, 2005: 74). This might be so "because L1 meanings tend to underlie L2 words until the learner has become highly proficient in the L2" (Jarvis & Pavlenko, 2008: 78). Ringbom (2005) further added that *semantic transfer* can actually originate from the L2 if the learner has a near-

native or high proficiency in this language, and therefore, his conclusion is that *transfer of form* tends to occur from a typologically similar language regardless of whether they are native or non-native, and that *transfer of meaning* tends to come from a language in which the learner is highly proficient in. This finding has been confirmed by Lindqvist's (2010) study, in which only the languages in which the learners are highly proficient (L1 Swedish, L2 English and L3 French) were the source of meaning-based transfer. Likewise, in their study of lexical CLI in the written production of 69 bilingual adult learners of English, Muñoz and Celaya (2007) reached similar conclusions. They concluded that *transfer of form* mainly occurred from the typologically related languages –i.e. Catalan, Spanish and French; *transfer of meaning*, on the other hand, originated from the learners' L1 – i.e. Catalan or Spanish. The study by Cenoz (2001) with L1 Basque and L2 Spanish learners of English and L1 Spanish and L2 Basque learners goes in the same direction. Odlin and Jarvis (2004) research is also consistent with the above mentioned findings. With this study they showed that, although both Finnish and Swedish speakers show influence from Swedish in those Swedish words similar to English, they present differences in the ways and frequency they use them. That is, whereas Swedish seems to have an influence in the choice of words, it is their L1 (either Swedish or Finnish) that seems to affect the way they use them.

Ringbom's (2001) conclusions, though, have been replied by other studies, such as Jarvis (2003), who pinpointed that *transfer of meaning* could actually occur from the L2 into the L1; or by Pavlenko and Jarvis (2002) in their study on transfer effects in English and Russian of Russian-English late bilinguals. They concluded that high proficiency in the source language is not a prerequisite for *transfer of meaning* to occur, but that what might come at play is the level of socialization in the source language. It follows that a high level of proficiency in a language not learnt in a naturalistic context might not lead to the occurrence of *semantic transfer* in the same way as an intense socialization in the environment

where the language is spoken. An important issue in the study of *transfer of meaning* is, moreover, the relation between language and thought, since learning an additional language entails adopting this new language worldview.

Additionally, as discussed in section 2.4.2.4 when addressing the issue of the effects of proficiency in CLI, these two types of lexical CLI seem to appear at different stages of language acquisition. While *transfer of form* might be most predominant in the early stages of acquisition, *transfer of meaning* seems to develop in a later proficiency stage. That is, it seems that differences in the quality of lexical transfer are linked with "a gradual progress from organization by form to organization by meaning, as the learner's L3 proficiency develops" (Ringbom, 2001: 65). However, as acknowledged by Ecke (2015), instances of *form-based CLI* might still affect the production of advanced learners. This is one of the results that Lindqvist (2010) aimed at in her study with 14 very advanced learners of L3 French. That is, although her participants presented more instances of *meaning-based transfer* (54%), especially of *semantic extensions*, they still produced a high amount of *form-based CLI* (46%).

2.5.2.4. Transfer of content vs. function words

Many studies on lexical transfer have analysed the transferability of *content* and *function words*. Researchers have found that *content* and *function words* from the L1 and the other non-native languages are not relied upon in the same way in the production process. Early studies, such as that carried out by Faerch and Kasper (1986), considered the transfer of *content words* as a conscious strategy to fill a gap, which was often preceded by a pause. Transfer of *functions words*, on the other hand, was seen as unintentional due to the high frequency of these lexical items.

The frequency of *function words* is also considered in later studies. However, there is no mention of the intentional - unintentional dichotomy. This is the case of Poulisse and Bongaerts' (1994) study with Dutch learners at grades 9, 11 and undergraduates, who proposed that in L2 production L1 *function words* are more likely to be used since they are more frequent and consequently transferred easily. They argued that learners pay more attention to more meaningful parts of speech; thus, *content words* are selected correctly and *function words* are more easily transferred. Poulisse's (1999) study of Dutch speakers' slips of the tongue also concluded that *function words* are easily transferred, due to their high automatization; that is, they are so automatized that they cannot be easily suppressed when using the TL. Moreover, when the learner can rely upon more than two languages, it seems, according to Williams and Hammarberg (1998), that *function words* are drawn from one of the non-native languages, not from the speaker's L1. Thus, in L3 production, *L2 status* might override the *frequency* effect associated with high proficiency in the case of *function words*. There is also evidence, though, that L3 production is influenced by L1 prepositions (Jarvis & Odlin, 2000).

In opposition to the above-mentioned studies, Cenoz (2001) has reported that L3 learners transfer more *content* than *function words* at grades 2 and 9; at grade 6, though, there are similar numbers of *content* and *function words* transferred. In the same line, Navés *et al*. (2005), in their study of 474 EFL bilingual Catalan/Spanish learners ranging from grades 5 to 12, found that similar percentages are transferred by the youngest groups in a writing task. The authors of this study point to possible explanations for the divergence of the results: the age of the learners, the different type of corpus (oral vs. written), the way of counting numerals, or the different contexts (L2 vs. L3).

Although both *content* and *function words*, which are types of *language switches*, are perhaps the ones that have been most extensively researched in CLI studies, they are not the only types, as has become evident in the previous

section. In the present study, a detailed classification of the different types will be presented. Therefore, the distinction between transfer of *content* and *function words* will also be made.

2.5.2.5. Lexical word choice transfer

The types of lexical CLI discussed so far result in non-target like forms; that is, they are all cases of negative transfer. However, as already pointed out and as extensively discussed in the literature, CLI can also have other manifestations; that is, CLI can also result in *positive transfer*, *overproduction*, *underproduction*, *avoidance* or *lexical word choice*. Taking this idea into consideration, it is possible to assert that learners may transfer the words that they use in their L1 into their L2. In other words, language learners may use certain TL words depending on their use of the L1 counterparts. Therefore, learners with different L1s might choose different words in the same context, as concluded by Ringbom (1987) and Jarvis and Odlin (2000). That is, the L1 can have an effect on a person's choice of certain categories of words, as well as one's own choice of specific words (Jarvis, Castañeda-Jiménez & Nielsen, 2012). If this occurs, the result is a target-like word, but maybe not the preferred option by native speakers of the language.

This tendency of using specific words becomes even more evident when the learners' L1 lack certain types of words –e.g. articles, prepositions, relative pronouns, phrasal verbs-, since they tend to omit or avoid these types of words when using the L2 (Dagut & Laufer, 1985; Sjöholm, 1995; Jarvis & Odlin, 2000; Jarvis, 2002). These learners' word choices, which, reflect L1 lexical preferences, might, moreover, be related to the frequency with which the L1 patterns occur (Ellis, 2002). In line with Ellis' ideas, Jarvis *et al.* (2012: 41) pinpoint that learners tend to use the language patterns they are frequently exposed to, "and this relates not only to the forms they produce, but also to the frequencies with which

they produce those forms and, concomitantly, to the ways they distribute those forms throughout their language use". This idea is, thus, linked to Selinker's (1983) observation that the higher the frequency of certain forms in the L1, the higher the chance to be transferred to the learner's L2.

Whereas the above-mentioned studies only focus on one word at a time, more recent investigations have explored word choice collectively rather than individually, through a classification approach. The assumption is that "even when a learner's use of some words may not be indicative of his or her L1 background, this may be compensated by his or her use of other words, in a way that may be captured through a classification model of learners' lexical styles" (Jarvis *et al.* 2012: 42).

Jarvis and Pavlenko (2008) explain a study by Jarvis, Castañeda-Jiménez and Nielsen (2004) that aimed at detecting the learners' L1 on the basis of their word choice patterns in the L2 by making use of stylometric techniques[15]. This study revealed that speakers of five different L1s could be distinguished with over 90% accuracy by looking at their use of approximately 50 words in their written performance of a silent film retelling task. Since this first exploratory study on more indirect consequences of having a specific L1, a series of studies, published in Jarvis and Crossley (2012), have been carried out. Their focus is on the analysis of the word forms, word meanings, word sequences and grammatical structures that learners with different L1 backgrounds use in their written productions. Their aim is to detect characteristic language-use patterns of learners with specific L1s; which are transferred into their L2 writings. Not only do errors make these patterns distinctive, but also underuses and overuses of the different forms. Jarvis *et al.'s* (2004) results are confirmed by Jarvis *et al.*'s (2012) and Jarvis and Paquot's (2012), studies, which suggest that the differences in both the use of words and the use of sequences of two, three and four words are indeed due to L1 influence.

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[15] *Stylometry* is a subfield of linguistics that studies the linguistic style usually of a written text, which is often used to attribute authorship to anonymous or disputed texts.

2.5.3. Grammatical CLI

As has been seen in the previous sections, there are a number of studies that have dealt with lexical transfer, both from the L1 and other known languages; however, the topic of grammatical CLI has not been as extensively tackled in the literature, especially the influence that the L2 might exert on the L3 grammar, an area of research still in its infancy. However, no one can deny that CLI at the grammatical level is very frequent among learners of English, who make grammatical errors when communicating in the L2 even at advanced levels of proficiency. More specifically, although learners might be familiar with the grammatical rules, they might make performance grammatical mistakes when facing the task of communicating in the L2 in meaningful interactions. Moreover, achieving native-like grammatical competence can become a tough task despite prolonged immersion in the L2, which, according to Sorace (1993) and Hawkins (2000), can be partly attributed to L1 influence on the L2.

In recent years the study of CLI at the morphosyntactic level has attracted the attention of researchers, especially of generative linguists in the area of TLA, attempting to establish the source language of transfer, as well as to examine the initial state of L3 so as to try to understand the adult learner's access to UG. The "partial access" approach posits that adult L3 learners are only able to transfer syntactic features from the L1; on the other hand, the "full access" approach claims that as L2 learners are able to learn new features, both L1 and L2 transfer are plausible (see García Mayo, 2012)

Some scholars, such as Ringbom (2001, 2005), have asserted that grammatical influence seems to arise more commonly from the L1 than from the L2. Additionally, this has been proved to be so in some empirical studies, as in Sanz, Park and Lado's (2015) study with L1 English learners with L2 Japanese or Spanish and L3 Latin. Ringbom (2001, 2005) further adds that the source of influence might also depend on factors such as *language typology*, *L2 proficiency*,

recency of use and the *exposure to the L2* or the amount of *input* received, as discussed in section 2.4.2. Ringbom (2001), for instance, mentions Stedje's (1977) study, an early study that tackles the issue of L2 *input* or exposure and grammatical CLI, in which it was found that the degree of L2 influence on the L3 depended on L2 use in the learners' environment. More recent studies have pointed out that CLI from the L2 is indeed possible due to the *foreign language effect*, and that the L2 might be the most important source of influence, as found out by Sánchez (2011a). In this study of the transfer of verb phrase headedness, CLI occurred from the learners' L2 (German) rather from their L1s (Spanish and Catalan) in L3 English production, despite the similarity between the L1s and L3 in the syntactic structure under analysis. Moreover, CLI was analysed in relation to the proficiency of the learners. As a result, a low competence in English was related to a higher influence from L2 German in L3 English production. On the contrary, it was found that a higher level of proficiency in the L2 did not necessarily imply a low influence from this language.

Although *language typology* seems to be a predictor of the source language of influence in plenty of studies, as discussed above, Martínez Adrián's (2004, 2008, 2010) studies of the acquisition of German *word order* by L1 Spanish with L2 English do not support the hypothesis of L2 transfer at the syntactic level; on the contrary, her studies reveal that L2 English does not have an influence on the learning of L3 German *word order*. Knowledge of English as L2 is normally thought as having an influence on German acquisition as both languages are similar as regards their lexis, phonology and grammar, and they both pertain to the same language family. Therefore, learners might perceive the degree of relatedness between the languages, as predicted by Kellerman (1983, 1984). Despite Martínez Adrián's results, the possibility of transferring grammatical structures from the L2 cannot be denied; however, studies from the generative perspective have yielded different results. While some of them have shown that the L2 is the exclusive source of transfer (e.g. Bardel & Falk, 2007; Falk & Bardel,

2011), others have demonstrated that CLI can occur from either or both the L1 and L2 (e.g. Rothman, 2010, 2011, 2015; Rothman & Cabrelli Amaro, 2010).

Based on these empirical findings, three main hypotheses or models have been put forward to explain the role of previously acquired languages (see García Mayo & Rothman, 2012; Jaensch, 2013): the *L2 Status Factor Hypothesis* (LSFH) by Bardel and Falk (2007), which argues for the preference for L2 transfer in L3 acquisition at the initial stages, as discussed in 2.4.2.3; the *Cumulative Enhancement Model* (CEM) introduced in Flynn, Foley and Vinnitskaya (2004); and the *Typological Primacy Model* (TPM) by Rothman (2010, 2011, 2015). Both the CEM and the TPM account for the possibility of transferring from any prior language. The CEM postulates that transfer from previous languages only facilitates L3 learning, and that those structures that can hinder L3 acquisition are not transferred. In addition, it is argued that typological similarities between the languages do not play any role in the transfer process. The TPM, on the other hand, argues that either typological distance or perceived typological similarity (see section 2.4.2.1) among the languages will determine the source of full transfer in L3 acquisition at the initial stages. Rothman acknowledges that either the L1 or L2 are completely transferred as the systems from which all the hypotheses on the L3 grammar are made; the selection of one or the other will be determined by the structural similarity between them.

Different grammatical features have been analysed in transfer studies, such as *word order* (e.g. Meisel, Clashen & Pienemann, 1981; Zobl, 1983; Green & Hetch, 1985; Camacho, 1999; Çiğdem, 2006; Lozano, 2006; Domínguez & Arche, 2008; Ó Laoire and Singleton, 2009; Pierantozzi, 2009; Rothman, 2010; Sánchez, 2011a, 2011b, 2011c; Sanz *et al.*, 2015), *relative clauses* (e.g. Flynn *et al.*, 2004; Rothman, 2010), *verbal negation* (e.g. Bardel & Falk, 2007), *focus fronting* (e.g. Slabakova & García Mayo, 2015), *use of articles* (e.g. Jarvis, 2002; White, 2003; Ionin, Ko & Wexler, 2004; Calvo, 2005; Leung, 2005; Trenkic, 2007; Zdorenko & Paradis, 2007; Ionin, Zubizarreta & Maldonado, 2008; Jaensch, 2009; Vazquez

Díaz, 2010; Torrado, 2011; Snape, García Mayo and Gürel, 2013), *null subjects* (e.g. White, 1985, 1986; Phinney, 1987; Tsimoli & Roussou, 1991; Ruiz de Zarobe, 1998; Judy & Rothman, 2010; Rothman & Cabrelli Amaro, 2010; Judy, 2011; Martínez Adrián, Gallardo del Puerto and Gutiérrez Mangado, 2013; Pladevall, 2013), and *null objects* (e.g. Na Ranong & Leung, 2009; Martínez Adrián *et al.* 2013; Orfitelli & Grüter, 2014). The present dissertation focuses on three of them –i.e. *word order, use of articles* and *null subjects*-, as they are considered to be some of the most common non-target grammatical issues present in the production by Catalan/Spanish speakers of English. These are, therefore, the features that will be analysed in what follows.

2.5.3.1 Null subjects

The null subject parameter, one of the first parameters proposed within the *Principles and Parameters Model* (Chomsky, 1981; Jaeggli, 1982; Rizzi, 1982), has been one of the most intensively studied phenomena in the field of generative linguistics in SLA research. It captures the phenomenon that some languages may omit subject pronouns, while others require overt subject pronouns.

According to the *Morphological Uniformity Principle* (Jaeggli & Safir, 1989), languages allow *null subjects* when verbs inflect differently for number and persons, which is the case of the learners' L1s – i.e. Spanish and Catalan are [+pro-drop] languages. *Null subjects* are possible in Spanish and Catalan because they have a rich inflectional system; therefore, *null subjects* can be identified by agreement on the verb. On the contrary, English is not uniform, as only third person singular has a different form from the others, and it is characterized by a poor verbal morphology; thus, *null subjects* are not allowed in this language, in which subjects are realized overtly –i.e. it is a [-pro-drop] language. English only

allows subject dropping in certain instances of colloquial speech and in the imperative.

The question that arises in SLA research is whether L2 learners are able to reset a parameter appropriately in the case of differing parametric values. In this regard, different views on parameters in IL grammars can be found in the literature. On the one hand, the "no parameter resetting" view assumes that only L1 settings are available to L2 learners. On the other hand, the "parameter setting" perspective posits that it is possible to acquire parameter settings different from those of the L1. Within the latter view, different models have been put forward. First, the *Full Transfer/Full Access Model* (Schwartz & Sprouse 1994, 1996) argues that parameters will initially be set at their L1 values; however, they will be restructured and reset to the L2 values in response to L2 input. On the other hand, the *Full Access without Transfer Model* (Vainikka & Young-Scholten, 1994, 1996) contends that L1 parameter setting is not carried over into the L2, but that the appropriate L2 settings are used immediately.

Since the mid-1980s a great number of studies have been conducted on the L2 acquisition of the *null subject* parameter within the UG-based framework; and they have examined the issue of parameter resetting in both directions from –null subject to +null subject and vice versa, and the effect of the L1 upon the acquisition of the L2 (see e.g. White, 1985, 1986; Phinney, 1987; Liceras, 1989; Hilles, 1991; Tsimpli & Roussou, 1991). A major finding has been that certain structural properties associated with the *null subject* parameter are likely to be transferred from the L1 to the L2 if the values are set differently in both languages. More specifically, transfer tends to appear when L2 learners with an unmarked (+null subject) L1 acquire a marked (-null subject) L2. White (1985, 1986), for example, found that French learners of English accepted significantly fewer *null subject* sentences than Spanish speaking learners, which can be explained by the fact that French is not a null subject language. Thus, a low incidence of *null subject* is expected, unless the L1 is pro-drop (White, 1985).

Phinney's (1987) examination of null and overt subjects with Spanish learners of English and English learners of Spanish also points to the importance of directionality differences. That is, the results suggest that resetting the parameter from English (marked value) to Spanish (unmarked value) is easier and faster than the reverse process, in which transfer from the L1 remains for a longer period of time. However, as pointed out by Lozano (2009) even advanced English learners of Spanish might present some persistent deficits, especially at the syntax-discourse interface.

It seems, therefore, that the learners' L1 might influence the acquisition of the prohibition of *null subjects* in English, especially in the early stages of L2 learning (Lakshmanan, 1994) and, as previous studies on CLI have shown (e.g. Poulisse and Bongaerts, 1994; Celaya, 2006; see section 2.4.2.4), such L1 influence should decrease as proficiency in the TL increases. Orfitelli and Grüter's (2014) results indicate little subject drop with their more advanced learners as compared to the very initial stages of development, in which subject dropping is more frequent on grammaticality judgment tasks. However, they argue that variability might be dependent on the task and learner. Subjectless sentences are also reported in the early stages of both child and adult [+prodrop] learners in Phinney (1987) and Ruiz de Zarobe's (1998) studies. Ruiz de Zarobe's (1998) analysis of different properties related to the pro-drop parameter with L1 Spanish learners of L2 English reveals that Spanish speakers transfer this parameter from their L1 to their L2 until some aspects of the auxiliary system make learners readjust the parameter to the value of the L2. Martínez Adrián *et al*.'s (2013) study with 10 fourteen-year old Basque/Spanish bilinguals, on the other hand, reveals a marginal effect of L1 to L2 as regards subject omission, as a low rate (5.24%) of subject dropping was found in the subjects oral narratives. The authors suggest that this might be due to the explicit correction of their teachers in this area.

The effects of proficiency on transfer of *null subjects* are directly addressed in White (1985, 1986) and Pladevall (2013), among others. White (1985, 1986) analysed five levels of proficiency, from beginners to advanced, through a grammaticality judgment test (GJT). Her results point to a decrease of acceptance of missing subjects with increased proficiency. Pladevall's (2013) study focuses on three groups of adult Spanish L2 learners of English in an instructed context (beginner, intermediate and advanced). The results show that the null subject parameter is acquired as proficiency in the TL increases. Pladevall suggests that after initial L1 transfer, learners show learning development of the L2 subject properties, as learners reject more null pronominal and expletive subjects in a judgment and correction task. Nevertheless, their responses, even the ones given by the more advanced group, are far from being native-like. This leads the author to highlight that explicit teaching in this area is indeed necessary if learners are exposed to minimal input, and that implicit teaching is only effective with more intensive exposure to the TL.

Accordingly, as Papp (2000) and Sorace (2003) have acknowledged, L2 optionality[16] might persist at advanced levels of proficiency, even at ultimate L2 attainment. They argue that this might be a consequence of the fact that L2 learners might not be exposed to data frequently enough to delete one of the optional variants from the grammar. Therefore, parameters might become difficult to reset in SLA, and variability is, thus, predicted in L2 acquisition (Hawkins & Chan, 1997; Beck, 1998; Martínez Adrián, 2010).

Judy and Rothman (2010) and Judy (2011), for example, have recently argued that Spanish-speaking learners of English show evidence of a +prodrop grammar even at advanced levels of L2 proficiency. They suggest that Spanish learners of English are able to eliminate *referential null subjects* at early stages since they recognize that the poor verbal morphology of English requires them to overtly insert the subject (Rizzi, 1982), but that *expletive subjects*, which are not

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[16] Optionality refers to the phenomenon in which more than one grammatical form exists in the learners' IL at any point of the acquisition process.

subject to this condition, persist into advanced L2 development. These results are also in line with Phinney's (1987) work, which indicates grater omission of *expletive subjects* compared to *referential* ones, which were never omitted in sentence-initial position, although the difference did not appear to be statistically significant. Likewise, Tsimpli and Roussou (1991) found a higher acceptance of null *expletive subjects* than *referential* ones with intermediate and post-intermediate Greek learners.

In the field of TLA, Rothman and Cabrelli Amaro (2010) analysed two groups of learners, both with L1 English and L2 Spanish, who were beginning to study either L3 French or L3 Italian, and compared them with monolingual English speakers learning either L2 French or L2 Italian. The analysis of *null/overt subjects* revealed that L2 and L3 learners behaved differently, as L3 learners tended to transfer from their L2 Spanish (a pro-drop language). Therefore, the results were target-like in the case of Italian (a pro-drop language), but not in French, which does not allow pronoun dropping. That is, transfer from Spanish had a facilitative effect in L3 Italian, but a non-facilitative effect in L3 French. The authors argue that these results support the view that L3 acquisition is influenced by the similarity of the previously acquired languages to the L3.

2.5.3.2. Word order

Word order has been one of the most extensively studied grammatical properties within CLI research, which has dealt with *word order* patterns and their transferability so as to see whether L2 order is influenced by L1 *word order* (e.g. Meisel, Clashen & Pienemann, 1981; Zobl, 1983; Green & Hetch, 1985; Camacho, 1999; Çiğdem, 2006; Lozano, 2006; Domínguez & Arche, 2008; Pierantozzi, 2009; Rothman, 2010; Sánchez, 2011a, 2011b, 2011c; Sanz *et al.*, 2015). Since languages vary as regards word order patterns, learners might transfer the

characteristic order pattern of their L1 or other previously learnt languages when learning or producing in the TL. That is, the placement of the subject, verb and complements, especially at the initial state, might be determined by the order they have in previously acquired languages (e.g. Bardel & Falk, 2007).

As acknowledged in the previous section, optionality between different forms (i.e. forms that appear in free variation) might also persist at advanced levels of proficiency (Papp, 2000; Sorace, 2003), and it has also been attested in the literature as regards *word order* (e.g. Camacho, 1999; Lozano, 2006). Camacho's (1999) study on the acquisition of L2 Spanish by 15 Quechua speakers showed that transfer of *word order* was still present after three years of immersion in an environment where the L2 was dominant; therefore, the author suggests that the resetting of the parameter involved is a lengthy process. In their study on the L2 acquisition of *word order* in Spanish by three groups of L1 English learners with different proficiency levels, Domínguez and Arche (2008) argue that the availability of different forms even at advanced levels might be the result of an overgeneralization of one of them to contexts where neither syntactic nor pragmatic rules allow them. It has also been further argued by Sorace (2000, 2004) that those structures –e.g. *word order*- that are part of the interface between syntax and pragmatics are more unstable, and therefore, optionality might persist in the learners' ILs.

Meisel *et al.'*s (1981) study on the acquisition of German also point to the same direction. In their study with Italian and Spanish workers in Germany, they showed evidence of transfer of word order patterns; both Italian and Spanish speakers preferred the use of SVO rather than the SOV order in German subordinate clauses. Likewise, Çiğdem's (2006) analysis of 14 German-Turkish bilingual children learning English revealed that, even after three years of English instruction, learners still transferred their L1 SOV order. In the same line, Green and Hetch (1985) got similar results with older L1 English learners of German after five years of instruction, as well as Pierantozzi (2009), who found

transfer from L1 French *word order* to L2 German, although no transfer was attested in the German children learning French. More recently, Sánchez's (2011a) study has focused on the influence of prior non-native language (German) on the acquisition of L4 English at the initial state (after 33 hours of instruction). Her analysis is based on the written production of 83 speakers of Catalan and Spanish. Her results also support the transfer hypothesis as her participants produced a high number of instances of transfer from their L3 German to their L4 English.

Apart from having different *word order* patterns, as Odlin (1989) points out, languages can also vary in terms of rigidity. For example, English and Spanish and Catalan present an overlap in their syntactic structures as they all share the same basic *word order*; however, Spanish and Catalan also allow other word orders. Therefore, speakers of a flexible language[17], such as Spanish or Catalan[18], for instance, may use different word orders when producing in another language, such as English, even if this language is quite rigid. English is a fixed *word order* language, in which differences in *word order* –found in highly restricted contexts such as there-constructions- may entail different meanings. Rigidity seems, therefore, to be a transferable property. As reported by Odlin (1989), an early study that accounts for this transferable property is Granfors and Palmerg (1976). This study lists a series of errors in English *word order* in a composition task carried out by native speakers of Finnish, a flexible SVO language. Therefore, the authors attributed errors to the flexibility of Finnish *word order*. The same task was performed by native Swedish speakers, who committed far fewer errors, due to the fact that Swedish is a more rigid language, as English is. Another study that involves two SVO languages but with different degrees of

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[17] Flexible languages might allow having VS structures, which is a property among the group of properties characterising languages positively marked for the Null Subject Parameter that might have a focalization purpose. That is, the focus element is expected to appear at the end of the sentence even if the canonical order is altered. Therefore, knowledge of flexible word order involves the interaction of syntactic, semantic and pragmatic knowledge.

[18] Spanish and Catalan have a relatively flexible word order when compared to English.

rigidity is Lozano and Mendikoetxea (2009, 2010), in which it is showed how Spanish speakers have persistent problems with word order in English, particularly with *it-insertion* structures, although the authors argue that this behaviour is due to general and developmental principles in line with Zobl (1989), and not due to language transfer, as will be discussed below.

The studies discussed so far have dealt with basic word order patterns (S, V, O). However, as highlighted by researchers such as Odlin (1989), other constituents are also subject to *word order* rules that specify the occurrence of the different elements within phrases. Each language has its own rules that govern the position of adjectives, adverbs and other word classes and, therefore, learners may also transfer word order in constituents within clauses. The case that Odlin (1989) describes to exemplify the above mentioned phenomenon is Andersen (1979), a study of English possessive constructions written by Spanish students that presented examples of Noun Phrases (NPs) that were word-for-word translations from Spanish, such as *the porch of Carmen* (Odlin, 1989: 37)

Regarding the factors that interact with *word order*, it seems that *language typology* plays an important role. Ó Laoire and Singleton's (2009) study with German learners with knowledge of English and Irish analysed this issue in relation to the *word order* of non-finite purpose clauses, an area in which German is closer to Irish than to English. The obtained results point to the fact that learners perceive the closeness of Irish and German in this issue and, thus, they draw on their knowledge of Irish to produce non-finite purpose clauses. Similarly, Rothman's (2010) study also found that *language typology* plays a decisive role in the selection of the source language of transfer. His analysis of *word order* in L3 Brazilian Portuguese by Spanish/English bilinguals revealed that participants preferred borrowing Spanish *word order* despite the fact that transfer from Spanish was non-facilitative and transferring from English would have resulted in positive transfer. The author argues that it is structural and typological similarity that determines the selection of the source language, as

discussed in section 2.4.2.1. However, as pointed out above, Martínez Adrián (2004, 2008, 2010) did not identify any L2 English effect on the acquisition of L3 German *word order* by L1 Spanish speakers.

Despite the fact that *language typology* might play a significant role in grammatical CLI, other studies have found out that this factor might be overridden by the effects of the L1. This is the case of Sanz *et al.*'s (2015) study with L1 English speakers with L2 Spanish and L2 Japanese backgrounds, who were tested in L3 Latin. Their results point to a privileged role of the L1 at the initial stages of L3 acquisition, as the learners tended to rely on the L1 English SVO order, irrespective of typological proximity.

Although plenty of cases of transfer of *word order* have been documented in the literature, there are cases in which CLI is highly improbable, especially when language patterns are not "basic". The example that Odlin (1989) offers is that Spanish speakers would never transfer the following order into English: **I them see*. Moreover, as claimed by Odlin (1989), despite the existence of all these studies that report instances of *word order* CLI, some scholars have asserted that such transfer does not exist, and that learners' *word order* might reflect universal principles of discourse organization. However, Odlin (1990) argued that there is no universal constraint on the transfer of *word order*, and that if this type of CLI is not that frequent is because of the learners' metalinguistic awareness.

The view on universal principles is the one followed by Pienemann's (1998) in his *Processability Theory* and by Klein and Perdue's (1997) *Basic Variety* framework. It is claimed that all L2 learners start out using a canonical word order –i.e. SVO order- irrespective of their L1; therefore, neither of the models allow *word order* variation due to CLI at the initial state of L2 acquisition. This has been shown to be the case in some studies, such as Sayehli (2001) and Håkansson, Pienemann ans Sayehli (2002), in which the learners' L3 German oral production showed no subject-verb inversion, which is interpreted as evidence of the SVO canonical order. In the same line, Pienemann, Kessler and Roos' (2006) study

describes a developmental sequence for the acquisition of L2 English by learners with different L1s in various European countries, which indicates that the learners' production displays an SVO order right after the one-word stage no matter the learners' L1. However, there are plenty of studies that invalidate this claim, such as the ones previously discussed. Additionally, Sánchez (2011c) directly invalidates the existence of the universal order at initial stages by showing evidence of the use of SOV at the initial state of L3 English acquisition in an instructed context by Catalan/Spanish bilinguals with knowledge of German.

2.5.3.3 Use of articles

Transfer of the article system, and especially of the English system, is a well-studied area in transfer research in SLA. Article use differs among languages and this can pose problems when acquiring an L2. Chierchia (1998) proposed the *Nominal Mapping Parameter* so as to distinguish different languages as regards *use of articles*. According to this model, three types of languages exist: 1. [+arg, -pred] languages, such as Japanese, which have no articles and lack number marking on nouns, so any bare noun can be an argument; 2. [+arg, +pred] languages, such as English, which have definite and indefinite articles, but they are not used with plurals and some mass nouns; 3. [-arg, +pred] languages, such as Spanish, which have both definite and indefinite articles that need to be used with all nouns, and number marking on nouns and determiners. These differences among languages might cause two distinct divergences between learners' production and native speaker ones. On the one hand, non-native speakers might use articles inappropriately (e.g. a definite article instead of an indefinite one); on the other hand, they may omit an article in a context where a native speaker would use one, or vice versa.

As extensively acknowledged by SLA researchers, such as Ortega (2009) and Ekiert and Han (2016), English articles are difficult to learn for all L1 groups. This might be due to "the fact that the English article system does not consist of one-to-one form and meaning relationships" (Goto Butler, 2002: 452). More specifically, articles in English have multiple functions within a single morpheme; this might cause problems to learners, as they generally look for one-form-one-function correspondence (Master, 2002). "The use of English articles is a subtle and complex phenomenon, and there is no obvious L2 input or formal instruction that can help L2-learners acquire the semantics of English articles" (Ko, Ionin & Wexler, 2009: 287). Thus, L2 learners of English have persistent difficulty in the *use of articles* even at advanced stages, or might never reach native-like performance in this respect.

Studies have tried to define whether the choice of "a", "the" or zero article in front of nouns, which encode definiteness in English, depends or not on the learners' L1. Ringbom (1987), for instance, showed that L1 Finnish learners of English were more likely to omit English articles than L1 Swedish learners. More recently, Snape *et al.* (2013) have analysed acquisition of English generic NPs by Spanish, Turkish and Japanese learners in an EFL setting through a forced choice elicitation task. As these languages differ in how they express generic interpretations, they have been able to show that L2 article choice is strongly determined by the way in which the L1 realizes generic reference by identifying the different patterns of article selection by the three groups of learners. It seems, thus, that learners' deviant structures might depend on their L1, even at advanced levels of proficiency. However, as discussed in section 2.4.2.4., with increased proficiency language transfer tends to decrease. This is clearly shown in Snape *et al.*'s (2013) study, in which the advanced Spanish learners of English incorrectly selected the definite article for bare plurals only 9% of the times.

It has been proved that for English there is an initial disadvantage in rate of acquisition for those English learners whose L1 does not have articles at all, as

they need to learn the distributional properties of articles –i.e. where they are used-, as well as their semantic and pragmatic properties –i.e. what the articles mean in a specific context (Jaensch, 2008; Ekiert & Han, 2016). White (2003), Trenkic (2007) and Jaensch (2009), for example, found considerable omission in obligatory contexts for "the" and "a/an". Zdorenko and Paradis' (2007) two-year longitudinal study of two groups of 16 children acquiring English –a group with [-article] L1s and a group with [+article] L1s- showed that those learners with L1s without articles considered null subjects to be an option in contexts where the target was a definite or an indefinite article. On the other hand, the [+article] group seemed to have transferred the knowledge of articles from their L1s, because they produced very few instances of article omissions. Trenkic (2007) has suggested in the *Syntactic Misanalysis Account* that those learners with L1s without articles misanalyse determiners as nominal modifiers when learning languages that contain them. Additionally, it is proposed that learners first attend to the most meaningful parts of the utterance first, before turning to those that provide little information on meaning.

Ionin *et al.* (2004) have argued in their *Fluctuation Hypothesis* (FH) that those learners with L1s with no articles might fluctuate between the two settings of the *Article Choice Parameter* –i.e. articles which distinguish on the basis of specificity or on the basis of definiteness- when acquiring an L2 with articles until they are able to set the value of this parameter correctly through exposure to input. The FH predicts that fluctuation might result in "the" used in [+specific] [-definite] contexts interchangeably with "a". They arrived at this conclusion after studying speakers of Russian and Korean, languages with no articles, learning English. They discovered that the learners selected articles in English based on both specificity and definiteness.

On the other hand, those learners whose L1s have articles, as is the case of Spanish and Catalan, go through the first stages of acquisition of the English article system more rapidly, as they can positively transfer their L1 or any

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previous knowledge to the TL. That is to say, as Jarvis (2002) acknowledges, when there are similarities between languages a fast start is expected. Accordingly, due to the similarities between the Swedish and English article systems, Jarvis (2002) found that after two years of English instruction Swedish learners were accurate in their use of the indefinite article in 86% of the cases, and in 98% of the occasions as for the definite articles. Thus, it seems that with [+article] L1 languages transfer overrides fluctuation, as Ionin *et al*.'s (2008) shows. In this study, Spanish learners of English transferred article semantics as they did not fluctuate between definiteness and specificity and distinguished between "the" and "a" on the basis of definiteness. However, opposite results are also reported in the literature, especially with child L2 acquisition (see e.g. Zdorenko & Paradis, 2008).

Similarities between the L2 and L3 have also been shown to affect L3 acquisition of articles positively. This is the conclusion reached by Leung's (2005) study with speakers of languages without article systems. The learners in Leung's study were L1 Chinese learners of L3 French with knowledge of L2 English, and monolingual Vietnamese learners of L2 French. The results showed that Chinese learners outperformed the Vietnamese in article use in obligatory contexts and the appropriate use of the definite article, as Chinese learners could transfer L2 English knowledge of articles in the production of French ones. Leung, thus, claimed that the L1 does not have a privileged role in the initial state of L3 acquisition. Likewise, Jaensch (2008) also analysed the influence of L2 English on L3 German by L1 Japanese learners. More specifically, the study looked at the influence of the L2 proficiency on L3 acquisition. The author had hypothesized that if the L2 did not have any influence, learners would fluctuate between definiteness and specificity. However, if the L2 did have a positive influence on the L3, the learners would select the correct article with greater accuracy, dependent upon both L2 and L3 proficiency. The analysis of a written multiple choice task performed by 39 Japanese speakers showed that learners

selected articles natively most times, particularly those learners with a higher level of proficiency in German. It is argued that learners in this study are aware of the definiteness feature due to having previously acquired a language that marks definiteness in the same way. A trend was observed within groups with different L2 proficiencies, in the sense that learners with a higher level of proficiency in the L2 outperformed those with a lower level of proficiency, although the difference was not statistically significant.

Although there are advantages when similarities between languages exist, a complete mastery of the article system is difficult. Ortega (2009) mentions the difficulties that Spanish speakers encounter when learning the English articles since their use differs a great deal in these languages. That is, they have a very similar article system, but they differ in some of the uses. Ionin and Montrul (2010) even suggest that acquiring a new category is easier than changing the interpretation of an existing one. Thus, Spanish learners tend to overgeneralize the definite article "the" to generic contexts even in upper-intermediate levels. This is caused by the fact that their L1 Spanish marks generic meanings with definiteness, whereas English prefers zero articles. This kind of generalization will not occur with learners whose L1s do not have articles. This failure to use the zero article in English even at high levels of proficiency was also acknowledged in Torrado's (2011) study with learners that had been studying English for an average of five years, and in Snape *et al.*'s (2013) study. Calvo (2005) also found cases of CLI in the article system from L1 English to L2 Spanish due to the difference in use of the definite article between the languages.

In the same line, Vázquez Díaz's (2010) longitudinal study on article transfer by 12 Spanish 11 and 12-years-olds English students immersed in a Content and Language Integrated Learning (CLIL) program showed that the students had a good command of singular definite NPs, possibly due to positive transfer; however, they overused definite articles with plural nouns in the L2. Likewise, Ionin *et al.*'s (2008) study confirms that the main problems that Spanish

speakers have in learning the articles in English are due to the fact that English has definite plurals with only specific reference (e.g. *The lions are dangerous*), whereas in Spanish definite plurals can have both a generic or a specific reference. Therefore, L1 Spanish speakers might interpret definite plurals in English as a generic reference. Other differences between these languages that might lead to transfer are the use of the definite article in Spanish in contexts where the possessive would be used in English, or with geographical names. Transfer of article use from Spanish into English is a generalized result, which has led some authors to assert that "there is a strong potential for language transfer between Spanish and English, as they are related both typologically and genetically" (Vázquez Díaz, 2010: 13).

2.6. Summary

Transfer research has evolved considerably since its birth in the 1950s, and has been through different stages. However, there is still much research needed in the area in order to have a full understanding of the processes and factors involved in the appearance of this phenomenon that occurs due to the coexistence of more than one language in the same mind.

This chapter opened with a definition of language transfer, followed by an account of the main issues in the area of multilingualism and multilingual acquisition. It has been highlighted that nowadays the analysis of the phenomenon of language transfer needs to be carried out taking into consideration multilingual contexts, in which unique processes emerge. In addition to this, it has become clear that all the languages that the multilingual learner possess, both the native and the non-native languages, can have an effect on the language currently learnt and, therefore, on the production in this language. We have also made the point that CLI can take place in the different

sub-systems, but only the issues related to lexical and grammatical CLI have been dealt with, as they are going to be the focus of analysis in the present dissertation.

As we have seen in this chapter, when considering the phenomenon of CLI many different aspects and factors need to be taken into account, such as the relatedness of the languages under study, the context in which the learning process is taking place, the status of the languages involved, as well as the proficiency in each of the languages or the recency of use. It is clear from the studies revised that the different variables interact in complex ways, sometimes overriding each other, some other times converging to cause the occurrence of CLI during production.

We have revised here the different factors that seem to interact with CLI and we have highlighted that factors such as *language typology*, *general level of proficiency*, *recency of use* and *L2 status* have been extensively researched. Other factors, on the other hand, have only been the focus of few studies. This group of factors include the ones under study in the present dissertation: *cognitive language learning abilities* and *input* received. In the chapter that follows (chapter 3), they will be explored, and the studies on the topic revised.

CHAPTER 3

COGNITIVE LANGUAGE LEARNING ABILITIES, INPUT AND CROSSLINGUISTIC INFLUENCE

'The multiplicity of interacting elements in any system that nontrivially represents language makes the prediction of the patterns that will eventually emerge as difficult as forecasting the weather, the evolution of an ecological system, or the outcome of any other complex system' (Ellis, 2002: 178)

3.1. Introduction

As extensively pointed out by SLA researchers, both internal and external factors can influence the complex process of learning an additional language. Learners can vary considerably in many ways, including personality and affective factors (e.g. extroversion, motivation, anxiety, self-confidence and empathy), linguistic proficiency, literacy, in their cognitive language learning abilities or aptitude for language learning, and in the experience that they have had during their language learning history, which includes the quantity, as well as the quality of input received. All this variation can, therefore, affect the learners' success or ultimate attainment in language learning and production. ID have indeed been postulated as the most important predictors of L2 achievement (e.g. Dörney, 2005). Learners' ID have also been highlighted by CLI researchers, who have argued that they might be the cause of the high degree of transfer variation found among different learners. Researchers have asserted that language transfer is not influenced by a single factor, but by a series of variables; many varied elements can, therefore, affect the occurrence of language transfer. This suggests that, given the complexity of the transfer phenomena, there is the need to investigate the co-influence of various factors.

The role of ID and *input* is the topic of the present chapter; that is, this chapter is devoted to the analysis and discussion of the importance of ID, and more exactly of *cognitive language learning abilities* and *input*. Its aim is to offer an analysis of these two factors in relation to the appearance of CLI in the learners' productions. Although their importance in transfer has been extensively noted – i.e. Odlin (1989) and Cenoz (2001)–, to our knowledge, not many empirical studies have been carried out so far to investigate the extent to which these differences among learners can affect the appearance of CLI. The first section of the chapter (section 3.2) deals with the role of *cognitive language learning abilities*; it highlights its importance in second language learning and analyses its potential role in the appearance of language transfer. Section 3.3 focuses on the issue of input; it first briefly concentrates on the importance that input has in language learning, and then moves on to the relation between input and CLI. As has been already pointed out, this combination of factors (*cognitive language learning abilities* and *input*) has not been examined so far.

3.2. Cognitive language learning abilities

Cognitive-related differences, along with affective and personality factors, are considered as important ID that predict L2 attainment. As reviewed by Kormos (2013), the cognitive variables that play a significant role in language learning are intelligence, foreign language aptitude, WMC and PSTM capacity. In the following subsections we shall mainly focus on language aptitude and working memory (WM), as these have been the subject of direct analysis in the present dissertation.

3.2.1. Cognitive language learning abilities in SLA research

It is undeniable that some individuals are more gifted than others at learning a second or foreign language; they seem to possess a talent for language learning. Granena and Long (2013a) have even acknowledged that language aptitude is the second strongest predictor variable (after age of onset) that accounts for 10% - 20% of the variance in ultimate attainment. Scholars in the field of SLA have investigated the great variability in the rate of acquisition, as well as in the learners' ultimate outcomes and processes used to learn an additional language, especially the variability found among late learners. This variation may be due to different factors, one of which is aptitude for language learning, which, according to researchers such as Robinson (2002a, 2005, 2008) and Ortega (2009), cannot be separated from the learners' learning contexts and experiences. This reminds us of the need to take into account diverse factors in SLA studies, since each of them may play a role in the learners' ultimate language success and performance.

Cognitive language learning abilities have been identified as a crucial factor in L2 acquisition, as already noted long ago by Skehan (1989: 38) in the following statement: "aptitude is at least as important, and usually more important, than any other variable investigated". Additionally, as DeKeyser (2000) claims, language aptitude can determine very high levels of achievement even with late learners, who are normally expected to attain a lower level of proficiency. Nowadays the importance of aptitude in high level achievement is the generally accepted idea, but it has not always been so and, moreover, the way in which aptitude has been conceptualized has changed since the first language aptitude research studies.

Although it is not within the scope of the present chapter to offer a full and detailed analysis of the development of research on cognitive abilities, a selection

of main milestones will be presented below, so as to highlight their importance in L2 learning.

The first research on language aptitude was carried out at the beginning of the 20[th] century; however, it was not until the 1950s that John Carroll developed his Modern Language Aptitude Test (MLAT), which has been extremely successful and is used to this day. The test, which focuses on different cognitive explicit abilities –i.e. grammatical sensitivity, inductive learning ability, phonetic coding ability and rote learning ability (Carroll, 1981)-, soon became a useful tool to predict rate of language learning in classroom settings, as its emphasis is on linguistic code features rather than learning through communication (see Dörney & Skehan, 2003; Granena & Long, 2013a; Kormos, 2013).

Despite its popularity since its creation, the test has recently been widely criticized "for producing a construct which is, in fact, nothing more or less than what the test measures" (Kormos, 2013: 134). That is, "the tacit understanding in the L2 research community has been that language aptitude is what language aptitude tests measure" (Dörney, 2005: 35). The main issue raised by current researchers, such as Miyake and Friedman (1998) and Robinson (2002), is, therefore, that researchers have failed to identify what aptitude consists of. Ortega (2009: 151) even expresses her skepticism about the existence of aptitude and the components that conform it in the following assertion: "In the end, however, no test administration or correlation prediction can tell us whether language aptitude really exists, and if so, what it is made of". Current SLA researchers, thus, are more interested in understanding the construct of aptitude than in developing tests to measure it, contrary to the first studies.

The main criticisms towards the MLAT, though, have been put forward by two SLA researchers who have extensively theorized on aptitude in the last years. The first important criticism comes from Skehan (2002), who claims that the conceptualization of the memory capacity component in the test as rote memory is outdated. Secondly, apart from highlighting the complexity of the

aptitude constructs, as will be discussed in the following section, Robinson (2002a) further states that aptitude scholars are no longer interested in rate of learning in formal instructional contexts, but in the learners' possibility to gain very high levels of attainment in different learning contexts. This aim has led to the design of new measures –e.g. Hi-LAB (Doughty, Bunting, Campbell, Bowles & Haarman, 2007), specifically conceived to predict successful ultimate attainment (see Doughty, 2013). This idea shows a clear change of conceptualization of the importance of aptitude in different learning contexts.

Whereas previous studies, especially during the 1970s and 1980s, suggested that aptitude differences predicted rate of learning, and were only relevant when learning explicitly and not implicitly, more recent research studies have pointed out that aptitude might also determine ultimate attainment, and might also be a factor to be considered in naturalistic acquisition. Skehan (1989) even argued that aptitude might be more relevant in naturalistic contexts than in classroom settings, and suggested that some of the components of the traditional conceptualization of transfer, such as grammatical sensitivity and inductive ability, might also be relevant in naturalistic acquisition (Skehan, 2002).

The studies that have been carried out in the last years to investigate this relation between ultimate attainment and aptitude in naturalistic settings have yielded mixed results, mainly due to methodological differences, as Kormos (2013), Long (2013) and Granena and Long (2013b) report. That is, Abrahamsson and Hyltenstam (2008) report a relation between aptitude, as measured by Meara's (2005b) LLAMA test, and grammatical attainment, measured by means of a GJT in early Spanish L1 learners of Swedish, which suggests an important role for aptitude in child L2 acquisition. DeKeyser (2000) and DeKeyser, Alfi-Shabtay and Ravid (2010), on the other hand, reached the same conclusion with older learners but not with younger ones, through an analysis of the learners' results in a GJT and a subtest of the MLAT. Additionally, Granena and Long (2013b) have attributed an effect to aptitude, as measured by the LLAMA test, in

late L1 Chinese – L2 Spanish starters in the acquisition of lexis and collocations. These studies show a recent attempt to explain why some late learners might attain near-native proficiency in the L2 despite their late start (see Granena & Long 2013a for a review of recent studies). Robinson's (2002a) claim that language aptitude plays a key role in the different learning contexts as different facets of aptitude might be relevant in each context has been, therefore, extensively proved. As Granena and Long (2013a) point out, these changes in aptitude studies have led to a re-examination of the language aptitude construct. That is, whereas at first it was considered a unitary construct composed of different cognitive abilities, all related to two main types –i.e. memory and analytical abilities-, more recently researchers (e.g. Skehan, 2002; Robinson, 2007b) have tried to identify the relevant subcomponents in each context, as will be extensively discussed below.

The conceptualization of aptitude as a combination of cognitive and perceptual abilities is nowadays emphasized. This view of aptitude as a complex construct consisting of different cognitive abilities has been recently adopted by DeKeyser and Koeth (2011). These abilities may become important in different degrees depending on varied factors, such as type of task, learning context, language domain (Granena, 2013), or stage of learning (Kormos, 2013). As Kormos (2013: 141) claims,

> Language learning aptitude is not a unitary construct, but rather a conglomerate of different abilities that can assist in the different stages and processes of language learning. Therefore, in order to elucidate the role of cognitive factors in language learning, it is necessary to define which components of aptitude assist in particular phases of language learning.

This above-mentioned change of conceptualization has been clearly captured by Robinson in his *Aptitude Complex Hypothesis* (2001, 2002a, 2005), which claims that learners' language aptitude is composed of different interrelated complex of abilities that cannot be disentangled from the contexts and the learning environment, as well as from motivational and affective factors.

Robinson's model, thus, as well as Skehan's (2002) model, allows for mixed profiles; one learner might be high in some of the abilities, and low in others. In this model, primary abilities –i.e. general cognitive abilities, such as pattern recognition, speed of processing and grammatical sensitivity- are distinguished from second-order abilities –i.e. specific language learning abilities, which include noticing the gap, semantic processing, metalinguistic rule rehearsal and memory for text and speech (Kormos, 2013).

3.2.1.1. Importance of memory capacity

Memory is indeed an important factor in language acquisition, since any piece of information that the mind holds involves memory, which is composed of two types that interact: long-term memory (LTM) and short-term memory (STM). Contemporary researchers who study cognitive abilities and memory in particular, have acknowledged that "good memory capacity, including verbal memory and memory as a substrate of both L1 and L2 skills, remains a prime candidate in explanations of differential levels of L2 achievement" (Ortega, 2009: 155).

LTM, which is unlimited, is comprised of two types of knowledge, namely, explicit-declarative – i.e. the kind of information that is verbalizable and consciously recalled- and implicit-procedural knowledge –i.e. information that the learners possess without being conscious of (Ortega, 2009). One of the most extensively studied areas has been the storage of vocabulary in LTM. It seems that words become part of LTM when the learner is able to establish associations and links in the mental lexicon between the form and the meaning of words (Meara, 2007), which is made possible when the learner notices a specific vocabulary item in the input. Thus, words that are highly frequent in the input

might enter into LTM earlier than low-frequency ones (e.g. Nation & Waring, 1997).

