

**THE INFLUENCE OF AGE ON VOCABULARY ACQUISITION
IN ENGLISH AS A FOREIGN LANGUAGE**

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CHAPTER 2

AGE AND VOCABULARY ACQUISITION

2.1. Introduction

Chapter 2 aims at setting the framework within which the current dissertation was prepared. It starts with a brief definition of key terms in SLA that will be used throughout the present and the following chapters and continues with a general account of the Critical Period Hypothesis (CPH). As the main focus of the chapter is on age and vocabulary acquisition, longer sections are devoted to see why vocabulary has been neglected in research on age and why the study of these two aspects could be interesting. Furthermore, a summary of the main findings on lexical issues in age studies, both in naturalistic and formal settings, is offered in section 2.6. This chapter concludes with some questions concerning the role of L2 vocabulary in research on age and with some comments on the studies reviewed.

2.2. General overview

A distinction has often been made in the field of SLA between language *acquisition* “picking up a language through exposure” and *learning*, the “conscious study of a second language” (Ellis, 1985:5). The former is related to informal or natural settings, that is, a context in which the SL is not taught but rather used naturally through informal conversations and interactions with native speakers (NSs) of the target language; while the latter normally takes place in a formal or instructional setting, in which SL learners receive instruction and limited opportunities to practise, like in language classrooms. As in the mainstream literature, the terms *acquisition* and *learning* will be used interchangeably in this dissertation, although when convenient, it will be stated if we are dealing with natural or formal settings.

The term *second language* (SL/L2) will be used to refer to any language other than the first (L1) or mother tongue, although many children learn more than one language from birth and it may be considered that they have more than one mother tongue. As regards the difference between a second and a *foreign language* (FL), according to Johnson and Johnson (1998:34) “the basis for this distinction is the geographical context in which the language is spoken: an ESL situation is one where English is widely used in commerce, administration and education. It is a FL in a country where English plays no such a role”. As the students that took part as participants in this dissertation were Catalan/Spanish bilinguals studying English in Barcelona, hence the use of *foreign language* in the title.

2.3. The Critical Period Hypothesis (CPH)

Age is one of the individual learner variables which has been most thoroughly investigated in SLA (Birdsong, 1999, 2006; DeKeyser, 2000; Harley, 1986; Long, 1990, 2005; Marinova-Todd, Marshall & Snow, 2000; Singleton & Lengyel, 1995; see Singleton, 2001; Singleton & Ryan, 2004 and Nikolov & Mihaljevic, 2006 for comprehensive reviews of recent studies).

The idea about the existence of a Critical Period (CP) beyond which a language could not be learned was first posited for a first language (Penfield & Roberts, 1959; Lenneberg, 1967), but was later on extended to other languages different from the first (Johnson & Newport, 1989). The *Critical Period Hypothesis (CPH)*, states that there is a specific and limited period of time for language acquisition. There are two versions of this hypothesis: the strong version is that language must be learned by puberty or it will never be learned from subsequent exposure; the weak version is that after puberty language learning will be more difficult and incomplete. Different cases of feral children² have been used to corroborate either the strong or the weak version of the hypothesis. Cases such as Victor's (Malson, 1973) seem to support the strong hypothesis. Although he was taught the language after 12 years of isolation in the jungle, he was just able to learn two words and incapable of distinguishing/producing sounds different from the ones heard in the forest. An example that would corroborate the weak version in L1 acquisition is the case of Genie (Curtiss, 1977), who being

² The literature uses the term 'feral children' to refer to cases of children who were deprived from any contact with humans (and hence also with language) from birth or from a very early age.

deprived from any contact with language at an early age, was able to speak and communicate, but the development of the language abilities was not normal and her command of the language extremely poor.³

As stated above, Johnson and Newport (1989) were the ones who ‘translated’ these two versions of the CPH in the L1 into two hypotheses for the L2: the *exercise hypothesis* and the *maturational state hypothesis*. The former states that early in life, humans have a superior language learning capacity that, if not exercised during this time, will disappear or decline with maturation; if exercised for normal L1 acquisition, it will remain permanently intact for later SLA. The latter affirms that the superior capacity for acquiring languages that humans have early in life will disappear or decline with maturation. Therefore, the difference between these two hypotheses lies in the fact that the *exercise hypothesis* accounts for the possibility that adults may have the same chances as children to successfully acquire the L2.

The fact that there exist some old learners that attain native-like proficiency (see for instance Bongaerts, Planken & Schils, 1995; White & Genessee, 1996) is one of the reasons why there is some reticence at present to use the term CP. Alternatively, there is a preference to talk about *Sensitive Periods*, i.e periods of heightened sensitivity or responsiveness to specific types of environmental stimuli, bounded on both sides by states of lesser sensitivity (Oyama, 1978/1982:40). However, in spite of the name adopted, there is no agreement on how a critical or a sensitive period may affect SL

³ Further evidence against a strong version of the CPH has come from research comparing deaf and hearing learners. It has been shown that provided that they have been exposed to language in infancy, the two groups “perform comparably well in learning a language later in life, whereas deaf individuals with little language experience in early life perform poorly” (Mayberry, Lock & Kazmi, 2002).

learning. Scovel (1969), for instance, holds that the optimal period should be limited to refer to just phonological learning, which should take place before the age of 6. Instead, authors such as Long (1990) consider