Whereas LTM encompasses established knowledge, STM is related to how much information learners are able to remember for a brief period of time. STM has been shown to predict success in learning new vocabulary in a foreign language (Service, 1992; Service & Kohonen, 1995; Chun & Payne, 2004), as well as achievement in L2 listening ability and overall L2 proficiency (Scott, 1994). However, the prediction of STM might be variable, as Williams (2005) pinpoints, depending on the L2 phenomena. Nowadays the most widely-accepted conceptualization of STM is Baddeley and Hitch's (1974) and Baddeley's (1986, 2000, 2003a) *Working Memory Model*. This model, apart from involving storage of information (STM), also entails processing– both automatic and controlled- and manipulation of information. In this way, according to Baddeley (2003b), WM plays a more important role in cognitive abilities and language learning than was previously thought.

In fact, since the mid-1990s scholars in the field of SLA and in the area of ID have started to point out that WM might be a cognitive ability as important as the traditional concept of language aptitude when learning an additional language. Robinson (2005), for example, has argued that WM needs to be seen as a main component of aptitude, along with other more traditional ones such as inductive ability. Miyake and Friedman (1998) have even proposed the "working memory as language aptitude" hypothesis, highlighting in this way that WM may occupy a central position in the construct of aptitude. In addition, some studies have analysed the relation between WM and foreign language aptitude. In this respect, Engle, Kane and Tuholski (1999) and Robinson (2002b) have found correlations between WM and different general aptitude scores (see Kormos 2013 for a review of these studies). These results suggest that "various aspects of working memory are important for all forms of language learning and processing, and must therefore be represented in any aptitude test" (DeKeyser & Koeth, 2011: 397).

Baddeley's (1986, 2000, 2003a) WM model consists of different components: the *central executive*, which contains the *phonological loop* –specialized in the manipulation and retention of speech- and the *visuo-spatial sketchpad* –responsible for visual and spatial information; and the *episodic buffer*, which is directly connected with LTM (Baddeley, 2000). The *central executive* has an important role in attention control. That is, it helps learners to shift between tasks that are being carried out in parallel, and to select, revise and review relevant information in order to be able to complete the task. The *central executive* also has an inhibitory function that hinders automatic responses that are not relevant in a particular task.

The ability to allocate attention during two different cognitive tasks is, thus, of great importance in the language acquisition process. As pointed out by Doughty (2013), those learners that are better at switching tasks are thought to be better at switching between comprehending and producing a foreign language, or switching between different languages, an ability that is of primary importance in the present dissertation. Thus, those learners that are better able at maintaining attention in two different tasks at the same time might be expected to produce fewer instances of CLI as they are capable of switching between their different languages.

WM, in contrast to LTM, is limited in capacity –i.e. information can only be hold in WM for about two seconds and subsequently forgotten unless it can be rehearsed by the phonological loop, so that it can eventually be integrated in LTM (Baddeley, 2007). That is to say, learners need WM to store new information and to integrate it with the existing knowledge in LTM. WM determines how well and how fast learners process and store linguistic information. These features of WM are captured in Baddeley's (2003a: 189) often cited definition, which asserts that WM is "the temporary storage and manipulation of information that is assumed to be necessary for a wide range of complex cognitive activities". The key concept in this definition is that of manipulation of

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information. The idea under the term of WM is not how many items individuals are able to store, but how they are able to maintain and manipulate information actively, as Engle (2002: 20) acknowledges in the following statement: "[Higher WMC] does mean that more items can be maintained as active, but this is the result of greater ability to control attention, not a larger memory store". Attention is, therefore, at the centre of the construct.

As highlighted above, WM is instrumental in integrating new information into LTM, and it is, thus, thought to play a vital role in the language acquisition process. As seen in Figure 4 below, WM is involved in the different stages of the language learning process.
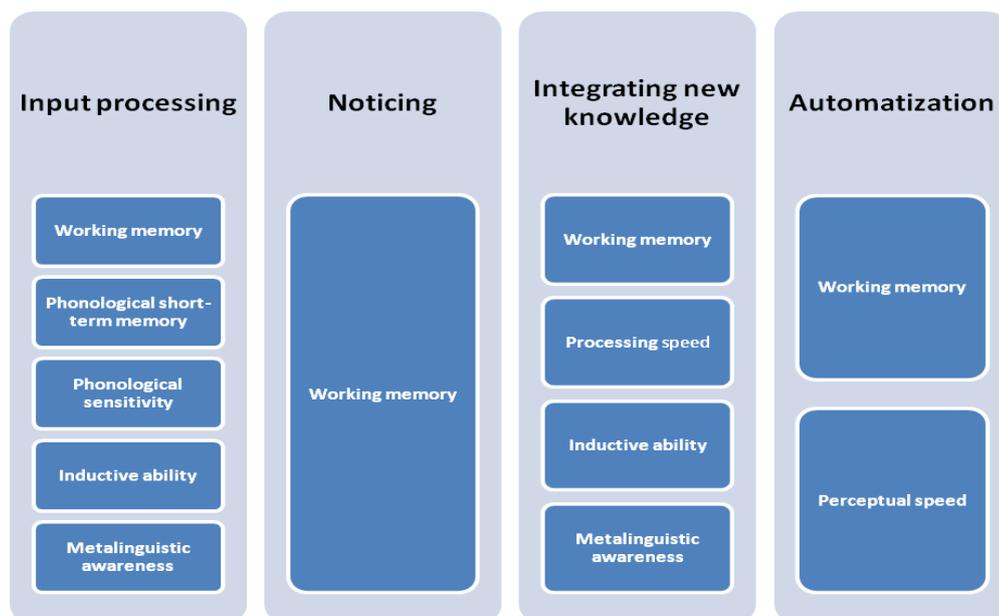
Figure 4 – The role of cognitive factors in language acquisition (adapted from Kormos, 2013: 142)

The first stage in the language acquisition process involves learners to process and understand input. In this stage, as reviewed by Kormos (2013), different cognitive factors are thought to be involved. First, WM is assumed to have an effect on the efficiency of *input processing*. Other factors, such as *PSTM* –that determines the length of the linguistic chunks hold in memory-, *phonological*

sensitivity –that helps in distinguishing sounds and decoding words-, *inductive ability* and *metalinguistic awareness* –which are responsible for the syntactic analysis of the input- are also defining influences in this first stage.

In order for language acquisition to occur, apart from attending to it, learners need to notice relevant and unknown information in the input, as will be discussed at length in the section on input (Schmidt, 1990; Robinson, 1995). In this process, *attention*, which is another main component of cognition regulated by WM (Kane & Engle, 2003), is of vital importance. An early definition of attention by James (1890) characterized it as "the taking possession by the mind, in clear and vivid form, of one out of what seems several simultaneously possible objects or trains of thought" (as cited in Gass, 1997: 8). It therefore refers to the learners' capacity to choose what they pay attention to and what they ignore in the input. It involves the control of the information that learners get from the environment. In order for input to become output, learners need to focus their attention on a limited and manageable amount of data; that is, they need to limit the data to which they attend (Gass, 1997), as *attention capacity* is limited and selective. This links to Schmidt's (1990, 1993) idea that in order for acquisition to take place, the learner needs to consciously notice new material in the input. This ability closely links to the learners' WMC; that is, the greater a person's WMC, the greater their ability to select from the input and, thus, ignore unnecessary information; a low ability to ignore unnecessary information might result in the unnecessary storage of information in WM (Fukuda & Vogel, 2009). WM, thus, plays an important role in *noticing* the relevant linguistic input.

As seen in Figure 4 above, the next stage of language learning is that of *integrating new knowledge*. WM is also thought to play an important role at this phase, as it regulates attention when manipulating several pieces of information. Learners that have a greater WMC are the ones that can maintain more items as active, which is due to the ability to control attention (Engle, 2002). In this stage of integrating new knowledge other cognitive factors come into play depending

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on the type and context of acquisition: *processing speed* -in implicit language acquisition-, *metalinguistic awareness* -in explicit learning-, and *inductive ability* -in both implicit and implicit learning- (Kormos, 2013).

In the last stage of language acquisition, the integrated knowledge needs to be *automatized*. Both WM and *perceptual speed* play a vital role in this process. Once the L2 knowledge has been stored in the mind, it needs to be accessed and retrieved when the learner needs it for either comprehension or production. This is done, according to Segalowitz (2003) through both automatic and controlled processing. Controlled processing requires more effort, as the knowledge has not been automatized and cannot work in parallel; therefore, learners need to process items one by one; that is, when they pay attention to one thing, they need to block the rest; only one can be executed at a time. Learning occurs, thus, according to the information processing theory called *Skill Acquisition Theory* (e.g. Bialystok & Sharwood Smith, 1985; DeKeyser, 1997; Bialystok, 2001). Here controlled processes become automatic, which takes place through extensive practice. Automatization, therefore, means the transformation of explicit into implicit or procedural knowledge, which entails the creation of links in LTM. The more the information is accessed through practice, the easier it becomes to access it effortless.

A related issue that has also been explored in the last decades has been the interaction of the L1 and L2 lexicons during lexical access, that is, how the learner accesses L1 and L2 words that have been stored in LTM. Kroll and de Groot (1997), for instance, have shown that both the L1 and the L2 are activated simultaneously both in recognition and production of words. According to Kroll, Sumutka and Schwartz (2005), whereas in the former what is activated is the L1-L2 form representations, in the latter meaning representations are activated.

WMC varies from person to person; thus, people with a large WMC are able to process linguistic information more quickly and effectively than those with a smaller WMC (Just & Carpenter, 1992). Furthermore, when such capacity

is unable to maintain the level of activation necessary to perform a certain task, processing slows down and/or storage decreases (Sagarra, 2008). Recent studies have indeed begun to suggest that those learners with better WMCs are able to learn an additional language more efficiently, and that it might predict learning rate and ultimate attainment in the L2. More specifically, studies have started to show, for example, that WM plays a role in L2 processing as regards lexical and syntactic processing (Miyake & Friedman, 1998), as well as reading comprehension (Geva & Ryan, 1993). Miyake and Friedman's (1998) study of 59 Japanese learners of English revealed that WM influenced the learners' capacity to attain native-like sensitivity to linguistic cues and to comprehend grammatically complex sentences efficiently. Geva and Ryan's (1993) study was carried out with 73 children in a bilingual English-Hebrew school. The authors suggest that the participants' results on demanding tasks such as reading in the L2 can be predicted taking into account information in memory storage and executive control functions, as well as intelligence and L2 oral proficiency. They, thus, highlight the importance of memory in performing tasks in the L2.

In Kormos and Sáfár's (2008) study with 121 secondary school students in Hungary, learners' WMC correlated with overall proficiency scores, as well as with achievement in reading, listening, speaking and in the use of English test (grammar and vocabulary). Moreover, WM has also been found to be related to the ability to allocate cognitive resources efficiently (Just & Carpenter, 1992; Engle, 2002). In the case of speaking, which is particularly relevant in the present dissertation as the participants had to perform an oral task, WM has been pointed to be a crucial factor, as learners need to maintain in memory pieces of their message while planning and coding the linguistic elements of the next segment of the message (Kormos, 2006).

However, Ortega (2009: 156) alerts us to the fact that "differential rate and success of L2 learning may be more complex than a simple correlation between memory tasks and proficiency measures can capture". She recalls a study by

Masoura and Gathercole (2005) in which it is shown that memory might have greater effects at early stages of language development rather than at more advanced ones, once a threshold size of L2 vocabulary has been acquired. Moreover, Ortega (2009) further suggests that memory might play a role in differential success at differential proficiency levels and in different linguistic areas. The same conclusion is reached by O'Brien, Segalowitz, Collentine, and Freed (2006) in a study with L2 Spanish learners, in which phonological memory was associated with greater gains in the area of lexis in lower proficiency learners, and with gains in grammar among higher proficiency ones. The above-mentioned complexity is also evident in Mackey, Philip, Egi, Fujii and Tatsumi's (2002) study, which posits that learners with high WMC might at an advantage in comparison with those with low WMC in learning from interactions only after a period of time, as shown by a post-test two weeks later.

3.2.2. Cognitive language learning abilities and CLI

The role of *cognitive language learning abilities* has been the focus of attention of a huge amount of research in the field of SLA, as discussed in the previous section. Additionally, the effects that this factor might have on the occurrence of CLI have been acknowledged at length. However, it has only been empirically analysed in relation to CLI on very few occasions and in specific areas. The few existing studies have been mainly carried out in the areas of lexis and phonology, as we shall note in this section.

As revised in the preceding section, WM has different functions: it assists in regulating attention to the relevant linguistic features, it maintains chunks of language in memory, which will be used for further processing, and it inhibits irrelevant stimuli and automatic response patterns when using the L2, such as words and phrases from the L1 (Kormos, 2013). Therefore, those learners with

higher WMC are expected to inhibit the L1 to a greater extent and, thus, fewer words and structures from their L1 are expected to be found in their L2 productions. Additionally, transfer effects are likely to occur due to memory constraints, which might determine the amount of information that learners are capable of processing in their WMs, how efficiently this information is processed, as well as how learners activate and retrieve the information stored in their LTM (Jarvis & Pavlenko, 2008).

As Odlin (1989) and Jarvis and Pavlenko (2008) have pointed out, studies on *cognitive language learning abilities* and CLI have mainly focused on the learner's *phonetic coding ability*, which Carroll (1981: 105) defined as "an ability to identify distinct sounds, to form associations between these sounds, and symbols representing them, and to retain these association", and *phonetic mimicry ability*, which refers to the learners' capacity to mimic sounds in a foreign language.

These studies on phonetic mimicry ability have shown that there exists some kind of interaction between the learners' cognitive ability for language learning and CLI. More specifically, they have shown that those learners who are good at phonetic mimicry are more likely to acquire a native-like accent in the L2 and, thus, they are less likely to transfer phonetic and phonological features from the languages they already know (Major, 1992, 1993).

More recently, two studies by Cerviño and Ortega (2014) and Ortega and Cerviño (2015) have investigated the role that PSTM –associated with memory for verbal material- might play in the occurrence of L1 phonological transfer. The analysis of /$^s_B{}^c_R{}^H_J$/ production by 30 Catalan/ Spanish learners of English revealed that PSTM might play an important role in Catalan EFL learners' production of the English vowel contrast analysed. That is, high PSTM learners produced higher spectral distance between /$^s_B{}^c_R{}^H_J$/ than low PSTM ones, who transferred their L1 phonological knowledge to the production of L2 categories.

On the basis of the quite limited existing literature Jarvis and Pavlenko (2008: 193-194) point out that

> those people who are especially skilled at discerning and acquiring the paradigmatic and syntagmatic forms, structures, patterns, and distinctions of a target language can be expected to rely less on their knowledge of other languages while learning, comprehending, and producing the target language.

This statement, though, should be confirmed by further research, since very few studies on the topic have been carried out so far. Moreover, in the light of the studies on the new conceptualization of language aptitude revised in the preceding section and the importance given to WM in language acquisition by recent research studies, it seems that WM could also have an influence on the occurrence of CLI. This is, however, speculation since, to our knowledge, no previous study has analysed the relationship between these two variables. The present study, thus, attempts to fill this gap in the literature.

Although the importance of a person's *cognitive abilities* may play an important role in the acquisition of an additional language and in the occurrence of language transfer, other factors –e.g. the proficiency in the TL or the input received- can also affect how a language learner is able to make use of these abilities (Jarvis & Pavlenko, 2008). This convinces of the necessity to take into consideration and analyse different factors altogether. A good example of the interrelation of different factors, although not specifically a study on language transfer, is Tokowicz, Michael and Kroll (2004). They examine the effects of WMC and SA experience on the types of errors that learners make when translating from the L1 (English or Spanish) to the L2 (English or Spanish). They analyze *non-response errors*, which occur when learners say that they did not know the answer or provided no answer at all, and *meaning errors*, produced when incorrect responses are uttered that are related in meaning to the correct target item. They found that those learners with more SA and higher WMC made as many meaning as non-response errors, since SA learners are used to being in situations where they need to communicate. All the other learners, on the other hand, made more non-response errors. *Meaning errors* require more efficient allocation of cognitive resources than *non-response errors* and, thus,

meaning errors require additional WMC, so learners with higher WMC are better at using strategies like *circumlocution*. This finding led the authors to conclude that only those learners with high WMC and with SA experience can use approximate translations to communicate, as this strategy requires the learner to maintain multiple items in memory simultaneously. Another significant conclusion of this study is that examining the types of errors that learners make is more informative than only analysing overall accuracy data, an idea which is followed in the present dissertation by analysing the different types of CLI present in the learners'productions.

To sum up, as can be seen by the overview on *cognitive language learning abilities* presented above, nowadays this factor is conceived as a combination of different abilities that might become relevant depending on factors such as type of task, learning context or language domain. Plenty of studies have emphasized its vital role in language learning, as discussed above; however, only a few have addressed the relation between *cognitive abilities* and CLI, although its importance has been acknowledged by several researchers. The need for further research in this direction is, therefore, evident, especially in the area of WM.

3.3. Input

3.3.1. Input in SLA Research

"Learners' acquisition of a second language depends on their experience of this language and what they can make of it" (Ellis & Collins, 2009: 329). Learners need to be substantially exposed to input for language acquisition to take place, which occurs since learners are capable of converting the language they are exposed to –i.e. *input*- into their own linguistic system. Learners' success in this

conversion will greatly depend on their *cognitive abilities*, as has been discussed in the previous section. It follows that the access to input and the subsequent practice of the learnt items is an important process that enables automatization and proceduralization of new knowledge -i.e. the conversion of declarative or explicit knowledge into procedural or implicit knowledge[19]-. As a consequence, links in LTM can be established and access to this new knowledge will eventually become easier.

In this line, in her extensive analysis of language input, Gass (1997) proposes a five-stage-model of second language acquisition (*apperceived input*, *comprehended input*, *intake*, *integration*, and *output*) that accounts for the conversion of *input* into *output*[20]. In this process, learners, first of all, need to notice new features in the input that still need to be learned, and relate them to already acquired material. They do not only need to comprehend input at the level of meaning, but also at the syntactic and phonological level. A further stage involves assimilating the linguistic material and integrating it or, more simply put, developing one's L2 grammar. Finally, learners will produce their own *output*, which in turn, will serve as a means of hypotheses testing -an essential component in language acquisition, which Swain (1985) had already put forward. This process is a gradual one; that is, "there is an incubation period beginning with the time of the initial input (negative or positive) to the final stage of restructuring output" (Gass, 1997: 145).

In the above-described process, the learners' role in the selection of input also needs to be considered. Learners need to be viewed as active participants that choose the input that they want to receive in each particular moment, and not just as passive recipients of input. In Beebe's (1985: 404) own words, "learners have 'input preferences' (or 'model preferences') in the sense that they

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[19] This is how the so called *Skill Acquisition Theory* defines learning: The gradual transformation from controlled to automatic knowledge (e.g. Bialystok & Sharwood Smith, 1985).

[20] Gass' (1997) model takes as its basis previous models on input, which will be presented and discussed in the following subsection.

consciously or unconsciously choose to attend to some target language models rather than others".

A further issue that Gass (1997) addresses is the importance of input in the different areas of linguistic information. She asserts that we normally put equal importance on input when learning semantics, grammar, and when learning the meaning of words. Nevertheless, it might be the case that some parts of language are more difficult to learn and thus require a higher amount of exposure to the language. This is the case of pragmatics, which is only acquired if the learner is provided with massive exposure: "the input for a fluent non-native speaker appears to be sufficient for grammatical development but not […] for pragmatic development" (Gass, 1997: 95). Gass further adds that the necessary input to develop the grammar of the language being acquired varies according to the specific features of the language itself, as well as the individual learners' knowledge of it.

This leads us to the conclusion that the importance and the role of input in SLA cannot be questioned. In fact, language input has always had a prominent role in different and diverse SLA theories. All theories agree that some kind of input is essential and necessary for acquisition to occur, as it provides the necessary linguistic material for the development of the L2 system (Gass, 1997). However, as discussed by Van Patten and Williams (2006), theories have attached different degrees of importance to the role of input in L2 acquisition; that is, some of them have attributed it a central role, such as Krashen's framework (Krashen, 1981, 1982, 1985), whereas others have given input a lesser role, which is the case of the studies within the UG framework (e.g. White, 1989). Although it is not within the scope of the present chapter to offer a full and complete review of all SLA theories, a summary of the main ideas as regards language input presented by several frameworks will be summarized in the following section, to better understand the relationship between input and CLI.

3.3.1.1. Input and SLA theories

For behaviourism (Lado, 1957; Skinner, 1957), language *input* was of primary importance, as language acquisition –both L1 and L2- was considered as a process of imitation and practice. They, thus, proposed a direct relationship between *input* and *output*. As SLA researchers became interested in the internal processes of the learner, since language acquisition was considered a creative process -e.g. Dulay and Burt, 1974-, the importance given to input decreased. For mentalist theories, it was only a trigger for the internal language processing. The focus moved from external to internal mechanisms that the learner brings to the learning situation, with emphasis on innateness and the innate system. Innatists regarded the "poverty of the stimulus" to be a feature of input, which led to the "logical problem of language acquisition" (White, 1989). The information that input supplies "is, by itself, insufficient to enable learners to arrive at the rules of the target language" (Ellis, 2008: 205). Learning in the UG model depends on getting the right input in order to set out the parameters of the language the learner is acquiring; input is, therefore, the evidence out of which the learner constructs the knowledge of a specific language. Nonetheless, only a few instances of exposure are needed to trigger the correct language forms.

Non-generative approaches, such as Hatch and Wagner Gough (1976), as reported by Ellis (2008), on the other hand, considered input as having a central role in language learning. Hatch and Wagner Gough stated in their *Frequency Hypothesis* that the order of L2 acquisition depended on the frequency with which different items occurred in the input. Several other researchers have analysed the relationship between frequency in the input and acquisition; we should highlight, though, the research carried out by N. Ellis (2002), who sees language learning as "the associative learning of representations that reflect the probabilities of occurrence of form-function mappings" and considers frequency as "the key determinant of acquisition because 'rules' of language […] are

structural regularities that emerge from learners' lifetime analysis of the distributional properties of the language input"(2002: 144). This idea is linked to those proposed by the *Competition Model* (MacWhinney, 2001), which predicts that the probabilities of occurrence of specific form-function mappings in the input predict learners' output. According to this model, additionally, input frequency works together with other determinants of acquisition, such as the learner's L1. Thus, Ellis (2008) concludes that input frequency alone cannot explain L2 acquisition, and that it interacts with other factors, such as syntactic category, phonological salience, communicative value, innate constraints on learning, and the above-mentioned L1.

Krashen also gave input a central role in L2 learning, as discussed in his *Comprehensible Input Hypothesis* (Krashen, 1981, 1982, 1985) as part of his *Monitor Model*. For Krashen, language learning can only be successful if L2 learners are exposed to *comprehensible input*, that is, language that is read, heard and understood, which learners process for meaning and which has something to be learned (i+1). This model stressed the idea that only a certain type of input is relevant for language acquisition. Therefore, modified language –i.e. foreigner talk, teacher talk and interlanguage talk- plays an important role in this respect. Although Krashen's model has been very influential in SLA theory, it has also been extensively criticised, mainly due to the vagueness in Krashen's definition of 'comprehensible'. Moreover, as suggested by Faerch and Kasper (1986), apart from using contextual information and already acquired knowledge to understand input –i.e. 'top-down processes'- learners might also pay attention to the linguistic forms in the message –'bottom-up processes'. They further argued that it is when learners perceive a gap between the input and their current knowledge that acquisition takes place; if they do not pay attention to the form of input, they might not acquire anything new (e.g. Schmidt, 1983). Therefore, as Sharwood Smith (1986) asserts, the processes of comprehension and acquisition

are not the same, and he suggests that there is input that helps learners to interpret meaning and *input* that learners use to improve their ILs.

In contraposition to Krashen's ideas on input, White (1987) claimed that there are certain issues that learners cannot learn simply by understanding input; they might also need negative evidence –e.g. feedback-. Additionally, she asserts that one of the potential types of language input is *incomprehensible input*. According to White (1989), input that learners cannot comprehend enhances language acquisition, as it makes learners draw their attention to certain structures that still need to be acquired.

In accordance with Krashen's perspective, Long (1983, 1996) found the best *comprehensible input* in interaction; that is, the kind of input that has been interactionally modified with native speakers or more proficient non-native speakers for the sake of comprehension. Long supported the idea that interactionally modified input through *negotiation of meaning* is essential for input to become comprehensible. It is the type of input that emerges when the interlocutors need to negotiate meaning or form when a problem occurs in the communication process. This kind of negotiation that occurs in conversation is a way of focusing the learner's attention on the areas of language that do not correspond to those of the TL. Long (1996: 451-452) very pertinently pinpoints that *negotiation of meaning* connects "input, internal learner capacities, particularly selective attention, and output in productive ways". This leads to the assertion that in order to take advantage of interaction, learners need specific internal capacities. This is in line with Robinson's (2002a) idea that attentional processes are important to notice the mismatches between input and output. It should be noted, though, that communication that takes place without any kind of problem in understanding also leads to acquisition; that is, *negotiation of meaning* is not the only type of interaction that facilitates language learning (Pica, 1996; Nakahama, Tyler & Van Lier, 2001)[21].

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[21] See Gass and Mackey (2006) for a recent overview of the Interaction Hypothesis.

It can thus be concluded that interactionist theories consider input and interaction of crucial importance in language learning for different reasons: interaction provides learners with input that contains the data that learners need for acquisition –models of what is grammatical-, and it also provides opportunities to produce language and to receive feedback on the learners' attempts to use the L2 (Long, 1996). It is during this process of negotiation that learners are able to pay attention to form, that is, they can notice the linguistic forms in the input.

It should also be noted that interactionist SLA research has continued to be a major strand of enquiry in SLA to the present day. The role of interaction, not just as a means of practising the grammatical structures, but as the basis for the development of the L2, has been highlighted by other studies, such as Pica (1987, 1988, 1994, 1996), Pica and Doughty (1985), Varonis and Gass (1985), Gass and Varonis (1994) Loschky (1994) and Mackey (1999) in this direction. However, other studies –i.e. Ellis 1995- have concluded that *premodified input* can be more effective than interactionally modified one. Ellis (2008) pinpoints that this might be due to the fact that *interactional input* might suppress learners' need to develop their competence, as demonstrated in Sato (1986).

In opposition to Krashen and Long's ideas on *comprehensible input*, Larsen-Freeman (1983) convincingly argues that language learners might be able to assimilate information about the L2 without understanding the input they are exposed to, such as information related to the L2 phonology. She further adds that learners can work by themselves on *unmodified input*, such as the one found on TV. In this way, some learning of the L2 might take place without *comprehensible input*, and, moreover, comprehending input might not result in acquisition.

While these theories have given input a central part in language acquisition, others have also considered additional factors, apart from input, as important variables for language learning, since input alone does not account for

the success in grammatical acquisition. This is the case of Swain's (1985, 1995) *Comprehensible Output Hypothesis*, which points to the importance of *modified output*; that is, the output modification to make the message more comprehensible to the interlocutor. It is with production that the learner needs to put the words into some syntactic structure: production "may force the learner to move from semantic processing to syntactic processing" (Swain, 1985: 249); "output may stimulate learners to move from the semantic, open-ended, nondeterministic, strategic processing prevalent in comprehension to the complete grammatical processing needed for accurate production (Swain, 1995: 218). In other words, processing language only at the level of meaning does not help in understanding the syntax of a language –an essential element to be able to produce language. Output, thus, leads to awareness of form, which in turn results in learning (Kowal & Swain, 1994, 1997).

This idea of awareness and noticing has also been extensively highlighted by Schmidt in his *Noticing Hypothesis* (1990, 1993, 1994, 2001) by asserting that the crucial steps in language acquisition are *noticing* -registering formal features in the input-, and *noticing the gap* –identifying the differences between the *input* and the *output* of the learners. When the learner notices something in the input, it becomes *intake* automatically, and thus, acquisition takes place. "Noticing includes awareness, and awareness presupposes attention. Hence, attention is central to any concept of noticing" (Gass, 1997: 9). Additionally, as Kormos (2013) reviews, attention to those aspects of the input that are relevant seems to be not only important in explicit learning, but also in implicit acquisition. Robinson (1995) agrees with this idea that noticing is necessary for learning, but adds that noticing should be viewed as attention plus rehearsal. N. Ellis' (2002) views are also in line with Schmidt's *Noticing Hypothesis*; he adds, however, that noticing is not always necessary in order to learn new elements of the language, only for those new elements with certain features that make low-attentional learning not likely. As has been extensively discussed in preceding sections when reviewing

the role of cognitive abilities in language learning, WMC plays an important role in this process of noticing relevant linguistic input.

The above discussed approaches in relation to input and interaction have been encompassed in the literature within the *Computational Model* of L2 acquisition. However, another type of approach has been more recently developed, the so called *Sociocultural Theory* (Lantolf & Appel, 1994; Lantolf & Pavlenko, 1995; Lantolf 2000a, 2000b), which considers input and interaction as a context in which acquisition occurs. More specifically, it considers acquisition as a social practice that occurs within interaction as learners are assisted through scaffolding to produce linguistic forms that they are unable to perform by themselves. It is in this process that learners move from assisted to independent control –i.e. to internalization of the target item. Sociocultural theorists further argue that interaction cannot be investigated by separating its component elements (*input*, *output*), but that it is necessary to study the learners in their environment and analyse interaction in its totality (Van Lier, 2000); that is, they "argue for a much richer view of interaction and for treating it as a cognitive activity in its own right" (Ellis, 2008: 272). For this framework, "learning occurs in interaction" shaped by cultural and social factors "rather than as a result of interaction" (Ellis, 2008: 273).

The latter discussed theories place great importance on the kind of input that learners receive through interaction with other speakers. It should be noted, though, that this is not the only type of input learners have access to. Thus, depending on the context in which learners acquire the L2, the type of input they receive might vary a great deal, which might have a significant impact on the language acquisition process.

Input and *output* are, thus, undoubtedly essential in SLA, and have been taken into account in the present study. The participants have been exposed to English *input* throughout their language learning history. However, both *type* and *amount of input* might vary among learners. While some of them might have

only been exposed to English in a formal context, others might have spent some time abroad in an English-speaking country, varying in this way the type of input received, and the amount of both input and output. Naturalistic exposure is not the only way in which learners can receive input and produce output. Some learners, therefore, especially those who are highly motivated, might seek opportunities for using the language outside the classroom in non-SA contexts. The importance of these issues is going to be highlighted in the following subsections.

3.3.1.2. Type of input

Input is determined by variation. It can come from varied sources, and can be *non-interactive* –i.e. in the form of texts that learners listen to or read- or *interactive* –i.e. when learners participate in conversations- which gives learners the opportunity to produce *output* and to receive feedback that points out and corrects their errors, as has been fully discussed in the previous section. This variation might depend, although not solely, on the context of acquisition. Thus, the type of input, as well as the amount of contact with the language, in a naturalistic context will vary from that in an instructional setting: learners in a naturalistic environment are more prone to receive both a higher *amount of input* and a more interactive *type of input*.

Moreover, the success in naturalistic environments over formal ones is generally attributed to the volume and variety of input received in the former versus the limited language contact in the latter (Lightbown, 2000). Bolibaugh and Foster (2013), for example, assert so in their study of native-like idiomaticity; that is, if learners' aim is to gain very high levels of L2 proficiency, they need long periods of exposure to the TL. In this respect, immersion settings provide more as well as a richer contact with the language to be learnt. Thus, they are

thought to provide a better environment for language learning. However, as warned by Young-Scholten and Piske (2009), researchers should be cautious in the way they address ultimate attainment. The variable length of residence (LoR) is frequently used, which might lead to inconsistent results, as in many cases the amount of input can be limited due to the few opportunities for interacting with native speakers, especially in the case of immigrants (Muñoz & Singleton, 2011). A further issue worth mentioning is that it might not be appropriate to analyse overall proficiency when comparing naturalistic versus formal settings, as research has shown that natural contexts might improve learners' oral fluency and pragmatic ability, whereas educational contexts may lead to greater grammatical improvement (Bardovi-Harlig & Dörney, 1998; Collentine & Freed, 2004).

Input in instructional settings, on the other hand, is mainly characterised by *input enhancement* (Sharwood Smith, 1991, 1993). That is, the input provided to the learners might have been modified with the aim of making the learners aware of specific properties of language; "it is a process by which language input becomes salient to the learner" (Sharwood Smith, 1991: 118). This type of modifications in the classroom facilitates students' awareness of the forms and meanings of the language they are learning and of the differences between their own language system and the one that is presented to them through instruction. In fact, the extent to which input is modified has been the focus of a great deal of research studies, not only in classroom contents -i.e. teacher talk-, but also in naturalistic environments -i.e. foreigner talk. Modification, though, does not have to be equalled to language simplification, as it can also involve discourse elaboration (Gass, 1997). It should also be noted that although the teacher might draw attention to a particular item or structure, it is the role of the student to make use and take profit of this input.

Apart from the type of modification discussed above, in classroom settings input can be presented in different ways, thus, leading to different results. That

is, instructional intervention can take place so as to focus the learner's attention, for instance, on the form of the language, which might play a significant role in the conversion of *input* into *intake*, and finally into *output*. This is what Van Patten (1995) proposes in his *Processing Instruction Framework*. This approach provides the students with structured input tasks, which force the learners to focus on specific grammatical structures, facilitating the intake of these structures from the input. Van Patten's framework was investigated by himself and his colleagues in the 1990's (e.g. Van Patten & Cadierno, 1993; VanPattern & Sanz, 1995). They compared the acquisition of Spanish object pronouns in two different instructional models: the traditional one in which information was first presented to the learners and then practised –i.e. the focused practice came after intake-, and the another type of context in which they tried to influence the way input was processed by focusing on practice before intake took place. Their results gave a better score for the processing instruction group, as they were better in both comprehending and producing the target structure.

The provision of feedback is another notable characteristic of the input provided to L2 learners. Although information that a particular utterance is non-target-like can also be provided in naturalistic settings, it is remarkably more abundant in formal contexts. Moreover, it is clear that adult learners receive more correction than children do, and it has been hypothesized, as asserted by Gass (1997), that correction might be a necessary condition for adult learners if their goal is to acquire an L2. In this way, they are able to look for evidence to confirm their hypotheses.

In spite of the evident limitation of instructional settings as compared to naturalistic ones, the aim of language teachers in the last decades has been to offer a rich and varied learning environment, to provide rich materials, and to generate good and extensive input (Piske & Young-Scholten, 2009). A further debated issue has been the need for native-like input. In this line, Piske, MacKay and Flege (2001) note that the success in learning a foreign language is also

dependent on the amount of input that learners receive from native speakers, as non-native input might lead to the development of rules that do not converge to the native speakers norms. Flege and colleagues have also highlighted the importance of quality of input, which is mostly guaranteed when interacting with native speakers. This access to input from native speakers is one of the differences between classroom and naturalistic or immersion settings, as noted by Piske and Young-Scholten (2009: 22) in the following statement:

> Learners in immersion settings may be exposed to a range of accents including the foreign accents of other non-native speakers; classroom learners are often primarily exposed to the latter. This exposure can be expected to have an effect on the second language learner's developing system, influencing not only end state, but also route of development.

Quality of input is, therefore, essential in the language acquisition process. In this respect, naturalistic acquisition might provide learners with high-quality input namely because of the wider range of contexts in which learners are able to experience the language. On the other hand, instructed learners might have fewer opportunities to get varied input. However, they might look for these opportunities outside the classroom. This is why it is very important, as we shall further discuss in the following section, to measure learners' L2 contact outside the classroom in order to gain a full insight into learners' experiences. A further question, as Gass (1997) and Young-Scholten and Piske (2009) point out, is the amount of input needed.

3.3.1.3. Amount of Input

The notion that learners need to be exposed to huge amounts of input in order to learn any language is unquestionable. In fact, the general belief is that very successful L2 learners have been in contact with the L2 to a great extent. However, the issue on how much input learners need for L2 development is

difficult to answer and, moreover, in classroom settings "estimating amounts of input equivalent to ten years of full immersion would yield unrealistic periods of time" (Muñoz & Singleton, 2011: 17). The researcher claim that there is no complete agreement on the amount of exposure to the language needed in order for acquisition to take place, which might vary from one learner to the other, as other factors –i.e. individual factors- may play a role, such as their motivation for learning the L2 or their cognitive language learning abilities.

For naturalistic acquisition, the indicator of LoR is very often taken as a valid measure of L2 exposure. However, according to Muñoz and Singleton (2011), researchers should indeed be cautious about using this index, as learners might vary in the amount of contact they have with the language, as well as in the intensity and diversity of contact with the language. That is to say, while some learners might be fully acculturated to the L2 community and, thus, use its language fully, some others might still make frequent use of their L1. Therefore, information about real contact is needed for an accurate analysis of input.

The same idea has been extended to instructed language learning; that is, apart from taking into account length of instruction (hours, semesters or years), frequency of L2 use outside the classroom should also be taken into consideration, as it might lead to revealing insights (Muñoz, 2011). The study by Muñoz (2011), in which 159 bilingual Catalan/Spanish learners of EFL were tested, is a good example of how different measures of input can yield to more detailed and precise results on the role of input. In this study, learners were tested on a general proficiency test, a lexical test and a phonetic perception test. While LoR correlated with the proficiency and the lexical test, a measure on language contact did so with the phonetic perception test. In the present study, following Muñoz (2011), the measure of L2 contact is an indicator of amount of input, which complements the variable length of instruction.

SA studies, apart from considering length of immersion, have also taken into account L2 use in comparison to L1 use while abroad, as Freed, Dewey,

Segalowitz and Halter's (2004) *Language Contact Profile* aims at. This helps in counteracting the effects of variability of L2 use among learners. This is perfectly illustrated in Bardovi-Harlig and Bastos' (2011) study of learners' recognition and production of conventional expressions. The participants in this study had different experiences with the English language depending on the nature of the target community. This variation allowed them to conclude that intensity of interaction –i.e. the amount of time learners spent speaking English and watching television- surpassed length of stay. This reveals that "measures of exposure such as length of stay or length of residence mask a variety of experiences" (Bolibaugh & Foster, 2013: 211). Dörney, Durow and Zahran's (2004) results point to the same direction. That is, in their analysis of seven Asian students learning English in an intensive language course at the University of Nottingham, success in the acquisition of formulaic sequences while abroad seemed to be dependent on learners' interaction with members of the TL community. These ways of measuring *input* in SLA have been adopted in CLI studies that have focused on the effects of language exposure in the appearance of language transfer; an idea that will fully developed in the following section.

3.3.2. Input and CLI

Both the *type* and the *amount of input* that language learners have received throughout their language learning period can have a great effect on their production in the foreign language, as highlighted in the previous section, and consequently, in the appearance of CLI. Learners can differ considerably in the *type of input t*hey have received. For example, while some of them might have acquired the language in a naturalistic setting and, thus, received a real type of input, others might have only had formal exposure to the language. Learners might have also had a combination of both formal and naturalistic exposure, by,

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for example, taking part in SA programmes, in which they might have had an intensive exposure to the language. Moreover, the number of years they have been exposed to the TL or the cumulative hours of English instruction and exposure –i.e. the amount of exposure-, may also differ among learners, which, as a consequence, might have an effect on CLI. All these different types of input are worth analysing in order to have a broad perspective of which kinds of exposure may constrain or favour the appearance of CLI.

3.3.2.1. Type of input and CLI

As the *type of input* learners receive might be dependent on the context in which they acquire the TL, the main findings regarding the appearance of language transfer in the production of learners acquiring an L2 in both naturalistic and formal contexts are going to be highlighted here. Research in both types of settings has shown that transfer can occur in both naturalistic and formal learning contexts; that is, CLI might be present when learners are focused on the formal properties of the language, as well as when the focus is on meaning and communication.

CLI in naturalistic and informal settings was found, for instance, by Williams and Hammarberg (1997, 1998) and Hammarberg (2001) in their study of non-adapted language switches in L3 Swedish[22]. Cenoz (2001) and Navés *et al.* (2005) are good examples of studies that analyse transfer in instructional settings. Having shown how the phenomenon of CLI is likely to occur in both contexts, the question that should follow is whether CLI is prone to occur more frequently in one of these contexts than in the other. The revision of the literature leads to the observation that studies show mixed results, as will be seen below.

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[22] See section 2.3.2.2 and 2.4.2.3. in the previous chapter for an overview of these studies

Early studies, such as Dulay, *et al.* (1982) and Krashen (1982), asserted that transfer was more likely to occur in classroom contexts than in naturalistic environments in SLA. In the same line, Tarone (1982) argued that L1 transfer was more evident in learners' careful than vernacular style, as they may be more likely to use all their resources, which includes L1 knowledge. While this position might be supported by some evidence, more recently scholars like Odlin (1989) have indicated that formal education may constrain transfer, since classroom learners are more concerned with following the standard language; they are also more metalinguistically aware of the differences between their native and target languages, which might make them follow the norms of the latter, as especially highlighted by Jessner (2006).

A further remark should be made at this point regarding the type of transfer that is more likely to appear in these two contexts. Some researchers, such as Odlin (1989) have supported the idea that negative transfer may be less likely in formal settings, where there is considerable awareness of language, whereas positive transfer may be more likely in formal settings. While in classroom contexts learners may be able to avoid some types of negative transfer that lead to non-target forms, such as syntactic ones, as they are used to making comparisons between the languages and making use of their explicit memory, in naturalistic environments learners might have a reduced amount of explicit knowledge of the differences between the languages since their main focus is on communication, which might lead to an increase of negative transfer (Jarvis & Pavlenko, 2008).

It needs to be pointed out that the above-mentioned studies on formal instruction mainly refer to traditional instruction. However, this is not the only type of instruction found in the classrooms, as more communicative-based instruction has been introduced in the foreign language classrooms in the last decades. CLIL is a good example of this. In CLIL not only does the amount of exposure to the language increase, but also the type of input learners are exposed

to changes. As Agustín Llach (2010) highlights in her review of some of the main variables that influence lexical CLI, the rationale for this learning context is that CLIL learners are exposed to large amounts of input and thus expected to develop higher levels of proficiency in the TL. This is especially true of vocabulary acquisition, with CLIL learners learning more vocabulary than learners in traditional instructional approaches.

CLI researchers have also become interested in this type of learning context and have begun to look into the differences as regards language transfer between non-CLIL and CLIL learners (e.g. Celaya, 2007; Agustín Llach, 2009; Celaya & Ruiz de Zarobe, 2010). Agustín Llach's (2009) study with 30 L1 Spanish EFL students and 30 CLIL learners, aged between 11 and 12, found that CLIL learners produce fewer instances of lexical transfer than their EFL peers in their written production. In the same line, Celaya (2007) had reached the same result as regards *borrowings* in her study of lexical CLI in written production. *Lexical inventions*, on the other hand, were equally found in both groups. The lower amount of borrowing by the CLIL group as compared to the non-CLIL one was also found in Celaya and Ruiz de Zarobe (2010), who analysed lexical CLI in the written production of 75 learners, some of whom had Catalan and Spanish as their L1s, and others were L1 Spanish/Basque bilinguals.

The general conclusion of these studies is that learners involved in this kind of programmes are expected to produce fewer cases of transfer than other learners following traditional instruction, even with communicative approaches. According to Agustín Llach (2010), this finding can be accounted for, on the one hand, by the learners' increase of proficiency, and on the other hand, by the different way in which language is perceived, as for CLIL learners English is used for meaningful communication, rather than just being a language task.

Moreover, some studies on CLIL and transfer have found differences in the types of transfer that learners produce. In Celaya (2006), *borrowings* are more frequent among non-CLIL learners, as this type of lexical transfer is characteristic

of low-proficient learners; however, CLIL learners present a higher number of *lexical inventions*, which is in line with those findings discussed in the previous chapter that showed that as proficiency increases meaning-related transfer becomes more common[23]. This suggests that results on CLIL and non-CLIL contexts parallel those between high and low proficient learners. However, Vázquez Díaz's (2010) study on the impact of CLIL on transfer of articles by 12 Spanish learners aged 11/12 years old immersed in a CLIL program suggests that negative transfer might be difficult to overcome with the help of CLIL input alone; therefore, they call for explicit *focus on form* in CLIL instruction models.

While some research on CLI has been carried out in relation to formal vs. naturalistic language learning, very few studies, to the researcher's knowledge, have explicitly dealt with the relationship between CLI and SA. The importance of this type of learning context has been emphasized by different scholars (e.g. Freed, 1995, 1998; Collentine, 2009), who have considered it a very efficient way to learn an L2. Although the amount of research on SA settings is scarcer when compared to the other learning contexts, in the last decades scholars have begun to explore it due to its popularity among language learners. Recent research on the effects of SA programmes on learners' language has highlighted the improvements that learners make while abroad, especially, but not solely, in the area of oral production –as it is the area considered to improve the most. This is due to both the quantity and quality of input that learners obtain in this type of setting, as compared to traditional classroom contexts (e.g. Freed, 1995, 1998; Lafford, 2004; Dufon & Churchill, 2006; DeKeyser, 2007; Sasaki, 2007; Llanes & Muñoz, 2009, 2013; Serrano, Llanes & Tragant, 2011; Pérez-Vidal, 2014).

Given the fact that both CLI and SA have been found to be important factors in L2 acquisition, it would be interesting to analyse their relationship. The experience abroad makes learners improve their oral skills at a greater rate mainly because of the opportunities they have of using the L2 in meaningful

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[23] See section 2.5.2.3 in the previous chapter for an overview of these studies

interactions with native speakers of the language while combing it with formal classes; hence, substantial effects as regards language transfer are expected. Learners abroad have the chance to receive a greater amount of input, as well as a different type of exposure, as they are able to learn the language in a naturalistic context. Both the *amount and type of input* received while abroad may affect the amount of language transfer, as well as the types of CLI found in the learners' productions. However, studies in this direction would be needed in order to confirm this hypothesis.

Within a generative perspective, researchers have argued that SA experiences are beneficial for language learners as they might be able to reset the parameters in their UG due to increased exposure to native input. Isabelli's (2004) examination of the *null subject* parameter shows that L2 Spanish learners abroad benefit from this experience, but that some problems remain, which suggests that the parameters might be restructured but not reset. In the same line, Rothman and Iverson (2007) investigated the resetting of the *null subject* parameter by two groups of adult English learners of L2 Spanish –i.e. a SA group and a classroom group. Their results do not show a significant improvement in the properties analysed, which suggests, according to the authors, that increase to native exposure is not necessary to access UG. They suggest, thus, that native input is beneficial in many linguistic and cultural respects, but not to have access to universal properties, and that classroom input might as well provide ample evidence to reset the *null subject* parameter.

Very few studies have addressed the issue of the relationship between CLI and stays abroad; Andria and Serrano (2013) and Andria (2014) would be an exception to this. These recent studies with L1 Catalan/Spanish learners of Greek in a formal language setting explore the relationship between proficiency and SA and transfer of thinking-for-speaking patterns of experiential verbs through a GJT and a picture description task. The results of these studies suggest that both proficiency and time spent abroad have an effect on the appearance of the type of

conceptual transfer under analysis. Although CLI was more evident in beginner and intermediate learners, advanced learners still presented cases of L1 transfer, in line with previous studies on proficiency and CLI. On the other hand, the effect of the SA context was more salient in pattern recognition than in pattern production, as a significant correlation was found between the results of the GJT and time spent in Greece. The authors point to the fact that further research would be needed, as other factors, apart from total time abroad, might be good predictors of pattern restructuring, such as the concentration of the stays, the type and amount of contact with the L2 while abroad, or whether the learners also receive formal instruction in the host country.

Although not specifically designed as studies on CLI, some research on communication strategies might shed light on the hypothesis that SA experiences might have an effect on the amount of CLI. Differences in communication strategies between learners with and without SA have been found in research (e.g. DeKeyser, 1991a, 1991b), since, for example, SA learning might encourage language learners to use an alternative term with a similar meaning when they do not know a particular word, which reflects a desire to communicate. DeKeyser (1991a, 1991b) found that while SA learners were more likely to use strategies such as circumlocution and restructuring than classroom learners, classroom learners used more direct and indirect appeals and literal translations more often than SA learners.

As pointed out in chapter 2, although CLI is not always a communication strategy, it is sometimes a resource that language learners use when they do not know a particular word or phrase in the foreign language. Thus, SA experiences might affect the appearance of CLI, and especially the types of CLI present in the learners' production, at least when CLI is used as a communication strategy. This is again however a hypothesis that needs to be tested, as, to our knowledge, there are no previous studies that have tackled this issue. The same can be asserted for the effects of *cognitive language learning abilities* on CLI. That is, although its

importance has repeatedly been highlighted by SLA studies, not much research has been carried out on this specific individual difference and CLI. These are indeed the gaps that the present dissertation intends to fill in.

3.3.2.2. Amount of input and CLI

The quantity or *amount of TL input*, as already highlighted by Odlin (1989), might have a strong effect on the likelihood of both positive and negative transfer. The common assumption is that increased exposure to the language being acquired leads to the decrease of language transfer both in a formal and naturalistic settings, which is strongly related to an increase in the learners' proficiency in the TL. As proficiency in the language being learnt increases, transfer effects tend to decrease (see section 2.4.2.4). Although this is the most logical and most frequent held idea, research studies have reached mixed results.

Sjöholm's (1995) study on verb choices by Finnish and Swedish speaking learners of English gives support to the expected hypothesis, as he observed a decrease of transfer effects as the learners' exposure to English increased, and so did their proficiency. The same result was found, for example, in Poulisse and Bongaerts (1994), Navés *et al*. (2005), Celaya (2006), Ortega and Celaya (2013)[24].The opposite was, however, found by Cenoz (2001) in her study with Spanish and Basque learners of English. Her study revealed that her participants showed more CLI effects as the amount of English instruction increased. This discrepancy of results is discussed by Jarvis and Pavlenko (2008), in which possible reasons are pointed out. First, they highlight the different input indexes used; while Cenoz (2001) takes into account the cumulative hours of contact with the L2 learners have had, thus measuring in this way frequency or intensity of exposure, Sjöholm (1995) focuses on the length of language exposure taking as a

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[24] See section 2.4.2.4 for a description of these studies and others that have reached similar results as regards the relationship between CLI and proficiency.

point of reference the number of years of instruction learners have received. Second, these studies analysed learners at different proficiency levels; that is, learners in Sjöholm's study were at a more advanced level of proficiency. The authors, thus, argue that the relationship between CLI and L2 instruction might be curvilinear, increasing first to a certain point, and subsequently decreasing. Although several researchers have pointed out the importance of input in CLI studies, not many of them have investigated it empirically. The present study aims, thus, at filling in this gap by directly testing the importance of the amount of input –i.e. number of hours of exposure- in the occurrence of CLI.

Whereas the focus of the above-mentioned studies was formal instruction, a series of studies have analysed learners in naturalistic environments, whose results point to the same direction; that is, transfer effects tend to decrease as LoR in the L2 context increases. A good example of this kind of studies is found in Williams and Hammarberg's and Hammarberg's (2001) longitudinal analysis of an L1 English speaker with L2 German and L3 Swedish, who showed a decrease in her switches from Swedish into German as her LoR in Sweden increased.

Finally, a third group of studies has focused on both formal and naturalistic learning, which again confirms the above-discussed results. For example, Calvo's (2005) study with L1 English learners of Spanish found that the number of years of instruction, as well as the contact with the language in a naturalistic setting, had an effect on the presence of L1 English in her participants' Spanish production. Although some methodological issues can be detected in this study regarding the number of participants (1 participant in a naturalistic setting and 6 in a formal setting) and the comparability of the groups analysed due to age differences, she pinpointed that the learner in her study that had studied the language for a longer period of time as well as in a naturalistic environment presented fewer cases of negative CLI.

Dewaele's (2001) results are in the same line. He investigated the interaction between three languages through a corpus of 25 adult learners of

French with L1 Dutch and English as their L2 or L3. However, it is worth highlighting that his comparison of L2 and L3 speakers showed that while increased TL exposure and use (i.e. amount and length of formal instruction in French) led to less language switching in both cases, the decline was more pronounced for L2 speakers than for L3 speakers. Dewaele concluded that this result was due to the more extensive linguistic system of multilingual speakers who need to manage more cognitive resources.

To summarize, some of the landmarks in the research on input and CLI have been presented. What becomes clear from the literature discussed above is that input plays an important role in the process of acquiring an additional language. Having access to high-quality input, as well as a large amount of input, might become decisive factors in language learning in both naturalistic and classroom settings. This factor has also been thought to affect the amount of CLI, as well as its types. Although some research has been carried out in this respect, as reviewed in this section, more studies are needed as some gaps have been identified in the literature, especially in the area of SA.

3.4. Summary

Language learners' ID might account for their rate of acquisition and their ultimate success in learning a second language. Consequently, they could also have an effect on the occurrence of CLI. While these ID have extensively been analysed in SLA research, they have received a scarce focus of attention in CLI studies. Thus, the factors of *cognitive language abilities* and *input* in relation to language transfer are still an under-researched area.

The chapter opened with the analysis of the role of *cognitive language learning abilities*. It first highlighted its importance in second language learning and subsequently analysed its potential role in the appearance of CLI. As we

have seen in this first part of the chapter, language aptitude has been considered by SLA researchers as a crucial factor in L2 acquisition, although the way it has been conceptualized has considerably changed since the first studies in the 1950s. Whereas traditionally language aptitude has been thought to be a unitary construct, more recent research has stressed its componential nature; nowadays it is conceptualized as a combination of cognitive and perceptual abilities. It has become clear from the literature that different abilities intervene in the process of acquisition. First, learners need to choose what they pay attention to and what they ignore from the *input*; they need to control the information that they receive from the environment (attention control). Afterwards, they need to integrate this new information into LTM. Once the L2 knowledge is stored, it needs to be accessed and retrieved when the learner needs it for either comprehension or production (information retrieval). WM has been shown to play an important role in all these steps of the language acquisition process. Studies suggest that people with a large WMC are able to process linguistic information more quickly and effectively than those with a smaller WMC.

All these abilities that have been shown to vary from learner to learner might also have an effect on the amount and type of CLI; however, very few studies on the topic have been carried out so far. The few existing studies have shown that there might be some kind of interaction between *cognitive language learning abilities* and CLI. Researchers have suggested that transfer effects are likely to occur due to memory constraints, which might determine the amount of information that learners are capable of processing in their WM, how efficiently this information will be processed, as well as how learners will activate and retrieve the information stored in their LTM.

The present chapter followed with the discussion of the factor of *input*. It first focused on the importance of input to acquire a L2, and highlighted its central role in SLA research. It then moved on to the relation between *input* and CLI. It has been highlighted that the access to input and the subsequent practice

is an important process that enables automatization and proceduralization of new knowledge, so that links in LTM can be established. Furthermore, a summary of the main ideas as regards language input as discussed by several frameworks and models have been presented in order to show how important input has been in SLA theory and research. In addition to this, the different types of input that learners can receive have also been presented, which greatly depends on the context of acquisition.

The amount of input learners need to receive has also been discussed, emphasizing the difficulties in obtaining this type of data. It has become clear that the amount of input that learners have received, as well as its type, can have a great effect on their productions in the second/foreign language, and consequently, in the appearance of CLI. As regards *amount of input*, the studies revised seem to suggest that increased exposure to the language leads to lower rates of CLI. On the other hand, it has been shown that language transfer occurs regardless of the *type of input* learners receive, although the latest studies pinpoint that formal instruction seems to constrain the appearance of the phenomenon.

The present dissertation aims at filling in the gap that seems to exist in research on both *input* and *cognitive abilities* in relation to CLI. The methodology followed to analyse this issue will be presented in the following chapter.

CHAPTER 4

THE STUDY: RESEARCH QUESTIONS

AND METHOD

4.1. Introduction

Chapter 4 presents the description of the methodology, the procedure followed and the analysis used in the present dissertation in order to answer the research questions that have guided the study. The section that follows this introduction (section 4.2) is devoted to the aims and to the research questions formulated, as well as to the hypothesis proposed. The chapter covers the method (section 4.3), which includes the description of the participants in the study, the different types of instruments used to collect the data –i.e. proficiency tests, cognitive tests, input instruments and an oral task-, and the procedure followed to collect the data. Section 4.4 focuses on the type of analysis performed. In this section, the classification of CLI –both of lexical and grammatical CLI-used in the present dissertation is presented. Additionally, some methodological considerations in CLI research that have shaped the methodological design of this dissertation are pointed out. Finally, a few issues regarding the transcription and coding of the data are addressed, and a description of the statistical analysis performed is provided. The present chapter closes with a summary of the main points presented (section 4.5).

4.2. Aims, research questions and hypotheses

As has been pointed out in chapters 2 and 3, previous studies on language transfer have tried to establish the variables that seem to be good indicators of the occurrence of CLI. They have revealed that factors such as *language distance*, *recency* and *frequency of use*, *L2 status* or *general level or proficiency* seem to account for the extent to which learners rely on their previously acquired languages, as well as for the types of CLI present in their productions. However, not much research has been carried out in order to acknowledge whether factors such as *cognitive language learning abilities* and *input* can affect CLI. Therefore, following this line of inquiry, the present study aims at filling this gap in the literature by exploring lexical and grammatical CLI. Accordingly, the present dissertation attempts to delve into the analysis of how the factors *cognitive language learning abilities* and *input* –and more precisely, *amount* and *type of input*- may affect the appearance of CLI in multilingual learners, contributing in this way to the discussion about the factors that promote or prevent CLI from occuring.

On the one hand, the *cognitive language learning abilities* variable considers the learners' WMC, their lexical access, their language aptitude as measured by the Llama F test (Meara, 2005b), as well as their attention span[25]. In this way, this dissertation will complement those studies on CLI and cognitive abilities, which have mainly focused on learners' phonetic mimicry abilities (Major, 1992, 1993) and PSTM (Cerviño & Ortega, 2014; Ortega & Cerviño, 2015), as revised in chapter 3. On the other hand, the variable *amount* and *type of input* considers the participants' length of language exposure, measured in relation to number of hours of instruction, exposure in naturalistic settings through SA programmes, and cumulative hours of contact outside the classroom. These measures have been previously used in studies on input (see section 3.3 for a discussion of these

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[25] The instruments used to measure cognitive language abilities will be described in section 4.3.2.

variables), mainly in relation to ultimate attainment, but not so much in relation to CLI.

In light of the literature presented, the present dissertation aims at finding answers to the following research questions:

Research Question 1: Do *cognitive language learning abilities* have an influence on the amount and type of lexical and grammatical CLI in L2 English oral production? That is, is CLI related to the results learners obtain in the different cognitive tests (WM, Lexical Access, Llama F and Attention Span tests?

Research Question 2: Do *amount* and *type of input*, measured in relation to the length of language exposure (number of hours of instruction), exposure in a naturalistic setting (through SA programmes) and cumulative hours of contact outside the classroom, have an effect on amount and type of CLI?

Research Question 3: Do *input* effects interact with *cognitive language learning abilities* effects? In other words, do learners with different characteristics as regards the *input* received and their *cognitive abilities* present a different amount and different types of CLI in their oral productions?

According to the existing literature on the effects of diverse factors – especially of proficiency- on language transfer, as extensively reported in chapter 2, and given the characteristics of the participants in the present study (see section 4.3.1), the amount of CLI is expected to be low as our participants have quite a high level of proficiency in the TL. Moreover, based on previous empirical findings, it is hypothesized that the types of CLI that will be found are those that high-proficient learners are likely to produce. Thus, it is assumed, for example, that the number of *lexical inventions* and other types of *lemmatic CLI* or *transfer of*

meaning are going to be higher than *borrowings* or other types of *lexemic transfer* or *transfer of form* (see section 2.5.2.3).

Additionally, the learners are expected to transfer from their L1 (Catalan/Spanish) due to their limited proficiency in their other additional languages, in most cases, and to the fact that they have not had the chance to automatize their knowledge of those languages through intensive exposure (see section 2.4.2.4). It is assumed that the languages that might influence their production in English are their L1s (Catalan/Spanish), which are the languages that they use in their everyday life. *Frequency* and *recency* of use are, therefore, factors that need to be taken into consideration.

As has been shown in chapter 3, *cognitive language learning abilities* have been found to play a fundamental role in language learning. In light of the few existing findings on the role of *cognitive abilities* and CLI, it could be hypothesized that those learners with higher cognitive abilities –as measured by the different tests- will show a lower amount of both lexical and grammatical CLI.

As regards the relation between *type* and *amount of input* and CLI, and based on the findings in previous studies, as discussed in chapter 3, it is hypothesized here that those learners who have been exposed to the TL the longest will present a lower amount of CLI. A higher amount of exposure to the TL entails a higher proficiency level; therefore, this is expected to affect the extent to which our participants rely on their previously acquired languages. Additionally, the *type of input* that the participants have received is also thought to have an effect on CLI; thus, those learners that have had a more naturalistic-type of exposure to the language (apart from the formal instruction received at school) – either through SA programmes or having contact with the TL outside the classroom- are expected to present fewer cases of CLI, as they might have been able to improve their oral skills and automatize their TL knowledge.

Finally, regarding the interaction between *cognitive language learning abilities* and *input*, it is hypothesized that learners that have high *cognitive abilities* and

that have been exposed to English throughout their language learning history to a greater extent will rely on their Catalan and Spanish on fewer occasions. On the other hand, those participants with low *cognitive abilities* and low *input* will present more cases of CLI. Additionally, those learners with a different combination of features from the above-mentioned ones –i.e. learners with high cognitive abilities and low input and those with low cognitive abilities and high input- will fall in between as regards amount of CLI.

4.3. Method

In order to answer the research questions and confirm or refute the above-mentioned hypotheses, the method that has been implemented in the present dissertation is described below.

4.3.1. Participants

The participants in the present dissertation are part of the "Age, input and aptitude. Effects in the long run in the acquisition of English in formal contexts" Project[26]. The description of the participants –both the experimental group and the control group of native speakers- is presented below.

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[26] Reference: PJDG007580011, Ministerio de Educación y Ciencia

4.3.1.1. Experimental group

From the whole sample, the participants selected for this dissertation are 107 students of EFL (87 females, 20 males) at two different universities in Barcelona -98 students at the University of Barcelona and 9 at the Autonomous University of Barcelona. They are all adult learners, with ages that range from 18 to 32 years of age (mean age 22, 6). Students outside this age range were discarded from the original sample of 193. The participants are at different stages of their studies; while 35 are in the first cycle of their degree, 72 of them are already in the second cycle, and are at a more advanced stage. Proficiency in English has been, thus, controlled in the present dissertation so as to counterbalance this difference. A description of the participants can be found in Table 2 below.

Age	Sex		Studies		L1		
	Male	Female	1 cycle	2 cycle	Catalan	Spanish	Bilinguals
22.6	20	87	35	72	37	45	25
N Years instruction	Onset Age	Order of acquisition			Nº of languages			
					3 languages	4 languages	5 languages	6 languages
		English L2	English L3	English L4				
15.2	7,2	7	96	4	20	5	26	6

Table 2 – Description of the participants

Most participants (N=96) are bilingual speakers of Catalan and Spanish, and therefore, English is the language that has been acquired in the third place (89.7%). There are other cases (N=4), although few, in which English is not the L3 but the L4 (3.7%), as seen in Table 2 above. These are cases in which French has been acquired before English, either through immersion in French schools or through schooling in a French speaking country for a certain period of time. Other combinations of languages, though, have also been considered. More specifically, 7 of the learners (6.5%) are Spanish speakers, as they were born

either in South America or in other parts of Spain and arrived in Catalonia in their adolescence or adulthood. Nonetheless, these learners have reported some knowledge of the Catalan language. In these cases, English is not their third language, but their second, as they have acquired it right after their mother tongue. Participants who did not have Spanish or Catalan as their L1 were not included in the present study.

The information on the L1 of the participants was taken from their answers in the questionnaire, in which they were asked about their language use in different spheres. The language the participants reported as the one used with their parents and the one they felt more confident with has been considered as their L1. Their answers show that 37 of them considered themselves as Catalan-dominant (35%), 45 as Spanish-dominant (42%) and 25 as balanced bilinguals (23%).

In the present dissertation we are dealing with multilingual learners, since all of them have knowledge of at least three languages. Furthermore, many of them have acquired or are acquiring other languages as their L4, L5 or even L6. There are 20 learners (18.7%) that have knowledge of three languages (Catalan, Spanish and English). A little over half of them, 55 learners (51.4%), know four languages. These are cases in which apart from speaking English, the learners have knowledge of another foreign language, which is in most cases French or German. Other languages, such as Italian, Japanese or Basque, have also been reported, but to a lesser extent. There are other learners, 26 of them (24.3%), that apart from English have two other foreign languages in their linguistic repertoire, bringing the total to five languages. This fifth language is in many cases German, but others, such as Italian, Arabic or Japanese have also been mentioned. Finally, there is a small group of learners, 6 of them (5.6%), who have knowledge of six different languages. In these cases, Italian or Galician, for example, account for the sixth language in their repertoire.

The order of acquisition of the languages has also been reported, as pointed out above when discussing the position of the English language in the learners' linguistic system. Additionally, the level of proficiency of the other foreign languages has also been controlled for. Participants were asked in individual interviews about the competence they thought they had in each of the languages. The information reported is, thus, self-perceived. In general terms, learners gave themselves a low mark in these languages, at least lower than the one they gave themselves in English, with the exception of those that have had French schooling. The mean grade that they reported in French is 4.5, in German 3.3, in Italian 4.4, and in other languages 4.1 out of 10.

As regards English, in general terms, they have an intermediate/advanced competence in this language. As will be described in section 4.3.2.1, the participants' proficiency has been controlled for through three different tests, and has been used as a control variable. According to the Oxford Quick Placement Test, 0.99% of our participants could be considered elementary learners, 27.73% lower intermediate, 29.7% upper intermediate, 34.65% advanced, and 6.93% very advanced learners.

The participants have studied the language for at least 7.5 years (the range goes from 7.6 to 25.5 years of contact with the language, with a mean of 15.2 years). The onset age also varies, and it ranges from 0.2 months to 15 years of age, with a mean age of 7.8. As it is noticeable from these numbers, a series of learners began with the study of the English language before entering the educational system. If we take a look at the age at which learners started studying English at school, the range varies slightly, as it goes from 3 to 15, with a mean of 8.2. As the age of onset has been considered in the literature as having an important effect on the SLA process (see Muñoz, 2006), it has been introduced as a control variable in the analysis of the data.

The level of contact with the language also differs from learner to learner, as they have had different experiences throughout their history as language

learners. They all have had formal instruction in English. However, as acknowledged above, not all the participants started learning English at the same age. Therefore, their formal instruction in English started at different periods of their schooling. The mean hours of formal instruction of our participants at primary school is 711.59 hours. At secondary school they have received an average amount of 831.44 hours of English, and at university a mean of 1302.62 hours[27].

Apart from having regular classes, some of the participants have also received extracurricular instruction in English. Some of them started receiving English instruction outside school during their primary school years, others at secondary school, and some of the participants once they started university. At primary school they have attended a mean amount of 95.67 hours of extracurricular English classes, during secondary school 262.32 hours, and at university 39.85 hours.

Therefore, some of the participants have had an increased number of hours of instruction due to their attendance to classes outside school. At primary school, the hours range from 0 to 1800, with a mean of 799.68 hours; at secondary school, they range from 0 to 2542.5, with a mean of 1093.78 hours; and at university years, the number of hours considerably increases, as it ranges from 162 to 3060, with a mean of 1342.47 hours. This variation is due to the fact that the participants in the study are at different points in their English studies, as mentioned above; therefore, the hours they have been exposed to the language varies, as does their proficiency.

The total number of hours of English classes has also been calculated, which includes both curricular and extracurricular instruction at the 3 different stages (primary, secondary and university). The participants, thus, have had a

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[27] The hours of formal instruction have been calculated taking into account the number of subjects they have passed: 1 subject has been equalled to 81 hours of formal instruction.

minimum of 1242 hours of formal instruction during their language learning history, and a maximum of 6198.8, with a mean of 3243.52 hours. However, apart from being exposed to a formal type of input, some learners have also undergone a more naturalistic type of exposure. That is, they have spent some time abroad in an English-speaking country or they have looked for naturalistic exposure to the language while at home.

Our participants have spent a maximum of 4320 hours abroad, with a mean of 965.6 hours in an English-speaking country. As we do not have information on the actual use of the English language while abroad, it was estimated that the participants might have used English 8 hours a day; thus, 1 month in an English-speaking country equates to 240 hours of exposure.

As shown in Figure 5 below, there are 29 participants that have never participated in a SA programme, nor lived abroad temporarily. Most learners have spent between 4 and 6 months in an English-speaking country (900-1440 hours), and very few of them (6 learners) have spent more than a year abroad (2880-4320 hours).
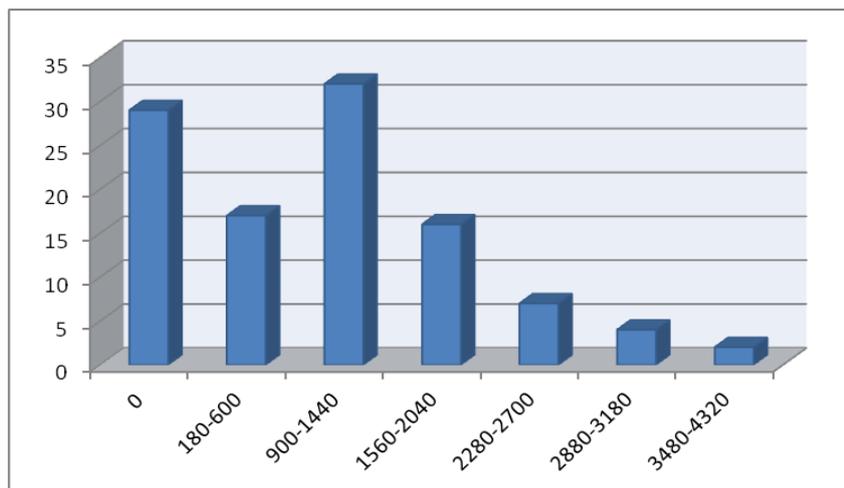
Figure 5 – Hours spent abroad

While at home learners might also seek for opportunities for being in contact with the language outside the classroom. Therefore, in accordance with

Muñoz (2011) a measure of informal contact with the language has also been included. This measure was calculated by averaging the frequency value in the participants' answers to three questions: 1) How frequently do you watch TV and films in English?, 2) How frequently do you watch extended texts in English?, 3) How frequently do you watch extended texts in English? The participants' answers ranged from "'never" (0 points) to "every day" (5 points). Additionally, the average was incremented by 0.5 if the participants reported having other intensive exposure to English several times per month, and by 1 point when the frequency was several times per week or daily. Moreover, 0.5 point was added when this exposure entailed interaction with native speakers. Thus, the maximum score that the participants could be awarded was 6.5. The mean of contact hours with English outside the classroom is 3.89; with a range from 1.33 to 6.5.

The participants under study could, therefore, be considered as comparable in terms of their knowledge of the L1 and the other known languages, and their knowledge of English (although different proficiency groups have been established), and are thus, expected to behave in a similar way when producing English. This is what Jarvis and Pavlenko (2008) have called "intragroup homogeneity", the first step to reach methodological rigour in CLI studies (see section 4.4.3).

4.3.1.2. Control group of native speakers

Apart from the above described participants from the GRAL research project, some other participants have taken part in the study in order to gain "intergroup heterogeneity" (Jarvis & Pavlenko, 2008), as will be described in section 4.4.3. For this reason, 22 English native speakers and 11 Catalan/Spanish

speakers participated in the study, who performed the task analysed in their native languages.

The English native speakers have a mean age of 25.7 and their ages range from 20 to 33. They come from different English-speaking countries (UK, USA and Ireland) and they do not speak any other language from birth, although they have later acquired other foreign languages. They reported using English on a daily basis while living in Spain.

The Catalan/Spanish speakers' ages range from 18 to 33, with a mean of 24.4. They come from different parts of the Catalan region; therefore, they are Catalan-Spanish bilinguals. Nevertheless, 7 of them have acknowledged being Spanish-dominant and 4 Catalan-dominant. They reported having knowledge of foreign languages, especially English, which they have studied in primary and secondary school, as they are students of other degrees at university. In most cases they self-rated their level of proficiency in English as high-intermediate, although in the majority of the cases they do not use this language on a daily basis.

4.3.2. Instruments

Participants in the study performed a series of tests, which aimed at testing the learners' general proficiency in English, at gathering data on their *cognitive language learning abilities*, and on the *amount* and *type of input* received during their English learning history. A film retelling task was used to elicit oral production by the learners, from which instances of CLI have been identified for analysis. Learners also performed the same task in their L1, either Catalan or Spanish. As previously acknowledged, the tests used are part of the battery of tests in the "Age, input and aptitude. Effects in the long run in the acquisition of English in formal contexts" Project, which also includes a written composition

and a non-word recognition test, as well as a short-term memory test. A description of the instruments used in the present study, designed by the GRAL research group, is provided in the following sections. Table 3 below presents the instruments, which are presented in detail in Appendix A.

Proficiency Tests	Oxford Quick Placement Test
	X_Lex and Y_Lex
	PID
Cognitive Tests	Working-Memory Test: Reading Span Test / Reading and Digit Span Test
	Lexical Access Test Llama_F Test Attention Span Test: Trail Making Test
Input Instruments	Background Questionnaire Interview
Oral Task	Oral Narrative (Film retelling)

Table 3- Tasks performed by the participants

4.3.2.1. Proficiency Tests

Three different tests were used in order to assess the proficiency level of the participants. The tests that are part of the battery of proficiency tests are the Oxford Quick Placement Test (QPT), which tests the learners' general level of language, X_Lex and Y_Lex, which are vocabulary size tests, and a Perceptual Identification Test (PID) that measures phonological perception of vowels.

<u>OXFORD QUICK PLACEMENT TEST</u>

The QPT is a paper and pen test produced by Oxford University Press together with University of Cambridge ESOL Examinations. It has been developed as an easy way to test students' level of English and to place them in the appropriate class level; it provides information on the level of study that would be most appropriate for learners.

This standardized test is in the form of multiple choice questions and covers a range of grammar and lexis questions. Thus, it tests accuracy and explicit use of knowledge under very controlled conditions. Test items are in a fixed response format, in which some possible answers are given and the learner has to choose one. Only one alternative is correct and the others are distractors based on typical mistakes made by learners (McNamara, 2000). Due to the familiarity that students in our context have with this kind of tests, since most learners have prepared for official exams, and due to the easiness to administer it, the GRAL research group thought that the QPT would be a good test to assess the general proficiency of the participants in terms of grammar and lexis. The QPT, together with a detailed analysis of the test, can be found in Appendix A.1.

<u>X_LEX AND Y_LEX</u>

X_Lex and Y_Lex are part of the LEX battery of tests (Meara, 2006), which are a series of tools to investigate lexical skills of L2 learners. These tests were developed with the intention of creating a standard vocabulary test for university students learning EFL, which could provide quick assessments of learners' L2 vocabulary skills (Miralpeix, 2007, 2009). In fact, they can be administered in between five and ten minutes.

The tests were also developed with the idea that passive recall is a good predictor of language performance (Read, 2000; Laufer & Goldstein, 2004) and taking into account the advantages and disadvantages of Yes/No tests. These kinds of tests are characterised by not including tasks that could be considered "irrelevant" and by enabling testing a higher proportion of words than in a conventional test in the same time. On the other hand, they are not designed to test multiple meanings of words, or to assess low-level learners, who may respond to non-words in an unpredictable manner (Miralpeix, 2009).

X_Lex (Meara, 2005a) is a test of vocabulary breadth (i.e. it assesses how many words a learner knows in a language) that gives an automatic estimation of the total receptive vocabulary size. It uses a vocabulary of 5000 words and, therefore, it is suitable for low-level learners. Y_Lex (Meara & Miralpeix, 2006) is a variant of the X_Lex test, but it is aimed at more proficient learners since it uses more advanced vocabulary. It tests vocabulary in the 6000-10000 range. Therefore, members of GRAL thought that it would be a good instrument to use with the participants in this study, who have an intermediate and advanced proficiency in English. The score on this test was added to the one learners were awarded in the X_Lex test in order to calculate an estimate of the learners' receptive vocabulary knowledge up to 10000 words. With both tests, the knowledge of 120 words from different frequency levels is tested. These tests can be found in Appendix A.2.

The tests have been found to discriminate between proficiency levels (intermediate and advanced) with university students (Miralpeix, 2007, 2009) and to significantly correlate with fluency, lexical richness and productive vocabulary size measures. No correlation has been found with WM scores, although learners with higher WMC seem to know more words from bands 7k (7000 words) onwards (Miralpeix, 2009).

PERCEPTUAL IDENTIFICATION TEST

The PID used in this study is based on a forced-choice lexical decision task, in which participants hear a series of repetitions of the words 'feet' and 'fit' and have to identify them as accurately and as fast as possible by pressing the correct computer key. A practice section is provided prior to the beginning of the test itself.

The words 'feet' and 'fit' – which contain the vowels /i:/ and /I/ respectively- where chosen due to the difficulties that Catalan/Spanish speakers have in discerning the difference between these two English vowel sounds since they are very often assimilated into the Spanish vowel /i/ (Flege, Bohn, & Jang, 1997; Escudero & Boersma, 2004). These difficulties arise from the fact that Spanish and Catalan do not have the spectral (tense/lax) and duration (long/short) contrast that the English vowel sounds under study have. Although Spanish and Catalan lack these acoustic cues, Spanish speakers seem to rely on duration rather than on quality/spectrum to distinguish English vowel sounds in the first stages, as opposed to English native speakers who primarily use spectral cues (Escudero & Boersma, 2004; Cebrian, 2006; Morrison, 2008).

The scoring measure of the test is the mean percentage of correct responses. A native speaker of English gets a 100% of correct identification of /I/ - /i:/ even if vowel duration is manipulated since native speakers rely mostly on spectral cues to perceptually identify these contrasting vowels. On the other hand, the manipulation of the duration may have an effect on L2 learners, who may have problems in identifying these vowel sounds as they only rely (or over-rely) on duration as a perceptual cue in the first stages. However, they are expected to start using the quality property to distinguish these vowels as their proficiency increases (Escudero & Boersma, 2004; Cebrian, 2006; Morrison, 2008). The reproduction of the test can be found in Appendix A.3.

4.3.2.2. Cognitive Tests

Four different tests were used in order to assess the *cognitive language learning abilities* and processing skills of the participants. The tests that are part of the battery of cognitive tests are a Reading and a Digit Span task, which draw upon both storage and processing of WM; a Lexical Access test, which aims at analysing how learners access the words from the lexicon; the Llama F test, designed to assess aptitude for foreign language learning, and an Attention Span test (the Trail Making test), which tests visual attention and task switching. A description of the tests is presented in what follows.

WORKING-MEMORY TEST: READING SPAN TASK

The Reading Span task, a widely-used WMC test (see Waters & Caplan, 1996; Friedman & Miyake, 2005), created by Daneman and Carpenter (1980), involves learners reading a series of sentences and processing their meaning. At the same time, learners have to remember the last word of each of the sentences, since they will be asked to recall them in the correct order at the end of each set. This complex task requires "participants to fulfill both processing and storage requirements" (Friedman & Miyake, 2005: 581). Therefore, the Reading Span task is designed to measure "WM storage in the face of processing (or distraction), in order to engage executive attention process" (Conway, Kane, Bunting, Hambrick, Wilhelm & Engle, 2005: 773). It measures how learners are able to keep information in STM (the words they are asked to recall) at the same time they are performing a processing task (sentence comprehension).

The Catalan and Spanish (the learner's L1s) versions of the Reading Span task developed by the GRAL group, which have an internal consistency of α= 0.872, include eighty-eight different sentences, of between eight and twelve

words each, which are organized into twenty blocks plus three trial blocks at the beginning. Each block, which are randomized, is composed of series of two to six sentences. Moreover, learners have to complete all blocks in order to finish the task. Using a randomized variant of blocks allows low-ability learners to experience some success throughout the task and not only at the beginning. Thus, by randomizing the sets, a more exact result can be assured (Conway *et al.*, 2005). A reproduction of the test can be found in Appendix A.4.

Participants in the study were asked to fulfil two tasks during task performance. On the one hand, they had to read the sentences and assess whether they made sense or not by pressing the respective two buttons; on the other hand, they had to remember the last word of each sentence in the order of appearance. The idea was to engage learners in meaning processing while trying to remember the words. Learners had to recall the words after each block when they saw the word "RECUERDA" ("remember") on the screen (which was the signal of the recall period), and had to write them down in a booklet they were provided with. Participants were given the same amount of time to read the sentences (five seconds per sentence). Although learners had time constraints in reading and processing the sentences, they were allotted as much time as needed to recall the words and to write them down. It took them between 20 to 25 minutes to complete the whole task. The test was conducted in the participants' L1 (Catalan or Spanish), because most research has suggested that WM is language independent (Osaka & Osaka, 1992; Osaka, Osaka & Groner, 1993).

Several scoring methods to calculate the results in the Reading Span task have been used in previous studies (see Friedman & Miyake, 2005; Conway *et al.*, 2005 for a description of the scoring methods). The scoring method used in the present dissertation is the "partial-credit unit scoring", which "expresses the mean proportion of elements within an item that were recalled correctly" (Conway *et al.*, 2005: 775). This scoring method has been proved to be adequate in research studies that have analysed a series of methods (see Friedman & Miyake,

2005; Conway *et al*., 2005). With this method, forgetting words in the two-word units results in lower overall scores than forgetting words in units where there are more words to be remembered.

<u>WORKING-MEMORY TEST: READING AND DIGIT SPAN TASK</u>

While the WM test used in the first data collection by GRAL was a Reading Span task, as discussed above, in subsequent data collections an automated Reading and Digit Span task was started up (see section 4.3.3 for the procedure followed in the data collection). This newest version of the tests consists of two parts: the practice and the actual experiment. The practice part is composed of three parts: 1) a Digit Span test, in which participants are presented with a series of letters (between 3 and 9) that they need to memorize. The number of digits they are presented with increases (3, 3, 4, 4, 5, 5, etc.), and after each of the series participants are presented with a chart with all the possible letters, which they will have to tick in the correct order of appearance; 2) a sentence practice, in which participants have to read a series of sentences and assess their plausibility; that is, they have to decide whether the sentences make sense or not by pressing the respective buttons; and 3) a combination of the previous two parts: learners are presented with two or three series of sentences that they have to assess taking into account their plausibility. After each sentence, a letter appears on the screen, which they have to memorize. As in part 1, after each of the series, a chart appears and learners have to tick the letters they remember in the order of appearance. Part 3 of the practice session is the real practice for the experiment, which begins right after the trial session.

The actual experiment consists of 15 sets of randomized sentences, since sets range between three and seven sentences that need to be assessed with no established order. Similarly to the previous WM test described, the idea was to

engage learners in meaning processing while trying to remember the letters, which entails simultaneous processing of information (Conway *et al.*, 2005).

<u>LEXICAL ACCESS TEST</u>

The Lexical Access test used in the present dissertation, designed by the GRAL research group (Serrano, 2011), is an animacy judgement task. It is based on the lexical access task used by Segalowitz and Freed (2004), who designed it to examine learners' speed –measured by reaction time- and efficiency of processing or automaticity –measured by coefficient of variation (Segalowitz & Segalowitz, 2003; Segalowitz & Freed, 2004; Segalowitz & Frenkiel-Fishman, 2005).

This computerized test includes 100 words presented on a computer screen that the participants had to classify as "animate" (people and animals: e.g. brother and duck) -by pressing the left key- and "inanimate" (things: e.g. knife or lamp) -by pressing the right key-, as fast and as accurately as possible. If no answer was provided in three seconds, the next word was presented. Participants were informed about this in order to ensure a fast response. The instructions and an example of the test can be found in Appendix A.5.

The learners performed this task in their first language –i.e. Catalan or Spanish– as well as in English, in order to control for individual differences in lexical access; or more simply, to control for those learners who are naturally faster. Thus, the test was divided into two different parts: one in the learners' L1 and the other in English. The order of these two parts was randomized in the data collection in a way that half of the learners performed the test in the L1 first and then in English, and the other half did it in the reverse order. The actual test, which had an approximate duration of ten minutes, was preceded by a six warm-up trial, which was not included in the analysis.

Both reaction time and accuracy of responses were recorded in order to examine, as mentioned, learners' speed and efficiency of processing respectively. Speed processing was calculated by partialling out L1 from L2 reaction times, controlling in this way individual differences. On the other hand, efficiency of processing was measured by the coefficient of variation – i.e. the standard deviation of a learner's reaction time divided by the mean reaction time-; which was also adjusted for L1 performance (Segalowitz & Freed, 2004).

LLAMA F TEST

The Llama Aptitude Test (Meara, 2005b) is a computer-based test battery that includes four different sub-tests: LLAMA B (a test of vocabulary learning), LLAMA D (a test of sound recognition), LLAMA E (a test of sound-symbol associations), and LLAMA F (a grammatical inferencing test). The tests have recently been used largely by SLA researchers; however, as Meara (2005b) reports, they have not been standardized. A recent study by Granena (2013) has validated them and shown their internal reliability. The subtest that has been used in the present dissertation, as well as in the different studies by GRAL, is LLAMA F.

LLAMA F is a "Grammatical Inferencing task" that was based on Carroll and Sapon's (1959) work. It is used to evaluate aptitude for foreign language learning, especially to identify analytical learners. It is based on picture stimuli and, thus, independent of the L1 of the learners. Apart from facilitating administration to speakers of any language, language independence also minimizes the use LTM strategies, as well as avoiding confounds related to proficiency level, literacy skills and language dominance that may emerge in L1 or L2-based tests (Granena, 2013). See Appendix A.6 for a reproduction of the test.

The test measures the ability to induce the rules of an unknown language. So, it tests explicit inductive language learning ability, which is directly linked to grammatical sensitivity (Granena, 2013). The task of the learners is twofold: firstly, they need to learn as much as they can about the grammatical rules of a new language (mainly agreement features) for five minutes by clicking on the buttons in the main panel; every time a button is clicked a picture and a sentence that describes it appear. Secondly, the learners need to show how well they have acquired the new rules. In this part of the test, a picture and two different sentences –a grammatically correct and an incorrect one- are presented to the learner, who needs to select the sentence that describes the picture most appropriately. There are twenty items in total and there is no time limit to complete this part of the test. Feedback in the form of an acoustic signal is given to the learners as they perform the test, and the final score is given at the end of it. Scores range between 0 and 100.

ATTENTION SPAN TEST: TRAIL MAKING TEST

Attention span is the amount of time that a person can concentrate on a task without being distracted. The test selected by GRAL to measure attention span was the Trail Making Test, one of the most extensively used tests in neuropsychological assessment. The test indicates speed of cognitive processing and executive functioning and provides information on visual search, perceptual speed, WM, scanning, general intelligence, mental flexibility and ability to maintain two lines of thought simultaneously (see Reitan, 1992; Strauss, Sherman & Spree, 2006; Sánchez-Cubillo, Periáñez, Adrover-Roig, Rodríguez-Sánchez, Ríos-Lago, Tirapu & Barceló, 2009; Salthouse, 2011).

The Trail Making Test consists of two different parts (A and B), in which the participants need to connect 25 dots that contain numbers or letters randomly

distributed over a sheet of paper without lifting the pen from the paper. The test also contains one sample trail for part A, and another one for part B. In part A the targets are all numbers (1, 2, 3... 25) and participants have to connect them in sequential order. In part B, numbers and letters alternate (1, A, 2, B... 25, L), and it is, thus, more complex. Moreover, there is more distance between numbers, which makes participants need more time during the task. However, the difference in time between part A and part B can also be attributed to the more complex cognitive processes needed to alternate numbers and letters. Different cognitive abilities can be associated with the different parts of the test, as Sánchez-Cubillo *et al.*, 2009 suggest: while Part A mainly requires visuoperceptual abilities, Part B reflects WM and task-switching ability.

The aim of the test is to finish the two parts as fast as possible and to maintain accuracy. Error rate is not taken into account in the score. It is nevertheless assumed that possible errors will be reflected on the task completion, since if participants make an error, it is pointed out to them without the stopwatch being paused. The score of each part is represented by the time needed by participants to complete the task. Additionally, the B-A difference score has been calculated, following previous studies (see e.g. Periáñez, Ríos-Lago, Rodíguez-Sánchez, Adrover-Roig, Sánchez-Cubillo, Crespo-Facorro, Quemada, and Barceló, 2007; Sánchez-Cubillo et *al.*, 2009). Generally speaking, it takes between five and ten minutes to complete the two parts. The test can be found in Appendix A.7.

4.3.2.3. Input instruments

Two instruments –an on-line background questionnaire and a personal interview- were given to the participants in order to have information on the

amount and *type of input* received during their language learning history. They also served as a tool for gathering sociolinguistic data of the learners.

BACKGROUND QUESTIONNAIRE

It is extremely difficult to accurately know the total *amount of input* that learners have received throughout their language learning history (e.g. Flege, 2009) due to the variety of sources and the methodology that are normally used to gather this kind of information, which normally comprises self-reported data. There is no other way to gain information about the *type* and *amount of input* that learners have been exposed to than asking them directly through interviews and questionnaires that contain questions related to length, frequency, intensity and type of language instruction, and any other type of exposure that learners might have experienced. Consequently, in the present study a questionnaire has been used to gather input-related information. These measures, according to Jarvis and Pavlenko (2008), are frequently used as indicators of L2 knowledge and exposure to the L2 in those cases in which learners are exposed to the TL in a classroom setting. It should also be noted, though, that learners' self-estimates of their use of the L2 might not be accurate enough (Muñoz & Singleton, 2011).

A detailed on-line background questionnaire written in Catalan (one of the participants' first languages) was elaborated by GRAL research group, and subsequently used in the present study to elicit information about the learning of EFL. Learners had to complete the questionnaire at home due to its length (83 questions) and were informed that it was very important to answer all the questions and to consult their parents in the event that they could not remember details of what they were asked about.

The questionnaire (see Appendix A.8) was divided into ten different sections that covered different issues about the learners' experience in learning

English. First of all, it elicited extensive biographical information about the learners, as well as sociolinguistic details, such as knowledge of languages, to make sure that the sample was homogenous. The questionnaire also included questions on the learning of English at primary and secondary school and at university, as well as extracurricular instruction; such questions regarded the age at which learners had started receiving English classes and how long instruction had taken place. It also elicited information about CLIL instruction and SA programmes, if any. Finally, it provided details about their exposure to the English language, their personal assessment of their experience learning the language and the factors that had influenced the process of learning it. All this information was considered important in order to have a detailed account of the *input* received during the learners' history of language learning and, therefore, to have an index of language exposure.

The questionnaire included the three types of questions that Dörney (2003) mentions that this type of data collection can include: factual questions, which are used to know who the participants are and, thus, information that might be useful to interpret the findings (e.g. demographic characteristics, facts about the learners' language learning history, amount of time spent in the L2 environment); behavioural questions, which serve to find out the participants' actions, habits and life-styles (e.g. when learners are asked for the frequency they watch TV programmes and films in original version); and, finally, attitudinal questions, which concern attitudes, opinions, interests and values (e.g. when learners are asked to assess their English classes at primary and secondary school). Most of the questions included in the questionnaire were closed-ended questions with pre-coded answer categories, in which learners were asked to choose an answer; the very few open-ended questions regarded very specific issues and, thus, the answers that learners had to provide were short (see Oppenheim, 1992 and Dörney, 2003 for a detailed description of the types of questions in questionnaires).

Although this type of research instrument allows the researcher to collect a large amount of reliable and valid information quickly and effectively, the types of insight they create are limited since they do not offer an in-depth analysis of data (Dörney, 2003). On the other hand, as Brown (2001: 78) states,

> the flexibility of interviews allows the interviewer to explore new avenues of opinion in ways that questionnaire does not; thus interviews seem better suited to exploratory tasks […] The richness of interview data also leads to more possibilities in terms of exploring the issues involved.

This is the reason why the GRAL research team decided to use semi-structured interviews as a complement to the questionnaire with a more detailed personal account of their experience as language learners, as will be explained below.

Apart from the questionnaire that the participants in the study had to fill in, two other questionnaires were specifically developed for the present dissertation for the control group, one in English and the other in Catalan. These questionnaires mainly asked for biographical and sociolinguistic information, and they focused on the proficiency and use of the different languages they knew (see Appendices A.9 and A.10).

INTERVIEW

The aim of the face-to-face semi-guided interview was twofold; on the one hand, it was a good instrument to test the oral competence of the learners, and, on the other hand, it provided richer, more spontaneous and detailed information on the learners' personal experience learning languages and on the *input* received. For this reason, they were conducted individually and learners were told that they could use their L1 if they thought that there was something interesting to explain which they did not know how to express in English. Although this instruction was given, none of the learners code-switched to their L1 due to their high level of proficiency.

The interview was divided into three different sections in order to elicit different verb tenses. The first section dealt with the learners' experience in the present and concentrated on questions about knowledge of other languages, their difficulties with English and their opinion about themselves as language learners. The second part consisted of questions about their past experience and asked about the quality of their experience, the factors that had influenced their learning of English and about the existence of a turning-point in the course of their learning. Finally, the third section dealt with their future plans to improve their English skills. As with the questionnaire, the interview also contained the three types of questions identified by Dörney (2003). The actual questions appear in Appendix A.11 and some samples of the learners' responses in Appendix B.1

4.3.2.4. Oral Task: Narrative (film retelling)

The oral task used to gather the learners' productions in English and to analyse the occurrence of CLI is an oral narrative or film retell of an eight-minute segment, called "Alone and Hungry", from Charles Chaplin silent film "Modern Times" featuring Chaplin and Paulette Goddard, in which a poor young girl tries to steal a loaf of bread, is then arrested, and finally escapes with the help of Charles Chaplin. This elicitation task "provides [learners] with a uniform prompt from which to speak" (Gass & Mackey, 2007: 136), and it has already been used in transfer studies by Jarvis (1998, 2000). Moreover, CLI studies have mainly focused on writing and to a less extent to oral skills as it is more time-consuming. In this way, the present dissertation intends to contribute to the understanding of how CLI works in oral production.

Participants were told that they would watch a story and that they would be asked to narrate it later on. Moreover, the instructions also specified that learners would watch the whole story first in order to get the general idea and

that it would be in the second viewing that the story would be divided into two parts and had, therefore, to be narrated in two fragments separately. The researchers in GRAL also asked the learners to narrate the story using the past tense, so as to emphasize that this was the tense to be used during the narration. Researchers were instructed to intervene as little as possible. The task is shown in Appendix A.12. and samples of the oral task are presented in Appendix B.2.

The film retelling was performed in English, as well as in the learners' L1 (either Catalan or Spanish). In this way, it is possible to compare the learners' performance in the source and the TL to see if the patterns in the TL are motivated by the ones found in the source language. This type of comparison is what Jarvis and Pavlenko (2008) have called "crosslinguistic performance congruity", a necessary comparison to be able to assure that CLI has taken place (see section 4.4.3).

The purpose of using this task was to elicit natural and free oral language samples that could be later analysed to see the extent to which previous languages can affect oral production in the TL. Larsen-Freeman and Long (1991) have classified this type of elicitation device in the eighth position in their twelve-point scale, which is ordered from those data-collection devices that exert more control over the learners' productions to those that exert less control. More specifically, the type of production data used is what Ellis (2008: 917) calls "general clinically elicited samples", in which "some control is exercised through the choice of task but learners are expected to be primarily engaged in message conveyance for a pragmatic purpose, as in naturally occurring language use". It is called a general sample, as opposed to focused samples, since the aim is to "provide a context for learners to speak or write in the L2 in a purposeful manner" (Ellis, 2008: 919), without pre-determining what linguistic forms the learners will have to use. Moreover, the oral narrative task was performed by participants individually; therefore, the result was the production of samples of monologic discourse.

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It was thought that the task would be suitable for learners with a high level of proficiency in the TL and especially suitable to explore the role that the factor of *cognitive language learning abilities*, and WM in particular, has in L2 performance and in the occurrence of CLI. This kind of oral task can be regarded as a complex one, if the task features in the *Triadic Componential Framework* by Robinson are considered (see Robinson, 2007; Robinson & Gilabert, 2007). It is complex since learners are not given any time to plan their contribution. Moreover, they are asked to narrate the story in the past tense (There-and-Then), which is cognitively more demanding than to carry it out in the present tense. Finally, many elements occur in the story that learners have to remember: there is a high quantity of characters, places, objects and events.

4.3.3. Procedure

As previously mentioned, the tests described above are part of a battery of tests in a larger project by GRAL. The tests were administered in different sessions and in different data collections (in different years) by the researchers within the research group, which the author of the present study belonged to. The first data collection, in which different tests were carried out in several sessions, took place in March 2009. The QPT was administered to 52 learners in the first session. They were given thirty minutes to carry it out. In a second session, which lasted approximately another half an hour, three other tests were performed in a computer room: the X_Lex and Y_Lex test, the Lexical Access test, and the PID test.

In a third session, the battery of oral tasks, as well as the WM test, were performed outside class in a quiet room for recording, where only the researcher and the selected participant were present. These tests took place from April to June 2009. This session lasted for an hour approximately: twenty minutes for the

oral narrative, fifteen for the interview, and twenty-five for the WM test. Finally, participants had to fill in the questionnaire at home.

Some of the participants, more specifically, the ones who were expected to finish their English studies, were contacted again in March/April 2010 in order to complete the battery of tests in a fourth session. They carried out a series of other tests, which include the new version of the WM test that lasted thirty minutes, and the oral narrative, but his time in their L1 (either Catalan or Spanish). All these tasks were also performed by 13 more learners, who carried out the tasks that participants had performed in 2009.

The third and last data collection took place between March and April 2011. A total number of 44 learners performed the tasks. As regards the tasks they carried out, they were the same as the ones in 2010. Two other cognitive tasks were, moreover, added to the battery of tests so as to have a more complete knowledge of the learners' *cognitive abilities*: the Llama F test, which lasted 15 minutes, and the Attention Control test, which the learners performed in about five minutes. The oral narrative in the L1 (Catalan or Spanish) was only carried out by the learners that had participated in the first data collection in 2009. The time needed to perform all the tests was slightly longer than in the previous data collection; it took around two hours and thirty-five minutes, which was distributed in two different sessions: in the first one (fifty minutes) participants performed the QPT, the X_Lex and Y_Lex Test and the PID test in a computer room. The second session took place a few days later and the learners were individually contacted to carry out the rest of the tests (one hours forty-five minutes), which were performed in the following order: WM test, interview, Attention Control test, oral narrative, Llama F test. The oral narrative in the learners' L1 was done at the end of the session. Moreover, questionnaires had to be filled in at home. A summary of the three data collections can be found in Figure 6 below.
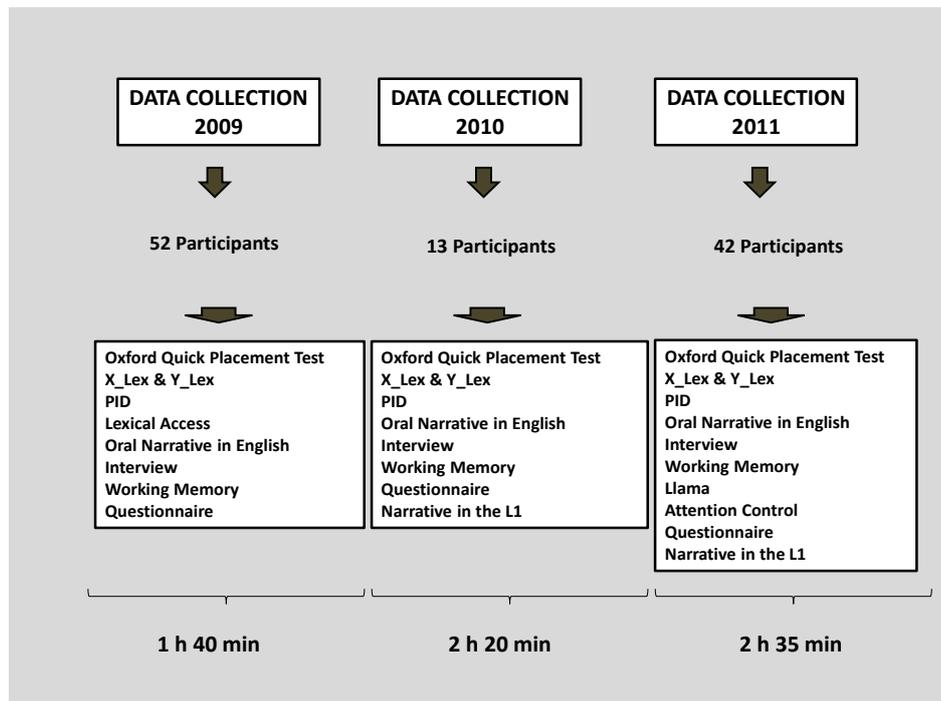
Figure 6- Data collection procedure

As has been mentioned, the oral task was also performed in English by English native speakers and in Catalan/Spanish by Catalan/Spanish speakers, who followed the same procedure as the experimental group. This data gathering took place from November 2009 to December 2010, and was carried out specifically for the present study.

4.4. Analysis

The instances of lexical and grammatical CLI were identified and further classified into different types. This section includes the type of analyses carried out with the data. First of all, the classification of CLI that has been used in this study is described and exemplified. Afterwards, the methodological decisions that have been taken in the analyses, as well as the statistical analyses performed are presented.

4.4.1. Classification of lexical CLI in the present study

The first step in the analysis was to identify the total number of instances of lexical and grammatical transfer in the oral productions of the learners. They were subsequently classified according to the source language of the transferred forms. Both the L1 –Catalan or Spanish- and the other foreign languages known by the learners were taken into account.

The next step consisted of identifying the subtype of lexical and grammatical CLI. The classification proposed for lexical CLI has been adapted from an earlier study (Ortega, 2008a), and is based on the classifications that Ringbom (1987, 2001, 2006), Dewaele (1998), Williams and Hammarberg (1998), Hammarberg (2001), Cenoz (2001), and Jarvis (2009) have established. These classifications (except for the one by Jarvis) have been adapted in previous studies with Catalan-Spanish bilingual learners by GRAL (Gost, 2003; Viladot, 2004; Gost & Celaya, 2005; Viladot & Celaya, 2007; Muñoz & Celaya, 2007; Ortega & Celaya, 2013) and seem to work successfully.

The first distinction, as seen in Figure 7 below, has been made between *lexemic* and *lemmatic* transfer (Jarvis, 2009), which is based on Ringbom's (1987, 2001, 2006) distinction between *transfer of form*, which includes *complete language switches*, *hybrids* or *blends* and *deceptive cognates*, and *transfer of meaning*, which includes *calques* and *semantic extensions*. Following Jarvis (2009), different types of *lexemic transfer* have been distinguished: *language switches*, *lexical inventions*, *false cognates* and *self-repairs*. Moreover, *languages switches* have been classified into different categories according to its function and use in the utterance -i.e. *code-switching* (Cenoz, 2001), *borrowings* (Poulisse, 1990), *editing terms*, *meta comments* and *insert implicit elicit* (Williams and Hammarberg, 1998; Hammarberg, 2001).
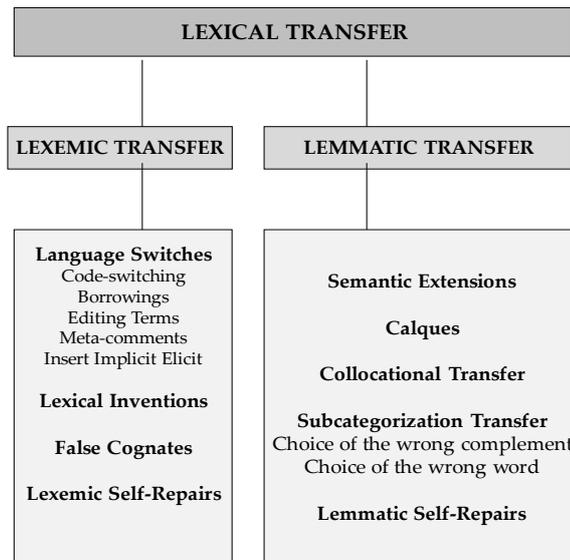
Figure 7- Classification of Lexical CLI

On the other hand, *lemmatic transfer* has been classified into five categories: the first four follow Jarvis (2009) classification: *semantic extensions, calques, collocational transfer* and *subcategorization transfer*. Subcategorization transfer has been further divided in the present disssertation into two main types: those cases that involve the choice of the wrong type of complement and those cases that involve the choice of the wrong specific word within the complement. Additionally, a fifth category has also been added, *lemmatic self-repairs*. A detailed description and analysis of each category is provided below. Some examples taken from the participants' productions in the study are also given in order to illustrate the coding categories.

4.4.1.1. Lexemic Transfer

Lexemic transfer, which corresponds to Ringbom's (1987, 2001, 2006) category of *formal transfer* in a straightforward way, involves the morphological, phonological and graphemic forms of words produced by language learners. It

seems to be caused by formal crosslinguistic lexemic similarities between lexemes of different languages or by processing interference –i.e. levels of lexeme activation (Jarvis, 2009). Although this type of CLI is often positive, especially when considering closely related languages (Odlin, 1989; Ringbom, 2007), only the non-target forms have been taken into consideration for the analysis. The different subtypes of *lexemic transfer* with examples taken from the data used in the present study are presented below.

LANGUAGE SWITCHES

Language switches involve the use of an inappropriate word or group of words from the wrong language, and seem to be largely caused "by a high level of activation in the intruding lexeme independently of a possibly existing mental connection between the intruding lexeme and the target lexeme" (Jarvis, 2009: 112). *Language switches* correspond to what Williams and Hammarberg (1998), and Hammarberg (2001) have called *non-adapted language switches*, i.e. "expressions in languages other than L3 that were not phonologically or morphologically adapted to L3" (Hammarberg, 2001: 25). As described above, they have been classified into five different categories in the present study.

CODE-SWITCHING

This category has been adapted from previous authors (e.g. Cenoz, 2001) to refer to whole pieces produced by the learner in another language. It does not include cases in which the learner introduces comments on the communicative situation, as when he expresses a difficulty verbally or is asking for help, as these cases have been classified as *metacomments* (see below). In most cases, the learners

are conscious that they are changing to the L1 or L2, but they use this strategy due to their lack of knowledge of the TL. Following Ortega and Celaya (2013), *code-switching* can be further subcategorized into two types: *code-switching of a whole sentence*, when whole sentences are entirely produced in the source language, and *code-switching of part of a sentence*, when only parts of a sentence are entirely produced in the source language[28]. Although this category was initially considered in the classification, no examples were found in our data and, therefore, it was not included in the analysis. The lack of examples of *code-switching* could be due to the high proficiency of the learners.

BORROWINGS

The category labelled as *borrowings* (Ringbom, 1987, 2001, 2006) consists in the use of a non-target word from a previously learnt language in the production of the TL that has not been phonologically and morphologically adapted (Poulisse, 1990), which results in a non-existing TL word (Ringbom, 2001). Cenoz (2001) considers *borrowings*, as well as *foreignisings* (also called *lexical inventions* in the literature, see below*)*, as a subtype of a category labelled *transfer*. Other authors, such as Williams and Hammarberg (1998) and Hammarberg (2001), label this category as *insert non-elicit*; and they consider it as "cases of non-eliciting switches that may be conditioned by various factors such as missing vocabulary, occasional access blockings, the nature of the topic or context and the attitudes of the speaker" (Hammarberg, 2001: 27). *Borrowings* are further subclassified into:

      a. *Content borrowings*, which includes nouns, adjectives, lexical verbs and adverbs. In example 1 provided below, the learner

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[28] Here 'part of a sentence' is understood as a whole phrase which has a minimum of two words or more than two words in the L1 or L2 which do not constitute a phrase.

introduces a word from the learner's L1 – Catalan-, in this case a noun, in the English utterance without any modification.

(1) SUB 9020SOGA: There's a woman that saw <a the> [//] <all the history> [//] all the **escena**@s:c. [Target Form (TF): scene].

b. *Function borrowings*, which includes pronouns, determiners, numerals, prepositions, conjunctions, and modal and auxiliary verbs (Huddleston & Pullum, 2002). Although this category was initially considered, no cases of this type were identified in the data and, therefore, not included in the analysis.

EDITING TERMS

Editing terms, which correspond to Williams and Hammarberg (1998) and Hammarberg's (2001) *edit* category, consists in terms that are used to introduce a self-repair, and to facilitate or to maintain interaction (e.g. "no", "sorry", "yeah"). Two examples are provided below to illustrate this category. In example 2 the learner uses an *editing term* to maintain interaction while trying to retrieve the English word needed. In example 3, on the other hand, the learner makes use of an interjection in order to introduce a self-repair, since the learner is aware of the fact that he has not uttered the intended English word.

(2) SUB 9020SOGA: She ran away but she [/] she hmm@p **bueno@s** she &tal [//] **bueno@s** she stopped with a [/] a man. [TF: well].

(3) SUB 9162ALPA: She is passing by a [/] a shop where <they buy> [//] **ai@s:c** they sell bread and cakes. [TF: eh].

META COMMENTS

The term *meta comments* refers to expressions that are used to indicate a comment on the communicative situation or on the text itself (Williams and Hammarberg, 1998; Hammarberg, 2001). In example 4 below the learner expresses in L1 Catalan that he does not know how to say a specific word in English.

> (4)   SUB 9097BLPE: A man sees [//] see her and follows her and she [/] she **no@s:c sé@s:c com@s:c es@s:c diu@s:c xoca@s:c** hmm@p and she finds with [/] with another man. [TF: I don't know how to say crash].

INSERT IMPLICIT ELICIT

Cases of *insert implicit elicit* consist in the use of a non-target word pronounced with rising intonation, which can be interpreted as an eliciting signal (Williams and Hammarberg, 1998; Hammarberg, 2001). This is illustrated in example number 5, in which the learner pronounces a Catalan/Spanish word ("cafeteria") but utters it with a rising intonation because he might be aware that it is not an English word.

> (5)   SUB 9020SOGA: In this time the man that was catch the first time hmm@p goes to a <&ca &ca> [//] **cafeteria@u** and takes a lot of food. [TF: cafeteria][29].
>
> @Comment: Pronounced with rising intonation and as a Spanish word.

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[29] The spelling of the word 'cafeteria' is the same in English and in Catalan/Spanish. The difference here lies on its pronunciation.

LEXICAL INVENTIONS

Lexical inventions, also called *coinages* (Ringbom, 1987, 2001, 2006; Jarvis, 2009) or *foreignisings* (Poulisse, 1990), along with *language shifts*, derive from "insufficient awareness of intended linguistic form, instead of which (a modified form of) an L2 word is used" (Ringbom, 2001: 64), and result in non-existing items in the TL or *foreignised* words. According to Jarvis (2009), this is the type of *lexemic transfer* that most clearly involves the level of lexemes, since that forms of words are modified. It can involve the blending of two words from two different languages, the use of a word stem from a language with the inflectional morphology from another one, or the modification of the word stem to make it seem like a word of the TL (Jarvis, 2009).

The term *lexical invention* was coined and defined by Dewaele (1998) to refer to words morpho-phonologically adapted to the TL but which do not actually exist in the TL and, therefore, never used by native speakers of the language. Dewaele (1998) assumes that *lexical inventions* can have both intralingual (*slips of the tongue*, *overgeneralizations* and *simplifications*) and interlingual sources. Since Dewaele's (1998) study, this term has also been used by other authors like Navés *et al*. (2005). In the present study, this category only refers to interlingual sources, and it consists in the use of a non-target word, which has been adapted from the L1 or L2 to the phonology and morphology of the TL, as well as in the uses described above (i.e. the blending of two words from two different languages and the use of a word stem from a language with the inflectional morphology from another one). Two examples are given below – example 6 and 7– that illustrate how learners adapt L1 Catalan/Spanish[30] words to the phonology and morphology of English. In example 6, the learner takes the L1 word "bistec" and adapts it to the English phonology and morphology. The

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[30] In many cases it is not possible to distinguish whether the word uttered is Catalan or Spanish-based due to the similarity between these two languages.

same process occurs in example 7. In this case, the learner invents the word out of the L1 Catalan/Spanish word "comisaria".

(6)　　SUB 9135FLMA:　　They're eating hmm@p huge piece of meat a **bisteak@c**. [TF: steak].

(7)　　SUB 9139RIZA:　　While he is calling to the **commissary@c** other policeman I guess hmm@p the man […] ask for a cigarette. [TF: police station].

FALSE COGNATES

False cognates, also called *deceptive cognates* or *false friends*, are "cross-linguistic word pairs that are (1) formally the same or similar and (2) semantically similar or dissimilar" (Jarvis, 2009: 107), and they often reflect mental associations between words formally similar. In other words, the underlying cause of this type of CLI is the learner's awareness of the TF and his confusion on its use caused by formal similarity to a word in another language. The result is, thus, an existing target word with a different meaning from the intended one (Ringbom, 1987, 2001, 2006). This is illustrated in sentence 8, where the learner has used the word "presents", which is a perfectly correct word in the TL, but not in the context in which the learner has used it. The selection of this lexical item has been triggered by an L1 word "presentarse".

(8)　　SUB 9128GUBR:　　[…] and then he **presents** himself [TF: introduces].

It consists in the use of a non-target form (i.e. *language switch*, *lexical invention*, *false cognate*) for which the learner immediately provides the target form. In example 9, for instance, the participant produces and a L1-based word ("police") but provides and immediate repair in order to conform to the TL.

(9) SUB 9097BLPE: […] and he call the police and said that he have no money so **<the police> [//] the policeman** take her [//] his.

4.4.1.2. Lemmatic Transfer

As discussed in section 2.5.2.3, *lemmatic transfer* goes beyond the semantic categories (i.e. *semantic extensions* and *calques*) that Ringbom's classification encompasses, and includes collocational, morphological and syntactic constraints on words. Thus, the scope of l*emmatic* transfer, the second broad type of lexical transfer, relates to both the semantic and syntactic properties of words (Jarvis, 2009). Four categories of *lemmatic transfer* are distinguished: *semantic extensions*, *calques*, *collocational transfer* and *subcategorization transfer*. These four types result from the ways that L2 learners build lexical representations in one language based on their knowledge of corresponding words in previously acquired languages (Jarvis, 2009).

SEMANTIC EXTENSIONS

Semantic extensions involve the links that exist between lemmas and concepts, and they are produced when "the learner assumes that what is a homonym or a polysemous word in the L3 has a meaning corresponding to what

is most commonly the core meaning of the equivalent L1 word" (Ringbom, 2001: 62). The clearest example is the case in which all the meanings of a polysemous word in a specific language do not correspond to the meanings of the same word in another language. This type of CLI is caused when learners carry over all the semantic links of a word from one language into another (Jarvis, 2009). In this type of *lemmatic transfer*, the learner is aware of the TF but not of its semantic restrictions (Ringbom, 1987, 2001, 2006), as can be observed in example 10, in which the learner is aware of the existence of the English word "coffee" but not of the context where it can be used. The confusion has arisen from the fact that all the meanings of its Catalan/Spanish counterpart ("café") do not correspond to the ones of the English word. In other words, while the Spanish word "café" can be used to talk about the drink or the place where you can have it, the English word "coffee" can only refer to the drink; the English word to refer to the place is "cafeteria".

> (10)   SUB 9010OLAR: […] then the man hmm@p enters in a **coffee** and eat a [/] a lot of things. [TF: café/cafeteria].

CALQUES

It refers to the literal translation of certain lexical items or idiomatic phrases from one language to the other (James, 1998). It is caused by the learners' awareness of existing TL forms but not of their semantic and collocational restrictions (Ringbom, 2001). Calques, thus, "involve the way that multiple forms are brought together to convey a particular meaning" (Jarvis, 2009: 113). They can involve the direct translation of compounds or more complex structures and fixed expressions. Example 11 below illustrates this coding category, in which the learner directly translates the Catalan/Spanish structure "el cotxe de policia" / "el coche de policía" into English.

(11) SUB 9030XACL: Both the woman and the man hmm@p meet in **the van of the police**. [TF: the police van].

COLLOCATIONAL TRANSFER

Collocational transfer is rarely considered a type of *semantic transfer* in studies on CLI. However, *calques*, which are normally regarded as a type of *meaning transfer*, and *collocational transfer* are "closely related phenomena (perhaps forming a continuum), and one of the advantages of the notion of *lemmatic transfer* is that it allows us to bring these two phenomena together under the same umbrella" (Jarvis, 2009: 116). This type of CLI occurs when the lemma-lemma association that learners have in their L1 is carried over to the lemmas in the L2. Sentence 12 clearly exemplifies this phenomenon. In this case, the learner used the verb "to make" instead of "to cook" or "to prepare" in combination with "the meal", which reflects an L1 Catalan/Spanish collocation ("fer el dinar" / "hacer la comida".

(12) SUB 9020SOGA: She **makes the meal**. [TF: cooks/prepares the meal].

SUBCATEGORIZATION TRANSFER

This type of CLI refers to cases that, on the surface, could be considered as a type of syntactic transfer since they involve a head of a phrase and their complement. In many cases, the learner chooses the wrong type of complement (e.g. a noun phrase instead of a prepositional phrase) or the wrong specific word within the complement (e.g. the wrong preposition). Both cases "reflect the influence of the syntactic specifications of headwords in one language on an L2

user's understanding and application of the syntactic specifications of corresponding headwords in another language" (Jarvis, 2009: 117). This kind of CLI can be classified as lexical and more specifically as lemmatic transfer if it is assumed that the syntactic specifications of words are contained in the lemma of a word. Two types of subcategorization transfer have been distinguished in the present study. Example 13 shows the first type, in which the learner has chosen the wrong type of complement, a prepositional phrase instead of a noun phrase, as it is this type of complement that the learner's L1 makes use of ("llamar a la policía" / "trucar a la policia"). Number 14 is an example of the second type; in this case, a wrong choice has been made in the selection of the preposition within the preposition phrase. Catalan and Spanish speakers tend to use the preposition "in" to express meanings that L1 English speakers would more often associate with the preposition "on" or "at", as is the case of sentence 14. This is due to the fact that the core meaning of the Spanish preposition "en" overlaps with the core meanings of "in", "on" and "at" and, thus, Spanish speakers associate "in" and "at" with "en" using "in" to represent the meanings of "in", "on" and "at" (Correa-Beningfield, 1990; Swan & Smith, 2001; Alonso, Cadierno & Jarvis, 2016).

(13)   SUB 9036ADMA: Then he sees no@s the police hmm@p calls [//] **phones to the police department**. [TF: phones the police department].

(14)   SUB 9036ADMA: He <hits again with the with the> [//] hits again **in the head**. [TF: on the head].

<u>LEMMATIC SELF-REPAIR</u>

Lemmatic self-repairs occur when the language learner produces a case of *lemmatic transfer*, for which he or she provides an immediate *self-repair* and, thus, the target form or expression is given, as can be seen in example 15. In this case,

the learner produces a literal translation from a Catalan/Spanish structure ("tenir gana" / "tener hambre"), but immediately provides the English target structure.

(15)   SUB 9097BLPE: There is a girl that hmm@p <he has &an> [//] **<he has hungry> [//] who is hungry.**

4.4.2. Classification of grammatical CLI in the present study

As already acknowledged, the number of grammatical CLI was identified, with special attention to *null subjects*, non-target *word order* and *use of articles*. Once the number of occurrences of these grammatical items was established, they were classified into different categories, which are specified below.

4.4.2.1. Null subjects

Null subjects were first classified according to the type of clause in which they tend to be present. This decision was taken as there is hardly any information in the literature on the contexts where subjects are omitted by speakers of a +null subject language acquiring English. Therefore, *null subjects* were classified taking into account whether they appear in a *main clause* or in a *subordinate clause*, as sentences 16 and 17 exemplify. Whereas the *null subject* appears in the main clause in sentence 16, it is located in the subordinate clause in sentence 17.

(16)   SUB 8002JABI: Then suddenly **goes back to reality**. [TF: he goes back to reality].

(17)   SUB 8006MICA: [...] and he tells **is your chance to escape**. [TF: it is your chance to escape].

In the second place, *null subjects* were classified into *referential* and *non-referential subjects*. Whereas the former refer to something previously mentioned, the latter do not; that is, *non-referential subjects* perform a syntactic role in the sentence but contribute nothing to meaning. In sentence 18 an example of *referential subject* is found; that is, "they" refers to people that the learner had mentioned before in the narrative. On the other hand, the missing subject in example 19 ("it") does not refer to something previously mentioned.

(18)   SUB 9040INFO: Then when **are inside** […]. [TF: they are inside].

(19)   SUB 9171MORO: The man hmm@p tells the police that **has been him who has stole the bread**. [TF: it has been him].

Null subjects were further classified according to the tense reference of the clause in which they should be inserted. That is, they were divided into *present* versus *past tense reference*, as sentences 20 and 21 show. This subcategorization was established as it was thought that past tense clauses are more complex than present tense ones and, therefore, learners would have more difficulties with the former. Whereas the *null subject* appears in a present clause in example 20, the clause is in the past tense in sentence 21.

(20)   SUB 8092LANU: The policeman hmm@p takes for granted that **is the woman**. [TF: it is the woman].

(21)   SUB 9052GEGU: […] and says that <she is> [/] she is not guilty that **was him the one that stole the loaf of bread**. [TF: it was him].

4.4.2.2. Word order

Cases of *word order* transfer were classified into two main types according to whether word order affected *basic patterns* or *constituents within clauses*. The

former refers to changes in the fixed SVO English structure, as seen in sentence 22 below where the subject was placed after the verb, which is possible both in Catalan and Spanish. The latter makes reference to misplacement of constituents such as adjectives or adverbs, as example 23 shows. In this case, the adverb, 'again', has been misplaced.

(22)   SUB 9186CAHE: […] and then **comes the police**. [TF: the police comes].

(23)   SUB 9040INFO: […] so he see **again the girl**. [TF: the girl again].

4.4.2.3. Use of articles

As revised in section 2.5.3.3, Catalan/Spanish learners of English tend to generalize the use of the article "the" in generic contexts, following their L1 patterns and uses. This is the use of the article that is expected to be found in our data, as the existence of the definite article in both languages makes learners think that the L2 use is equivalent to the L1 use. Other non-target uses of the articles due to L1 transfer were also identified, such as its use with proper names. Sentence 24 below shows how Catalan/Spanish learners of English use the definite article for generic uses.

(24)   SUB 9051ALES: She starts crying because she's push she has nothing in **the life**. [TF: in life].

4.4.3. Methodological considerations: Transcription and coding

The oral narratives were transcribed using CHILDES (MacWhinney, 1995) and revised at least twice by a different researcher. The data analysis was data-

driven and consisted in the search for forms that exhibited traces of L1 or Lx influence. The transcripts were also checked in order to ensure that the cases of CLI identified had been coded correctly. Thus, interrater measures were used in the coding of the narratives. The samples for the interrater reliability test where chosen at random. Interrater reliability agreement of 10% of the data reached 86.4%.

Following Jarvis' (2000, 2010) the methodological criteria for the identification of transfer, different types of comparisons have been made in the present dissertation to reliably identify occurrences of CLI. The first comparison has involved comparing the learners' oral production with that of Catalan/Spanish speakers and English speakers, who performed the oral narrative in their L1s. The aim was to ask monolingual speakers to do the task; however, due to the difficulty finding monolingual speakers in our context, Catalan/Spanish speakers with some knowledge of English and English native speakers with some knowledge of other languages but who mainly use English on a daily basis while living in Spain were selected (see section 4.3.1.2). The L2 oral narratives performed by the experimental group were also compared with the ones that some of the learners performed in their L1 Catalan or Spanish. In this way, *intergroup heterogeneity* and *crosslinguistic performance congruity* are aimed to be achieved (see Jarvis, 2009).

A couple of examples are provided below in order to exemplify how the comparisons were carried out. Sentences 25 and 26 below were produced by two of the participants in the experimental group, who uttered the lexical inventions "shock" and "tops". "Shock" comes from the Catalan word "xocar" or the Spanish one "chocar" as seen in examples 27 and 28 –sentences produced by learners in the experimental group in their L1. The same verb was used by the learners in the Spanish control group, as exemplified in sentence 31. The invented word "tops" is made up from the Spanish word "topar", as seen in example 29,

or from the Catalan counterpart "topar", as produced by the participant in example 30, who belongs to the Catalan control group.

(25) SUB 8111MADU: Then she **shock**@c with a [/] a bueno@s man

(26) SUB 9080MELU: She **tops**@c with a man

(27) SUB 9148MIRA: La noia que s'està escapant **xoca** amb el Charlot

(28) SUB 9149GEMA: Y cuando escapa **choca** con Charlot

(29) SUB 9152ELRA: Charlot sale de la esquina y se **topan**

(30) SUB CGCJM: Llavors **topa** amb el Charlot

(31) SUB CGSMR: Ella al correr se **choca** con el segundo protagonista

These sentences considerably differ from what English native speakers utter, as sentences 32, 33 and 34 show. English speakers use the verbs "run into", "crash" and "bump into" instead.

(32) SUB CGECB: She **runs into** a man walking down the street

(33) SUB CGEMH: Then she **crashes** into a guy

(34) SUB CGECM: As she runs away she **bumps into** a man

The second example provided is from the moment in the narrative when the girl decides to steal a loaf of bread and run away. Some of the learners in the experimental group describe this action with the expression "go running", as seen in example 35 below. "Go running" clearly comes from the Spanish expression "salir corriendo", which is what the learner in example 35 said when recalling the narrative in the L1. The participants in the control group also made use of the same expression, as sentences 37 (in Catalan) and 38 (in Spanish) show.

(35) SUB 8002JABI: And she takes a [/] a loaf of bread and **goes running**

(35) SUB 9139RIZA: Decide robar una barra de pan entonces cuando **sale corriendo**

(37) SUB CGCAR: La noia **surt correntes**

(38) SUB CGSEM: Y coge una barra de pan entonces **sale corriendo**

These sentences contrast with the ones produced by English native speakers, who use the expressions "run outside", "run away" and "start running", as seen in the examples 39 to 41 below.

(39)   SUB CGEBT: She steals a loaf of bread she **runs outside**

(40)   SUB CGEBO: The girl who stole the bread **ran away**

(41)   SUB CGECB: She take a loaf out of the vehicle and **starts running**

As reported in section 4.3.1.1, participants in the present dissertation are comparable as regards their L1 knowledge and context of acquisition. Although the knowledge that they have of their L2 might vary to a certain extent, this is a variable that has been controlled for. Since they are comparable, they are expected to behave in a similar way when producing in the TL, as Jarvis' (1998, 2000*) intra-group congruity* evaluates. As will be reported in the following chapter on the results, the occurrences of CLI that have been identified have been produced by several of the participants, and not just by a single learner. For instance, 37 learners have produced instances of null subjects, 17 of them have uttered the editing term 'ai', 36 cases of 'bueno' have been identified, 5 learners have produced the lexical invention 'cafetery' and 5 of them the invention 'shock', just to mention a few examples.

After the identification of the instances of CLI in the oral data, the percentage of CLI was calculated. Raw numbers were not used in the quantitative analysis of the data. This decision was taken as there was no limit as regards the time that learners were allowed to use for the oral narrative, nor for the number of words. Therefore, a great deal of variance is found among the participants. The time that learners spent producing their oral narratives range from 54 to 594 seconds (mean 231.26), and the tokens uttered range from 183 to 1376 (mean 455.58) (see Table 4 below).

	N	Minimum	Maximum	Mean	Standard Deviation
Time (s)	107	54	594	231.26	98.08
Tokens	107	184	1376	455.59	208.99

Table 4- Time and tokens in the oral production

The quantitative analysis of the data was accompanied by a qualitative analysis. The software selected for coding the data and for the qualitative analysis was NVivo (http://www.qsrinternational.com/, version 9). The results of this qualitative analysis were later submitted to statistical treatment, as will be described in the following section.

4.4.4. Statistical analysis

Before analysing the results statistically, a missing data analysis was carried out through the option of Missing Value Analysis in SPSS v20. A Multiple Linear Regression with a random component based on a normal distribution was performed to obtain the missing data.

The next step involved the construction of the *cognitive language learning abilities* explanatory factors through a Principal Component Factor Analysis with the aim of reducing the dimension and to obtain synthetic factors that enable the analysis of the factor as a whole. Additionally, the reduction of the dimension have also allowed us to construct explicative models with a reduced number of factors independently of one another. Finally, the factors have allowed us to reduce the impact of the missing data as the multivariate factors do not present the problems that individual variables with missing data do. An Equamax Rotation was applied to the factors, which facilitates their interpretation and the identification of the variables. As seen in Table 5 below, the value of 3 components was higher than 1, which add up to 56.8% of the total variability.

The first factor accounts for 21.1%, the second one for 19.6%, and the third one for 16.1%.

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	1,475	21,072	21,072
2	1,374	19,629	40,701
3	1,130	16,139	56,839

Table 5 - Component analysis

The first factor correlates with Lexical Access Reaction Time (0.818) and Lexical Access Coefficient of Variation (0.786). The second factor includes the Digit Span and the Reading Span with correlations of 0.776 and 0.725 respectively. Finally, the third factor correlates with attention span (0.665), the Reading Span task -the test used in the first data collection- (0.654) and the Llama F (0.498).

The possibility of introducing the factor 'input' based on different components –i.e. total hours of formal instruction, hours abroad and cumulative contact hours- was also taken into consideration. However, this option was finally discarded since there was practically no reduction of the dimension, and also due to the fact that there were no problems with missing data with these variables. For these reasons and to facilitate the interpretation of the subsequent models, the option of extracting the input factor was discarded.

The following step in the preparation of the data consisted in the transformation of the dependent variable (CLI occurrences). The percentage of tokens that did not present influence from previous languages was obtained. Afterwards, the logarithm was calculated as the distribution of residuals was close to normal.

Apart from the dependent variable –CLI occurrences- and the independent ones –i.e. *cognitive abilities* (the three components described above) and *input* variables (total hours of formal instruction, hours abroad and

cumulative contact hours)-, two control variables have been introduced in the analysis –i.e. *proficiency* and *onset age*.

A backward method through blocks was used. The initial number of variables was 9, although the final models have never presented more than 4 explicative variables, which indicates that there are no problems of adjustment. The initial block always consisted of the control variables, which have always been part of the model. The second block consisted of the *cognitive abilities* factors. The significant variables at a 95% confidence interval have been revised, and the variables with no predictive capacity were eliminated in a decreasing order. The third block consisted of the *input* variables, and the analysis was performed as described right above.

The transformation of the data used in the analysis generally show graphics with central residual. However, normality of the data was tested through the Kolmogorov-Smirnov Test. The existence of collinearity was also discarded through the indicator of Variance Inflation Factor, which was below 3 in all cases. The existence of outliers was also tested through standardised residuals, Cook statistics and Mahalanobis. The individuals with Cook values higher than $4/(N-K-1)$, where N stands for the number of participants (107) and K for the number of predictors, were discarded (between 2 and 4).

In order to analyse the interaction between *cognitive language learning abilities* and *input*, a K-Means Cluster was performed with one of the *cognitive abilities* variables and one of the *input* variables. Following previous studies (Tokowicz *et al.* 2004), the variables chosen for the analysis are the second factor obtained after the Principal Component Factor Analysis, which includes the Digit Span and the Reading Span Tests, and the time spent abroad. In this way, these two variables classify the participants in two groups: those learners with high and low WM, and those with high and low amount of time spent in an English-speaking country. In order to see any possible differences between the above-mentioned groups, an ANOVA and a Brown Forsythe tests were carried out

depending on the homogeneity of the group of variances. That is, based on the results obtained in the Test of Homogeneity of Variances, in those cases where the variances were statistically equal an ANOVA was performed; when the variances were not equal a Brown Forsythe Test was performed. Finally, a Post-Hoc Tukey test or a Post Hoc Dunnett's test (depending on the homogeneity of variances) were performed in order to see the exact differences between groups.

4.5. Summary

In the first place, the present chapter opened with the aims and the three research questions that motivated the present dissertation. The objective of the first research question was to examine the influence of *cognitive language abilities* – measured through different cognitive tests: a WM test, a Lexical Access test, Llama F and an Attention Span test- on CLI in English oral production. The second research question aimed at analysing whether the *amount* and *type of input* -measured in relation to number of hours of instruction, exposure in a naturalistic setting through SA programmes and cumulative hours of contact outside the classroom- learners have been exposed to had an effect on CLI. Finally, the third research question inquired into the interaction of *cognitive language learning abilities* effects and *input* effects.

Secondly, this chapter included the method followed in the present dissertation. It accounted for the description of the participants –both the experimental group and the control group of native speakers- and the different instruments used to collect data, which include three proficiency tests (QPT, X_Lex and Y_Lex, and PID), two input tests (a background questionnaire and an interview), four cognitive tests (a WM test, a Lexical Access test, Llama F and an Attention Span test), and the oral task (a film retelling). The section also included information about the procedure followed in the data collection.

The chapter then outlined the type of analysis used, which included previous classifications that have shaped the classification of CLI used. This study has distinguished between *lexemic* and *lemmatic* lexical CLI, and has focused on three cases of grammatical CLI (*null subjects*, *word order* and *use of articles*). Finally, some other considerations regarding the transcription and coding of the data, as well as a description of the statistical analysis performed, has been provided.

CHAPTER 5

RESULTS

5.1. Introduction

Chapter 5 is devoted to the analysis of the results, so as to give an answer to the three main research questions that have been formulated in the present study. The section that follows this introduction deals with the description of the data on CLI, both of lexical and grammatical CLI, and with the results for each of the main subtypes of transfer. In the second place, in section 5.3, we shall present the results of the analysis of *cognitive language learning abilities* and CLI. The statistical results for the first research question will, thus, be introduced so as to gauge the relationship that might exist between the variable *cognitive abilities* and the appearance of the phenomenon of CLI. The chapter follows with the results of the analysis of *input* (section 5.4). This will provide the necessary material to answer the second research question that has guided the present dissertation, which is on the possible relationship between *input* and CLI. Section 5.5 focuses on the third research question, which deals with the interaction of the two variables investigated in the present study –i.e. *cognitive language learning abilities* and *input*- and CLI. Thus, the focal point of this dissertation is on the analysis of both internal *(cognitive abilities)* and external factors *(input)*, which might constrain the occurrence of CLI. In this way, a better understanding of the contexts and processes that are involved in the appearance of CLI is expected to be gained. Finally, the chapter closes with a summary of the main results.

5.2. Description of the data on crosslinguistic influence

As acknowledged in the previous chapter when describing the type of analysis performed, the first step consisted of identifying the number of occurrences of both lexical and grammatical CLI, and classifying them into different types (see section 4.4). The raw number of CLI occurrences can be observed in Table 6 below, as well as the raw number for the main types analysed in the present study: lexical (both *lexemic* and *lemmatic* CLI) and grammatical CLI.

	N	N Total tokens	Minimum per participant	Maximum per participant	Mean	Standard Deviation
CLI	107	788	0	25	7.36	5.516
Lexical_CLI	107	604 (76.6 %)	0	22	5.64	4.479
Lexemic CLI	107	124 (20.5 %)	0	9	1.16	1.807
Lemmatic CLI	107	480 (79.5 %)	0	14	4.49	3.388
Grammatical CLI	107	184 (23.4 %)	0	8	1.72	1.877

Table 6– Raw number of CLI occurrences, and minimum and maximum of occurrences per participant

As can be seen in the table above, a total number of 788 CLI occurrences out of 48,748 tokens were identified in the data, from which 604 (76.6%) were classified as lexical CLI, and 184 (23.4%) as grammatical CLI. Therefore, the 107 participants in the present study produced a higher amount of lexis-related than grammar-related transfer. As regards the two broad types of lexical CLI, *lemmatic* CLI (480 occurrences, 79.5%) was much more frequent than lexemic transfer (124 occurrences, 20.5%). However, it is important to note here that the number of occurrences was not equally distributed across the different participants. Thus, while 6 of the participants did not produce any instances of CLI, up to 25 instances of transfer were identified in one of the learner's oral production, as portrayed in Table 6 above and in Figure 8 below. As regards lexical CLI, the

number of tokens range from 0 to 22. The occurrences of grammatical CLI range
from 0 to 8 tokens.
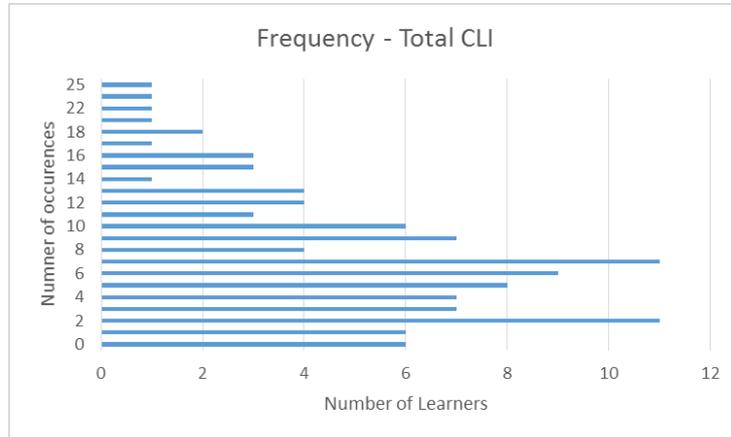
Figure 8 – Frequency of occurrences of CLI

Most learners produced between 2 and 10 instances of transfer in their
productions. The number of occurrences in the data is quite normally distributed
as Figure 9 below shows.
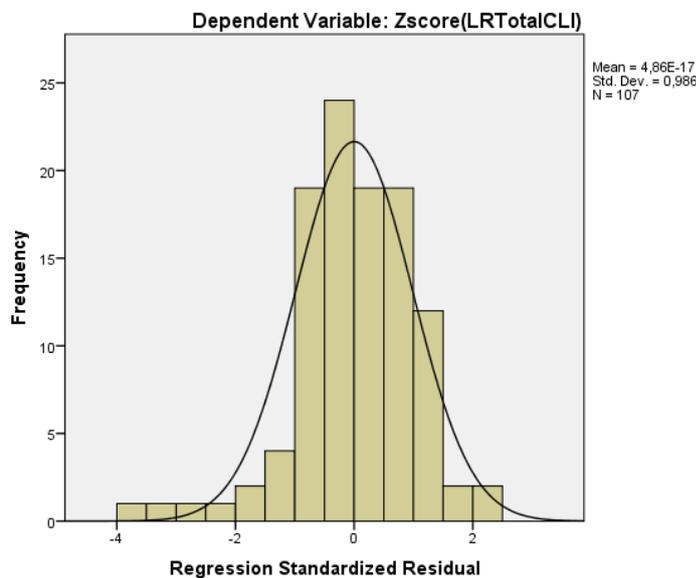
Figure 9– Distribution of CLI occurrences

As regards the two broad types analysed in the present study –i.e. lexical
and grammatical CLI-, Figure 10 below shows the variability among the learners.

As for lexical CLI, 9 of the learners did not produce any instance of this type, while one of them produced as many as 22 occurrences. However, as can be observed, not so many learners produced such high amount of transfer. That is, most of them transferred lexical items from their L1 between 1 and 9 times.
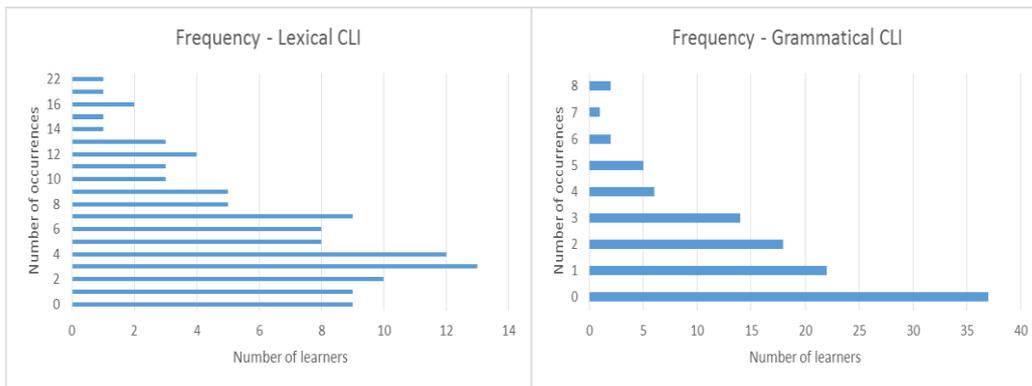
Figure 10 – Frequency of occurrences of lexical and grammatical CLI

The results are slightly different for grammatical CLI, as most learners (up to 37) did not transfer any L1 structure into English. Moreover, those who transferred some of the grammatical structures under analysis (*null subjects*, *word order*, and *use of articles*) did not do it very frequently, as can be seen from the number of occurrences, which range from 1 to 8.
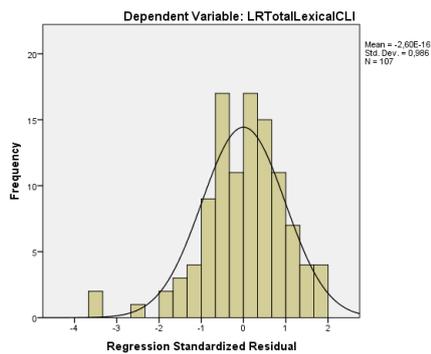
Figure 11 – Distribution of lexical CLI
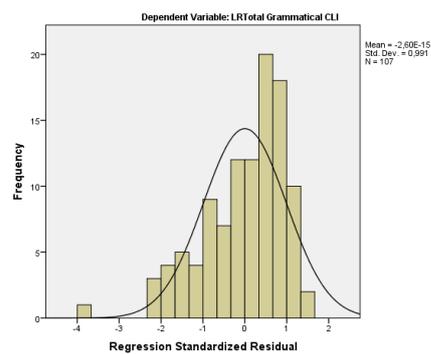
Figure 12 – Distribution of grammatical CLI

32.5% of the learners did not produce any grammar-related transfer, and those who did so, only produced them between 1 and 5 times in their oral productions. Very few learners -5 of them (4.6%) –presented between 6 and 8 cases of

grammatical CLI. The distribution of both lexical and grammatical CLI is represented in Figures 11 and 12 above.

Differences in the raw numbers between *lexemic* and *lemmatic* lexical CLI can also be observed in Figure 13 below. The most remarkable point that needs to be highlighted is the low number of *lexemic* CLI identified. In the data, 53.3% of the learners in the study did not produce any instance of *lexemic* CLI. 21 of them (19.6%) only did so once, and 13 (12.1%) twice. 16 learners (14.9%) produced between 3 and 9 cases of this type of lexical CLI.
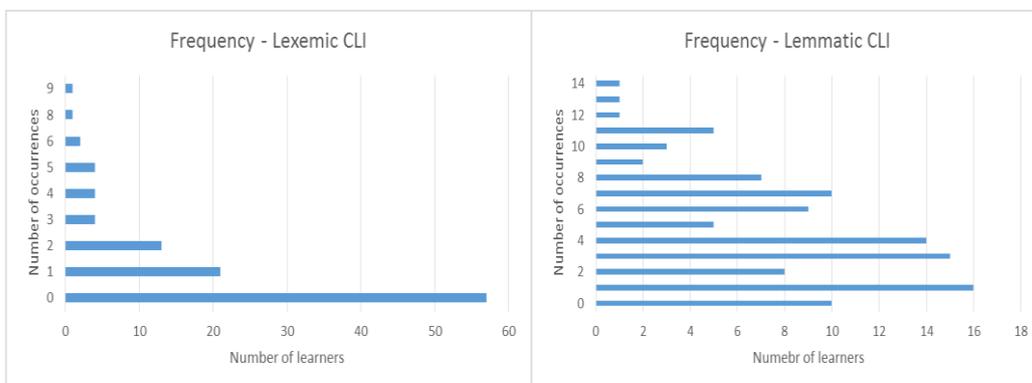
Figure 13– Frequency of occurrences of *lexemic* and *lemmatic* lexical CLI

Lemmatic CLI appeared more frequently in the learners' oral productions, although not all of them produced this type of transfer. 10 learners (9.3%) were identified in the corpus that did not produce any instance of *lemmatic* transfer. Most learners produced at least one case (14.9%), up to 14 occurrences (1 learner). However, most participants presented between 1 and 7 cases of this type of lexical CLI in their oral narratives. The way both types of lexical CLI is distributed in the data is presented in Figures 14 and 15 below, which do not show a normal distribution of the data.
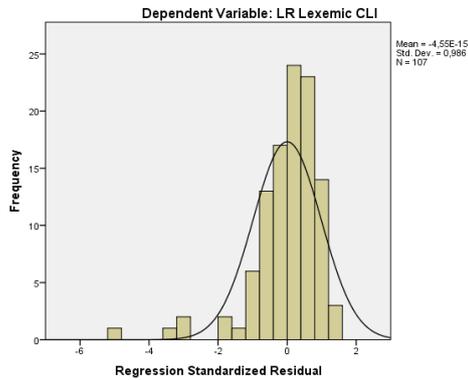
Figure 14 – Distribution of *lexemic* CLI   Figure 15 – Distribution of *lemmatic* CLI
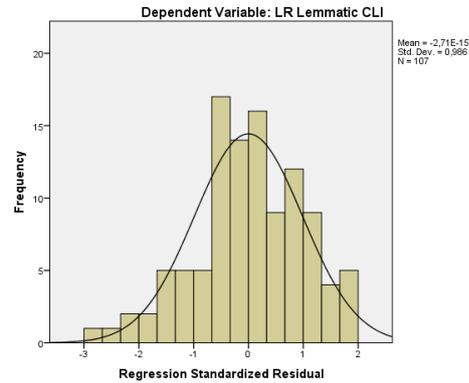
The raw numbers described above allow us to see the differences that exist in the frequency of occurrence for each of the types under analysis. However, a great deal of variance is found among the participants as regards time spent doing the task and number of tokens uttered, as detailed in section 4.4.3. Due to this variance, raw numbers could not be used to analyse the relation between CLI and the *input* and *cognitive abilities* factors (see sections 5.3 and 5.4). The percentage of CLI against the number of tokens produced was used instead. As Table 7 below reveals, the mean percentage of CLI in the learners' oral production is 1.81%, 0 being the minimum and 7.07% the maximum. Therefore, the amount of CLI in the learners' productions is low.

The mean percentage of the broad types of CLI –i.e. lexical and grammatical CLI- against the number of tokens is also pictured in the table below. Whereas the mean percentage of lexical CLI is 1.39 –which ranges from 0 to 6.02 depending on the learner-, the percentage is somewhat lower when considering grammatical CLI, whose mean is 0.88 with a range from 0 to 4.12. The values that correspond to *lexemic* and *lemmatic* CLI are also portrayed in Table 7 below. Whereas the percentage of lexemic CLI ranges from 0 to 2.72 depending on the participant, with a mean of 0.27, the percentage of *lemmatic* CLI is slightly higher, as it ranges from 0 to 4.14, with a mean of 1.11.

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	N	Mean Percentage	Minimum	Maximum	Standard Deviation
CLI	107	1.81	0	7.07	1.47
Lexical_CLI	107	1.39	0	6.02	1.20
Lexemic CLI	107	0.27	0	2.72	0.45
Lemmatic CLI	107	1.11	0	4.14	0.92
Grammatical CLI	107	0.88	0	4.12	0.96

Table 7- Mean percentage of CLI, and minimum and maximum percentage

The broad types of *lexemic* and *lemmatic* lexical CLI and grammatical CLI were further classified into subtypes, the number of occurrences identified in the data and the percentages against number of tokens calculated so as to have comparable data. A qualitative analysis of this data will be presented in the following subsections when analysing the influence that the participants' *cognitive language learning abilities* and *input* have on the appearance of each of the subtypes of CLI.

5.3. Results of Research Question 1 – Cognitive language learning abilities and CLI

The first research question inquired into the effect of *cognitive language learning abilities* on the occurrence of CLI and, more precisely, whether CLI is related to the results learners obtained in the different cognitive tests (WM, Lexical Access, Llama F and Attention Span tests). After carrying out the statistical analysis of the data, one type of CLI significantly correlated with the variable of *cognitive abilities*: *language switches*, as will be seen below.

As reported in section 4.4.1.1, *language switches* is one type of *lexemic* CLI, along with *lexical inventions*, *false cognates*, and *lexemic self-repairs*. As portrayed in Figure 16 below, the analysis of the data revealed that *language switches* were by far the most frequent type of *lexemic* CLI: they appeared on 88 occasions; thus,

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this type represents the 70.9% of the total number of *lexemic* CLI. 21 *lexical*

inventions (16.9%) and 13 *false cognates* (10.4%) were also identified in the corpus.

Finally, learners self-repaired on 2 occasions (1.6%).
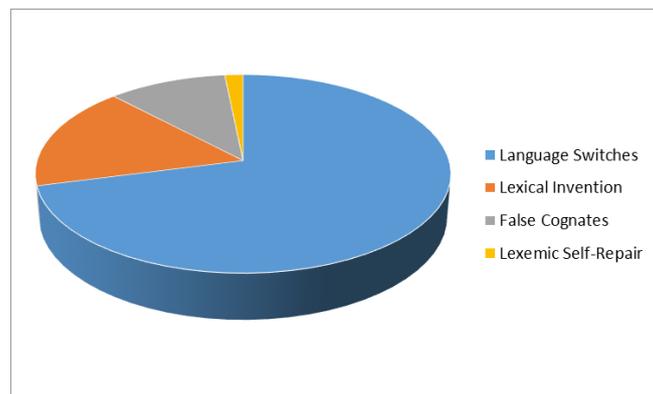
Figure 16- *Lexemic* transfer: Number of occurrences

The category of *language switches* comprises three main subcategories –i.e.

borrowings, *editing terms* and *metacomment*s. *Editing terms* (70 cases) were by far

the most frequent in the data, whereas *borrowings* and *metacomments* appeared in

9 cases each in the participants' oral productions.

An in-depth analysis of the data reveals that the Catalan/Spanish learners

of English in the study transfer 3 different editing terms from their L1s (either

Catalan or Spanish): "bueno" (36 cases), "no" (17 cases), and "ai/ay" (17 cases), as

can be observed in sentences 1-3 below:

(1) SUB 9252NELU: and there's a woman hmm@p **bueno@s** a couple
    hmm@p who go out […] [TF: well].

(2) SUB 9097BLPE: the policeman take her [//] his [//] **ai@s** him […] [TF:
    oups].

(3) SUB 9152ELRA: so it gets into the glass **no@s** and then hmm@p he
    grabs the glass [TF: doesn't it].

    @Comment: Pronounced as an Spanish word

Whereas some *editing terms* (sentences 1 and 2) are used to introduce a self-repair, others (example 3) are employed to facilitate or to maintain interaction. In the first example the participant is aware of the lexical mistake and repairs himself or herself. The same is true of the second example; in this case, however, the learner makes a grammatical mistake.

Borrowings, which subsume cases of *code-switching* and *insert implicit elicit* terms, as acknowledged in section 4.4.1.1, were scarce in our data. One example is provided below (sentence 4).

(4) SUB 9079SAGA: She cries and the police run to **encarcelar@s** her [TF: imprison/jail].

It seems that in all the sentences above the learners have a lack of knowledge, or, at least, they might be experiencing an occasional access blockage, which is something especially frequent in oral production. It should be noted that all the cases identified in the data are *borrowings* of content words, and that no cases of *borrowings* of function words were found. Additionally, it is worth mentioning that all the borrowings identified derive from the learners' L1s[31].

The number of *metacomments* in the corpus was the same as the number of *borrowings*, as described above. Only those instances in which the *metacomments* were produced in the learners' L1 were analysed. As the participants' proficiency was considerably high, on some occasions they were able to produce this type of comments in the TL. However, sometimes they made use of their L1, as examples 5 and 6 below show. These are two representative sentences of the two uses that have been identified in the corpus for this type of *lexemic* CLI. On the one hand, learners use *metacomments* to make comments on the oral narrative, more

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[31] Only one instance of borrowing from French was identified in the data: SUB 8108ELFE: She is in front of hmm@p a patisserie@f os something like that [TF: bakery]. This result can be explained taking a close look at the characteristics of the participant that produced it. Thus, although SUB 8108ELFE had learnt French after English and French is not the last languages acquired, he self-rated himself as having a very advanced proficiency in French.

specifically when they have lapses on the events that take place in the story, as sentence 5 below illustrates. In this case, the learner is not able to recall which the following event in the story is, and he or she uses Catalan to comment on that; however, in this specific example, the comment in the L1 Catalan is followed by a comment in the TL ("I don't remember").

On the other hand, *metacomments* are also used when learners are not able to remember a specific word in the TL; that is, at the moment of production a particular item cannot be accessed in the mental lexical, or the learner might not have acquired it yet. On these occasions, learners might make a comment on this communicative situation, which is a strategy used to gain time to try to remember the TL item. This can be observed in sentence 6, in which the learner does not remember how to say "panaderia" in English; while this comment is made, the learner is trying to remember the word "bakery", which he or she finally cannot recall and, thus, another strategy is adopted by the learner; that is, the learner paraphrases the word.

(5) SUB 9166MAAL: I think Chaplin is released and hmm@p yes no **què@s:c més@s:c passa@s:c** # I don't remember [TF: What else happens].

(6) SUB 8111MADU: […] this woman <tell to the> [//] told <to the> [/] to the well owner of the **no@s me@ acuerdo@s de@s panaderia@s** ok hmm@p to the place that the young girl stole the bread [TF: I don't remember how to say bakery].

Although these two uses of *metacomments* have been identified in the corpus under analysis, the latter is more frequent. More specifically, 6 examples of comments on the inability to recall a specific word have been identified in the data, against 3 instances of comments on the oral narrative.
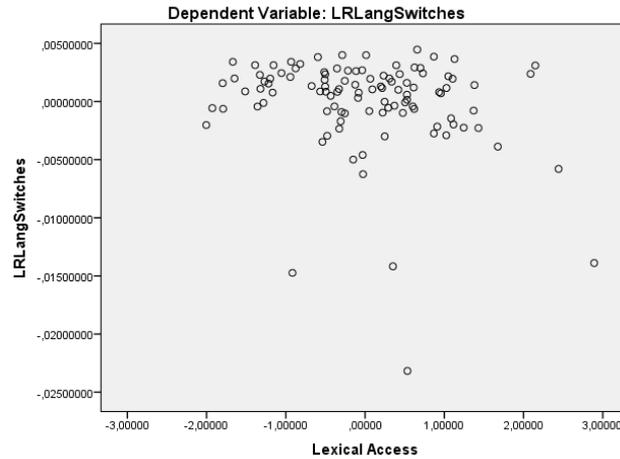
Figure 17- Distribution of values: *language switches* / lexical access

As acknowledged above, the statistical analysis performed on the data showed that the category *language switches* significantly correlated with one of the cognitive factors obtained in the Principal Component Analysis (see section 4.4.4) -i.e. the lexical access factor-, after the analysis with a Wald Chi-Square test, as shown in the table below. Out of 107 participants, 101 have been used for the analysis, as the rest of the participants (6) were outlier values according to Cook's statistics. The distribution of the values is shown in figure 17 above.

As table 8 below reveals, those learners that obtained a high score in the lexical access test were the ones that presented a significantly lower percentage of correct tokens in the oral narrative, which means that the percentage of CLI (*language switches*) was higher (p= .056). In other words, the higher the learners' lexical access, the higher the percentage of *language switches*. However, it should also be noted that one of the control variables –i.e. proficiency- also exerted some influence on the results (p= .014), which means that a higher proficiency entails a reduced amount of *language switches*. Moreover, time spent abroad also seems to have an effect on the occurrence of this type of lexical CLI, as we shall discuss in the following section.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-.006	.0892	-.181	.169	.005	1	.944
ZProficiency	.242	.0983	.049	.435	6.067	1	**.014**
ZOnsetAge	.123	.0845	-.043	.289	2.117	1	.146
ZLexical Access	-.203	.1060	-.410	.005	3.658	1	**.056**
ZAbroad	.187	.0710	.048	.326	6.938	1	**.008**
(Scale)	.837ª	.1150	.639	1.096			

Table 8- Correlations *language switches* - Lexical Access

The other type of CLI that seems to be related to the learners' *cognitive abilities* is *null subjects*. *Null subject* occurrences were found in the oral production of 37 participants in the study (35% of the learners), and a total of 61 cases were identified. Most participants -70 of them- did not present any case of *null subject*. Out of those learners that produced missing subjects, 24 of them only did so once, 5 learners produced them twice, 6 of the participants elided the subject on 3 occasions, and 2 of them did so 4 times, which is the maximum number of cases produced by the same learner.

As acknowledged in section 4.4.2.1, the linguistic contexts of appearance in terms of main vs. subordinate clause and present vs. past time reference were also analyzed to check for possible patterns of influence. The analysis of the data reveals that *null subjects* are present in both main and subordinate clauses, and that the learners in the present study still drop subjects in clauses with present as well as past time reference, as exemplified by sentences 7 to 9 below.

(7) SUB 9076MISO: A woman call the police and tell them that [/] **that is the woman** the one who [/] stole the [/] the loaf of bread. [TF: it is the woman].

(8) SUB 9036ADMA: The old woman said **that was the girl**. [TF: that it was the girl].

(9) SUB 9079SAGA: She's going to fight with the police to escape then **have a accident**. [TF: they have an accident].

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Null subjects were found in 27 main clauses (44.3%) and 34 subordinate clauses (55.7%). While sentences 7 and 8 show cases of subject omission in subordinate clauses, in example 9 the subject has been dropped in a main clause. As regards time reference, subject dropping in clauses with present time reference appeared on 48 occasions (78.7%) in the data, as seen in sentences 7 and 9; and 13 times (21.3%) in clauses with past time reference, as exemplified by sentence 8.

Subject omission was also analyzed according to the type of subject –i.e. *referential* vs. *non-referential subjects*. The analysis shows that both types of subjects are omitted by the learners in the present study. Thus, while *referential subjects* were dropped on 23 occasions (37.7%), *non-referential subjects* were avoided 38 times (62.3%). Sentence 9 shows a case in which the learner has dropped a *referential subject*, "they", which the learner has previously mentioned; in sentences 7 and 8, on the other hand, the omitted subjects are non-referential ("it"), as they only have a grammatical function within the sentence, but they do not contribute to meaning.

As for the category "subject omission", the different indices obtained were not statistically significant, as seen after the analysis with the Wald Chi-Square test (see Table 9 below). Although it did not reach statistical significance, the results obtained with *null subjects* are worth pointing out, since the analysis points to a possible tendency, as the table below shows. The analysis was performed with 100 participants after leaving out 7 outlier values, according to Cook's statistics. The results point to a possible relation between the appearance of *null subjects* and one of the cognitive factors obtained in the Principal Component Analysis (see section 4.4.4): the Attention Span test, the Reading Span task and the Llama F. Thus, those learners that got a higher score in these cognitive language learning tests, tended to transfer their L1 *null subjects* to a lesser extent (p= .100). The learners' proficiency also explains these results, as the correlation gained significance (p= .046).

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-.006	.0934	-.1890	.177	.004	1	.949
ZProficiency	.189	.0949	.003	.375	3.964	1	**.046**
ZOnsetAge	.069	.0903	-.108	.246	1.579	1	.447
ZAt/RST/Llama	.182	.1109	-.035	.400	2.703	1	.100
(Scale)	.923a	.1268	.705	1.208			

Table 9- Correlations *null subjects* – Attention Span task, Reading Span task, Llama F

To summarize, both the qualitative and quantitative results of the data on the relationship between *cognitive language learning abilities* and CLI have been described in this section. The analysis has revealed one significant correlation between *language switches* and the lexical access factor: those learners that obtained a higher score in the Lexical Access test presented a higher percentage of *language switches*. It was also noted that the learners' proficiency level had also an effect on the results. *Language switches* (*borrowings*, *editing terms* and *metacomments*) were the most frequent type of *lexemic* CLI in the data. Moreover, a possible relation between *null subjects* and the cognitive component that involves the Attention Span, the Reading Span and the Llama F tests was pointed out. It seems possibly that those learners that scored higher in these tests were the ones who presented fewer cases of omission of subjects. Proficiency, though, also played an important role in this respect. The qualitative analysis also showed that *null subjects* were omitted in both main and subordinate clauses, clauses with both present and past time reference, and in both *referential* and *non-referential subjects*, although omission was more frequent in the latter.

5.4. Results of Research Question 2 – Input and CLI

The second research question asked whether the *amount* and *type of input* that learners have received throughout their language learning history might have an effect on both the amount and type of CLI present in the oral English production of L1 Catalan/Spanish learners. As reported in chapter 4, three different independent input variables have been used in the present study to try to explain CLI differences in our participants' oral production. *Type* and *amount of input* have been measured in relation to length of TL exposure in classroom contexts–i.e. number of hours of instruction-, as our participants are EFL learners, exposure to naturalistic input through SA programmes, and cumulative hours of contact outside the classroom. Additionally, as previously acknowledged, our participants' proficiency as well as onset age of English learning have been used as control variables. As will be shown below, whereas onset age has not been found to exert an influence on the occurrence of CLI, the learners' level of proficiency has been shown to explain the appearance of language transfer to a great extent, along with *input*.
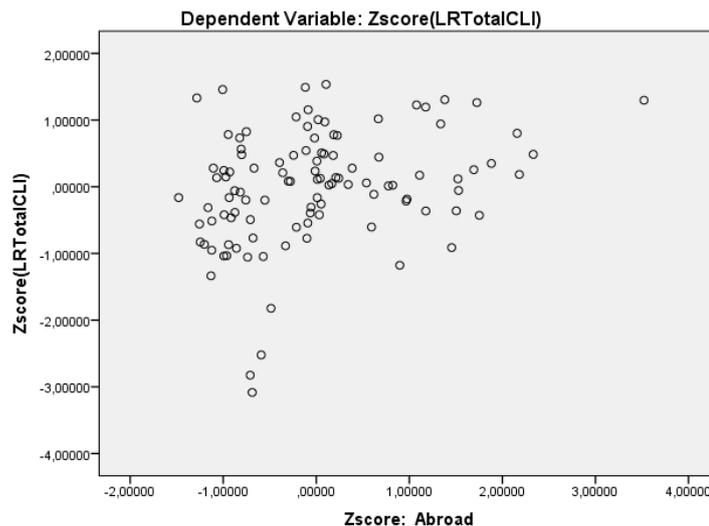
Figure 18- Distribution of values: Total amount of CLI / Time abroad

Total amount of CLI[32] (both lexical and grammatical) has been found to significantly correlate with one of the input indices –i.e. hours abroad- after the analysis with a Wald Chi-Square test. In this analysis, 101 participants have been used, discarding 6 outliers. The distribution of the values is shown in Figure 18 above.

As the table below reveals, those participants that had spent a longer period of time abroad were the ones that presented a higher percentage of target-like tokens, and, therefore, a lower amount of CLI. This correlation appeared to be highly significant (p= .000). A longer time abroad and, therefore, receiving naturalistic input entails a higher proficiency in the language that is being acquired. Proficiency, thus, also reached significance when correlated with the total amount of language transfer (p= .000). That is, the higher the proficiency level, the less the learners transfer from their L1.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	.071	.0632	-.053	.195	1.267	1	.260
ZProficiency	.423	.0560	.313	.532	56.990	1	**.000**
ZOnsetAge	-.055	.0590	-.171	.061	.870	1	.351
ZAbroad	.284	.0527	.181	.388	29.036	1	**.000**
(Scale)	.374a	.0531	.283	.494			

Table 10- Correlations total amount of CLI – Hours abroad

Similar results were obtained when the correlations were carried out with the category of lexical CLI, as can be observed in Table 11 below. This time, 103 out of 107 participants were considered as valid according to Cook's statistics. The index of hours abroad appeared to be highly significant (p= .000), as well as the influence of the proficiency factor (p= .000). The higher the number of hours abroad, and the higher the proficiency, the less the amount of CLI in the learners' oral productions. The distribution of the values is represented in Figure 19 below.

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[32] See section 5.2 for the qualitative description of the data.
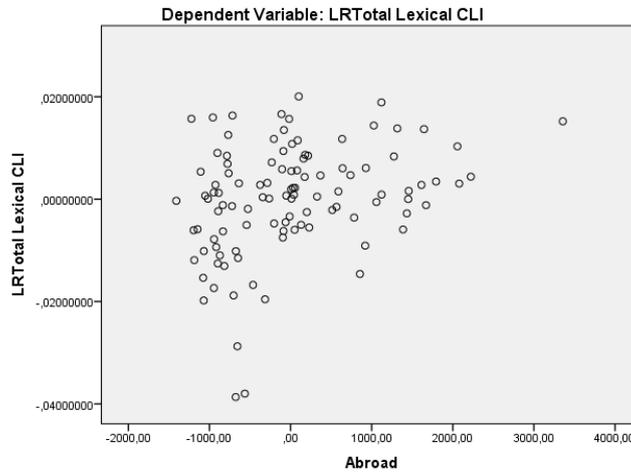
Figure 19- Distribution of values: Lexical CLI / Time abroad

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	,037	,0695	-,099	,173	,279	1	,597
Z**Proficiency**	,421	,0635	,296	,545	43,883	1	**,000**
ZOnsetAge	-,068	,0645	-,195	,058	1,119	1	,290
ZAbroad	,289	,0584	,175	,404	24,514	1	**,000**
(Scale)	,462a	,0650	,351	,609			

Table 11- Correlations lexical CLI – Hours abroad

While the correlations reached significance for lexical CLI, they did not for grammatical CLI. It seems that the appearance of this type of CLI does not depend on the *amount of input* that the learners have received, but on the level of proficiency that they have, as can be seen in Table 12 below. The participants' proficiency level seems to be directly related to the transfer of grammatical structures from their L1.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	.066	.0832	-.098	.229	.619	1	.431
Z**Proficiency**	.310	.0756	.162	.458	16.829	1	**.000**
ZOnsetAge	.066	.0673	-.065	.198	.975	1	.323
(Scale)	.703a	.0979	.535	.924			

Table 12- Correlations grammatical CLI – Level of proficiency

As described in section 4.4.2, three different grammatical structures have been analysed in the present dissertation. As Figure 20 below shows, the production of non-target *word orders* were the most frequent in the data (76 cases), followed by *null subjects* (61 cases), and finally *use of articles* (47 cases).
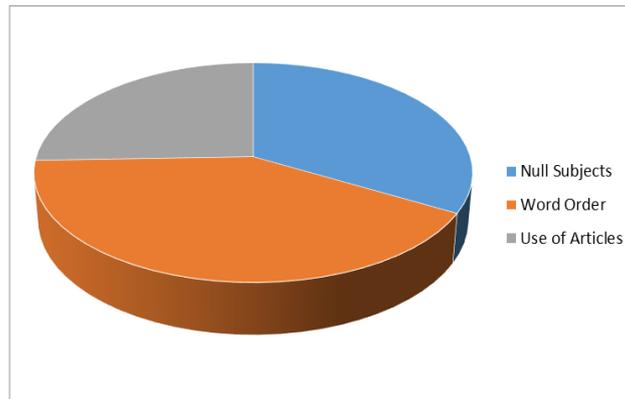
Figure 20- Grammatical CLI: Types and number of occurrences

Following the same procedure used in the analysis of lexical CLI, the number of occurrences were identified and the percentages against the number of tokens was calculated for grammatical CLI, so as to have comparable data. The mean percentage of *null subjects* is 0.13 (minimum 0, maximum 1.46), of *word order* 0.18 (minimum 0, maximum 1.10), and of *use of articles* 0.11 (minimum 0, maximum 1.32).

Correlations were also carried out with the subtypes of both lexical and grammatical CLI with a Wald Chi-Square test to see any possible relations between them and the variable of *input*. For the analysis of *lexemic* CLI a total number of 99 English learners were included, as the others were considered outliers. In this case, the total number of hours of formal instruction significantly correlated (p= .012) with the type of lexical transfer under analysis, as seen in the following table (Table 13).

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	.182	.0535	.077	.287	11.548	1	.001
ZProficiency	.217	.0567	.106	.328	14.609	1	**.000**
ZOnsetAge	.021	.0562	-.089	.131	.136	1	.712
ZHoursFormalSetting	.134	.0531	.030	.238	6.348	1	**.012**
(Scale)	.268ᵃ	.0382	.203	.355			

Table 13- Correlations *lexemic* CLI – Hours of formal instruction

Thus, those learners that present a lower amount of *lexemic* CLI are the ones that have been exposed to a higher amount of input in an instructional setting. A higher amount of input normally entails a higher level of proficiency in the language being learnt, which has been extensively found to affect language transfer. This factor also seems to affect the occurrence of *lexemic* CLI, as the correlation has been found to be statistically significant (p= .000). The distribution of the values can be seen in the following figure (Figure 21).
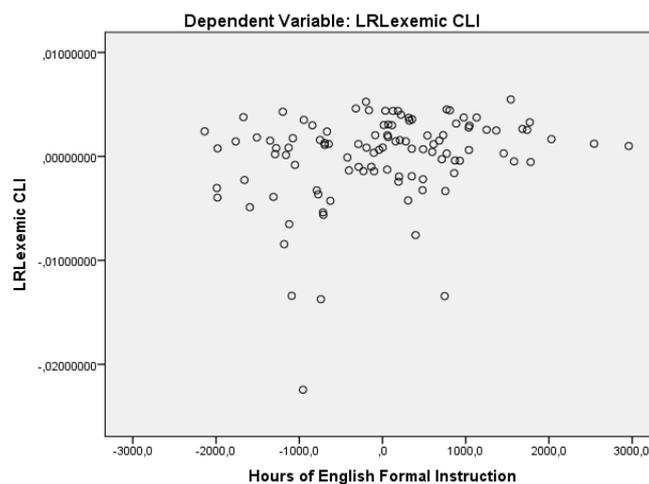
Figure 21- Distribution of values: *Lexemic* CLI / Hours of formal instruction

On the other hand, the other type of lexical transfer, *lemmatic* CLI, significantly correlated with the input index of a more naturalistic type of exposure to the TL. The analysis was performed on 101 learners, and as Table 14 below shows the correlation appeared to be highly significant (p= .000), which

means that those learners that have spent time abroad present a lower amount of *lemmatic* lexical CLI. Once again, proficiency also seems to be affecting the results, as the correlation also gained significance (p= .000). The distribution of the values is presented in Figure 22 below.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	.055	.0762	-.095	.204	.512	1	.474
ZProficiency	.380	.0709	.241	.519	28.787	1	**.000**
ZOnsetAge	-.036	.0723	-.178	.105	.255	1	.614
ZAbroad	.289	.0635	.164	.413	20.667	1	**.000**
(Scale)	.569[a]	.0800	.432	.749			

Table 14- Correlations *lemmatic* CLI – Time abroad
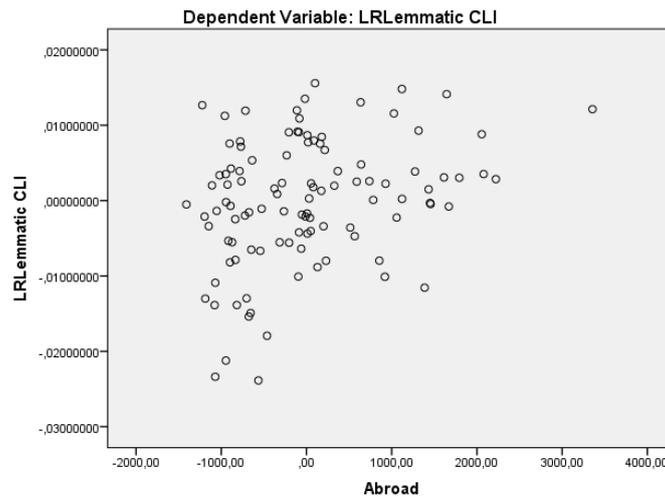
Figure 22- Distribution of values: *Lemmatic* CLI / Time abroad

Statistical analysis was also performed with the subtypes of both *lexemic* and *lemmatic* CLI, and further statistically significant correlations were identified. Thus, *language switches* seem to be influenced by the time spend abroad. On the other hand, the appearance of *false cognates* seems to be only influenced by the participants' level of proficiency. *Semantic extensions* are affected by the amount of contact with English that the learners have outside the classroom while at

home. Furthermore, one of the subtypes of *subcategorization transfer* –i.e. choice of the wrong complement- seems to depend on the amount of hours of instruction that the participants have had throughout their language learning history. The other subtype –i.e. choice of the wrong preposition-, though, seems to be only influenced by the learners' proficiency, irrespective of the hours of instruction they have received in the classroom context.

Only one of the subtypes of *lexemic* transfer –i.e. *language switches*- gained significance when correlated with *input*, as seen in the table below (Table 15). More specifically, *language switches* seem to decrease as the amount of time spent abroad increases (p= .008). This effect, moreover, might be influenced by the factor of proficiency, as the analysis reached significance (p= .014).

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	-.006	.0892	-.181	.169	.005	1	.944
ZProficiency	.242	.0983	.049	.435	6.067	1	**.014**
ZOnsetAge	.123	.0845	-.043	.289	2.117	1	.146
ZAbroad	.187	.0710	.048	.326	6.938	1	**.008**
(Scale)	.837[a]	.1150	.639	1.096			

Table 15- Correlations *language switches* – Time abroad

Apart from this, the other correlation that also gained significance involved *false cognates*. It should be pointed out that *false cognates* comprised a small number of *lexemic* CLI (see above). Some of the examples taken from the data are presented in sentences 10 and 11 below, in which learners get confused with words that have a similar form in both the L1 and TL, but whose their meaning is completely different as they do not share the same etymological origin. In sentence 10, "pretends" has originated from the Spanish word "pretende" or the Catalan one "pretén", and "advice" in sentence 11 might have originated from the Spanish word "aviso" or the Catalan counterpart "avís", which mean "warning". Interestingly, "pretends" has been used in the wrong context by two

learners and "advice" by 6 different participants, which show that the use of these false cognates is not individual, but that learners who share the same L1 might be prone producing these non-target forms.

(10) SUB 9160HEPE: She [/] she **pretends** to escape [TF: wants].

(11) SUB 8052RUDO: […] and hmm@p make an **advice** to the policeman [TF: warning].

The statistical analysis with 100 learners showed a significant correlation between *false cognates* and proficiency. Thus, those learners with higher proficiency levels present a lower number of *false cognates* in their oral productions, as pictured in Table 16 below.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-.032	.1046	-.237	.173	.096	1	.757
ZProficiency	.244	.0981	.052	.437	6.212	1	**.013**
ZOnsetAge	-.086	.1411	-.362	.191	.369	1	.543
(Scale)	.992	.1404	.752	1.309			
	a						

Table 16- Correlations *false cognates* – Level of proficiency

Lexical inventions, as already acknowledged, were more frequent in the data, but no significant correlations were found. 21 instances were identified in 13 different learners' oral productions. Although this type of *lexemic* transfer shows a lack of vocabulary on the part of the learners, they are a sign that the learner has internalized the TL rules that govern the TL morphology. Some *lexical inventions* were identified several times in the data, as is the case of the words "commissary" and "cafetery":

(12) SUB 9139RIZA: […] he is calling to the **comissary@c** [TF: police station].

(13) SUB 8070RAGU: The policeman passes hmm@p just in front <of the> [/] of the **cafetery** [TF: cafeteria].

In sentences 12 and 13 the learners are trying to guess the TL words on the basis of the rules that they have internalized. It is worth mentioning that in example number 13 the learner could have transferred the L1 word without modifying it and it would have resulted in a correct target word. However, the learners might avoid doing it, as they might assume that their L1 and TL cannot be that similar.

The scene in which the girl runs into the man has stirred up the production of several *lexical inventions*. Learners might not have acquired how to name this event yet and, therefore, have tried to guess it, which has resulted in the invention of different terms, as sentence 14 to 16 below illustrate.

(14) SUB 9071VIEL: she [/] she run away and **shocked** with a [/] a man.

(15) SUB 9080MELU: she's running and she **tops** with a man.

(16) SUB 9084MAMU: […] but she has hmm@p **incontred** with Chaplin.

The *lexical invention* in sentence 14 is quite prolific in the data, as it (along with the version "shuck'") has been identified on 5 different occasions by different learners. While this invention could have originated from both Catalan ("xocar") or Spanish ("chocar"), "tops" in sentence 15 comes from the Catalan word "topar", and "incontred" in sentence 16 from the Spanish word "encontrar". They have been modified so as to sound like an English word. Finally, it is worth mentioning that while most *lexical inventions* have originated from either Catalan or Spanish, one example (sentence 17) has been identified that seems to come from a non-native language (French: "après"):

(17) SUB 8108ELFE: […] and he **apresses** him but that woman again says that it was the girl [TF: approaches].

As mentioned above, the participant 8108ELFE considered himself as a very advanced French learner. Thus, it seems reasonable that he could have transferred from this non-native language.

The last type of *lexemic* CLI –i.e. *lexemic self-repairs*- is not very frequent in the corpus and not very prolific, and no significant correlations were found either. The percentage of *lexemic self-repair* is barely a 1.6% of the total number of *lexemic* transfer. Example 18 below is a good case of *lexemic self-repair*, as the learner transfers a word from his or her L1 Catalan, although the word is unfinished. The learner immediately realizes that he or she has produced a non-target word and, therefore, tries to self-repair the utterance; on this occasion, however, the learner is not successful as he or she is unable to retrieve the intended word and produces a *metacomment* in English instead.

(18)   SUB 9026AMGA: He doesn't pay the <**&co &comp**> [//] I don't know [TF: bill]

As described in section 4.4.1.2, *lemmatic* CLI has been divided into 6 main types (*semantic extensions, calques, collocational transfer, subcategorization transfer of type of complement, subcategorization transfer of preposition* and *lemmatic self-repair*). All these subtypes have been identified in the data; however, their occurrence varies a great deal, as can be observed in Figure 23 below.
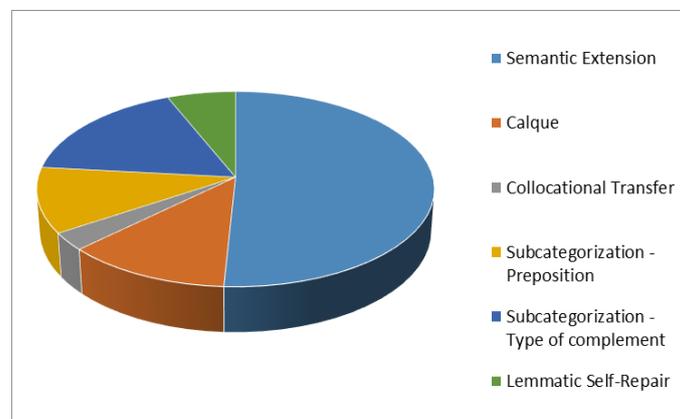
Figure 23- *Lemmatic* transfer: Number of occurrences

Out of the 480 instances of *lemmatic* transfer identified in the data, 244 cases of *semantic extensions* were traced back, which represents the 50.8%. The second most frequent phenomenon was *subcategorization transfer* that involved the choice of the wrong complement, as 82 occurrences (17.1%) were singled out in the corpus. The type of *subcategorization CLI* that involved the choice of the wrong preposition within the prepositional phrase was fewer in number: 52 cases (10.8%) were pinpointed. A similar number, 58 occurrences (12.1%), were identified as *calques*. 30 cases of *lemmatic self-repairs* (6.25%) appeared in the data. Finally, the less frequent type of *lemmatic* CLI was *collocational transfer*, which has been identified on 14 occasions (2.9%).

The high number of *semantic extensions* in the data can be explained by the appearance of the word "police" instead of "policeman", as can be seen in sentence 19 below. The learner uses the term 'police' when he or she wants to refer to a single policeman or police officer. "Policia" in Spanish or Catalan can refer to both the officer and the department; the learner, thus, extends these two uses in English. In this case the learners are aware of the existence of the word, but not of the contexts in which it is used. This is a very common semantic extension that the participants in the present sentence come up with, as 76.1% of them produce at least one case.

> (19) SUB 9181LOLO: He calls the attention of a **police** who's passing by [TF: policeman/police officer].

Although this *semantic extension* is very frequent in the data due to the events that occur in the story that the participants need to narrate, it is not the only one found in the data, as the examples 20 to 22 below show. In sentence 20 the learners uses the word "coffee" instead of "café" or "cafeteria", as in Catalan and Spanish the same word is used for both the place and drink and, thus, the learner transfers these uses into English. A similar situation is found in example 22; in this case, the learner extends the meaning of "looking" as in Catalan and

Spanish the verb "mirar" can be used in both contexts. The same occurs in sentence 22: in Catalan and Spanish the verb "recordar" means both "remember" and "remind". The learner is not aware of the existence of the two verbs in English and extends the meaning of "remember" into "remind".

(20)   SUB 9145NULO: […] and hmm@p steps him into a cafetery@c [//] <a coffee> [/] a **coffee** [TF: café/cafeteria].

(21)   SUB 9080MELU: […] a woman who is **watching** through the vitrin@c [TF: looking].

(22)   SUB 9096YAMA: I think she hesitates for a moment but then she [/] she **reminds** him [TF: remembers].

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-.002	.0860	-.171	.166	.001	1	.977
ZProficiency	.346	.0752	.199	.494	21.199	1	**.000**
ZOnsetAge	.082	.0842	-.083	.247	.951	1	.329
ZContact	.291	.1035	.088	.494	7.904	1	**.005**
(Scale)	.761ª	.1055	.580	.999			

Table 17- Correlations *Semantic extensions* – Contact outside the classroom

The statistical analysis of the production of 104 learners revealed that the amount of contact that the learners have with English outside the classroom while at home might affect the appearance of *semantic extensions*. That is, those learners that read and write in English, watch TV in English and have contact with English native speakers in their everyday lives present a small amount of this type of *lemmatic* CLI. The correlation gained significance (p= .005), as seen in Table 17 above. However, the appearance of *semantic extensions* also seems to depend to a great extent on the learners' proficiency level (p= .000). The distribution of this type of *lemmatic* CLI in the data is portrayed in Figure 24 below.
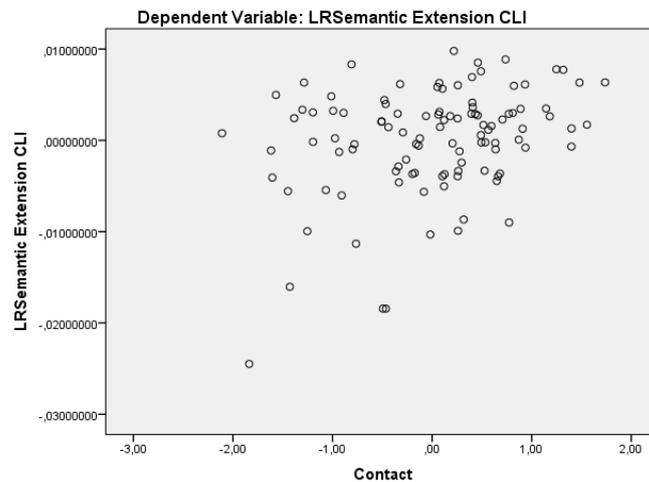
Figure 24- Distribution of values: *Semantic extensions* / Contact outside the classroom

Subcategorization transfer, as acknowledged in section 4.4.1.2, has been divided in the present dissertation into two main types: those cases that involve the choice of the wrong type of complement (e.g. a noun phrase instead of a prepositional phrase), which is the most frequent type identified, and those cases that involve the choice of the wrong specific word within the complement (e.g. the wrong preposition).134 cases were traced back in the data, from which 61.2% were cases of wrong choice of complment, and 38.8% of wrong preposition.

The analysis of the occurrences of the former type, the choice of the wrong complement, has revealed that the learners very frequently use a prepositional phrase instead of a noun phrase, as sentences 23 to 27 exemplify. In all of them the learners have used the type of complement that they use in their L1. Most of the cases found involve the verbs "tell" or "explain", "call" or "phone", "enter" (which has been used with different prepositions: "into", "in", "to"), and "meet".

(23)   SUB 8008MIFE: Charles Chaplin hmm@p **tells to the police** that he's the one [TF: tells the police].

(24)   SUB 8068LUGO: […] then they **return to [/] to home** [TF: return home].

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(25)   SUB 8057DAFE: He **enters in a [/] a cafeteria** [TF: enters a cafeteria].

(26)   SUB 9020SOGA: He **meets with the first girl** that had stolen the [/] the bread [TF: meets the first girl].

(27)   SUB 9036ADMA: The police calls [//] **phones to the police department** [TF: phones the police department].

On some other occasions, although to a lesser extent, the learners have also used a noun phrase instead of a prepositional phrase, as can be observed in sentences 28 to 30 below. In all the cases that have been documented, the verbs involved are "pay", "look" and "ask", which are followed by a noun phrase.

(28)   SUB 8030GEAR: He doesn't want to **pay the meal** [TF: pay for the meal].

(29)   SUB 9030XACL: […] and she's **looking** hmm@p **<the the> [/] the food** [TF: looking at the food].

(30)   SUB 9040INFO: He <start to> [//] started to [/] to **ask some dishes** [TF: ask for some dishes].
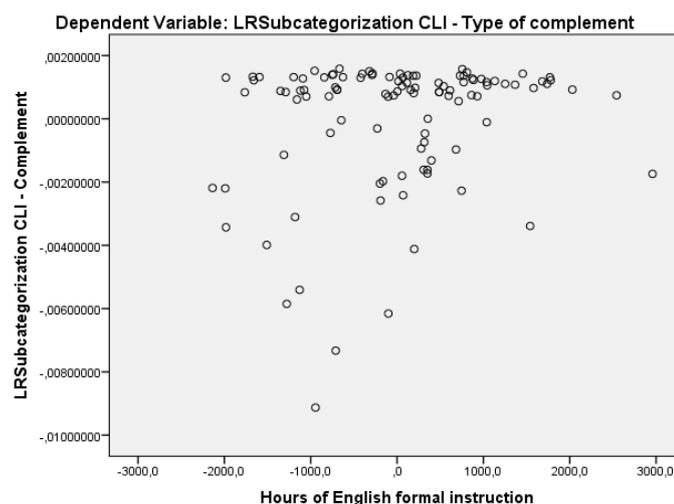
Figure 25- Distribution of values: *Subcategorization* CLI (choice of complement) / Formal instruction

The statistical analysis of this type of *subcategorization transfer* also provided some insights into the role that input has on the appearance of the different types of transfer. Its distribution can be observed in Figure 25 above. The analysis was performed with 103 oral productions out of 107 because of the presence of outliers. As already pointed out, this type of *subcategorization* involves the wrong choice of complement, which seems to depend on the number of hours that the learners have spent learning English in a classroom setting. As shown in Table 18 below, the correlation was statistically significant (p= .013). Those learners that have received more hours of formal instruction of English are the ones that are able to select the appropriate complement without transferring their L1 structures.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	.001	.0944	-.184	.186	.000	1	.989
ZProficiency	.127	.0995	-.068	.322	1.625	1	.202
ZOnsetAge	.019	.1051	-.187	.225	.033	1	.856
ZHoursFormalSetting	.238	.0961	.049	.426	6.124	1	**.013**
(Scale)	.919ᵃ	.1280	.699	1.207			

Table 18- Correlations *Subcategorization* CLI (choice of complement) – Formal instruction

The second type of *subcategorization transfer* involves the wrong selection of a specific word within the complement; in this case, the type of word that has been found to be used in the wrong way is prepositions. Although prepositions such as "of", "to" and "on" have been used incorrectly on a few contexts, as in the expression "to sit on the table", most cases involve the preposition "in". Thus, it has been seen that Catalan and Spanish speakers tend to use the preposition "in" to express meanings that L1 English speakers would more often associate with other prepositions, such as "on", as exemplified in sentence 31, or "at", as in sentence 32 (see section 4.4.1.2).

(31) SUB 9242PARU: There are some comic scenes like <he's sitting &und> [//] <sitting in> [//] well <in a> [//] **in** the legs of another woman [TF: on].

(32) SUB 9245NULA: They [/] they sit <in the> [/] **in** the table [TF: at].

This subtype of *subacategorization transfer* seems not to depend on the quantity and quality of input received, as the statistical analyis indicates. It seems to be, however, dependent on the proficiency of the learners, as seen in Table 19 below. The analysis was performed with 102 oral productions. As the output below indicates, those learners with a higher level of proficiency in English are the ones that transfer their L1 preposition into English to a lesser extent; this result gained high statistical significance (p= .000).

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	,090	,0803	-,068	,247	1,243	1	,265
ZProficiency	,300	,0659	,170	,429	20,645	1	**,000**
ZOnsetAge	,114	,0668	-,017	,245	2,926	1	,087
(Scale)	,654ª	,0915	,497	,860			

Table 19- Correlations *Subcategorization* CLI (word within the complement) – Proficiency

The statistical analysis of the other types of *lemmatic* transfer –i.e. *calques*, *collocational transfer* and *lemmatic self-repair*)- did not reach significance. Their qualitative analysis is presented below.

The *literal translations* (or *calques*) of certain expressions are also quite prolific in the data; 58 different cases were identified. However, some of them, as the ones in sentences 33 to 35, are repeated all over again in the data. In sentence 33 the learner literally translates the Catalan/Spanish construction "se'n va corrents" or "se va corriendo" into English. The same process is found in sentence 34, in which the learners calques the expression "una altra vegada" or

"otra vez". Even the version "another again" (SUB 9080MELU) has been identified in the corpus. The structure in sentence 35 is also very frequent in the data; learners again calque their L1 structures when producing in the L2 ("el coche de policía" / "el cotxe de policia"). The same structure has been very frequently found in other expressions, such as "the man of the shop" and "a couple of the house".

<blockquote>

(33)   SUB 9111FEMP: […] and **goes away running** and she bumps into a man [TF: runs away].

(34)   SUB 9071VIEL: They **another time** went to hmm@p empait@c the girl [TF: again].

(35)   SUB 8068LUGO: The film stopped when <the the the> [/] **the lorry of the police** hmm@p just crash […] [TF: the police lorry]

</blockquote>

Collocational transfer is not very frequent in the corpus; however, the cases singled out in the data are repeated several times by different learners, which suggests that they are non-target forms that are likely to be produced by learners who share the same L1 (Catalan/Spanish). The most prominent example of this type of transfer is the use of the verbs "let" and "leave" with the word "free" (examples 36 and 37), as these are the verbs that are used in Catalan and Spanish (deixar/dejar). In English, however, the verb that collocates with free is "set".

<blockquote>

(36)   SUB 8026CASU: The woman is **let free** [TF: set free].

(37)   SUB 8080MAMA: They **leave free** Charles Chaplin [TF: set free].

</blockquote>

Other cases of *collocational transfer* have also been found in the data, as sentences 38 and 39 exemplify. In 38 the learner uses the verb "get" instead of "take", as this is the verb used in his or her L1 ("obtenir"/ "obtener"). The same process can be observed in example 39: in Catalan and Spanish the noun "robbery" collocates

with the verb "fer"/ "hacer", but it does not in English, in which "robbery" collocates with "commit" or "take part in".

    (38)   SUB 8014ANME: They [/] they decide to [/] to **get profit** of that situation [TF: take profit/advantage of].

    (39)   SUB 9229MAOJ: […] the one who [7] who **make the [/] the robbery** [commit / take part in the robbery].

Finally, the last type of *lemmatic* CLI analysed has been what we have called *lemmatic self-repair*. These cases have mainly involved occurrences of *semantic extensions* (22 cases), *subcategorization transfer* (5 cases) and *calques* (3 cases) for which the learners have immediately provided the target-like forms. Most cases of *lemmatic self-repairs* which involve *semantic extensions* contain the word "police" instead of "policeman" or "police office", as sentence 40 exemplifies. However, other overextensions have been idententified in the data, as can be seen in sentence 41, in which the learner first uses the word "pair" to refer to people instead of "couple". In sentence 42 a case of *subcategorization self-repair* which involves the wrong choice of complement has been identified, as the learner's first choice is a noun phrase instead of a prepositional phrase. In sentence 43, on the other hand, the learner has selected the wrong preposition within the prepositional phrase ("in" and "at") before producing the target-like one ("on"). Finally, in sentence 41 the learner produces a *calque* from the L1 ("another time") from the Spanish expression "otra vez" or the Catalan "una altra vegada"; however, a self-repair is produced immediately afterwards ('again').

    (40)   SUB 9228MAOJ: <The **police**> [//] the **police officer** faints.

    (41)   SUB 8092LANU: They look how hmm@p <some people a **pair**> a **couple** […].

    (42)   SUB 9228MAOJ: He ask again the policeman to pay **the** [//] **for the thing**.

(43)   SUB 9265MAMA: The girl puts the bread <**in** the table> [//] <**at** the table> [//] **on** the table.

(44)   SUB 9097BLPE: Appears the [/] the girl <**another time**> [//] **again**.

The analysis of the different types of grammatical CLI have also yielded some interesting findings, especially the analysis of *word order* CLI, as it significantly correlated with amount of time spent abroad, as will be discussed below. Transfer of *word order* was also quite present in the learners' productions. 76 cases were identified in the oral productions of 48 learners (44.8% of the learners), which means that 59 participants (55.2%) did not produce any instance of this type of grammatical transfer. As acknowledged for *null subjects* (see above), a low rate of transfer of *word order* has been identified. This idea is backed up when looking at the number of cases that each individual learner produced. That is to say, out of those learners that presented this type of grammatical transfer, 29 of them only produced it once, 12 learners presented 2 cases of *word order* transfer, 5 participants did it on 3 occasions and, finally, 2 learners produced *word order* transfer 4 times.

A qualitative analysis of the data reveals that word order transfer affects both basic word order patterns and word order in constituents within clauses. While the former was identified on 43 occasions (56.6%), the latter was found 33 times (43.4%). As reported in section 2.5.3.2, the learners' L1 (Catalan/Spanish) and their L2 (English) share the same basic word pattern (SVO), but they differ in terms of rigidity, as Catalan and Spanish have a relatively flexible word order that allows VS structures, in comparison to English that is a fixed word order language. These VS structures, which are allowed in Catalan and Spanish but not in English, are quite prolific in the learners' English productions analysed in the present study: 39 cases have been identified, as sentences 45 and 46 below exemplify. Whereas in sentence 45 the learner has produced a VS order, in

example 46 apart from having inverted the subject and the verb, the learner has placed the complement at the beginning of the sentence.

> (45) SUB 8109BLGA: […] and then **appear \<the this\> [//] the first girl** who robbed the bread. [TF: the first girl appears].

> (46) SUB 8021LARI: […] and **in that road are hmm@p the policeman the girl and Chaplin**. [TF: the policeman the girl and Chaplin are in that road].

Out of the 39 cases of VS structures in the data, 9 of them have been identified as presenting *It-insertion* structures, as can be observed in sentence 47, in which the learner inverts the subject-verb order, but the pronoun "it" is also introduced in the position of the subject, as the learner might be aware of the fact that the subject of the sentence needs to be present. The learner, however, keeps a possible L1 order (Spanish: "aparece una vaca").

> (47) SUB 8008MIFE: […] and **it appears a cow**. [TF: a cow appears].

Apart from the above-described cases of subject-verb inversion, 4 other cases of basic non-target orders have been found in the data, as exemplified in sentences 48 and 49 below. In these two sentences the learners have kept their L1 flexible order of complements when producing in English. In English, however, the direct object needs to be contiguous the verb.

> (48) SUB 9160HEPE: They set **free Charles Chaplin**. [TF: Charles Chaplin free].

> (49) SUB 9181LOLO: He sees how a man hmm@p \<puts in\> [//] well brings **into the shop hmm@p a tray**. [TF: a tray into the shop].

As stated above, transfer of *word order* also affects constituents within clauses, as languages have differing rules that govern the position of different

word classes, such as adverbs and adjectives. 33 instances of this type of word order transfer have been singled out in the data. The cases that have been traced back mainly affect the position of some adverbs, such as "also", "even", "suddenly", "probably" or "still" within the clause, as seen in examples 50 and 51, in which the learners apply the flexible L1 rules of the position of adverbs. While misplacement of adverbs due to L1 transfer has been documented 30 times in our learners' corpus, only 3 instances of non-target order of adjectives have been found, as documented in sentence 52 below.

(50)   SUB 8015ALMU: He found **suddenly** the girl. [TF: he suddenly found a girl].

(51)   SUB 8021LARI: There **even** there is a cow. [TF: there is even a cow].

(52)   SUB 8112JOGR: Then hmm@p it's kind of prototypical American couple **married**. [TF: married couple].
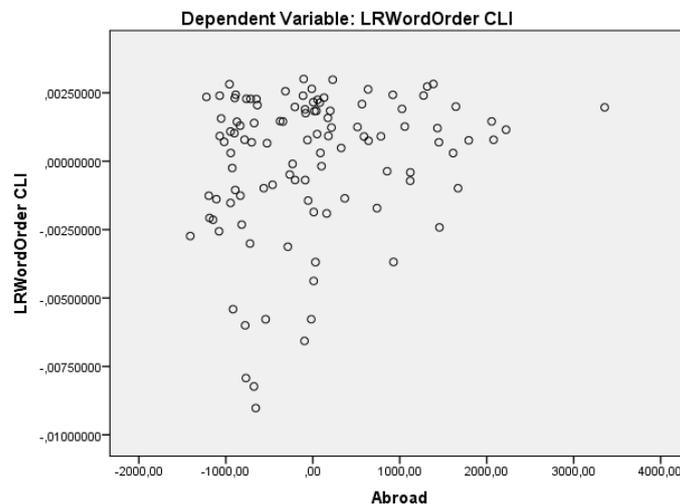
Figure 26- Distribution of values: *Word order* CLI / Time abroad

The statistical analysis with the oral narratives produced by 102 learners of English (5 outliers were identified) shows how the amount of word order transfer is highly influenced by the time that the participants have spent in an English-

speaking country, with the correlation gaining significance accordingly (p= .003), as illustrated in Table 20 below. Its distribution is represented in Figure 26 above. It should also be noted that the learner's proficiency also seems to be playing a role in the appearance of this type of CLI, as the correlation was also statistically significant (p= .009). Thus, those learners with a higher level of proficiency in English and those that have spent a longer time abroad present fewer cases of CLI.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	.026	.0902	-.151	.203	.083	1	.773
ZProficiency	.198	.0762	.048	.347	6.740	1	**.009**
ZOnsetAge	-.065	.0758	-.214	.084	.735	1	.391
ZAbroad	.204	.0691	.069	.340	8.729	1	**.003**
(Scale)	.820[a]	.1148	.623	1.079			

Table 20- *Word order* CLI – Time abroad

Transfer of *null subjects* and transfer in the *use of articles* have also been found in our learners' oral productions; however, no statistically significant results have been found when correlated with the different input indexes. A qualitative analysis of the *null subjects* in the data has been provided in the previous section. The analysis of the *use of articles* is reported in what follows. The appearance of this type of grammatical CLI is scarce when compared to the other types of grammatical CLI. 47 cases have been identified in the data, and as described for the other types of grammatical CLI, not all the participants presented cases of this type. To be precise, only 28 participants out of 107 (26.2%) transferred their L1 article use into their L2 English. Half of these learners (14) only seemed to transfer their L1 use of articles on one occasion, 10 participants appeared to do so twice, 3 of them presented 3 instances of this type of CLI and, finally, 1 learner did so 4 times.

A qualitative analysis of the data has shown that some of the learners in the present study seem to overgeneralize the use of the definite article ("the") to generic contexts in which English prefers zero articles. This use of the definite article for generic reference has been singled out on 34 occasions. It is, therefore, the most frequent case of transfer of *use of articles* identified in the learners' oral productions (72.3%), as sentences 53 to 56 below illustrate. As these sentences show, the learners' L1 (Catalan/Spanish) makes use of the definite article for generic reference, which they directly transfer into English. There are also certain expressions in English which do not contain the definite article in opposition to Catalan or Spanish, such as "go to jail or prison" or "serve breakfast" or any other meal. This use is, thus, transferred into English, as sentences 54 and 55 exemplify.

 (53) SUB 8026CASU: Then the girl is the first one that recovers **the** consciousness. [TF: recovers consciousness].

 (54) SUB 8008MIFE: He is the one who has to go to **the** jail. [TF: go to jail].

 (55) SUB 8019YPO: The woman is serving **the** &break [//] breakfast. [TF: serving breakfast].

 (56) SUB 9193SIJU: They face up **the** reality when a police officer hmm@p crosses them. [TF: face reality].

Apart from the overgeneralization of the definite article to generic context, as described above, other types of transfer of *use of articles* have been traced back, although to a lesser extent. Whereas the definite article is not employed with proper names in neither Spanish nor English, it is in Catalan. This Catalan use of the article has been transferred on 9 occasions into English, as example 57 shows.

 (57) SUB 9135FLMA: […] and he takes **the Charles Chaplin** <to the> [/] I don't know to the police station. [TF: takes Charles Chaplin].

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Finally, another important difference between the use of the definite article in English and Catalan or Spanish is that English prefers the possessive in contexts in which the definite article would be used in Catalan and Spanish. Consequently, Spanish and Catalan learners of English might transfer this use of the article into English. This has been found 9 times in the data, as sentence 58 below clearly shows, in which a native English speaker would prefer using the possessive "her" instead of the definite article "the".

    (58)   SUB 8052 RUDO: The man <tells tells> tells her that it's the chance to escape. [TF: her chance].

To sum up, the analysis of the impact of the different *input* indexes on CLI has revealed significant results. The factor that seems to influence the appearance of CLI to a greater extent is "time spent abroad", which has significantly correlated with the total amount of CLI, and the total amount of lexical CLI, especially the *lemmatic* type. Additionally, time abroad also seems to affect the occurrence of some of the subtypes of lexical and grammatical CLI: *language switches* and transfer of *word order*. It has also been noted that the learners' level of proficiency has exerted some influence on the above-mentioned results. This factor, moreover, has influenced the appearance of grammatical CLI and two of the subtypes of lexical CLI: *false cognates* and *subcategorization* CLI (the type that involves the wrong selection of a specific word within the complement). Another *input* index that yas yielded significant results is the amount of formal instruction that learners have received during their learning history, which seems to have influenced amount of *lexemic* CLI and amount of *subcategorization* CLI (the type that involves choice of the wrong complement). Finally, cumulative hours of contact with English has significantly correlated with the number of *semantic extensions* that learners have produced in their oral narratives.

5.5. Results of Research Question 3: Cognitive language abilities, input and CLI

The third research question regarded any possible interaction between *cognitive language learning abilities* and *input*. It was intended to find out whether learners with different characteristics as regards *cognitive abilities* and *input* presented different numbers and types of CLI in their English oral productions. As reported in Section 4.4.4, in order to answer this research question a K-Means Cluster was performed with one cognitive variable –i.e. the second factor obtained after the Principal Component Factor Analysis, which includes the Digit Span and the Reading Span Tests- and one input variable –i.e. time abroad. These two variables allowed the classification of the participants in two different groups: those learners with high and low WM, and those with high and low amount of time abroad. After the analysis, a group of 62 learners was classified as having a high WM with a mean of 0.67, and 44 learners as having low WM with a mean of -0.94 (1 missing). As for the number of hours spent abroad, 31 learners were classified as having a high amount of time abroad, with a mean of 2,216.13 hours, and 76 participants were considered as having little experience abroad, with a mean of 455.5 hours. With this classification, 4 different groups have been formed:

1) 21 learners with high WM (mean 0.66) and high input (mean 2,397 hours)

2) 10 learners with low WM (mean -1.06) and high input (mean 1,836 hours)

3) 41 learners with high WM (mean 0.67) and low input (mean 371 hours)

4) 34 learners with low WM (mean -0.91) and low input (mean 543 hours)

In order to see any possible differences between the above-mentioned groups, an ANOVA and a Brown Forsythe tests were carried out depending on the homogeneity of the group of variances. Out of all the CLI variables with

homogenous variances, only the mean of the total amount of CLI appeared to be significant (p= .03), as portrayed in Table 21 below. This means that there is a difference in the mean of the total amount of CLI among the groups.

		Sum of Squares	df	Mean Square	F	Sig.
TotalCLI	Between Groups	.002	3	.001	3.094	**.030**
	Within Groups	.021	102	.000		
	Total	.023	105			
False Cognate	Between Groups	.000	3	.000	.712	.547
	Within Groups	.000	102	.000		
	Total	.000	105			
Lexemic self-repair	Between Groups	.000	3	.000	.292	.831
	Within Groups	.000	102	.000		
	Total	.000	105			
Calque	Between Groups	.000	3	.000	.246	.864
	Within Groups	.001	102	.000		
	Total	.001	105			
Lemmatic self-repair	Between Groups	.000	3	.000	.811	.491
	Within Groups	.000	102	.000		
	Total	.000	105			
Subcategorization CLI 1	Between Groups	.000	3	.000	.577	.632
	Within Groups	.000	102	.000		
	Total	.000	105			
Subcategorization CLI 2	Between Groups	.000	3	.000	.893	.448
	Within Groups	.001	102	.000		
	Total	.001	105			
Use of articles	Between Groups	.000	3	.000	.533	.661
	Within Groups	.001	102	.000		
	Total	.001	105			

Table 21- ANOVA results

A Post-Hoc Tukey was performed in order to see the exact differences between groups. As we can see in Table 22 below, the groups in which there is a significant difference in their mean are those learners with high WM and high input (group 1) and those with low WM and low input (group 4). That is, those

learners with higher WMC and that have spent a longer period time abroad present more target-like items and, therefore, fewer instances of CLI (see Figure 27). However, no significant differences were found among the other groups.
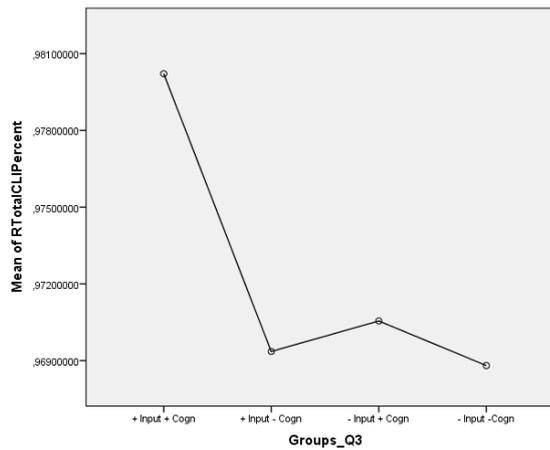
Figure 27 – CLI differences among the groups

	Groups			Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
+ Input + Cogn	+ Input - Cogn	.01085951382	.00551937307	.207	-.0035564993	.0252755270
	- Input + Cogn	.00966488852	.00385489736	.065	-.0004036918	.0197334688
	- Input -Cogn	.01140765033*	.00398704180	**.026**	.0009939229	.0218213778
+ Input - Cogn	+ Input + Cogn	-.01085951382	.00551937307	.207	-.0252755270	.0035564993
	- Input + Cogn	-.00119462530	.00506654273	.995	-.0144278940	.0120386433
	- Input -Cogn	.00054813651	.00516779682	1.000	-.0129495970	.0140458700
- Input + Cogn	+ Input + Cogn	-.00966488852	.00385489736	.065	-.0197334688	.0004036918
	+ Input - Cogn	.00119462530	.00506654273	.995	-.0120386433	.0144278940
	- Input -Cogn	.00174276181	.00333209822	.953	-.0069603230	.0104458466
- Input -Cogn	+ Input + Cogn	-.01140765033*	.00398704180	.026	-.0218213778	-.0009939229
	+ Input - Cogn	-.00054813651	.00516779682	1.000	-.0140458700	.0129495970
	- Input + Cogn	-.00174276181	.00333209822	.953	-.0104458466	.0069603230

Table 22- Post-Hoc Tukey results

As for the non-homogenous variances, the Brown Forsythe test revealed that the mean of the number of lexical CLI (p= .012), *lemmatic* CLI (p= .026), and *semantic extensions* (p= .010) was significantly different in the groups, as seen in Table 23 below.

		Statistic[a]	df1	df2	Sig.
LexicalCLI	Brown-Forsythe	3.960	3	67.993	**.012**
Grammatical CLI	Brown-Forsythe	.670	3	36.329	.576
Lexemic CLI	Brown-Forsythe	1.814	3	87.188	.151
Lemmatic CLI	Brown-Forsythe	3.365	3	48.000	**.026**
Language switches	Brown-Forsythe	1.831	3	82.774	.148
Lexical Invention	Brown-Forsythe	.999	3	52.099	.401
Semantic Extension	Brown-Forsythe	4.082	3	70.157	**.010**
Collocational CLI	Brown-Forsythe	.794	3	28.978	.507
Word order	Brown-Forsythe	1.989	3	77.061	.123
Null subject	Brown-Forsythe	1.245	3	19.339	.321

Table 23- Brown Forsythe results

The Post Hoc Dunnett's test further showed the groups that presented differences. As we can observe in Table 24 below, the significant differences in the three types of CLI always appear between the groups of learners with high WM and high input (group 1) and the learners with high WM and low input (group 3); and between the learners in group 1 and the learners with low WM and low input (group 4).

Dependent Variable	Group 1	Groups 2, 3 & 4	Mean Difference (1 - 2,3 & 4)	Std. Error	Sig.
Lexical CLI	+ Input + Cogn	+ Input - Cogn	.00829985917	.00346096565	.167
		- Input + Cogn	.00835813015*	.00227975902	**.003**
		- Input -Cogn	.00976071098*	.00276151709	**.005**
Lemmatic CLI	+ Input + Cogn	+ Input - Cogn	.00657417157	.00334350307	.332
		- Input + Cogn	.00623367901*	.00177025818	**.005**
		- Input -Cogn	.00744712891*	.00213933752	**.006**
Semantic Extension	+ Input + Cogn	+ Input - Cogn	.00460982542	.00169038956	.093
		- Input + Cogn	.00329438414*	.00111593753	**.026**
		- Input -Cogn	.00529489987*	.00153458149	**.007**

Table 24- Post Hoc Dunnett's results

As regards the results for lexical CLI, a significant difference (p= .003) has been found between group 1 and group 3. The former presents significantly fewer cases of CLI than the latter, as seen in Figure 28 below. Additionally, the former seems to behave significantly different (p= .005) from group 4, whose learners produced more tokens of lexical CLI. No significant differences, however, were found between group 1 and group 2. The differences between groups 2, 3 and 4 were not significant either.

The results regarding cases of *lemmatic* CLI are similar to the ones described above. That is, significant differences were found between group 1 and groups 3 (p= .005) and 4 (p= .006). No other intergroup differences were identified. Thus, those learners with high WM and high input were the ones that produced CLI on fewer occasions, as can be observed in Figure 29 below.
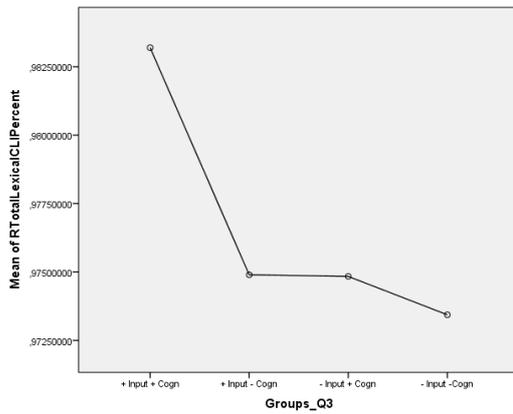
Figure 28- Intergroup differences/Lexical CLI
CLI
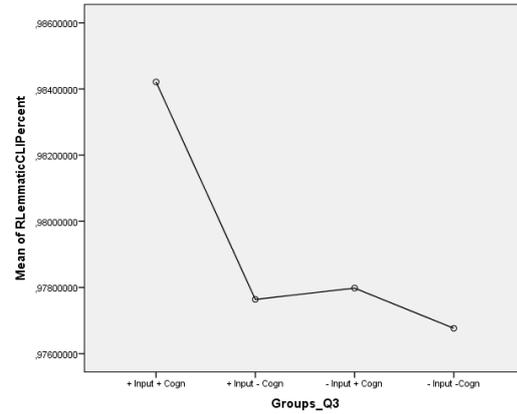
Figure 29- Intergroup differences/*Lemmatic CLI*

The results as for *semantic extensions*, are in the same line, as seen in Figure 30 below. Significant differences were obtained between group 1 and groups 3 (p= .026) and 4 (p= .007), and no other significant differences were obtained after the statistical analysis. The figures also show that group 2 produces more cases of CLI than group 3; however, the difference was not significant. This may well indicate a tendency; that is, that those learners with high WM and low input would produce fewer cases of CLI than those with low WM and high input, which would mean that WM is a better predictor of CLI occurrence than hours abroad, especially when it comes to *semantic extensions*.
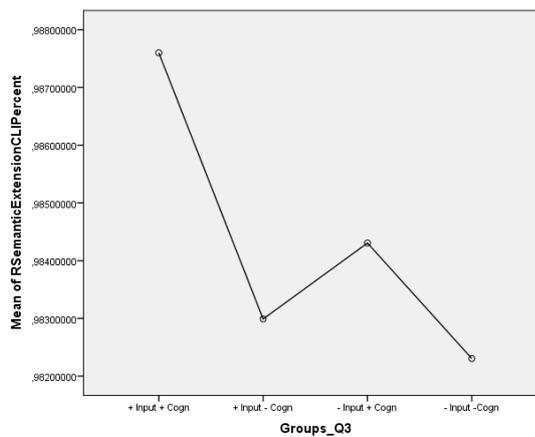
Figure 30- Intergroup differences/*Semantic extemsions*

5.6. Summary

The present chapter has been devoted to the presentation of the results obtained after the qualitative and quantitative analysis of the participants' oral productions. The chapter opened with a qualitative description of the data on CLI. It has been pointed out that 788 instances of CLI were identified in the data, from which 76.6% were classified as lexical CLI, and 23.4% as grammatical CLI. In addition to this, it has become clear that *lemmatic* CLI (480 occurrences, 79.5%) was more frequent than *lexemic* transfer (124 occurrences, 20.5%) in our participants oral narratives. However, it has been noted that the number of occurrences was not equally distributed across the different participants.

The chapter continued with the description of the results of the first research question, which dealt with the effects of *cognitive language learning abilities* on the occurrence of CLI. The analysis has revealed one significant correlation between *language switches* and the lexical access factor. That is, those learners that obtained a higher score in the lexical access test presented a higher number of *language switches*. It has also been highlighted that the learners' proficiency level had also an effect on the results. Moreover, a possible relation between *null subjects* and the cognitive component that involves the Attention Span, the Reading Span and the Llama F tests has been pinpointed. To be precise, those participants that got higher results in these tests were the ones who presented fewer cases of *null subjects*. The point that proficiency also played an important role in the results was also made, however..

As we have seen in this chapter, when considering the second research question which focuses on the effects of *input* on CLI, the factors that seem to influence the appearance of CLI are time abroad, formal instruction and cumulative hours of contact. While time spent abroad significantly correlated with the total amount of CLI, the amount of lexical CLI, especially the *lemmatic* type, *language switches* and transfer of *word order*, instruction in a classroom

setting seemed to have an influence on the amount of *lexemic* CLI and *subcategorization* CLI (the type that involves choice of the wrong complement). Additionally, it has been pointed out that cumulative hours of contact with English correlated with the number of *semantic extensions* that learners produced.

Importantly, it has also been noted in this chapter that whereas the variable of proficiency had an important effect on the results obtained, the learners' onset age did not. Thus, the participants' level of proficiency influenced the occurrence of grammatical CLI and of two of the subtypes of lexical CLI: *false cognates* and *subcategorization* CLI (the type that involves the wrong selection of a specific word within the complement).

Finally, the chapter closed with the results of the third research question, which asked about any possible interaction between *cognitive language learning abilities* and *input*. The results of the statistical analysis showed that those learners with high WM and high input produced fewer cases of CLI than those with low WM and low input. However, no significant differences were found among the other groups. A more detailed analysis of the different types of CLI also produced revealing findings. Significant results were obtained for the subtypes of lexical CLI, *lemmatic* CLI and *semantic extensions*. Thus, those learners with high WM and high input produced fewer cases of CLI than those with high WM and low input and those with low WM and low input.

CHAPTER 6

DISCUSSION

6.1. Introduction

The aim of the present chapter is to discuss the results described in chapter 5 concerning the possible relationship between CLI and *cognitive language learning abilities* and *input*. The general purpose of the present doctoral dissertation was to contribute to the analysis of those factors that might have an influence on the appearance of CLI in Catalan/Spanish learners of EFL. More precisely, the study was guided by three research questions: The first research question regarded the possible effects that *cognitive language learning abilities* could have on the amount and type of lexical and grammatical CLI in English oral production; the second research question inquired into the possible relationship between *amount* and *type of input* - measured in relation to the length of language exposure, exposure in a naturalistic setting through SA programmes, and cumulative hours of contact outside the classroom- and amount and type of CLI. Finally, the third research question focused on the interaction between *cognitive abilities* and *input* effects on CLI. In this chapter the results obtained through the quantitative and qualitative analysis of the data will be discussed in light of previous research. The section that follows this introduction delves into the discussion of the descriptive analysis of the data on CLI. Our discussion will then continue with an in-depth analysis and discussion of the three research questions formulated. Finally, a brief summary of the main points will be presented at the end of the chapter.

6.2. CLI in English oral production: Descriptive analysis

The present section seeks to discuss the descriptive analysis of the data on CLI, which will then serve as the basis for the discussion presented in the following sections. In light of previous studies on the effects of diverse factors on CLI –especially of proficiency- and given the characteristics of the participants in the present study, the amount of CLI was expected to be low, as our participants have quite a high level of proficiency in the TL. Moreover, taking into account previous empirical findings, it was hypothesized that the types of CLI to be found in the data would be those that high-proficient learners are likely to produce. It was assumed, for example, that the amount of *lexical inventions* and the different types of *lemmatic* CLI or *transfer of meaning* would be higher than *borrowings* or other types of *lexemic* transfer or *transfer of form*. These hypotheses have been partially confirmed, as will be extensively discussed below.

6.2.1. Total amount of CLI

As presented in the chapter on results, 788 CLI occurrences out of 48,748 tokens (1.6%) were identified in the data, which had been obtained from 107 intermediate - advanced learners of English. This result shows that CLI can be produced by learners at a more advanced stage, although it is much more frequent in low proficient learners, and it decreases as learning progresses and a higher level of proficiency is acquired, as studies on both L2 (e.g. Taylor, 1975; Poulisse & Bongaerts, 1994; Navés *et al.* 2005; Andria, 2014) and L3 acquisition (e.g. Ringbom, 1987; Williams and Hammarberg, 1998; Fuller, 1999; Hammarberg, 2001; Dewaele, 2001; Ortega & Celaya, 2013) have extensively demonstrated. This decrease in the number of transferred items might be due to the fact that while beginner learners access new words in the L2 through the L1

and associate them to the same conceptual features, more proficient learners directly connect new words with the concept and less strongly with the L1 (Hufeisen, 2005). The equivalent formation in low proficient learners (Pavičić, 2008) can lead to negative transfer to appear, as items in different languages might not be exact equivalents.

These results are in line with previous studies in the field, such as the recent study of experiential verbs by Andria (2014), in which traces of L1 Catalan/Spanish were detected in Greek as a foreign language even at advanced proficiency levels. This might suggest that bilingual and multilingual learners have specific features that distinguish them from monolingual speakers, the presence of other languages being one of the distinctive characteristics. This difference will always be present irrespective of the proficiency that the learner has. This finding could be considered as support to the Multilingual Framework, especially Cook's *Multicompetence Framework* (1991, 1992, 1997, 1999, 2002, 2003, 2008) according to which the knowledge of the languages that a multilingual has is different from that of a monolingual speaker. Thus, it follows that multilingual speakers cannot behave as monolingual ones, and behave as if their previously acquired languages did not exist. This is true at all stages of proficiency; the learners' L1 and other previously acquired languages always exert an influence on the TL, the degree of which will vary depending on various factors, as will be discussed below.

As we saw in chapter 5, findings point out that the number of CLI occurrences was not equally distributed across the different participants. That is, while some learners did not produce any instances of CLI, up to 25 instances of transfer were identified in the oral production of one of the learners. This variability among the participants points to the need to try to identify the possible factors that might directly affect the appearance of the phenomenon under investigation in some cases but not in others. It should also be mentioned here that the number of participants that transferred this high number of

structures and vocabulary was very low. We need to take into account that the learners in this study are studying English at university and, therefore, have had plenty of instruction and exposure to the TL; additionally, they might be highly motivated to achieve a very high level of proficiency. The consequence of all these factors might be an advanced level of English, which has a direct effect on the amount of CLI, as plenty of studies have shown. It should also be mentioned here that there is a great deal of variance among the learners as regards the length of their oral productions, which can be explained by the fact that there was no limit as regards the time that learners could spend performing the oral narrative, nor on the number of words that they were allowed to use. This factor, as pointed out in chapter 4, has been controlled for in the analysis of the influence of *cognitive language learning abilities* and *input* on CLI, by working with ratios in the statistical analysis.

6.2.2. Lexical vs. grammatical CLI

The detailed descriptive analysis also attested that the amount of lexis-related CLI was higher than the amount of grammar-related CLI. This observation can be explained through two main reasons. On the one hand, we need to take into account the fact that the learners' grammar knowledge has been operationalized as *null subjects*, *word order* and *use of article* as an index to account for their overall level of grammar. On the contrary, the learners' lexical knowledge has been studied as a whole. However, as pointed out in section 2.5.3, the grammatical features selected and analysed here are considered to be some of the most common non-target grammatical issues present in the English productions by Catalan/Spanish learners.

On the other hand, it is important to consider that the participants in this study have been instructed with grammar-centred methodologies. Thus,

although they might have lapses while producing in English, especially when performing orally, they are aware of most grammar rules in English and, consequently, apply them when using the language, as the independent measures used to assess their proficiency demonstrated. That is to say, they are familiar with the grammatical rules, but they sometimes make mistakes when facing the task of communicating in the L2 in meaningful interactions. Achieving native-like grammatical competence has been found to be a difficult task despite long immersion in the L2 (Sorace, 1993; Hawkins, 2000). This contrasts with the lexical knowledge that speakers can have of a language, as there might be always gaps in their lexical knowledge. For example, learners might frequently be faced with the task of naming an object or discussing an idea for which they lack the word. In this situation, they might make use of the languages in their linguistic repertoires so as to solve the communication problem and fill in a lexical gap in the L2 (Ringbom, 1986, 1987). As argued by Ringbom (1987), when learners have not acquired an L2 frame of reference, they may assume and hypothesize that the L2 might work in a similar way to their L1, and thus transfer elements from this language.

As pointed out when discussing CLI holistically, variability among the learners has also been found in the analysis of lexical and grammatical transfer when taken separately. This variability might be due to the many interrelated factors that play a role in the process of SLA, which makes the process a highly complex one. Although it is a homogenous population as regards age, studies and, consequently, interests and possible motivations, there are both internal and external factors that might have an effect on the learners' productions. These are the factors that will be discussed in subsequent sections of the present chapter so as to try to shed more light on the way CLI operates.

As far as lexical CLI is concerned, most learners transferred lexical items from their L1 between 1 and 9 times. As pointed out above, even proficient learners might encounter communication problems because of a lexical gap; in

this case, they might transfer an L1 word as a communication strategy, although they might be unaware of it. It should also be mentioned that one of the learners produced as many as 22 occurrences. This was not expected due to the characteristics of the learners. The discussion of both internal and external variables in the subsequent sections will try to explain the reasons why some learners might rely on their L1 to a greater extent than others.

Interestingly, the panorama appeared to be a little bit different for grammatical CLI, as a large number of learners did not transfer any L1 structure into English. As highlighted above, they are highly competent in the TL. Moreover, this can also be explained due to the centrality that grammar has in EFL classes and to the fact that they might have studied English grammar as part of their degree. Therefore, learners in this study may have had plenty of opportunities to have internalized and automatised English grammatical knowledge. Nevertheless, the fact that they seldom transfer L1 structures into the L2 might be an indication that, although they might have the knowledge, they might make mistakes while performing, especially because the task used to collect the data is an oral one.

6.2.3. Lexemic and lemmatic CLI

As for the two main types of lexical CLI, our results also indicate that *lemmatic* CLI was much more frequent than *lexemic* CLI. Approximately half of the learners did not produce any instance of *lexemic* CLI, and the ones that did so, did it on very few occasions. Even though lexemic CLI was not very frequent in the corpus, it is sizeable enough so as to be taken into consideration, as argued in previous research on CLI (see Sánchez, 2015), as it can help to draw a more complete picture of how the phenomenon operates. Despite not being very frequent, some instances were identified in the learners' oral production, which is

in line with Ecke's (2015) study, in which instances of *form-based* CLI still affected the production of advanced learners.

Although *lemmatic* CLI appeared more frequently in the learners' oral productions, a few learners did not produce any case of this type of transfer, as reported in the previous chapter. The difference in the occurrence of both types of lexical CLI can be accounted for by the fact that *lemmatic* CLI is a more complex type that extends, in most cases, to the word unit. These results are in line with previous studies on lexical CLI. As Ringbom (2001) pointed out, as the learners' language proficiency develops, there seems to be a change from organization by form to organization by meaning. In other words, while *transfer of form* or *lexemic* CLI might be most predominant in the early stages of acquisition, *transfer of meaning* or *lemmatic CLI* seems to develop in a later proficiency stage. This suggests that CLI might work in different ways at different levels of proficiency due to the different needs learners have. This is in line with Celaya's (2006) longitudinal study, in which written productions of Catalan/Spanish learners of EFL were analysed. Celaya concluded that whereas *borrowings* and *coinages* (types of *lexemic* CLI) decreased as L2 proficiency increased, *calques* (one type of *lemmatic* CLI) increased with increased proficiency. This suggests that not all types of transfer develop in the same way. This is also evident in Navés *et al.*'s (2005) study, as a statistically significant decrease of *borrowings* was found as proficiency increased. The same pattern was not true for *lexical inventions*, as the decrease did not appear to be significant.

Calques appeared on 58 occasions in the analysis of the narratives in the present study and, thus, represent the 12.1% of cases of *lemmatic* CLI. Their appearance, however, did not seem to be directly related to the learners' level of proficiency. This difference in the results between both studies might be due to the differences in the proficiency and age of the learners analysed. That is, whereas Celaya (2006) analysed primary and secondary school learners, the present study focuses on university students, who have a considerable higher

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level of proficiency in the TL. Once again, a close look at the characteristics of the participants can shed light on the results obtained. Thus, this finding could be due to the proficiency that the learners have, as low-proficient learners are expected to produce a higher amount of *lexemic* CLI, while more proficient ones might present more occurrences of *lemmatic* CLI, as reported in section 2.5.2.3. Lindqvist's (2010) study with 14 very advanced learners of L3 French point to the same direction, as her participants presented more instances of *meaning-based* transfer (54%), especially of *semantic extensions*, than of *form-based* CLI (46%). The difference has appeared to be more striking in the present study, which can be accounted for by the fact of having used a slightly different classification of *meaning-based* transfer and, thus, including the categories of *collocational CLI* and *subcategorization CLI*, as suggested by Jarvis (2009).

6.2.4. Native vs. non-native CLI

It had also been hypothesised that the learners would mainly transfer from their L1 (Catalan/Spanish) due to their low proficiency in their other foreign languages, and to the fact that they have not had the chance to automatize their knowledge of those languages through intensive exposure. After the analysis of the cases of CLI in the data, it has been seen that all instances of CLI but one (see below), both lexical and grammatical, derived from the participants' L1, confirming, thus, the assertion that "no account of L2 acquisition is complete without an explanation of the role played by the L1" (Ellis, 2008: 345). This result is in accordance to Ringbom's (1987) assertion that the native language vocabulary has a greater influence than the L2 lexicon on the TL. Ringbom (2007) argues that this might be due to the fact that learners have already learnt how their world is reflected through languages, and they might feel reluctant to modify their conceptual L1-based system. As regards grammatical CLI, this type

of transfer has previously been found to arise more frequently from the L1 rather than from the L2 in some studies (e.g. Ringbom, 2001, 2005; Sanz *et al.,* 2015). Others, however, have emphasized the prevalence of L2 effects over L1 influence, especially those dealing with the importance of *L2 status* (e.g. Sánchez, 2011a, 2011b, 2015).

As reported in chapter 5, only one instance of *borrowing* from French was identified in the data[33]. In the last decades, studies on TLA have emphasised the need to consider prior L2 knowledge, since it can actually be the source of influence when acquiring a new language (Ringbom, 1987; Singleton, 1987; Dewale, 1998; Williams & Hammarberg, 1998; Cenoz, 2001; Hammarberg, 2001; Jessner, 2006; De Angelis & Dewaele, 2009). It is nowadays commonly held that all linguistic systems in the speaker's mind can actually interact in IL production. However, this has not been the case in the present study, where the influence of the learners' L1s has overridden the influence of other previously acquired foreign languages. This result could be due to a number of reasons. First of all, we need to consider the supremacy of *lemmatic* CLI over *lexemic* CLI. As scholars in the field have highlighted, such as Ringbom (2005), when *meaning transfer* takes places, it is mainly the result of L1 influence. Additionally, the low level of proficiency and the lack of automatization in the other non-native languages might have had an effect on these results.

Multilingual learners can usually only borrow from an L2 instead of the L1 when they have a high level of proficiency in the former, as they might be able to use the L2 strategies that are normally borrowed from the L1 (Singleton, 1987; Ringbom, 1987; Williams & Hammarberg, 1998; Odlin &Jarvis, 2004; Ecke & Hall, 2013). In Lindqvist's (2010) study, for example, only the languages in which the learners were highly proficient were the source of *meaning-based transfer*. Additionally, Tremblay (2006) has argued that a high level of automatization in

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[33] This learner had a very high level of proficiency in French. According to Falk and Bardel (2010), well-mastered L2s might lose their status of a L2 and behave more like a L1.

the L2 is needed for it to become a source language of influence, and that high proficiency in the L2 is not enough for the L2 to become automatized, but that exposure to the L2 is needed. Pavlenko and Jarvis (2002) further argued that the level of socialization in the source language is important for transfer to take place from this language. This is not the case of the participants in the present study, who have quite a low level of proficiency in the other additional languages and have not been intensively exposed to them, with the exception of the learner that reported having had a previous intensive exposure to French. This means that English is the foreign language they are most proficient in. They are, on the other hand, beginner or intermediate learners of German or French, among others, and they lack, in most cases, any kind of exposure to these languages in a naturalistic environment.

Although German is typologically closer to English than Catalan or Spanish, they have a low proficiency level in German, and it is not a language that they frequently use. As a consequence, it seems that *proficiency* and *frequency and recency of use* override *language typology* in this case, as opposed to Ringbom's (1986) and Jarvis' (2000) studies, in which language typology overrode frequency of use and amount of exposure. The learners' L1s (Catalan/Spanish) are the languages that they use in their everyday life. The fact that a closer language such as German did not have any influence on English is supported by studies such as Martínez Adrián's (2004, 2008, 2010) analysis of the acquisition of the German word order by L1 Spanish with L2 English, in which L2 English did not appear to have any effect on the learning of L3 German word order.

The results also point to the fact that the above-mentioned variables *proficiency* and *frequency and recency of use* might be more powerful factors than the *status of the L2*, thus contradicting those studies (e.g. Meisel, 1983; Schmidt & Frota, 1986; De Angelis & Selinker, 2001; Hammarberg, 2001; De Angelis, 2005b, 2007; Bardel & Falk, 2007; Falk & Bardel, 2011; Sánchez, 2011a, 2011b, 2015) that have argued that the L2 can be activated instead of the L1 for the learners' desire

to supress the L1. Finally, it should be noticed that some researchers, such as Hammarberg (2001) and Wrembel (2010), have suggested that while L1 influence persists over a period of time, L2 influence vanishes more rapidly. Thus, it could be the case that at the time the data was collected, L2 influence had already vanished, although this assertion cannot be proved in the present dissertation.

Because of all these factors, the different languages in the multilingual mind are activated to different levels (Green, 1986). The factors *proficiency* and *frequency and recency of use* might make the other foreign languages remain dormant and, thus, without any influence, whereas the learners' L1 is an active language and, therefore, it exerts some influence on the selected language. If a language is highly activated, it can be more easily selected during production and be the source of influence (Grosjean, 1995, 1997, 2001). Thus, in beginner learners, L1 lexical items reach the level of activation required before the corresponding L2 counterparts (Poulisse & Bongaerts, 1994).

6.3. Research Question 1 – Cognitive language learning abilities and CLI

As discussed in chapter 3, *cognitive language learning abilities* have been found to play a fundamental role in language learning. However, not much research has been carried out to analyse its role in the occurrence of CLI. Thus, the present dissertation intended to shed some light on the CLI phenomenon under analysis. Accordingly, the first research question inquired into the effects of *cognitive language learning abilities* on the amount and types of lexical and grammatical CLI in English oral production. That is, it attempted to analyse if CLI was in any way related to the results learners obtained in the different cognitive tests (WM, Lexical Access, Llama F and Attention Span tests). Based on the few existing findings on the role of *cognitive abilities* and CLI, it was hypothesized that those learners with higher cognitive abilities –as measured by

the different tests- would show a lower amount of both lexical and grammatical CLI.

6.3.1. Language switches

As seen in chapter 5, the results of the statistical analyses revealed that *cognitive abilities* did not predict occurrence of CLI as a whole, which will be extensively discussed in section 6.3.3. There was only one type of lexical CLI that significantly correlated with this variable. This was the lexical access factor, which includes the learners' lexical access reaction time and lexical access coefficient of variation, and appeared to predict number of *language switches* (*borrowings*, *editing terms* and *metacomments*). The higher the learners' lexical access, the higher the percentage of *language switches*. It should be noted, though, that proficiency and time spent abroad also exerted some influence on the results, as will be discussed in the following section (section 6.4).

The Animacy Judgement Task used was aimed at examining learners' speed and efficiency of processing or automaticity (Segalowitz & Segalowitz, 2003; Segalowitz & Freed, 2004; Segalowitz & Frenkiel-Fishman, 2005). Being able to access the words in the lexicon is part of the last stage in the language acquisition process, in which the knowledge has to be automatized so that the learner can access and retrieve it for production. If the L2 cannot be retrieved at the moment of production, the learner might make use of the stored items from their previously acquired languages, as they are highly activated and automatized.

From the results obtained, it seems that those learners that are faster in accessing the items stored in their lexicons are the ones that transfer from their L1 on more occasions. While both the L1 and the L2 are activated simultaneously in the production and comprehension of words (Kroll & de Groot, 1997), the L1

lexical items might have a much higher level of activation than the ones from the L2. It follows that if a language is highly activated, it can be more easily selected during production (Grosjean, 1995, 1997, 2001) and, thus, be the source language in CLI, which was indeed the case for *language switches*. We should highlight here that the learners' competence in the language can also determine the access to a particular lexical item (Hufeisen, 2005). Thus, the fact that the learners' level of proficiency in the L2 is not comparable to the one they have in their L1 might make them access the L1 word first.

Language switches were quite prolific in the data, and they were found to be the most frequent type of *lexemic* CLI, as they represent the 70.9% of the total number of *lexemic* CLI (88 tokens) of the total number of *lexemic* CLI. Their number of occurrences even surpassed the number of *lexical inventions*, which appeared on 21 occasions (16.9%)[34]. This result was not expected, as according to studies such as Celaya (2006), *lexical inventions* are more present in higher proficiency levels and *borrowings* tend to decrease considerably as proficiency increases. Learners, thus, need a high command of the language in order to produce this type of CLI, as they are a sign that learners have internalized the TL rules. However, it should be noted that in the present study, the category of *language switches*, apart from *borrowings*, also comprises *editing terms* and *metacomments*.

A close look at the data reveals that *borrowings* are infrequent, as only 9 cases were pinpointed. Therefore, *lexical inventions* (21 tokens in 13 different oral production) are more frequent in the data than *borrowings* (9 tokens); the difference in number is, however, not so great. Some *lexical inventions* were identified several times in the data, such as "commissary" and "cafetery". This shows that speakers with the same L1 formulate similar hypotheses of how the TL might work on the base of the rules that they have internalised whenever there is a gap in their vocabulary knowledge. *Editing terms*, on the other hand,

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[34] Apart from *language switches* and *lexical inventions*, 13 tokens of *false cognates* (10.4%) and 2 *self-repairs* (1.6%) were identified in the data.

were produced more frequently (70 tokens). This difference in number can be accounted for by the fact that *editing terms* are completely unintentional words that are highly automatised in the learners' L1 (e.g. "bueno", "no", "ay"), so they are easily accessed. This is especially true for the *editing term* "Bueno", which has been identified 36 times in the data. "Bueno" is a very frequent crutch used in both Catalan and Spanish that learners transfer unconsciously. *Metacomments* were also scarce (9 cases). The learners have enough proficiency to comment on their own production and on the communicative situation using the TL. The use of the L1 to comment on their own production might be favoured by the fact that the learners share the same L1 with their interlocutors (Grosjean, 1998).

No cases of *borrowings* of function words were found in our participants' oral productions. Due to their level of proficiency they might have automatised function words in English because of their high frequency in the language. All the borrowed words are content words from the learners' L1. As discussed in the previous section, only one instance of borrowing of content word from French was identified. This is in line with Cenoz' (2001) study, in which learners transferred more content than function words. The difference between Cenoz' and the present study lies in the fact that no single token of transfer of function word has been detected in the present study. This divergence of the results might be due to the different age and proficiency of the learners analysed. Whereas Cenoz analysed learners' production at grades 2, 6 and 9, the present dissertation focuses on university students.

6.3.2. Null subjects

Apart from the significant correlation discussed above, a possible tendency has been found in the data, although the statistical analyses did not yield any significant correlation. The results point to a possible relation between *null*

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subjects and one of the cognitive factors obtained in the Principal Components Analysis, which includes the Attention Span test, the Reading Span task and the Llama F. Those participants with higher scores in these cognitive tests were the ones that tended to transfer their L1 *null subjects* to a lesser extent. The learners' level of proficiency, though, also explains the results. It should be noted here that the Principal Component Analysis showed a relationship between the three tests mentioned above. This contradicts, however, Granena's (2013) results, who concluded that the aptitude dimension measured by the Llama B, E and F was different from WM, STM, processing speed and attention span. However, her participants were tested on the three tests, which might account for the differing results.

It seems, thus, that those learners with higher attention span, WM and higher inductive language learning abilities have been able to automatize L2 grammatical structures to a greater extent as they produce L1 *null subjects* when producing in the TL on fewer occasions. On the one hand, this is in line with Doughty (2013), who suggested that those learners that are better able to maintain attention in two different tasks at the same time are the ones better capable of switching between their different languages and, therefore, they are expected to produce fewer cases of CLI. In the present study, this was only true for transfer of *null subjects*. On the other hand, people with large WMC process linguistic information more quickly and effectively (Just & Carpenter, 1992), and this is why WM has been found to play an important role in L2 processing as regards lexical and syntactic processing (Miyake & Friedman, 1998). Effectiveness of linguistic processing might lead to a faster integration of this new information into LTM, which, thus, might have a direct effect on the amount of transferred items, as L2 items might have been already processed. Once again, though, this was only found in the analysis of *null subjects* and not in the other cases on CLI. Finally, a good inductive language learning ability might ease the

acquisition of new grammatical rules and, therefore, reliance on L1 structures might not be needed.

A low rate of subject omission (a total number of 61 cases) was identified in the data, as most participants (70 of them) did not present any case of *null subject*, and the learners that produced them, did so on a few occasions. The results, therefore, would confirm the "parameter setting" perspective, which posits that it is actually possible to acquire parameter settings different from those of the L1. More specifically, the results are in line with the Full Transfer/Full Access Model (Schwartz & Sprouse, 1994, 1996), which argues that parameters are initially set at their L1 values, but then reset to the L2 values as learners' contact with the L2 increases. It should be considered that all the participants have attended formal classes for a considerable number of years, which might have made them metalinguistically aware of the difference between their L1 and the TL (Jessner, 2006). They are also used to making comparisons between the languages, which may lead to the avoidance of negative transfer (Jarvis & Pavlenko, 2008). A low rate of subject dropping was also found in Martínez Adrián's (2013) study with fourteen-year old Basque/Spanish learners. The author suggested that this could be due to the explicit correction of the learners' teachers in this area. Moreover, subject omission is a mistake that teachers frequently correct in classrooms settings. Thus, the feedback that teachers give might help learners in the process of noticing. Being aware of the differences between the *input* and the *output* that learners are able to produce has been considered a key element in SLA (Schmidt, 1990, 1993, 1994, 2001).

However, the fact that some transfer of *null subjects* takes place confirms previous findings: certain structural properties associated with the *null subject* parameter are likely to be transferred if the values are set differently in the learners' L1 and L2 (White, 1985, 1986), especially if the resetting is from Spanish (+null subject) to English (-null subject) (Phinney, 1987). Previous research (Phinney, 1987) has shown how difficult it is to reset the parameter from Spanish

into English, which means that transfer from the L1 might remain for a long period of time. This is a plausible explanation for the fact that some of the participants, who are advanced learners of English, still produce sentences with *null subjects* in English. However, it should be noted that the variable of proficiency appeared to significantly correlate with this type of grammatical CLI, meaning that learners with a higher proficiency level have been able to reset the parameter, which is in line with Orfelli and Gruters' (2014) study, in which little subject drop was found as compared to the very initial stages of development.

White's (1985) and Pladevall's (2013) studies, which directly address the effects of proficiency on transfer of *null subjects*, also point to a decrease of missing subjects with increased proficiency. However, in line with the present study, in Pladevall (2013) the more advanced group's performance was far from being native-like, which led the author to point out the need of explicit teaching in this area if learners are exposed to minimal input. Interestingly, no input indexes significantly correlated with the appearance of *null subjects* in the participants' oral productions. As noted above, those learners that transferred Catalan/Spanish *null subjects* in English did so on few occasions, which confirms Papp's (2000) and Sorace's (2003) conclusions that L2 optionality might persist at very advanced levels of proficiency. This might be a consequence of a lack of exposure to L2 input so as to be able to delete one of the optional variants from the grammar.

The qualitative analysis of the data also revealed that *null subjects* are present in both main (44.3%) and subordinate clauses (55.7%), and that the learners drop subjects in clauses with both present (78.7%) and past (21.3%) time reference. Additionally, the analysis showed that both *referential* (37.7%) and *non-referential subjects* were dropped by the participants in this study. The presence of *referential subjects* in the participants' productions does not confirm Judy and Rothman's (2010) and Judy's (2011) conclusions that Spanish learners of English are able to eliminate *referential null subjects* at early stages as they recognize that

the poor English verbal morphology requires them to insert the subject (Rizzi, 1982), but that *expletive subjects* persist into advanced L2 development. The results, though, are in line with Phinney (1987) and Tsimoli and Roussou (1991), who found greater omission of *expletive subjects* than *referential* ones.

6.3.3. Other cases of lexical and grammatical CLI

The statistical analysis performed on the other types of both lexical and grammatical CLI did not yield any statistically significant results. It seems, thus, that *cognitive language learning abilities* do not explain the occurrence of CLI as a whole, at least with the tests and measures that have been used in the present dissertation.

The results obtained, therefore, do not support the hypothesis that had been formulated in the present dissertation. It had been thought that *cognitive language learning abilities* would be directly related to the appearance of CLI for a number of reasons. First, STM has been found to predict success in learning new vocabulary in a foreign language (Service, 1992; Service & Kohonen, 1995; Chun & Payne, 2004), since if learners are able to remember a higher amount of information in their memories, which can at some point become part of their LTM, they are not supposed to resort to their previously learnt language when producing in the TL, as an increased amount of tokens is going to be part of their lexicon. It is worth mentioning here Williams' (2005) assertion that the prediction of STM might be variable depending on the L2 phenomena under analysis.

As reported in chapter 3, WM has been found to determine how well and how fast learners process and store linguistic information (Just & Carpenter, 1992; Baddeley, 2007). Thus, it plays a determining role in lexical and syntactic processing (Miyake & Friedman, 1998), which enables the integration of the new TL information into LTM. Moreover, WM plays a particularly relevant role when

producing in the TL, as learners need to maintain in memory pieces of their message while planning and coding the linguistic elements of the following segment of the message (Kormos, 2006). It seems, therefore, that WM is involved in the different stages of the language learning process (Kormos, 2013): in input processing, in the integration of new knowledge, and in its automatization. So it assists in regulating attention to the relevant linguistic features, it maintains chunks of language in memory, and it inhibits irrelevant stimuli and automatic response patterns when using the L2, such as words and phrases from the L1 (Kormos, 2013). Therefore, it had been hypothesized that those learners with higher WMC would inhibit their L1 to a greater extent and, thus, fewer words and structures from their L1 would be found in their English productions.

This hypothesis, however, has not been confirmed after the quantitative analysis of the data. As pinpointed in the preceding subsections, only one significant correlation has been found with *language switches*, as well as a possible tendency with *null subjects*. The high level of proficiency of the participants in the present study could have influenced the results, as the effects of memory have been found to be great at early stages of language development rather than at more advanced ones (Masoura &Gathercole, 2005), and the effects might also differ in the different linguistic areas (O'Brien *et al*. 2006; Ortega, 2009). Therefore, further research in this area would be needed in order to confirm whether the *cognitive language learning abilities* factor plays an important role in the appearance of CLI.

6.4. Research Question 2 – Input and CLI

As reported by some SLA researchers such as Odlin (1989), TL input might have a strong effect on the likelihood of transfer. The common assumption is that increased exposure to the TL leads to the decrease of CLI both in formal and

naturalistic settings, which is strongly related to an increase in the learners' proficiency in the TL. Although this idea is frequently held, research studies are scarce and have produced mixed results, as reported in chapter 3. This study is intended to shed light on this issue, which is the focus of the second research question.

In this section the discussion is on the second research question that has guided the present study, which asked whether the *amount* and *type of input* that learners have received throughout the years, measured in relation to the length of language exposure (number of hours of instruction), exposure in a naturalistic setting (through SA programmes) and cumulative hours of contact outside the classroom, might affect both the amount and type of CLI in the learners' English oral productions.

As reported in chapter 4, it had been hypothesized that those learners who have been exposed to the TL the longest would present a lower amount of CLI, as a higher amount of exposure to the TL might bring about a higher proficiency level. Additionally, it was hypothesized that the type of input that the participants have received might also have an effect on CLI; thus, those learners that have had a more naturalistic-type of exposure to the language (apart from the formal instruction received at school) –either through SA programmes or having contact with the TL outside the classroom- are expected to present fewer cases of CLI, as they might have been able to improve their oral skills and automatize their TL knowledge.

6.4.1. Total amount of CLI

The analysis of the results in the previous chapter has shown that *input*, along with level of proficiency, exerts an influence on the occurrence of CLI. Onset age, on the other hand, has not been found to influence CLI, which is in

line with Pfenninger and Singleton's (2016) longitudinal study. This study revealed that whereas age of onset might have an influence on CLI at the beginning of secondary school, at the end of this school period no effect for age is found. As a consequence, the authors conclude that in the long run the age factor does not have an effect on the amount of CLI.

The *input* index that has had a major effect on the appearance of CLI is 'time spent abroad'. In the present study, the impact of SA has been explored through hours spent in an English-speaking country. The results of the statistical analysis of the data revealed that there were significant correlations between hours abroad and proficiency and the occurrence of CLI. More specifically, it seems that naturalistic exposure through SA programmes has an effect on the total amount of CLI, which includes cases of both lexical and grammatical CLI. Participants that had spent some time abroad, which might result in a higher level of proficiency in the TL, presented fewer cases of CLI. When correlations were run individually for both types, it was found that time abroad influenced lexical CLI, but not grammatical CLI, which only significantly correlated with the learners' level of proficiency. This finding on the role of time abroad in the decrease in the number of CLI occurrences is in line with Andria and Serrano's (2013) and Andria's study (2014), in which the effect of the SA context was more salient in pattern recognition than in pattern production. However, the authors conclude that more research would be needed, as other factors, apart from total time abroad, might be reliable predictors of pattern restructuring, such as the concentration of the stays, the type and amount of contact with the L2 while abroad, or whether the learners also receive formal instruction in the host country. It seems, thus, that more detailed information of actual contact with the language is needed. Calvo's (2005) study with L1 English learners of Spanish also confirms the importance of language exposure in a naturalistic setting for the decrease in occurrences of negative transfer. She pinpointed that the learner in

her study that had studied the language for a longer time as well as in a naturalistic environment presented fewer cases of negative CLI.

The importance of *input* and its role in the L2 acquisition process has been extensively discussed, and as Ellis and Collins (2009) assert, L2 acquisition mainly depends on the learners' experience with the TL. SA experiences give language learners the opportunity to increase their amount of exposure to the TL, as well as to experience different types of language discourses. That is, learners in a naturalistic environment are more prone to receive both a higher *amount of input* and a more varied and interactive type of input in comparison to the limited language contact that has traditionally characterized instructional settings (Lightbown, 2000). In this respect, the *input* that learners receive while abroad is richer. Thus, the increase of both quantity and quality of the *input* leads to language improvement, especially, but not solely, in the area of oral production –as it is the area considered to improve the most (i.e. Freed, 1995, 1998; Lafford, 2004; Dufon & Churchill, 2006; DeKeyser, 2007; Sasaki, 2007; Llanes & Muñoz, 2009, 2013; Serrano, Llanes & Tragant, 2011; Pérez-Vidal, 2014).

This access to rich *input*, as well as plenty of opportunities to practise the learnt items, enables learners to automatize and proceduralize new knowledge. Moreover, with a greater *amount of input*, the frequency of the items to be learnt increases, which is a key determinant in the language acquisition process, according to N. Ellis (2002) and the proponents of the *Competition Model* (MacWhinnney, 2001). This way, links in LTM are established and access to this new knowledge becomes easier when learners need it (Bialystok & Sharwood Smith, 1985). As a consequence, learners do not need to rely on their previously learnt languages as frequently, since gaps in their knowledge have been filled.

Apart from an increase in the *amount of input* while abroad, learners are also exposed to different types of input. It is for them a good opportunity to interact with native speakers of the language, which guarantees a high-quality type of input. The need for native-like input has been acknowledged by some

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researchers (e.g. Piske, MacKay & Flege, 2001) as a key determinant in learning a foreign language. This interaction with native speakers while abroad provides learners with input that contains the items that they still need to learn, apart from giving them plenty of opportunities to produce *output* and to receive feedback (Long, 1996). According to interactionist theories, these are key elements in SLA, which are, with no doubt, more present in naturalistic environments than in formal contexts. These results are also in line with views held within the *Sociocultural Theory* (Lantolf & Appel, 1994; Lantolf & Pavlenko, 1995; Lantolf, 2000a, 2000b), which considers acquisition as a social practice that occurs within interaction, since learners are helped through scaffolding to produce linguistic forms that they would be unable to produce on their own. Therefore, it is reasonable to assume that those learners with SA experiences might have acquired a higher level of proficiency in English, which directly affects the presence of L1 influence in the TL (see section 6.2 for a discussion of the role of proficiency). It should also be noted that the variable of proficiency has also been found to influence the presence of CLI in the present study. Thus, it seems that there might exist a direct relation between *input* and *proficiency*, which is clearly captured in Jarvis and Pavlenko's (2008) classification of the different factors that constrain CLI; that is, both *level of proficiency* and *input* are included under the heading 'factors related to language experience and knowledge'.

6.4.2. Lexical CLI

The fact that time abroad decreases the amount of CLI has been found to be especially true for lexical knowledge, which can be explained by the fact that learners that take part in SA programs might improve their lexical knowledge to a greater extent through intensive exposure, which allows them not to rely on the strategy of resorting to their L1 when gaps in their knowledge arise. However,

SA learners do not seem to improve their grammatical knowledge as much while abroad. While naturalistic contexts might improve learners' fluency and pragmatic ability, educational contexts may lead to a greater grammatical improvement (Bardovi-Harlig & Dörney, 1998; Collentine & Freed, 2004). Grammatical CLI (*null subjects*, *word order* and *use of articles*) appeared to be influenced by the participants' level of proficiency.

Additionally, those learners with SA experiences might have also experienced the need to get their messages across on occasions when they did not have the lexical means to express them, which is the main idea of the *Ignorance Hypothesis (*Newmark, 1966; Newmark & Reibel, 1968; Dulay & Burt, 1974; Krashen, 1981, 1983). According to Gabrys- Barker (2006), not having acquired a TL lexical item, which might be due to insufficient access to *input*, or inability to access it at the moment of performance, which is particularly true in oral production, might make learners transfer from previously acquired languages. SA learning, therefore, might encourage learners to use an alternative term with a similar meaning because of the speaker's ignorance of a certain form or structure (Corder, 1983), reflecting a desire to communicate. These learners might have developed other communication strategies, apart from L1 use. DeKeyser (1991a, 1991b), for example, found that learners with SA experiences were more likely than classroom learners to use strategies such as *circumlocution* and *restructuring*. This might also explain why the oral productions of those learners with more time spent abroad present a less amount of CLI. However, we should remember that CLI is not always a communication strategy, it might also be a learning strategy by which learners formulate hypotheses (Kellerman, 1983, 1995; Odlin, 1989, 2003).

6.4.3. Lexemic vs. lemmatic CLI

As regards the analysis of the different types of lexical CLI, the statistical analysis also revealed enlightening results. Whereas time spent in an English-speaking country had an influence on the appearance of *lemmatic* CLI, the extent to which learners produced *lexemic* CLI seemed to be influenced by the amount of formal instruction received throughout the years. Proficiency seems to play a role in both cases. These results can be explained by the fact that immersion settings provide more contact with the language and are, thus, thought to provide a better environment for language learning, especially when it comes to the more subtle aspects of the language, as Bolibaugh and Foster's (2013) study of native-like idiomaticity concludes. Thus, time spent in an English-speaking country might reduce the amount of *lemmatic* CLI.

As pointed out above, formal instruction had an effect on *lexemic* CLI. To be precise, those learners that had received more hours of formal instruction were the ones that presented less amount of *lexemic* CLI. This result is in line with Sjöholm's (1995) study on verb choices by Finnish and Swedish speaking learners of English, which measured *amount of input* taking as a point of reference the number of years of instruction that learners had received. This result is also in line with Dewaele's (2001) analysis of a corpus of 25 adult learners of French with L1 Dutch and English as their L2 or L3, which showed that increased TL exposure and use, measured through amount and length of formal instruction in French, led to less language switching.

As acknowledged by Odlin (1989), formal education may constrain transfer, since classroom learners are more concerned with following the standard language. Thus, when using the TL they might consciously try to avoid resorting to their L1. While this might be possible for *lexemic* CLI, it might become more complicated for *lemmatic* CLI, as it involves more subtle language phenomena.

6.4.4. Language switches, false cognates and word order

Significant correlations were also found between some *input* indexes and the subtypes of both lexical and grammatical CLI. More specifically, time spent abroad seems to influence the extent to which learners produce *language switches* and *word order* CLI. *Language switches* and *word order* CLI seemed to decrease as the amount of time spent abroad increased. Hammarberg's (1998, 2001) longitudinal analysis of an L1 English speaker with L2 German and L3 Swedish in a naturalistic environment points to the same direction, as he reported a decrease in the participant's switches from Swedish into German as her LoR in Sweden increased. The effect of the L1 in the production of these types, moreover, appeared to be influenced by the general level of proficiency. This variable also seems to influence the number of *false cognates* in the learners' oral productions, although their appearance were scarce in the data. It was noted that *false cognates* comprised a small number of *lexemic* CLI: 13 tokens were identified, which represents the 14.4% of the total number of *lexemic* CLI. The low rate of appearance might be due to the high awareness that the learners might have of *false cognates*, as they are very frequently targeted in the EFL classroom. Interestingly though, different learners produced the same *false cognates*. So their use is not individual, but learners with the same L1 might be vulnerable to produce the same non-target forms.

Transfer of *word order* was identified on 76 occasions in the productions of 48 learners. Thus, a low rate was traced out, as each individual learner transfers it very few times. This shows optionality between forms (i.e. forms that appear in free variation), which persists at advanced levels of proficiency (Papp, 2000; Sorace, 2009). The results are in line with Camacho's (1999) study on the L2 Spanish acquisition by Quechua speakers, in which transfer of *word order* was still present after three years of immersion in the L2 environment, which led the author to conclude that resetting of the parameter was a lengthy process.

However, it could also be argued that if learners do not present many tokens of this type of CLI is due to their high metalinguistic awareness.

The qualitative analysis revealed that *word order* transfer affects both basic word order patterns and word order in constituents within clauses. It has been argued that although Catalan and Spanish share the same word pattern with English (SVO), they differ in terms of rigidity. Therefore, learners transfer patterns that are possible in their L1, but that are non-target like in English, as for example VS structures or *It-insertion* structures, as well as the position of adjectives and adverbs within the clause, as pointed out by Odlin (1989). Rigidity has appeared to be a transferable property in the present study, confirming in this way previous studies such as Granfors and Palmerg (1976). On the other hand, Lozano and Mendikoetxea (2009, 2010), despite detecting problems with *word order* in English by Spanish speakers, especially with *It-insertion* structures, argued that this behaviour is due to general and developmental principles and not to language transfer, in line with Zobl (1989). As previously acknowledged, and in line with the results of the other types of CLI, the source language of transfer of *word order* is the learners' L1, in line with Sanz *et al.*'s (2015) study with L1 English speakers with L2 Spanish and L2 Japanese backgrounds, in which a prevalent role of the L1 was pointed out.

6.4.5. Use of articles

Transfer of *word order* was more frequent than the other types of grammatical CLI analysed, such as transfer of *use of articles*, which was identified on 47 occasions. As proposed by Chierchia (1998), the learners' L1 Catalan/Spanish and their L2 English are different types of languages as regards *use of articles*. The differences between these two kinds of languages might make non-native speakers use articles inappropriately, as they might assume that the

L2 article system works in the same way as in their L1. A low rate of occurrence of this kind of grammatical CLI was expected due to the high proficiency level of the participants. However, the fact that 47 tokens have been singled out shows that L2 learners of English have persistent difficulty in the use of articles even at advanced stages. This is in line with Ko *et al.* (20098) and Snape *et al.* (2013), which pointed to the difficulty of reaching native-like performance, and concluded that there is no L2 input of formal instruction that can help learners of English to achieve full competence in the use of the English article system. The low rate of occurrence could also be due to the fact that the Spanish/Catalan and English article systems, although they present some differences, are quite alike. Therefore, learners can positively transfer their L1 knowledge to the L2 and a fast start is expected (Jarvis, 2002). Despite the advantages that the similarities between the two systems might entail, complete mastery is difficult. It has even been suggested that changing the interpretation of an existing category is more difficult than acquiring a completely new one (Ionin & Montrul, 2010). It is, thus, understandable that the participants in the present study still have problems with the English article system.

Some learners overgeneralised the use of the definite article "the" to generic contexts in which English prefers zero articles. This is in line with Snap *et al.*'s (2013) study, in which cases of incorrect selection of definite articles instead of bare plurals were identified. Learners' performance, though, was dependant on their proficiency level. The failure of using the zero article in English even at high levels of proficiency was also acknowledged in Torrado's (2011) study with learners that had been studying English for an average of five years. To a lesser extent, some participants also transferred the use of the definite article with proper names, and also used it instead of the possessive. The statistical analysis of this type of grammatical CLI did not, though, reach significance. That is, no correlation between the learners' *cognitive abilities* and their access to L2 *input* and their *use of articles* was found.

6.4.6. Semantic extensions

Another kind of naturalistic acquisition –i.e. exposure to and contact with the language outside the classroom through television, reading and writing for pleasure, and contact with English native speakers- seemed to influence the amount of *semantic extensions* in the data. Those learners with higher cumulative contact with the TL presented fewer cases of this type of *lemmatic* CLI. *Semantic extensions* were very prolific in the data -244 tokens were traced back, which represents the 50.8% of cases of *lemmatic* CLI. This high number of semantic extensions in the data can be explained by the nature of the task the learners had to carry out, and the concepts that they had to name. Once again, the fact that different learners transfer the same L1 elements shows how CLI is very similar within learners that share the same L1 (see section 4.4.3).

6.4.7. Subcategorization CLI

On the other hand, the amount of formal instruction and proficiency had an effect on the occurrence of *subcategorization* CLI (choice of the wrong complement), which appeared quite frequently in the learners' narratives -82 occurrences were singled out (17.1%). The analysis revealed that learners very frequently used a prepositional phrase instead of a noun phrase, or to a lesser extent, a noun phrase instead of a prepositional phrase. Interestingly, most of the cases found involve the same verbs: "tell", "explain", "call", "phone", "enter", "meet", "pay", "look", and "ask". CLI is, thus, not an individual phenomenon.

Those learners with a higher number of hours in classroom settings presented fewer cases of this type of *subcategorization* CLI. This result is in line with Jessner's (2006) view of the role of metalinguistic awareness in SLA. Learners in formal settings are more metalinguistically aware of the differences

between their native and TL (Jessner, 2006), which might make them follow the norms of the latter and to resort to one's L1 on fewer occasions. In the same line, Jarvis and Pavlenko (2008) have suggested that in classroom contexts learners may be able to avoid some types of negative transfer that lead to non-target forms, such as syntactic ones, as these learners are used to making comparisons between the languages and making use of their explicit memory. The reasons why learners' productions present this type of transfer might be due to the fact that they have not acquired the sufficient number of rules, or that there are no rules that account for the totality of language processes (Gabrys-Barker, 2006).

Formal instruction might also make learners pay attention to those aspects of the *input* that are difficult to notice by learners on their own. *Noticing* –i.e. registering formal features in the input- and *noticing the gap* –i.e. being aware of the differences between the *input* and the *output* of the learners- have been considered important elements in SLA (Schmidt, 1990, 1993, 1994, 2001). In classrooms contexts, teachers help learners to notice those items that need to be acquired and to make them aware of the differences between the TL and their L1. *Input enhancement* (Sharwood Smith, 1991, 1993) in instructional settings helps learners to be aware of certain properties of the language; that is, it facilitates awareness of forms and meanings of the TL. Additionally, instructional intervention aims at focusing the learners' attention on specific structures of the TL, which might play a key role in the conversion of *input* into *intake*, and finally into *output*. The provision of feedback on the part of the teacher might also intervene in this process of *noticing* and *noticing the gap*. It is well-known that feedback on non-target like structures is more abundant in formal settings than in naturalistic ones, where learners are normally only corrected when there is a communication breakdown: the focus is on meaning and not on form.

As suggested by Ringbom (1987) and Jarvis and Pavlenko (2008), among others, knowledge of lexical items also entails knowledge of the syntactic constraints of words. Learners might assume that certain aspects in the language

they are trying to learn work in the same way as in the L1 (Ringbom, 1987), which might be the case of the selection of the appropriate type of complement. Thus, in order to prevent them from transferring these elements, these differences need to be pointed out, which very frequently occurs in explicit learning. In the same line, Robinson (1995) has suggested that although *noticing* is necessary for learning, it needs to be viewed as attention plus rehearsal. Once again, formal instruction allows learners to rehearse in a systematic way those new elements that have been noticed. Moreover, as highlighted by N. Ellis (2002), there are some elements that require a high attention in order for them to be learnt; the selection of the appropriate complement –i.e. a noun phrase instead of a prepositional phrase, or vice versa- might be one of those. Thus, those learners that have received a higher amount of formal instruction have had more opportunities for noticing and rehearsal. Being aware that the TL works in a different way makes them transfer L1 items to a lesser extent.

The other type of *subcategorization* CLI that involves choice of the wrong word within the complement (the wrong choice of preposition), which was identified on 52 occasions, appeared to be influenced by the learners' level of proficiency. Most cases of this type of CLI involved the preposition "in". As previously discussed, this is due to the fact that the meaning of the Spanish preposition "en" overlaps with the meanings of "in" and "on". Thus, L1 Spanish speakers tend to associate "in" with "en" to represent the meaning of both "in" and "on". As proficiency in English increases, learners become aware of the target structures, and stop formulating hypotheses based on the knowledge that they have of their L1.

6.5. Research Question 3: Cognitive language learning abilities, input and CLI

A large number of studies on CLI focus on more than one variable (e.g. Ringbom, 1987, 2001; Cenoz, 1997, 2001; Hammarberg, 1998; Jarvis, 2000; De Angelis and Selinker, 2001; Williams & Hammarberg, 2001; Odlin & Jarvis, 2004). This fact indicates the need to investigate different factors altogether, as varied factors might be influencing language transfer at the same time (Ecke, 2015). Herdina and Jessner (2000, 2002) further argue that the influence of the different factors can only be partially anticipated, as they differ among individuals and they interact with one another. Therefore, the third research question focused on the interaction between the two factors under investigation in the present study –i.e. *cognitive language learning abilities* and *input*. It had been hypothesized that those learners that have high *cognitive abilities* and that have been exposed to English throughout their language learning history to a greater extent would rely on their Catalan and Spanish on fewer occasions when producing in English. On the other hand, those participants with lower *cognitive abilities* and lower *input* would present more cases of CLI. Additionally, those learners with a different combination of features –i.e. learners with high *cognitive abilities* and low *input* and those with low *cognitive abilities* and high *input*- would fall in between as regards amount of CLI. The results reported in the previous chapter have shed some light in the question of inquire, although the findings are not conclusive, as will be reported in what follows.

Following previous studies (Tokowicz *et al.* 2004), the *cognitive* and *input* indexes chosen were WM and SA. The statistical analysis revealed that those learners with higher WMC and with longer stays in an English-speaking country produced more target-like tokens and, therefore, fewer instances of CLI than those with low WMC and fewer hours abroad, at least when considering the total

number of transferred items (both lexical and grammatical CLI). Thus, it seems that it is the combination of both factors that makes learners rely more or less on their L1. This result is in line with Tokowicz *et al.* (2004), who examined the effects of WMC and SA experience on the types of errors that learners make when translating from the L1 (English or Spanish) to the L2 (English or Spanish). As reported in chapter 3, they found out that those learners with more SA and higher WMC behaved differently from the other groups, as they were the ones that made as many *meaning* as *non-response errors*, since they were used to being in situations where they needed to communicate. This finding led the authors to conclude that only those learners with high WMC and with SA experience can use approximate translations to communicate, as, according to Kormos (2006), this strategy requires the learner to maintain multiple items in memory simultaneously. In the same line, those learners with high WMC and with SA experience might be better able at maintaining different pieces of information in memory at the same time while producing in the TL while abroad, which increases the chances for this information to become integrated in the learners' LTM. It should be reminded, however, that WM, at least with the test used in the present study, did not seem to predict CLI occurrence, as discussed in section 6.3. Therefore, it might be the variable SA that might be exerting more influence on the results, as this was a factor that appeared to predict CLI to a great extent, as seen in section 6.4.

Interestingly, no other statistically significant differences were found among the other groups. For example, no significant difference was found between those learners with low WM and high input and those with high WM and low input, which could indicate that just having one of the two characteristics is not enough in order to reduce the number of transferred items. However, it is important to take into account that group 2 (learners with low WM and high input) is composed of only 10 learners, which is not a representative number and, therefore, this fact could have had an impact on the results. SA has

appeared to have a great effect on CLI occurrence; therefore, it is reasonable to assume that those learners with SA experiences and low WM would transfer fewer items from their L1 than those learners with less experience abroad. However, due to the characteristics of the participants in the present study, this has not been confirmed. Furthermore, the fact that no statistically significant differences were found between those with high WM and low input and those with low WM and low input indicates that WM does not play an important role when it comes to CLI.

Apart from considering the total number of transferred items in the learners' oral narratives, the analysis of the different types of CLI also yielded some interesting findings. As seen in the previous chapter, significant differences were obtained for lexical CLI, *lemmatic* CLI and *semantic extensions* between the groups of learners with high WMC and with experience abroad, those with high WMC and no SA stays, and those with low WMC and low input. The results for the three above-mentioned types have been very similar. Once again, and as expected, there is a clear difference in performance between those learners with high WMC and with SA experience, which shows that they are the ones that are better at *input* processing and at integrating it in their LTM (see Kormos, 2006, 2013). This has appeared to be especially true for lexical CLI, and not for grammatical CLI, and for specific types of lexical CLI. This shows that when trying to get messages across, which increases when living in the TL country, learners need to hold numerous lexical items in memory that will eventually enter their LTM as they are able to process linguistic information more quickly (Just & Carpenter, 1992). If this happens, they are less likely to resort to their previously acquired lexicon when communicating in the TL.

As reported above when discussing the results for the total amount of CLI, the fact that no differences have been found between those learners with high WMC and no experience abroad and those with low WMC and no SA as regards

lexical CLI shows that *input* might be a better predictor than WM when trying to explain CLI occurrence.

Finally, a possible tendency was pinpointed for the appearance of *semantic extensions* in the data, although it did not reach significance in the statistical analysis. Those learners with high WM and low input produced fewer instances of *semantic extensions* than those with low WM and high input, which would mean that WM is a better predictor of this type of lexical CLI than time spent abroad. However, we need to be cautious with this assertion due to the lack of significance and due to the low number of participants (10) in one of the groups.

6.6. Summary

The present chapter has been devoted to the discussion of the results. The discussion of the data on CLI has revealed that although CLI is more frequent at low stages of proficiency, it can also occur at more advanced stages. It has been suggested that multilingual learners possess specific features, the presence of other languages being one of the distinctive characteristics. This difference will always be present irrespective of the learners' proficiency level. It has also been pinpointed that the variability found among the participants points to the need to identify the possible factors that might have an effect on the appearance of language transfer in some cases but not in others.

It has been noted that the fact that learners produced more instances of lexis-related than grammar-related CLI could be due to the fact that the participants in this study have been instructed with grammar-centred methodologies and, therefore, they are familiar with the English grammatical rules, while still being prone to make mistakes when facing the task of communicating in the TL. On the other hand, learners might always have gaps in their lexical knowledge. In this situation, they might resort to their previously

learnt languages so as to solve the communication problem. Moreover, it has been pointed out that the difference in the occurrence of *lexemic* and *lemmatic* CLI can be explained by the fact that the latter is a more complex type that extends, in most cases, to the word unit. It seems, thus, that as the learners' level of proficiency develops, there is a change from organization by form to organization by meaning. The discussion has also focused on the reasons why the influence of the learners' L1s has overridden the influence of other previously acquired foreign languages, which could be related to the low proficiency, the lack of automatization and the low frequency of use in those languages.

The discussion of the effects of *cognitive abilities* on CLI has pointed out that *cognitive language learning abilities* do not seem to predict CLI occurrence as a whole, at least with the participants and tasks used in the present study. It has been suggested that the proficiency of our learners could have been one of the reasons why such a relation has not been found. However, the analysis showed a significant correlation between lexical access and the appearance of *language switches*. Thus, those learners that were faster in accessing the items in their lexicons were the ones that transferred from their L1 on more occasions. It has been suggested that while both the L1 and the L2 are activated simultaneously in the production and comprehension of words, the L1 words have a higher level of activation. If a language is highly activated, it can be more easily selected during production and, thus, be the source language in CLI, which was indeed the case for language switches. Additionally, a possible relation between attention span, WM and inductive language learning ability has been pinpointed, although the analysis did not reach significance.

The effects of *input* on CLI were the next point to be explored. It has been seen that the *input* index that has had a major effect on CLI in the present study is 'time spent abroad'. SA experiences give learners the opportunity to increase their amount of exposure to the TL, as well as to experience different types of language discourses. This access to rich input, as well as providing plenty of

opportunities to practise the TL, enables learners to automatize and proceduralize new knowledge. It has also been highlighted that those learners that take part in SA programs improve their lexical knowledge to a greater extent, which allows them not to resort to their L1 when gaps in their knowledge arise. On the other hand, SA learners do not seem to improve their grammatical knowledge as much while abroad. Time spent in an English-speaking country was also found to have an influence on the appearance of *lemmatic* CLI. These results have been explained by the fact that immersion settings provide more contact with the language and are, thus, thought to provide a better environment for language learning, especially when it comes to the more subtle aspects of the language. On the other hand, the extent to which learners produced *lexemic* CLI was found to be influenced by the amount of formal instruction received throughout the years, which can be accounted for by the fact that formal education may constrain transfer, since classroom learners are more concerned with following the standard language.

The dissertation then covered the discussion of the results of the different subtypes of lexical and grammatical CLI. *Language switches*, *false cognates* and *word order* CLI seemed to decrease as the amount of time spent abroad increased. Moreover, while cumulative contact with the TL seemed to influence the amount of *semantic extensions*, amount of formal instruction had an effect on the occurrence of *subcategorization* CLI (choice of the wrong complement), which has been explained by the fact that learners in a classroom context are more metalinguistically aware of the differences between their native and TL. It has also been suggested that formal instruction might make learners pay attention to those aspects of the *input* that are difficult to notice by learners on their own.

Finally, the chapter closed with the discussion of the interaction of *cognitive language learning abilities* and *input*. It has become clear that that those learners with higher WMC and with longer stays in an English-speaking country are the ones that produce more target-like tokens and, therefore, fewer instances of CLI

than those with low WMC and fewer hours abroad, at least when considering the total number of transferred items. It has been noted that it might be the combination of both factors that make learners rely to a greater or lesser extent on their L1. It has been suggested, however, that it might be the variable SA that might be exerting more influence on the results, as this was a factor that appeared to predict CLI to a great extent. No other significant differences were found among the other groups, which could indicate that just having one of the two characteristics might not be enough to reduce the number of transferred items.

The analysis of the different types of CLI also yielded some interesting findings, as significant differences were obtained for lexical CLI, *lemmatic* CLI and *semantic extensions* between the groups of learners with high WMC and with experience abroad, those with high WMC and no SA, and those with low WMC and low input. A clear difference in performance between those learners with high WMC and with SA experience was found, which shows that they are the ones that are better at *input* processing and at integrating it in their LTM. This appeared to be especially true for lexical CLI, and for specific types of lexical CLI. This shows that when trying to get messages across, which increases when living in the TL country, learners need to hold numerous lexical items in memory that eventually will enter their LTM as they are able to process linguistic information more quickly.

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CHAPTER 7

CONCLUSIONS, LIMITATIONS AND FURTHER

RESEARCH

7.1. Conclusions

The present doctoral dissertation has tried to contribute to the discussion of the factors that might promote or prevent CLI. That is, this study investigated the effects of *cognitive language learning abilities* and *input* –two factors that have been found to be fundamental in the acquisition of a second language- in the appearance of lexical and grammatical CLI by analysing the oral production of 107 Catalan/Spanish multilingual students of EFL at two different universities in Barcelona. Additionally, the control variables *level of proficiency* and *age of onset* were taken into account in the analysis so as to control for their possible effects.

The first research question addressed the influence of different *cognitive abilities* on language transfer. More specifically, it dealt with the effects of the learners' WMC, their lexical access, their language aptitude as measured by Llama F (Meara, 2005b) -which tests learners' inductive language learning ability-, as well as their attention span, on the occurrence of different types of lexical and grammatical CLI. This dissertation, thus, was aimed at complementing previous studies on CLI and *cognitive abilities*, which have mainly focused on learners' phonetic mimicry abilities (Major, 1992, 1993) and PSTM (Cerviño & Ortega, 2014; Ortega & Cerviño, 2015).

The second research question inquired into how *amount* and *type of input* may affect the appearance of CLI in multilingual learners. This variable

considered different measures that have been previously used in studies on *input*. The input indices used were the learners' length of language exposure, measured in relation to number of hours of formal instruction, exposure to the language in naturalistic settings through SA programmes, and cumulative hours of contact outside the classroom. Finally, the third research question focused on the possible interaction of *cognitive language learning abilities* effects and *input* effects. In other words, it attempted to determine whether learners with different characteristics as regards their *cognitive abilities* and the *input* received present a different number and different types of CLI in their English oral productions.

The qualitative description of the data on CLI has provided intriguing insights. 788 instances of CLI out of 48,748 tokens were identified in the data (1.6%), which reveals that CLI can indeed occur at advanced stages, even if at low percentages. However, the variability found among the participants points to the need to identify the possible factors that might have an effect on the appearance of language transfer in some cases but not in others. Interestingly, learners produced more instances of lexis-related than grammar-related CLI, which could be due to the grammar-centred methodologies that the participants have followed throughout their language learning history. They are familiar with the English grammatical rules, but they might sometimes make mistakes when facing the task of communicating in the TL. As for the learners' vocabulary, they might always have gaps in their lexical knowledge, which might lead to them resorting to their previously learnt languages so as to solve communication problems.

The analysis also showed that *lemmatic* CLI was much more frequent than *lexemic* CLI in our participants' oral narratives. However, it was noted that the number of occurrences was not equally distributed across the participants. The difference in the occurrence of both types has been explained by the fact that *lemmatic* CLI is a more complex type that extends, in most cases, the word unit.

Thus, as the learners' level of proficiency develops, there is a change from organization by form to organization by meaning.

The present study also yielded some results on source selection in multilingual learners. The results clearly indicated that the participants preferred Catalan and Spanish, the learners' L1, as source of transfer. This is in line with Ringbom (1987), who asserted that the native language vocabulary has a greater influence than the L2 lexicon on the TL. Ringbom (2007) argued that this might be due to the fact that learners have already learnt how their world is reflected through languages and, therefore, they might feel reluctant to modify their conceptual L1-based system. As regards grammatical CLI, it has previously been found to arise more frequently from the L1 than from the L2 in some studies (e.g. Ringbom, 2001, 2005; *Sanz et al.,* 2015); others, however, have emphasized the prevalence of L2 effects over L1 influence, especially those dealing with the importance of *L2 status* (e.g. Sánchez, 2011a, 2011b, 2015). The reasons why the influence of the learners' L1s might have overridden the influence of other previously acquired foreign languages in the present study have been pinpointed; they might be related to the learners' low proficiency, their lack of automatization and the low frequency of use in their other non-native languages.

The results of both quantitative and qualitative analysis showed that the variable co*gnitive language learning abilities* does not predict occurrence of lexical and grammatical CLI as a whole, as no statistically significant differences were found when taking into account the total amount of CLI tokens. This lack of statistical relationship was not expected and, thus, contradicts the few existing studies on the effects of *cognitive abilities* on CLI. The reason for this divergence of results might lie in the fact that the different existing studies have tackled different language areas. That is, whereas Major (1992, 1993), Cerviño and Ortega (2014) and Ortega and Cerviño (2015) focused on pronunciation, the present study has analysed lexical and grammatical CLI. The effects, thus, might differ in the different linguistic areas (O'Brien et al., 2006; Ortega, 2009). It has also been

suggested that the high level of proficiency of the participants in the present study could have influenced the results, especially as regards the effects of memory on CLI, as memory effects have been found to be greater at early stages of language development rather than at more advanced ones (Masoura & Gathercole, 2005).

However, the analysis provided evidence of the effects of lexical access on the number of *language switches*, as the correlation appeared to be significant. More specifically, those learners that were faster in accessing the items in their lexicons were the ones that transferred from their L1 on more occasions. In line with Kroll and de Groot (1997), we have suggested that while both the L1 and the L2 are activated simultaneously in the production and comprehension of words, the L1 words have a higher level of activation. If a language is highly activated, it can be more easily selected during production (Grosjean, 1995, 1997, 2001) and, thus, be the source language in CLI, which was indeed the case for *language switches*. It has also been noted that while the learners' level of proficiency level had an effect on these results, the learners' age of onset did not.

Along with the quantitative analysis, the present study also casts interesting qualitative results on the types of CLI present in the data. Thus, *language switches*, which comprise *borrowings*, *editing terms* and *metacomments*, were quite prolific and were indeed the most frequent type of *lexemic* CLI in the data. Their number of occurrences even surpassed the number of *lexical inventions*, which came as a surprise since, according to studies such as Celaya (2006), *lexical inventions* are more frequent in higher proficiency levels, and *borrowings* tend to decrease considerably as proficiency increases, as they are a sign that learners have internalized the TL rules. However, we have noted that the category of *language switches*, apart from *borrowings*, also comprises *editing terms* and *metacomments* in the present study, which might account for the difference in results.

Moreover, a possible relation between *null subjects* and the cognitive component that involves the Attention Span, Reading Span and the Llama F tests was pointed out. Those learners that scored higher in these tests were the ones who presented fewer cases of omission of subjects, although the analysis did not yield significant results. Proficiency, though, played an important role in this respect. It seems, thus, that those participants with higher attention span, WMC and higher inductive language learning abilities have been able to automatize L2 grammatical structures to a greater extent as they produce L1 *null subjects* on fewer occasions when producing in the TL. This is in line with Doughty (2013), who suggested that those learners that are better able to maintain attention in two different tasks at the same time are the ones better capable of switching between their different languages and, therefore, they are expected to produce fewer cases of CLI. Additionally, people with large WMC process linguistic information more quickly and effectively (Just & Carpenter, 1992). Effectiveness of linguistic processing might lead to a faster integration of this new information into LTM, which, thus, might have a direct effect on the number of transferred items, as L2 items might have been already processed. Finally, we also addressed the role of good inductive language learning ability, which might ease the acquisition of new grammatical rules and, therefore, reliance on L1 structures might not be needed.

The qualitative analysis showed a low rate of subject omission, which gives support to the "parameter setting" perspective that posits that acquiring parameter settings different from those of the L1 is possible. More specifically, the results are in line with the *Full Transfer/Full Access Model* (Schwartz & Sprouse, 1994, 1996), which argues that parameters are initially set at their L1 values, but then reset to the L2 values as learners' contact with the L2 increases. It has been argued that all the participants have attended formal classes for a considerable number of years, which might have made them metalinguistically aware of the differences between their L1 and the TL (Jessner, 2006), as they are

used to making comparisons between the languages, possibly leading to the avoidance of negative transfer (Jarvis & Pavlenko, 2008).

However, we assumed that the fact that some transfer of *null subjects* took place is clear evidence that certain structural properties associated with the *null subject* parameter are likely to be transferred if the values are set differently in the learners' L1 and L2 (White, 1985, 1986). These results are in line with Phinney (1987), who showed the difficulty of resetting the parameter from Spanish into English, meaning that transfer from the L1 might remain for a long period of time. It was, thus, concluded that this is a long-lasting grammatical feature against which learners have to strive in order to achieve target-like performance. The analysis also demonstrated that *null subjects* were omitted in both main and subordinate clauses, clauses with both present and past time reference, and in both *referential* and *non-referential subjects*, although omission was more frequent in the latter.

Our results concerning the effects on *input* indices on lexical and grammatical CLI confirm previous research on this variable. To begin with, the role of SA had a bearing on the total amount of CLI. The results, therefore, provided certain evidence for the benefits of L2 stays, as has been suggested in previous studies (i.e. Freed, 1995, 1998; Lafford, 2004; Dufon & Churchill, 2006; DeKeyser, 2007; Sasaki, 2007; Llanes & Muñoz, 2009, 2013; Serrano, Llanes & Tragant, 2011; Pérez-Vidal, 2014). SA experiences give learners the opportunity to increase their exposure to the TL and to experience different types of language discourses. This access to richer *input*, as well as plenty of opportunities to practise the TL, enables learners to automatize and proceduralize new knowledge.

The results of the statistical analysis have also shown that SA experiences influence the appearance of lexical CLI to a greater extent, especially the *lemmatic* type. It has been argued that those learners that take part in SA programmes considerably improve their lexical competence, which allows them not to resort

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to their L1 when gaps in their knowledge arise. Immersion settings provide more contact with the TL and, therefore, they are thought to provide a better environment for language learning, especially when it comes to the more subtle aspects of the language. This could explain why those learners that have been abroad produce fewer cases of *lemmatic* CLI. On the other hand, the extent to which learners produced *lexemic* CLI was found to be influenced by another *input index*, namely the amount of formal instruction received. This has been explained by the fact that formal education may constrain transfer, since classroom learners are more concerned with following the standard language. On the other hand, SA learners do not seem to improve their grammatical knowledge as much while abroad.

Interestingly, statistically significant differences were found between those learners with and without SA experiences as regards the occurrence of some of the subtypes of lexical and grammatical CLI. That is, *language switches* and *word order* CLI seemed to decrease as the amount of time abroad increased. It has also been noted that the learners' level of proficiency has exerted some influence on the above-mentioned results. This factor, moreover, has influenced the appearance of grammatical CLI and two of the subtypes of lexical CLI: *false cognates* and *subcategorization* CLI (the type that involves the wrong selection of a specific word within the complement). Most cases of this type of CLI involved the preposition "in", which might be due to the overlap of the Spanish preposition "en" with the meanings of "in" and "on". It has been argued that as proficiency in English increases, learners become aware of the target structures, and stop formulating hypotheses based on the knowledge that they have of their L1.

The qualitative analysis of the cases of transfer of *word order* revealed a low rate of occurrence. That is, learners transferred L2 *word order* on very few ocaasions. The optionality between L1 and L2 forms has been previously found to persist even at advanced levels of proficiency (Papp, 2000; Sorace, 2009) as

resetting of this parameter is considered a lengthy process (Camacho, 1999). The low rate of occurrence, on the other hand, has been explained as caused by the learners' high metalinguistic awareness. The analysis has also shown that *word order* transfer affects both basic word order patterns and word order in constituents within clauses. *Word order* rigidity has appeared to be a transferable property in the present study, confirming in this way previous studies such as Granfors and Palmerg (1976).

Transfer of *word order* was more frequent than the other types of grammatical CLI analysed, such as transfer of *use of articles*. However, the fact that 47 tokens were singled out in the data shows that L2 learners of English have persistent difficulty in the use of articles even at advanced stages, which is in line with Ko *et al.* (2009) and Snape *et al.* (2013), who concluded that there is no L2 input of formal instruction that can help learners of English to achieve full competence in the use of the English article system. It has been hypothesized that the low rate of occurrence could also be due to the similarity between the Catalan/Spanish and English article systems. Therefore, learners could have positively transferred their L1 knowledge to the TL (Jarvis, 2002). In line with Snap *et al.*'s (2013) study, some learners overgeneralised the use of the definite article 'the' to generic contexts in which English prefers zero articles. To a lesser extent, some participants also transferred the use of the definite article with proper names, and also used it instead of the possessive.

Another *input* index that has yielded statistically significant results is the amount of classroom instruction, which besides having influenced *lexemic* CLI, as mentioned above, seems to have had an effect on amount of *subcategorization* CLI (the type that involves choice of the wrong complement). This can be accounted for by the fact that learners in a classroom context might be more metalinguistically aware of the differences between their L1 and the TL (Jessner, 2006), which might make them follow the norms of the latter and resort to one's L1 on fewer occasions. It has also been suggested that formal instruction might

make learners pay attention to those aspects of the input that are difficult to notice by learners on their own. Once again, formal instruction allows learners to rehearse in a systematic way those new elements that have been noticed. The analysis revealed that learners very frequently used a prepositional phrase instead of a noun phrase, or to a lesser extent, a noun phrase instead of a prepositional phrase. Interestingly, most of the cases found involve the same verbs: "tell", "explain", "call", "phone", "enter", "meet", "pay", "look", and "ask". It was thus concluded that CLI is not an individual phenomenon.

Finally, the other input index to reach significance was cumulative hours of contact with English outside the classroom setting –i.e. exposure and contact to the language through television, reading and writing for pleasure, and contact with English native speakers. This variable, however, has only been found to significantly correlate with the number of *semantic extensions* that learners have produced in their oral narratives. *Semantic extensions* were very prolific in the data, which was explained by the nature of the task the learners had to carry out and the concepts that they had to name.

The present study also discussed whether and to what extent learners with different characteristics as regards their *cognitive abilities* and *input* received would present different number and types of CLI occurrences. The quantitative analysis of the data revealed that those learners with higher WMC and with longer stays in an English-speaking country were the ones that produced fewer instances of CLI than those with low WMC and fewer hours abroad, at least when considering the total number of transferred items. The combination of both factors might make learners rely less on their L1 in their English oral productions. We should, however, bear in mind that it might be the variable SA that is exerting more influence on the results, as this was a factor that appeared to predict CLI to a great extent. No other statistically significant differences were found among the other groups, which could indicate that just having one of the

two characteristics might not be enough to reduce the number of transferred items.

The analysis of the different types of CLI also yielded some significant differences between groups for lexical CLI, *lemmatic* CLI and *semantic extensions.* Differences were found between those learners with high WMC and with experience abroad, those with high WMC and no SA stays, and those with low WMC and low input. Learners with high WMC and with SA experience clearly performed in a distinctive way, which shows that they are better at *input* processing and at integrating it in their LTM. This appeared to be especially true for lexical CLI, and for specific types of lexical CLI. This means that when trying to convey messages, which increases when living in the TL country, learners need to hold numerous lexical items in memory that eventually will enter their LTM as they are able to process linguistic information more quickly. It has also been pointed out that the fact that no differences were found between those learners with high WMC and no experience abroad and those with low WMC and no SA shows that *input* might be a better predictor than WM when trying to explain CLI occurrence. Finally, it should be borne in mind that group 2 (learners with low WM and high *input*) was composed of only 10 learners, which is not a representative number and, therefore, this could have had an impact on the results.

The lack of statistically significant results, especially in the relationship between *cognitive language learning abilities* and CLI calls for further research in these areas. The following section, thus, will be dedicated to the limitations of this doctoral dissertation and to some suggestions for future research.

7.2. Limitations and further research

The present dissertation has some limitations that should be acknowledged. First, the lack of information of the actual use while abroad should be considered. The indicator of LoR, which has resulted in being one of the most important predictors in the present study, has been taken as a measure of L2 exposure while abroad. This *input* index has been found to predict the occurrence of CLI, along with the learners' proficiency level. However, this index presents the approximate number of hours that the learners have been exposed to the language. We should take into account that in many cases the *amount of input* while abroad might be limited due to the lack of opportunities of interacting with native speakers (Muñoz & Singleton, 2011), and that it might vary a great deal from one learner to the other. This variation might have an effect on the language acquisition process, as studies such as Dörney *et al.* (2004) and Bardovi-Harlig and Bastos (2011) have demonstrated. Therefore, for further research it would be interesting to analyse the actual contact that learners have with the language while abroad, and how this might affect the occurrence of CLI. In this way, a clear picture of the effects of this variable on CLI would be obtained. Moreover, the current study explored the effects of *input* through self-reported data and, thus, the results are based on the information that learners provided. More precise information about the learners' actual knowledge of the TL before and after the stay would be needed to be able to carry out a more detailed analysis of the impact of SA on CLI.

Another limitation lies in the limited number of participants in one of the sub-groups. This became evident in the analysis of the interaction between *cognitive language learning abilities* and *input,* as the group formed by learners with SA and low WM only included 10 learners. It has been noted that this could have had an impact on the results, as this group of learners were expected to produce fewer instances of CLI than learners with no experience abroad.

Another fruitful aspect for further research would be to include learners with lower proficiency levels. It has been pointed out that the effects of memory have been found to be greater at early rather than at more advanced stages of language development (Masoura & Gathercole, 2005). Therefore, the inclusion of these learners would lead to more conclusive results on the role of WM on the appearance of CLI. It is also important to mention that the effects of memory might also differ in the different linguistic areas (O'Brien *et al.* 2006; Ortega, 2009). Therefore, further research that included the different linguistic areas could reveal important aspects regarding the impact of *cognitive language learning abilities* in the occurrence of CLI. Additionally, the inclusion of written production and its comparison with oral data would shed further light on the issue.

The discussion of the limitations can pave the way for further research, as it is very difficult for one single study to address all the aforementioned aspects. It is hoped, though, that the present dissertation represents an important contribution to the field, as it examines the role of under-researched factors on the appearance of CLI. Thus, future studies should explore more in-depth the variables of *cognitive language learning abilities* and *input*, taking into account the suggestions above.

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APPENDICES

APPENDIX A. INSTRUMENTS

A.1. Oxford Quick Placement Test

The QPT is originally divided into two parts: part 1 (questions 1-40) and part 2 (questions 41-60). Items in part 2 are incrementally more difficult than those in part 1. As indicated in the test, participants in the study had to complete both parts since they are Level 3 or above in the ALTE (Association of Language Testers in Europe) scoring.

Each correct answer in the test receives one point, and this gives a final score out of sixty. According to the score, learners can be divided into six different levels, as indicated in Table 25 below.

ALTE Level	ALTE Level Description	Score out of 60
0	Beginner	0-17
1	Elementary	18-29
2	Lower Intermediate	30-39
3	Upper Intermediate	40-47
4	Advanced	48-54
5	Very Advanced	55-60

Table 25- Oxford Quick Placement Test: Scores and Equivalent Level

A.2. X_Lex and Y_Lex

Both X_Lex and Y_Lex present learners with a series of words. They have to decide if they know or not the meaning of the words by clicking on the smiling or the unhappy face buttons, as seen in Figure 31 below. The words are selected from five different bands. This enables the program to generate a profile that shows the proportion of words the learner knows in each frequency band. The test contains some non-words that resemble real English words in order to check the reliability of the learners' claims.
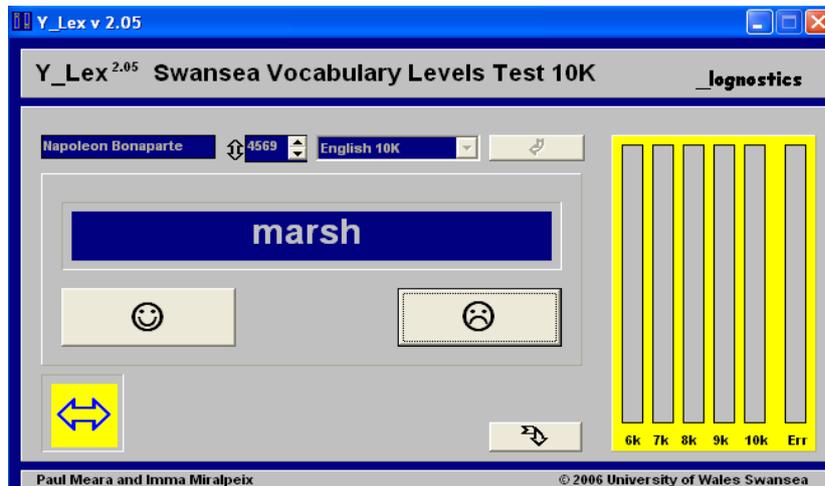

Figure 31- Reproduction of the Y_Lex Test

A.3. Perceptual Identification Test

Figure 32 below shows the instructions given to the participants at the beginning of the test.
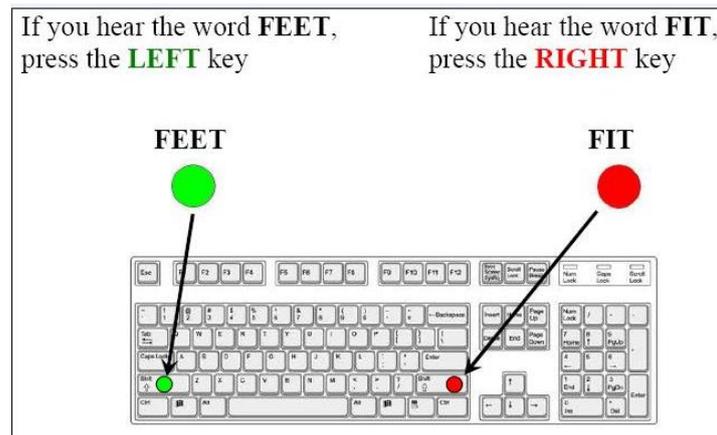
Figure 32- PID Test - Instructions

The test consists of a 10-step vowel duration continuum, in which vowel quality has been manipulated while vowel duration has been kept constant (100 ms) by using Praat software. The five first steps of the continuum correspond to /ɪ/ and the last five to /iː/. The aim is to assess the effect of the manipulation of duration on learners' vowel perception. The test includes 10 repetitions of 10 different synthesized stimuli, which reproduce different realizations of the two original tokens, 'feet' and 'fit', as pronounced by a British English native speaker. This adds up a total of 100 items for identification.

A.4. Working Memory Test: Reading Span Task

A reproduction of the test is presented below. Figure 33 shows how the sentences were presented to the participants and the buttons they had to press in order to assess the plausibility of the sentences. It also shows the recalling period that was signalled by the word "RECUERDA" (*remember*) on the screen.

El paciente que se entrenaba demasiado dolió a la garganta.

YES   NO

RECUERDA
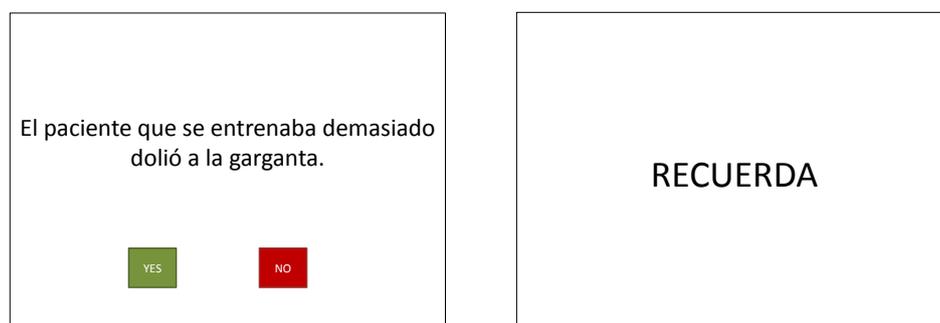
Figure 33- Reproduction of the WM Test

The sentences in the tests include four types of syntactic structures (Waters & Caplan, 1996): 1) cleft subject (CS): El aspirante a profesor fue quien hizo el examen; 2) cleft object (CO): *El abuelo fue lo que la canción de la infancia recordó; 3) object ± subject (OS): *La melodía que vino del bosque cantó a los pájaros; 4) subject ± object (SO): *El libro que el lector compró hojeó las páginas[35]. Recall words were selected on the basis of their frequency (Sebastián, Caso & Rodríguez, 2000), and were characterised by the following features: 1) no proper names were included; 2) they were 3-syllable words; and 3) words did not refer to abstract concepts. In this way, they all had the same characteristics and could be equally recalled.

---

[35] Translation into English: 1) cleft subject (CS): *The professor candidate was the one who did the exam*; 2) cleft object (CO): *The grandfather was what the childhood song remembered*; 3) object ± subject (OS): *The melody that came from the forest sang to the birds*; 4) subject ± object (SO): *The book that the reader bought flicked through the pages*.

A.5. Lexical Access Test

Figure 34 below shows the instructions given to the participants at the beginning of the Lexical Access test.
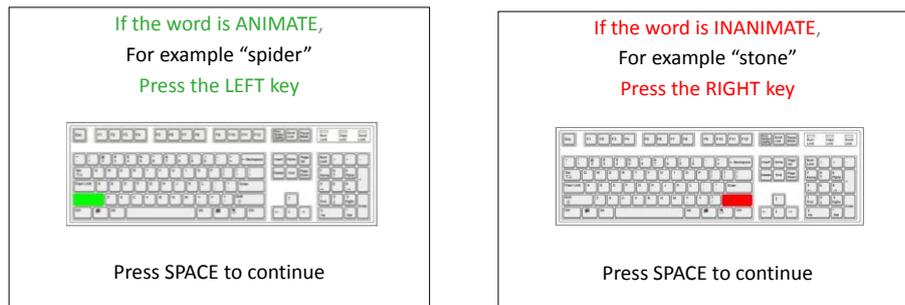

Figure 34- Lexical Access Test - Instructions

A.6. Llama F Test

A reproduction of the test is presented below. Figure 35 shows how the test is presented to the learners, and the way the sentences of the new language and the pictures that represent them are presented (Meara, 2005b).
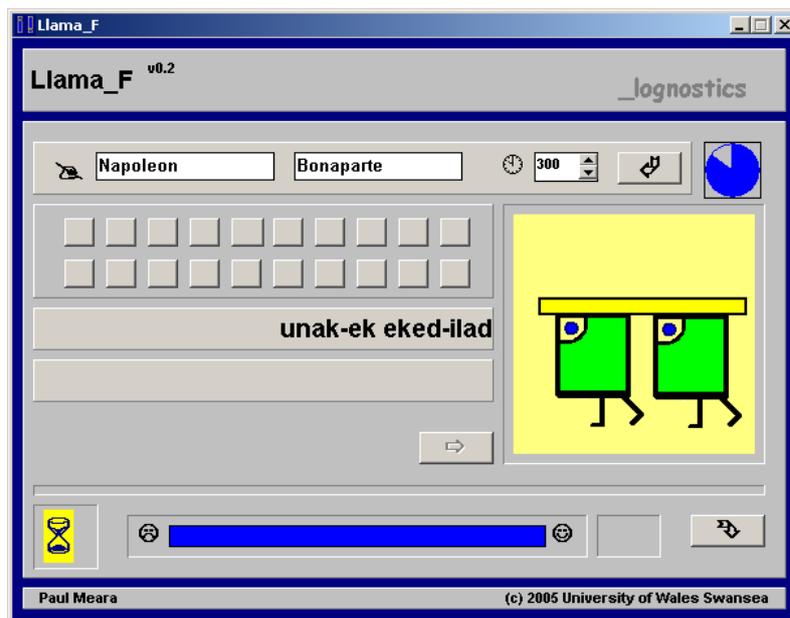
Figure 35- Reproduction of the Llama F Test

The table below shows how the scores of the test should be interpreted (Meara, 2005b).

0-15	a very poor score, probably, due to guessing
20-45	an average score; most people score within this range
50-65	a good score
75-100	an outstandingly good score; few people score within this range

Table 26- Interpretation of the Llama F scores

A.7. Attention Span Test: Trail Making Test

A reproduction of the Trail Making Test can be found below. The first figure (Figure 36) corresponds to Part A of the test (the sample and the actual test), and Figure 37 to Part B.
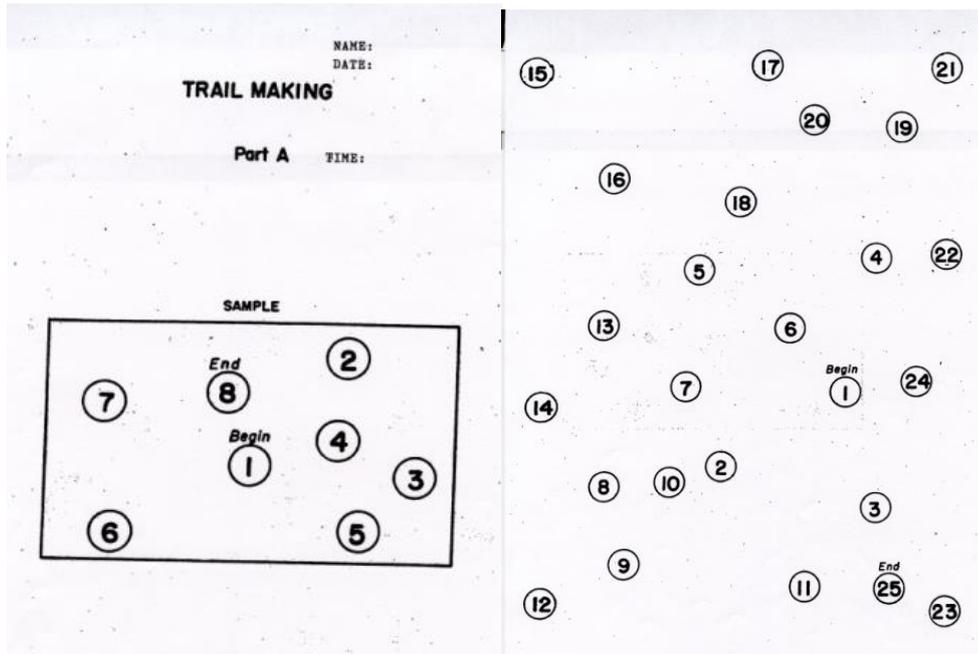
Figure 36- Trail Making Test, Part A
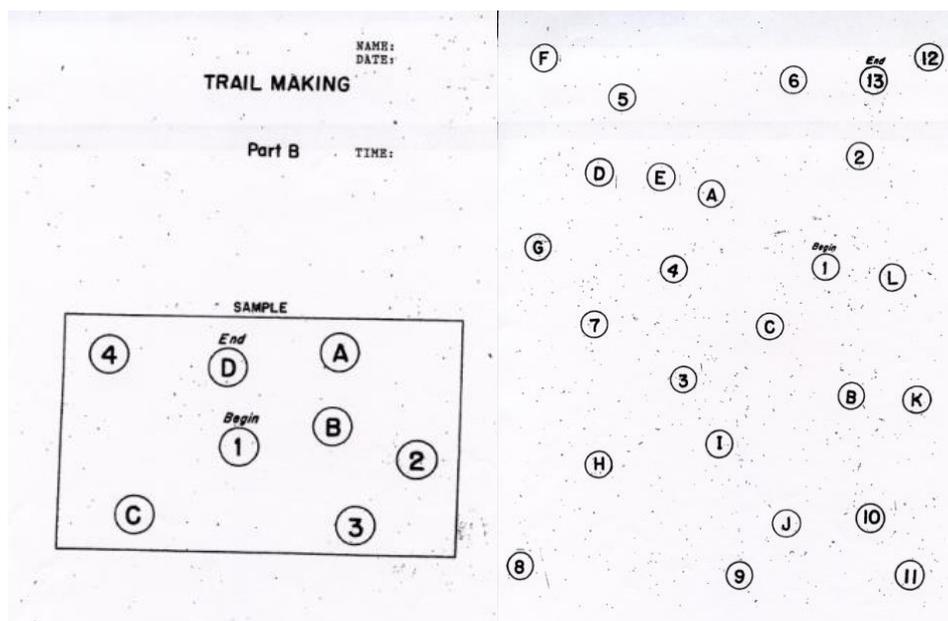
Figure 37- Trail Making Test, Part B

A.8. Background questionnaire

The three questionnaires used in the study are presented in A.8, A.9 and A.10.

GRAL Questionnaire about the learning of English as a Foreign Language

I. INFORMACIÓ SOBRE AQUESTA ENQUESTA

L'objectiu d'aquesta enquesta és recollir informació diversa sobre el que ha estat la teva experiència aprenent llengües, en especial èmfasi en la llengua anglesa. És molt important per nosaltres que contestis totes les preguntes (sobretot, les que tenen l'asterix, que són de resposta obligada), amb la màxima sinceritat, i que en cas de no recordar algunes de les informacions que et demanem, ho consultis amb els pares, si fa falta, o triïs la resposta més aproximada. Les dades que et demanem es tractaran de manera totalment confidencial.

II. DADES PERSONALS

1) Universitat on estàs estudiant

2) Estudis universitaris que estàs cursant

3) Curs d'inici dels estudis a la universitat

4) Cicle que estàs cursant

5) Quantes assignatures semestrals de Filologia Anglesa has fet fins ara?

6) Primer cognom *

7) Segon cognom

8) Nom *

9) NIF (lletra al final sense punts, ni espais ni guions) Exemple: 37281972A *

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10) NIU o NIUB (Número d'identificació universitari. Escriu-lo sense espais ni punts)

11) Edat

12) Data de naixement *

13) Lloc de naixement. Si has nascut fora de Barcelona capital, especifica on en la casella de sota

14) Nacionalitat

15) Sexe

16) Telèfon de contacte *

17) Altres telèfons de contacte

18) Correu electrònic de contacte *

19) Correu electrònic universitari (només si és diferent de l'anterior)

III. DADES SOCIOLINGÜÍSTIQUES

20) Llengua / llengües que parles habitualment amb els pares

21) Llengua / llengües que parles habitualment amb els amics

22) Llengua / llengües que parles habitualment amb els teus germans (si en tens)

23) Llengua / llengües que parles habitualment amb els companys de feina (si treballes)

24) Llengua / llengües que parles habitualment amb els companys de facultat

25) En quina llengua et sents més còmode?

26) Si has estudiat altres idiomes a part de l'anglès, indica quin és el que més anys has estudiat en la casella de sota i quants anys l'has estudiat

27) Estudis de la mare

28) Estudis del pare

IV. ASSIGNATURA D'ANGLÈS A L'ENSENYAMENT REGLAT

29) Quants anys tenies quan vas començar a fer anglès com a assignatura en el teu centre?

30) A primària, quants cops a la setmana tenieu l'assignatura d'anglès?

31) A secundària (o similar), quants cops a la setmana tenieu l'assignatura d'anglès?

32) A batxillerat (o similar) quants cops a la setmana tenieu l'assignatura d'anglès?

33) Quina nota d'anglès vas treure a les PAU (proves d'accés a la universitat)?

34) Si has fet "Llengua Anglesa I" quina nota vas treure?

35) Si has fet "Llengua anglesa II" quina nota vas treure?

V. ANGLÈS EXTRAESCOLAR

36) Si has fet anglès extraescolar, a quina edat vas començar?

37) Si has fet classes d'anglès extraescolar a primària indica quants anys en vas fer

38) Si has fet classes d'anglès extraescolar a primària indica quants cops a la setmana

39) Si has fet classes d'anglès extraescolar a secundària indica quants anys en vas fer

40) Si has fet classes d'anglès extraescolar a secundària indica quants cops a la setmana

41) Si has fet classes d'anglès extraescolar a batxillerat indica quants anys en vas fer

42) Si has fet classes d'anglès extraescolar a batxillerat indica quants cops a la setmana

43) Si has fet classes d'anglès extraescolar a la universitat indica quants anys en vas fer

44) Si has fet classes d'anglès extraescolar a universitat indica quants cops a la setmana

VI. **AICLE-CLIL. ASSIGNATURES CURRICULARS IMPARTIDES EN ANGLÈS** (per exemple ciències en anglès)

45) A Primària, vas fer alguna matèria curricular en anglès? Especifica quines i durant quants cursos en la casella de sota

46) A Secundària, vas fer alguna matèria curricular en anglès? Especifica quines i durant quants cursos en la casella de sota

47) A Batxillerat, vas fer alguna matèria curricular en anglès? Especifica quines i durant quants cursos en la casella de sota.

48) Si NO ets alumne de Filologia Anglesa, has fet alguna assignatura de contingut en anglès a la universitat? Especifica quines i durant quants cursos en la casella de sota

VII. ESTADES A L'ESTRANGER

49) Quina és l'estada més llarga que has fet a un país estranger en la que utilitzessis de manera habitual l'anglès?

50) Quina és la segona estada més llarga que has fet a un país estranger en la que utilitzessis de manera habitual l'anglès?

51) Quina és la tercera estada més llarga que has fet a un país estranger en la que utilitzessis de manera habitual l'anglès?

52) En la teva estada o estades llargues a l'estranger, quin és el percentatge més alt que consideres haver escoltat d'anglès?

53) En la teva estada o estades llargues a l'estranger, quin és el percentatge més alt que consideres haver practicat d'anglès?

VIII. ALTRES EXPERIÈNCIES EN ANGLÈS

54) Amb quina freqüència veus programes de TV i/o pel.lícules en V.O?

55) Amb quina freqüència intercanvies correspondència (e-mails, cartes, xats) en anglès?

56) Amb quina freqüència llegeixes textos llargs en anglès (llibres, revistes, pàgines d'internet)?

57) Altres experiències de pràctica intensa en llengua anglesa? Si us plau especifica-les en l'espai de sota

IX. CARACTERITZACIÓ DE LES CLASSES D'ANGLÈS Com caracteritzaries les classes d'anglès que has rebut? És a dir, les activitats que solíeu fer a classe estaven pensades per estudiar i treballar l'estructura de l'anglès (gramàtica i vocabulari) o per comunicar-vos en anglès interactuant i parlant entre vosaltres?

58) Classes d'anglès a l'educació primària

59) Classes d'anglès a l'educació secundària

60) Classes d'anglès a batxillerat

61) Classes d'anglès extraescolars

62) Classes d'anglès a la universitat

X. VALORACIÓ DE LES EXPERIÈNCIES D'APRENENTATGE D'ANGLÈS PRÈVIES.
Et preguem et decantis per una de les sis opcions i només deixis en blanc la resposta en cas de no haver fet anglès en el context per el que se't demana.

63) La meva valoració de les classes d'anglès a PRIMÀRIA

64) La meva valoració de les classes d'anglès a SECUNDÀRIA

65) La meva valoració de les classes d'anglès a BATXILLERAT

66) La meva valoració de les classes de llengua anglesa a la UNIVERSITAT

67) La meva valoració de les classes EXTRAESCOLARS d'anglès

68) La meva valoració de l'aprenentatge d'anglès en les ESTADES A L'ESTRANGER

69) En conjunt, estàs satisfet del nivell d'anglès que has assolit fins ara?

XI. ATRIBUCIÓ DE FACTORS A L'APRENENTATGE DE L'ANGLÈS. En aquesta secció et demanem quina influència han tingut els següents factors en el teu aprenentatge. Et preguem et decantis per una de les quatre opcions i només deixis en blanc si no tens experiència sobre algun dels factors esmentats.

70) L'edat en què vaig començar aprendre idiomes

71) La meva família

72) Els meus amics i companys

73) El propi esforç i persistència en aprendre idiomes

74) La importància que les notes i resultats tenien per a mi

75) Les activitats d'aprenentatge que he anat fent per pròpia iniciativa

76) El mètode d'ensenyament dels meus professors d'anglès

77) La meva facilitat per aprendre idiomes

78) La meva motivació per aprendre idiomes i/o anglès

79) Les classes d'anglès extraescolars

80) El fet d'haver estudiat assignatures en anglès

81) Les moltes hores de practicar l'anglès pel meu compte

82) En quin moment vas tenir la sensació de que estaves millorant de debò?

XII. INCIDÈNCIES I COMENTARIS

83) Hi ha cap incidència o comentari que vulguis fer sobre l'emplenat de l'enquesta?

XIII. MOLTÍSSIMES GRÀCIES PER LA TEVA COL.LABORACIÓ

A.9. Questionnaire for the English native speakers

I'm Mireia, a doctorate student at University of Barcelona. I'm carrying out a study on the acquisition of foreign languages and I'd like to ask for your collaboration. It is as easy as to answer the following questions. The answers that you give will be kept confidential.

Thanks for your collaboration! Anonymity will be preserved.

Name: _____

E-mail: _____

<u>QUESTIONNAIRE</u>

1) Age:_____

2) Studies: _____

3) Country of origin: _____

4) Where have you lived most of your life? _____

5) What is your L1 (native language)?
   _____

6) Do you know any other language from birth? _____
   Which one? _____

7) What language(s) do you speak at home?
   _____

8) Do you have any knowledge of other languages (L2, L3…) even if it is

elementary?

_____

Can you name them in chronological order of acquisition?

   - L2: _____
   - L3: _____
   - L4: _____

9) What age did you start learning these other languages at?

   - L2: _____
   - L3: _____
   - L4: _____

10) How many years have you studied each of them in a formal school setting?

   - L2: _____
   - L3: _____

- L4: _____

11) Where have you studied them?

____ ☐ Elementary school

☐ High school

☐ University/college

☐ Other (Specify) _____

____ ☐ Elementary school

☐ High school

☐ University/college

☐ Other (Specify) _____

____ ☐ Elementary school

☐ High school

☐ University/college

☐ Other (Specify) _____

12) How often do you communicate in your native language while in Barcelona?

☐ Never

☐ A few times a year

☐ Monthly

☐ Weekly

☐ Daily

13) Is your native language the one you usually use while in Barcelona?

_____

_____

14) Whom do you communicate in your native language while in Barcelona with?

_____

_____

_____

_____

15) What languages do you use at home while in Barcelona?

_____

_____

____

16) How often do you use each of the languages you know while in Barcelona?

- L2: ___ ☐ On a daily basis

☐ Often

☐ At university/work

☐ Never

- L3: __ ☐ On a daily basis

☐ Often

☐ At university/work

☐ Never

- L4: ___ ☐ On a daily basis

☐ Often

☐ At university/work

☐ Never

17) What is your self-perceived proficiency in each of the languages you know?

	L2	L3	L4
Beginner			
Low-intermediate			
High-intermediate			
Advanced			
Native			

18) Have you lived in any of the countries where those languages were used? Specify where, when and for how long.

_____
_____
_____
_____
_____

19) Are you living with Spanish or Catalan-speaking people? (Specify)

_____
_____
_____

20) How often do you travel to your country of origin?

_____
_____
_____

A.10. Questionnaire for the Catalan/Spanish native speakers

Estic desenvolupant un estudi sobre l'adquisició de llengües estrangeres en el departament de Filologia Anglesa de la Universitat de Barcelona, en el qual la teva aportació serà de gran importancia. És tant senzill com contestar el següent qüesionari. Les respostes que ens proporcionis seran tractades confidencialment.

Nom i cognoms: _____

Correu electronic de contacte: _____

QÜESTIONARI

1) Edat: _____

2) Estudis universitaris que estàs cursant:

   _____

3) Lloc de naixement: _____

4) Lloc de residència actual: _____

5) Quina és la teva llengua materna?

   _____

6) Quina llengua o llengües utilitzes amb els teus pares?

   _____

   _____

7) Quina llengua o llengües utilitzes amb els teus amics?

   _____

   _____

8) Quina llengua utilitzes amb més freqüència?

   _____

   _____

9) Amb quina de les següents afirmacions et sents més identificat?

   ☐ Em sento més còmode parlant en català.

   ☐ Em sento més còmode parlant en castellà.

   ☐ Em sento còmode tant en català com en castellà indistintament.

10) Coneixes altres llengües (L2, L3…) apart del català i castellà encara que en tinguis un coneixement bàsic?

   _____

   Anomena-les en ordre cronològic d'aprenentatge.

   L2: _____

   L3: _____

   L4: _____

11) A quina edat vas començar a estudiar cadascuna de les llengües?

L2: _____

L3: _____

L4: _____

12) Quants anys has estudiat cadascuna de les llengües en un context escolar?

        L2: _____

        L3: _____

        L4: _____

13) En quin context les has estudiat?

    ____ ☐ A Primària

        ☐ A Secundària

        ☐ A la Universitat

        ☐ Altres (Especifica) ____

    ____ ☐ A Primària

        ☐ A Secundària

        ☐ A la Universitat

        ☐ Altres (Especifica) ____

    ____ ☐ A Primària

        ☐ A Secundària

        ☐ A la Universitat

        ☐ Altres (Especifica) ____

14) Quina creus que és la teva competència en cadascuna de les llengües que coneixes?

	L2	L3	L4
Beginner			
Low-intermediate			
High-intermediate			
Advanced			
Nadiu			

15) Amb quina freqüència utilitzes actualment la llengua estrangera en què tens un nivell més alt?

    ☐ Mai

    ☐ Algunes vegades a l'any

    ☐ Mensualment

    ☐ Setmanalment

    ☐ Diàriament

16) Amb qui utilitzes aquesta llengua estrangera ?

    ☐ Amics

    ☐ Familiars

    ☐ Professors

    ☐ Companys d'universitat

    ☐ Altres (especifica) _____

17) Has viscut en algun dels països on s'utilitzen aquestes llengües? Especifica el lloc, quan hi vas viure i la durada.

_____

_____

_____

18) Hi ha algun altre comentari que vulguis fer?

_____

_____

_____

Gràcies per la teva col.laboració!

A.11. Interview

We would like to ask you a few questions about your experience learning languages so far. If you get stuck with your English, you may explain it in your mother tongue.

Questions to talk about the present:

1. Do you think that learning English is difficult? Why? / Why not?
2. What are your main problems with English?
3. Are you taking any language course in English right now (outside the university classes)?
4. Do you like it? Why? / Why not?
5. Why are you taking it? Why do you want to improve / learn English?
6. Do you speak any other foreign languages? If yes: tell me more (e.g. level?)
7. Do you like learning languages?
8. Do you think you are good or bad at learning languages? Why? /Why not?
9. How do you compare with other classmates / friends learning languages?
10. Do you feel you are competent enough in your mother tongue? In all areas? (speaking, writing, etc?) From 1 to 10, how would you grade your competence in each of the languages you speak (including your first language/s).
11. When do you think is the best age to start learning a foreign language? Why?

Questions to talk about the past:

12. What can you tell me about your past experience learning languages: Was it good or bad? Why do you think so? When did you start?
13. What were some of the most important factors that influenced your learning of English? (If they don't know what to say give them clues: a motivating teacher, an experience abroad, films/songs, English friends, going to a language school, etc.)
14. And was there any moment in the past that you thought you had *really* improved your level of English? A turning-point? Why did you think so? What happened? (Any particular experience?)

<u>Questions to talk about the future / conditional:</u>

15. If you had a friend that just started learning a foreign language, what would you recommend him/her to do?
16. And what about you? Is there anything in the near future you would like to do to improve your English?
17. Any plans for this course / summer?

That's all. Thank you so much for your time!

A.**12. Oral narrative: Film retelling**

Two screenshots from the film retelling task are shown below. The first one corresponds to the first part of the film, in which Chaplin is shown blaming himself of the theft. The second image corresponds to the second part, in which Chaplin and the girl are seen having lunch in the nice house they imagine.

APPENDIX B. DATA SAMPLES

B.1. Interview

@Begin

@Languages: en, es, ca

@Participants: SUB **9040INFO** Subject, INV Ro Investigator

@ID: en|SUB|18|female|Subject|

@Birthplace of SUB: Catalonia

@L1 of SUB: ca

@Coder: An

*INV: do you think that learning English is difficult?

*SUB: hmm@p well sometimes [/] sometimes it depends on the [/] the like grammar some [/] some parts of grammar are difficult but if you study it and you really want to learn it it's not so difficult.

*INV: uhhuh and what are your main problems with English?

*SUB: hmm@p I don't know maybe my [//] like part <of of> [/] of English is that I [/] I need to [/] to speak more the [/] the speaking.

*INV: and are the other parts better?

*SUB: well grammar sometimes is difficult but writing no because I really like writing in English.

*INV: ok and are you taking any language courses right now?

*SUB: yes hmm@p I'm [/] I'm [//] I think I'm studying hmm@p English I go to English &cla [//] lessons every [/] every Friday <and I'm> [//] and I'll do advanced.

*INV: ok and do you like it?

*SUB: yes.

*INV: why why do you like it?

*SUB: hmm@p I don't know I think that it's [/] it's really good <to have> [/] hmm@p to have this certificate so +/.

*INV: but why are you taking it because you want the certificate or because you want to improve your English?

*SUB: yes because I want to improve my English and [/] and because I'm studying English philology so it's better that &= laugh <I I I> [/] I have to study.

*INV: ok that's great and do you speak any other foreign languages?

*SUB: hmm@p well I learned French for three years and then two years ago I started German.

*INV: alright but when +/.

*SUB: yeah but nowadays I [/] I don't really go to lessons because I [/] I live here in Barcelona now and then maybe hmm@p <if I> [/] if I arrive hmm@p on Thursday then I can go to German lessons but not every week.

*INV: ok and what level do you think you have in those two languages?

*SUB: hmm@p French delf and German beginner.

*INV: beginner.

*SUB: yeah.

*INV: ok and do you like learning languages?

*SUB: yes I studied one year Italian as well but Italian it's [/] it's easy.

*INV: it's easy xx do you think you are good or not so good at learning languages?

*INV: do you think you have an ability for languages?

*SUB: yeah maybe it's because I like a lot so then maybe I [/] I try to do my best so.

*INV: ok and if you compare with your classmates do you think you are a good at language learning?

*INV: or with your friends do you think you have a special +/.

*SUB: it depends of the classmaters@c but I don't know maybe in writing I really like it so so but for example when we do speaking I don't say a lot of things because maybe I'm nervous or I don't know how to say so but it depends .

*INV: ok and do you think you are competent enough in your mother tongue Catalan?

*SUB: hmm@p yes maybe because it's my [/] my patron language so.

*INV: so you think you master all areas?

*SUB: yeah well maybe I don't know I [/] I could improve more of course but +/.

*INV: what areas?

*SUB: hmm@p maybe writing.

*INV: writing ok and from one to ten if you have to give a grade ok how competent are you <in the different> [/] in the different languages for example in Catalan if you have to give yourself a grade from one to ten what grade do you give yourself in Catalan?

*SUB: hmm@p seven or eight.

*INV: ok and in Spanish?

*SUB: hmm@p six five six.

*INV: ok and in English?

*SUB: hmm@p six seven.

*INV: ok and in German?

*SUB: hmm@p German hmm@p three?

*INV: three?

*INV: and in Italian?

*SUB: Italian hmm@p three or two two maybe.

*INV: ok and when do you think is the best age to start learning a language?

*SUB: when you are young yeah because +/.

*INV: why?

*SUB: because hmm@p <you are more> [///] it's easier <for a for a> [/] <for a &chi> [//] for a kid to [/] to bear in mind all the things so maybe when [/] when you are five or six years old.

*INV: when you are five years old?

*SUB: yeah.

*INV: ok good now let's talk a little bit about the past and with your experience learning languages was it a good experience the way you learnt the different languages that you've learned?

*SUB: yeah yeah.

*INV: with English at school?

*SUB: <in &Eng> [/] in English at school and <I I> [/] I've always have gone to [/] to an [/] an academy in the school since I was six years I started.

*INV: wow so you started when you were six and since then you've studied English.

*SUB: yeah every year yeah.

*INV: classes and private schools.

*SUB: yes .

*INV: alright.

*SUB: I took the pet the first and now I [/] I [/] I do the advanced.

*INV: alright and for the other languages too?

*INV: did you have a good experience?

*SUB: oh yes yes.

*INV: I want to know your opinion about the factors that have influenced your learning of English what has influenced your English positively for example your teacher or listening to songs or English friends or what factors have really contributed to your learning of English?

*SUB: hmm@p I don't know maybe because my family my mother is the one who runs this English school so I've always been xx of languages so my [/] my family love languages and of course I +/.

*INV: that was an important factor your family.

*SUB: yeah so I always grew up around of different [//] speaking different languages so maybe.

*INV: yeah certainly that was an important factor for you.

*SUB: yeah.

*INV: and in your learning of English was there a moment when you realised wow now I think I know this language and I can communicate and work in this language was there a turning point when you realised there was a big change?

*SUB: yeah maybe when I went to Oxford maybe two years old that I [/] I went there alone <and I> [/] and I [/] I hmm@p realised that I could really speak English <and and> [/] and could communicate with other people so [/] so then because before <I didn't> [//] I haven't gone <to to> [/] to [//] the [//] to [//] abroad to another country so I studied just in the school or in the English academy but I didn't practise really so but I don't know maybe +/.

*INV: so there was a big change.

*SUB: yeah.

*INV: ok and let's imagine that you have a friend who wants to study English and who wants to learn a foreign language just any foreign language what kind of things would you reccommend him or her to do so that they improve and learn the language?

*SUB: well first of all that he could or he should join to some lessons [//] English lessons but then hmm@p he could also hmm@p try <to find> [//] to do an intercanvi@s:c or something and [/] and to speak the language to practise because it's not to [/] to learn grammar or writing is not enough to learn a language properly so I don't know.

*INV: uhhuh any other recommendations?

*SUB: to go abroad to the [/] the country where they speak the language to learn.

*INV: and what about you is there anything in the near future that you would like to do to improve your English?

*SUB: yeah <I &wi> [//] I will go in summer to Dublin@u to work so I think I would like really speak English <and and> [/] and improve my English .

@Comment: Spanish pronunciation

*INV: right and tell me about those plans for Dublin what is your idea?

*SUB: I will I will go there for two months .

*INV: ok.

*SUB: and I will stay with a family and I will work <in a> [/] in a catering like in the university of Dublin@u and I [/] <I find> [//] I found this for an agency [/] agency and I just decided to go because I really when I came here I [/] I really realised that I had to [/] to improve my speaking because maybe it's the part that I really need so I decided <to go> [/] and to go <to another to the> [//] to another country to speak English and [/] and to improve and I don't know maybe.

@Comment: Spanish pronunciation

*INV: excellent ok that's all thank you very much for your time and thank you for doing this interview.

*SUB: ok

@End

@Begin

@Languages: en, es , ca

@Participants: SUB **9193SIJU** Subject, INV Te Investigator

@ID: en|SUB|18|female|Subject|

@Birthplace of SUB: Barcelona

@L1 of SUB: ca

@Coder: An

*INV: I'm going to ask you a few questions about your previous experience in learning languages and your opinion about language learning so the first one ok do you think that learning English is difficult?

*SUB: well I think it's not difficult if you learn when you are little if you start learning at I don't know five six years old something like that but <as an adult> [/] as an adult I think it's quite difficult 'cause it's got nothing to do with Spanish or Catalan so I think it's quite difficult if you start like later but if not I don't think it's that.

*INV: so you think that the kids who started learning English at the age of five nowadays are +/.

*SUB: yeah or at least yeah listening or just I [/] I don't mean they have got to study lots of hours per week or something like that but just be familiarized with English and so on.

*INV: so in your opinion what are the main problems with English?

*SUB: well you know that it's [//] as I said before it's got nothing to do with our native languages so I think <that's quite> [//] I mean if you learn French it's quite easy for me for instance that's my [/] my personal experience at least in English I think that it's not such a difficult language as maybe Chinese or some other languages which are really more complicated but just this distance which makes hmm@p I don't know maybe seem like really difficult and people are afraid of learning English 'cause it may seem just too a far language but.

*INV: are you taking any other language courses besides English?

*SUB: no hmm@p I used to study hmm@p French <at the school> [//] oh@i well at high+school but now as I'm in the university I well next year hmm@p I'll do a second language French but that's all.

*INV: and are you taking any language courses in English?

*SUB: no apart from the university classes no I used to but hmm@p as I'm studying filologia+anglesa@s:c I thought it wasn't really necessary.

*INV: do you speak any other foreign languages?

*SUB: yeah a little bit of French and that's all.

*INV: how good is your French?

*SUB: hmm@p I studied five years at high+school so more or less I can defend myself in a conversation and I understand hmm@p practically everything if they don't speak very quickly and as I said before I think it's quite easy hmm@p even having done only five years of French and hmm@p twelve for English or thirteen I don't know it's [/] hmm@p it's been easy for me to learn French 'cause you can make up words and maybe if you pronounce them quite well in the right intonation then they are ok and I don't know just +/.

*INV: and at secondary school you learned +/.

*SUB: yes I studied French.

*INV: and you started ?

*SUB: when I was twelve in primer@s:c d'ESO@s:c.

*INV: when you were twelve and before that did you study any languages?

*SUB: only English.

*INV: oh ok do you like learning languages?

*SUB: yeah I love I wish I could study more languages but at the moment I'm quite just concentrated on the university and we'll see if in the future another language.

*INV: as a language learner do you think that you are good or bad at learning languages?

*SUB: at learning I think I'm quite well you know I like to be perfectionist and I like to know a little bit of everything but I think my speaking is always the worst part 'cause I hmm@p I don't speak much with anybody except university here but I think listening I quite understand pretty much French and English but speaking is always my worst part I think it just needs practice and that's what lacks me but.

*INV: how do you compare with other classmates as far as English is concerned?

*SUB: it depends I think <in writing> [//] and listening as I said I'm quite good but speaking I've heard hmm@p so many people speaking I mean <&non na>[/] <&non na> [/] non-native English speakers &sp [//] spoking@c like they were English and I was amazed at that especially people from the north &da [//] Dans and well Polish and ai@s sorry

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hmm@p Norwegians and so on and also from the East hmm@p Polish and Romanians and so on I think hmm@p well maybe their governments care much more than here to make hmm@p a young kid speak English hmm@p earlier than here I don't know how it works but I've heard them I was quite amazed when I heard.

*INV: alright I guess that Spanish and Catalan are your home languages.

*SUB: yeah.

*INV: how would you grade your Catalan and Spanish from one to ten would you say that speaking listening and writing you are about the same in the two languages or different?

*SUB: no I'm far more fluent in Catalan I mean <I speak> [//] I've always spoken Catalan at home with my family with my friends even at the school with people who [/] who were immigrants I tried to speak Catalan with them and if they didn't understand me of course I changed to Spanish but always my first language is Catalan and hmm@p maybe some words when I speak in Spanish may come out like well what we call catalanades@s:c which well are just translated in that sort well I don't know I [//] I'm more fluent in Catalan than Spanish but still I can defend &my [//] myself in Spanish and I studied lots of subjects in Spanish and I understand everything just maybe I've got a Catalan strong accent but that's all.

*INV: when it comes to reading which language do you prefer?

*SUB: more Catalan yeah.

*INV: and did you say that as far as school is concerned you would score the same in Spanish and in Catalan?

*SUB: well depends if you take into account the hmm@p orthographic hmm@p mistakes so hmm@p <if you> [/] hmm@p if you consider that I think I would be better in Catalan because even if it may seem for other people more complicated to write in Catalan for instance some of the accents and the pronoms@s:c febles@s:c and so on but I think I'm quite more used to write in Catalan than in Spanish.

*INV: what do you think is best to start learning English as a foreign language or languages in general?

*INV: I've got the impression that you favoured the sooner the better am I right?

*SUB: yeah [/] yeah definitely or at least that's my own experience and hmm@p I started learning English when I was three well hmm@p I went hmm@p from three to six years or

something to like that to like a play house or school something like that hmm@p two or three hours per week just to play with &gi [//] girls and boys in English and teachers spoke to us in English and so on just to learn the fruits and the colours and so on +/.

*INV: and did you like it?

*SUB: yeah well I can't remember now but yeah I think <I would> [//] that I would recommend to anyone just for English I mean for French I actually started when I was twelve so it's quite different I think .

*INV: so let's talk a little bit more about your past experience learning languages so you started learning English as a foreign language rather young when you were three and then when you were twelve you started learning French and in between what happened?

*SUB: just English.

*INV: ok so in the school +/.

*SUB: xx a little bit but yeah +/.

*INV: what was it like?

*INV: what did you like most and least about learning English as a foreign language at a primary school level?

*SUB: yeah at first I remember that my mom enrolled me to tennis hmm@p English and music classes and she told me ok when you are twelve you must decide of what you do and then was <when I> [/] when I was eleven or something like that I just hmm@p &di [//] &r [//] hmm@p didn't really like English I don't know why but I came to <my crisis@u> [//] a crisis and then <I &th> [//] hmm@p I thought ok next year I'm going to give up English but eventually when I was twelve I realized English was important and I [/] I came to love it maybe because of the teachers too 'cause that means a lot and then I gave up tennis and music and continued English so hmm@p yeah and during my primary hmm@p school hmm@p I just studied English as any boy and girl here hmm@p and hmm@p well hmm@p I remember that I used to learn lots of grammatic@c structures and hmm@p lots of words hmm@p first in English rather in Catalan or Spanish and it was like strange for me that when I hmm@p went to high+school I realized that they were explaining to me something that I already knew in another language .

*INV: &= laugh.

*SUB: no that was funny because I mean I knew it in my own languages but I knew it just instinctively I didn't kwew the present perfect and so on.

*INV: in your opinion which are the most important factors in learning languages?

*SUB: I think it's a combination but hmm@p as I said before hmm@p to read as much as you can from newspapers hmm@p books whatever you like the most and then listening of course but then hmm@p such an amount of information that you can find in internet and nowadays it's incredibly amazing it's easy to learn a language but really <the &sp> [//] the speaking part I think <it's the> [//] you need someone to be speaking with you and that someone must correct you when you speak because just keep speaking and nobody corrects you you don't know if you are doing right or wrong so I think it's just a little bit of everything and well putting a lot of effort to I mean you have to be interest and if you are doing it hmm@p without interest or not then it's not good at all.

*INV: ok thinking about your own experience learning English do you think that there was a moment in the past that you could perfectly identify in which you really improved your English?

*INV: was there any turning point?

*INV: maybe something that made you realize that you had improved your English?

*SUB: no I don't think so but as I just said hmm@p from [/] <from three> [//] bueno@s well from I was three or four until hmm@p sixteen seventeen I studied regularly and every year I went bueno@s took new classes at the British school in Vilanova@s:c i@s:c la@s:c Geltrú@s:c where I live and then I [/] I didn't realize if hmm@p there was what you said a turning point hmm@p that <made me feel> [//] hmm@p made me be better at my English or something like that but I don't think it was kind of regular and hmm@p I don't know but hmm@p in the summer <I hmm@p every year we go with my> [//] well my mother is an English teacher too and we go to Cambridge and then I think when I was little I didn't speak well that's why I'm better listening that speaking 'cause I was used to listen to hmm@p those people when I did language speaking English and my mother speaking English but then I [//] it came to a point maybe I was fifteen or something like that it was me who spoke to them and <not she> [//] not my mother so maybe that was a turning point but not really as I said before just listening it was like kind of regular 'cause if you go every year and you meet the same people when you speak about anything you are used to hear but speaking yeah maybe when I hmm@p became an adult or something like that but I don't think xx .

*INV: if you had a friend who just started learning a foreign language what would you recommend your friend to do?

*SUB: hmm@p well I would say the first two months or something like that just focus hmm@p on oral [//] &rai [//] hmm@p on readings sorry well writing comprehension let's say and just get <the &m> [//] the most contact hmm@p he or she can with that language and often hmm@p something like [/] like after achieving the basic level then go abroad to a country where they spoke that language hmm@p 'cause <I think if> [//] I think <it's not> [//] hmm@p it's not hmm@p perfect if you go to a country where you don't know hmm@p anything at all about that language and you want to [/] to learn there but if you have got a basic level I think you can improve really fast if you go there and then maybe in a month you speak quite fluently and understand more or less .

*INV: do you have any plans for the future?

*INV: what would you like to do to improve your English?

*SUB: well I think it's not that I like it but I think I must go abroad if I want to speak hmm@p very good English and [/] and probably when I finish my degree here I [//] I'll go to a native English speaking country and just take a kind of master or postgraduate or whatever just hmm@p but I don't think I'd like to go to live abroad for all my life but just for a short period maybe I don't know five years or something like that just to improve really my speaking and then afterwards we would see but .

*INV: any plans for this course for this summer?

*SUB: hmm@p not yet well hmm@p I just know that <I have rejected> [//] well I've [//] hmm@p <I refuse> [//] my mom as always wanted me to go to Cambridge with her but for the first year in my life I said no hmm@p it's wonderful it's a really amazing city I love Cambridge but I just wanted to be here hmm@p with my friends and so on and just relax 'cause this year has been just too much of English maybe and we will see.

*INV: go to the mountain

*SUB: yeah no [/] no not really but it's just <I I> [/] I need some time to get over and probably I'll make some trip maybe in Ireland I've got some friends too but just I don't want to plan anything yet 'cause if not hmm@p I don't know.

@Comment: pronounced as /krisis/.

*INV: ok that's all thank you very much

@End

B.2. Film retelling

@Begin

@Languages: es, ca, en

@Participants: SUB **9073MOBL** Subject, INV Ma Investigator

@ID: en| |SUB|20|female|Subject

@Birthplace of SUB: Catalonia

@L1 of SUB: ca

@Coder: Mi

*SUB: hmm@p the first part is a woman that she is looking some food and she seems she is very hungry <when the> [//] and when the shop+assistant leave the [/] # the car with all the bread she stole one and start to run but <a woman> [//] another woman that was hmm@p walking in the street she saw her and she told to the shop+assistant that she has stolen <a bread> [//] a loaf of bread and then she is running and she find the man and <the police start to> [//] the police start to <caght@u caught the> [//] catch the woman and then finally the man said that she has stolen the loaf of bread but the woman of the street tell the truth to the police and they [/] finally they [//] the police catch the woman <and the man> [/] and the man is caught because bua@s well I suppose that <he want to return> [//] he want to see the woman again <and for this> [///] well and the final scene@u is in the police car and the man ask the woman if she remember him and ah@s and then they escape from the police and they go away together .

@New Episode

*SUB: they [/] they have left from the police and then they are in a park and they saw a couple that they have a [/] a house and then <they imagine> [//] well first [//] firstly the man imagine the [//] a situation of both of them living in a house and <they are> [//] <they seem> [/] they seem that they are very happy and they are eating and then the woman also imagine [/] imagine this and both of them like it so he says that <they will get a [/] a house> [//] they will have a house even if he has to work and then the final part is that hmm@p <they &s> [//] <they saw a police> [//] they see <a police> [//] a policeman and they go away .

@Comment: mispronounced

@End

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@Begin

@Languages: en, es , ca

@Participants: SUB **9152ELRA**, INV Ra Investigator

@ID: en| SUB|20;|male| Subject|

@ Birthplace of SUB: Barcelona

@L1 of SUB: es

@Coder: An

*SUB: well it's a funny story about a girl and Charles Chaplin and first we can see that there's a girl in the street and she's looking at the window+shop and then hmm@p she's [//] well I think she's hungry and so she wants to eat some bread so <she does> [//] is [/] hmm@p is that when she sees that the deliver or person who is there I [/] I don't know <if if> [/] if he was the baker or something but and then hmm@p he got out of the van so she decided to take a loaf of bread from the van but hmm@p she was seen by a [//] an old lady who seems like some sort of wealthy woman I don't know but it seems so [/] so she [/] she saw what she did so well hmm@p when the baker got back I think that hmm@p they caught her and they decided to call the police and then the police came and <I think that their> [///] I think I've got lost a little bit but hmm@p Charles Chaplin was there and they saw that hmm@p well he saw the whole situation and he decided to take the loaf of bread of her and so hmm@p <the van> [//] <the well> [//] &sh [//] he said that it [/] it had been him who had stolen the [/] the loaf of bread so <the &po> [//] the [/] the policeman decided to arrest him instead of her so but the woman who had seen the whole situation hmm@p went out to the policeman and told him that it's [//] well he had lied because it had been her the person who had done it really so well finally they [/] they got loose of [/] hmm@p of him and they decided to [/] to take the girl instead and then what Charles does <is some> [//] is kind of weird because he goes into a shop that says tables for ladies but I [/] I quite [//] didn't quite understand the story because then he I [/] I think it's like a place only for ladies or men accompanied by ladies I don't know but he gets into there and so he [/] he eats a lot because it was like a lot of dishes around and hmm@p well then hmm@p when he finishes hmm@p she goes to pay hmm@p to the cash and then I think he [/] he knocks in the window and there's like a policeman outside and so he [/] he tells him to come in and then well hmm@p <I don't know what he> [///] well of course it's <a &mu> [//] a mute story so we don't know what they say no@s but hmm@p they say

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something and then he gets arrested by him and hmm@p well the policeman hmm@p gets him into <a van> [//] the police van and then hmm@p well <there's the> [//] in the police van there's I think hmm@p two people on the &r [/] right side and then three people on the left side one of them is an African+american woman who is like sort of I don't very grumpy because every time well the van was like very dredging along and so well hmm@p every time Charles was about to fall she sort of pushed him out of the way and well there's [//] there was also a man with a moustache and well well suddenly the [/] the policeman I think stops and then <the &w> [//] the girl comes in because she's also pushed <by the> [//] by [/] by another policeman oh@i well he [//] she decides <Charles Chaplin is a very> [//] well she's [//] he's sort of a gentleman and so he decides to yield the sit to [/] to the lady hmm@p well she sits down and [//] hmm@p but hmm@p she doesn't want to be there so what she does is move and she tries to escape she goes to the door and I don't know it's like some sort of messy affair there and then the car has an accident and so hmm@p well they take advantage of the situation in order to escape and well <they are> [/] they are knocked there the three of them are on the floor hmm@p well when they realize that the policeman is about to wake up hmm@p what Charles does is take hmm@p his nightheal@c I think it is [/] is the [/] the police stick <the bill> [//] no the club it is called the club hmm@p he takes the club and then he hits him on [/] on the head and well then both of them escape together and I think that's it more or less .

@New Episode

*SUB: well after what I've said hmm@p then <the the> [/] the man and the girl arrived at a garden I think <it is like> [//] well it's not a very big garden a small garden with [//] near <a house> [//] a white house and then well they start to talk and Charles asked [//] asks the girl hmm@p where she lives and well &sh [//] he realizes that she's like some sort of a vagrant because she says that she has no home or she lives anywhere so <it isn't> [//] it means that [/] that well she doesn't have a house or [/] or somewhere to live in and well hmm@p so he looks <at a> [/] at a house nearby and he sees that hmm@p there's &l [//] a man I think he's [/] he's going to work and then the [/] the woman is saying him off and then well he realizes that it could be like a perfect place to live in with the lady and so hmm@p he's like some sort of imagining the whole situation living with her in [/] <in a place> [/] in a place like that so well he imagines the house <quite of a big> [//] quite a big house everything is like perfect everything divine hmm@p there is also <very funny> [/]

very funny picture <with milk> [//] <with like> [//] ai@s sorry with a cow &wi [//] well she [//] he wants milk so he decides to call the cow and the cow is like a person because hmm@p it's like she understands him so she comes in and then he puts like a glass <under the> [/] under the mammals of the cow it's like crazy because if you don't milk a cow there's no milk no@s so well the milk hmm@p per se expells the milk and so it gets into the glass no@s and then hmm@p he grabs the glass and he drinks it and then he kicks the [/] <the milk> [//] ay@s sorry the cow off and then well he's imagining the whole story like perfect with [//] hmm@p everything's nice hmm@p and then we can see that he stops dreaming and then and [//] the woman is [//] seems hungry because she well of course <she's been like> [//] I don't know if it was like a dream <or she> [//] or it was uttered no@s so maybe it was uttered because I [/] I [//] so that she was hungry at the end so maybe it was uttered and well finally when she tells him that she was hungry she swears like [/] no@s like in that movie that he's going to work and he's going to earn a lot of money in order to buy that house in order to hmm@p I don't know have a very good life with that lady no@s and [/] and when finally a policeman <cames in> [/] cames <in the> [//] on the stage and then well the lady sees him and then tells him to run off and then well the poor man cannot stand up and well finally he stands up and they go away .
@End

@Begin
@Languages: es, ca, en
@Participants: SUB **9036ADMA** Subject, INV Mi
@ID: en|SUB|18|female|subject
@ Birthplace of SUB: Barcelona
@L1 of SUB: es, ca
@Coder: Mi
*SUB: ok hmm@p firstly of all hmm@p there is a street and a girl bueno@s a woman hmm@p suddenly appears and she see some food in a shop and the employer is taking all the bread well bueno@s this <into the> into the shop hmm@p and <when she> [//] ai@s when he enters she steals some [//] a lot of bread and when she is hmm@p escaping

hmm@p she crashes with Charles Chaplin and <a woman> [//] another woman who saws her hmm@p says to the police than has been her but Charles Chaplin says that no that <the who> [//] he is the guilty and then the police hmm@p go with him but the [/] the other woman hmm@p insist of telling the truth and then # aw@i # I don't remember # then I remember that hmm@p Charles Chaplin is [/] is free and he goes to [/] <to a shop> [//] to a restaurant but when he is going out he sees the police again and tell him to pay because he doesn't have money then he sees no@s the police hmm@p calls [//] phones to the police department and Charles Chaplin hmm@p have a [/] a big cigarette and hmm@p give other kids hmm@p cigarettes to smoke then arrive the [/] the car patrol police and he is inside when again the [/] the first woman hmm@p appears and he let him to sit and # the girl tries to escape from the patrol car and there is a accident and next we can see the police Charles Chaplin <and the> [/] and the woman lying on the floor they are asleep or and they [//] ah@i Charles Chaplin <says her to told her> [//] tells her to escape but the police hmm@p wakes up and he hits again <with the with the> hits again in the head and then she escapes firstly but then she returns and call him to [/] to go with her and then is they go .

@New Episode

*SUB: ok the couple hmm@p in [//] is walking down the street and they sit near [//] under a tree near <a &hou> [//] a house and a couple &wi [//] no@s a couple go out <of the house> [//] to the house and the man has to leave to go work <or something> [//] or somewhere and then they imagine that they are in <the same> [/] the same moment <like the &ho> [//] like the couple and then <he is> [//] they are at home and he catches a fruit I don't know what it is and he diu@c with the fruit throw the window and then they go to the [/] a kitchen and he calls &someth [//] something and a cow appears and he puts a glass under to take milk and while the woman is cooking and then they finish the [/] the glass is full and they begin to [/] to eat and there <we can> [//] we go to the first image which was they <in the> [//] under the tree near the house and he promises that they will be together and they will have a home and will be happy and the police arrives again and they go together .

@End

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@Begin

@Languages: es, ca, en

@Participants: SUB **9192EROR** Subject, INV Ma

@ID: en|SUB|18|male|subject

@ Birthplace of SUB: Barcelona

@L1 of SUB: es, ca

@Coder: Ma

*SUB: hmm@p it is <a poor> [/] a poor girl that is trying to get something to eat because she's hungry and she steals a [/] a loaf of bread in a bakery and she gets caught <by> [/] by the owner and then there's a man that is coming <and he says> [//] and he's trying <to> [/] to save the girl saying that <he has> [/] he has stolen the [/] the loaf and then <they> [/] they are &perse [//] persecute by the police hmm@p they take them <and> [/] <and they> [//] I don't know # <and the man> [//] ## hmm@p and <they> [/] they get into a police car and <they are with with> [///] ## hmm@p and then they crash and they're <fell in> [/] fell <into the> [/] into the road and <they they> [/] they have a chance <to> [/] to escape from the police and they escape together and <then> [///].

@New Episode

*SUB: they have escaped together and they get into the grass and they meet them hmm@p better they think about <living together> [//] how would be life living together hmm@p having something to eat having money [//] a lot of money and suddenly hmm@p the man stops thinking about it because <it> [/] it was only a dream and he says that he would work for it to be together and to have money and a house and then <a> [/] a policeman come <and> [/] and say to them to stand up and to continue walking .

@End

@Begin

@Languages: es, ca, en

@Participants: SUB **9162ALPA** Subject, INV Cr Investigator

@ID: en|SUB|22|female|subject

@ Birthplace of SUB: Barcelona

@L1 of SUB: es, ca

@Coder: Mi

*SUB: hmm@p ok there [/] there is a [/] <a girl> [//] a homeless girl I guess or well not very rich at least hmm@p who is walking and she is passing by a [/] well a shop with well there is hmm@p ah@i my God well a shop where <they buy> [//] ai@s they sell bread and cakes and &thin [//] these things and she [/] she feels hungry so she decides to take a [/] a loaf of bread <from the> [/] from the truck or somewhere where they are taking it <to the> [/] to the shop hmm@p and then she starts running but the owner of the shop realizes that someone has stolen something and as she is escaping from the shop she [/] she pumps up with [/] with Charlot and [/] and then <the the> [/] the owner of the shop gets to them and she is accusing the [/] the girl or she [//] <he is> [/] he is saying that someone stole something hmm@p but Charlot says that it was him not [/] not the girl so she can run she goes free and he [/] he goes to a restaurant and he eats a xx hmm@p but then a [/] a woman who saw the [/] the moment when the girl took the [/] the bread tells <the police> [//] the policeman that it was the girl not [/] not Charlot so they start looking for the girl but at the same time they are looking for Charlot because there was another policeman I guess that didn't hmm@p hear the accusation <of the> [/] of the other woman hmm@p they finally find Charlot in the restaurant and arrest him and they [/] they bring him to a kind of bus for arrested people or hmm@p yeah an special cab hmm@p and staying there he [/] he meets again the girl who has been arrested by the other policeman hmm@p and well she [//] he [/] he asks her if he remembers him that he was the one who [/] who tried to save her from the police from the bread thing and [/] and then <the girl> [//] hmm@p well she is very sad because I guess she was hungry she was just stealing because she was hungry and now she finds herself there arrested by the police and she starts crying but suddenly hmm@p she decides to [/] to escape from [/] from this and with the movement inside the bus or [/] or yes with the movement and [/] and because of another car which is in the road there is an accident and they [/] they fall out <from the> [/] from

the bus and Charlot suggests her that she [/] <she can &cape> [//] that she can escape now hmm@p because they have a policeman &bu [//] next to them but he is like &st [//] hmm@p well I don't know he's faint on [/] on the floor and as the girl is escaping she [/] she tells Charlot to [/] to come with her and they [/] they both escape .

@New Episode

*SUB: hmm@p well ok the [//] they escape from the policeman and the bus for the arrested people and they find a [/] a place with some grass next to a [/] a sort of country house and [/] and they sit there to [/] to rest for a while and <while they are> [//] hmm@p while [/] while they are there they see a couple <who is> [/] <who is> [///] well the man is [/] is going [/] going to work I guess and [/] and the woman hmm@p says good+bye to him like in a very hmm@p not well yes romantic way <she is like very> [///] he is in love with [/] <with his> [//] with her husband and Charlot hmm@p it seems that [/] that he is mocking the [/] the woman who is saying good+bye <to his> [/] <to his> [//] ai@s to her husband sorry hmm@p but he is not actually because [/] because hmm@p he [/] he tells the [/] the girl who was arrested the [/] the homeless girl hmm@p if she can imagine they both living <in a> [/] in a little house like that like [/] like the couple hmm@p and then they [/] they start well in fact he [//] hmm@p Charlot start [//] starts imagining what would the life be hmm@p <they together> [//] they both together <in a> [/] in a house and it is a very ideal life with a cow <for for> [/] for them just to [/] to have the milk fresh every morning with fruits and everything and [/] and he's imagining her cooking a [/] a big piece of [/] of meat <and &the> [//] they start eating in his imagination and it is supposed that he is explaining her all [/] all his thoughts and when he finishes she remembers she was very hungry and she suddenly hmm@p seems to express that it is a good idea to [/] to live together because she [/] she knows that <she would be> [//] hmm@p she wouldn't be hungry anymore with him and # ah@i and then he [/] he says ok I will get <a home> [//] a house for you and we will live together.

@End

APPENDIX C. CODING EXAMPLE

@Begin

@Languages: es, ca, en

@Participants: SUB **9020SOGA** Subject, INV Cr Investigator

@ID: en|UB|22|female|subject

@ Birthplace of SUB: Barcelona

@L1 of SUB: ca

@Coder: Mi

*SUB: it's [//] this story is about a girl who is very hungry and when she look at a [/] a bakery he saw a cakes and bread so she stole a loaf of bread and she ran away but she [/] she hmm@p **(1)bueno@s** she &tal **(2)bueno@s** she stopped with a [/] a man and she fall down so there's a woman that saw <a the> [//] <all the history> [//] all the **(3)escena@s:c** and he tells **(4)to** the bakery man that she was stole the bread so hmm@p he calls the police <and &sh> [//] and they go but the man don't hmm@p that the girl hmm@p that fall at the floor hmm@p say that <he was> [//] he had stolen the bread not the girl so the policeman hmm@p <&ca> [//] catch the man and go away so hmm@p the bakery man says that it was the girl not the man so the **(5)police** goes to [/] to go catch the girl but **(6)in this time** the man that was catch the first time hmm@p goes to a &ca &ca **(7)cafeteria@u** and takes a lot of food and [/] and then he smoke some cigars and he gave some [/] some boys cigars but he doesn't pay because the policeman had to pay and he argues so <he was he they> [//] the policeman **(8)brings** the man to a van and in the van he meets **(9)with** the first girl that had stolen the [/] the bread so there they escape together and they talk **(10)bueno@s (11)no@s**.

@Comment: cafeteria is pronounced with rising intonation because she is not sure if the word exists in English and is also pronounced as a Spanish word.

@New Episode

*SUB: so they run away together and then they are sitting on the grass near a house so the man ask the woman if she could imagine them living in a house because she was poor and she hadn't a house to live so they imagine that &th [//] they [/] they live together in a house and she was their wives I think and she **(12)makes the meal** and the table is full of

[/] of food and they had a cow and when they realise that it's a dream hmm@p they saw a policeman and they stand up and go [/] go and that's it .

@End

(1) Language switch, editing term

(2) Language switch, editing term

(3) Language switch, borrowing

(4) Subcategorizarion transfer, choice of the wrong complement

(5) Semantic extension

(6) Calque

(7) Language switch, insert implicit elicit

(8) Semantic extension

(9) Subcategorizarion transfer, choice of the wrong complement

(10)Language switch, editing term

(11)Language switch, editing term

(12)Collocational transfer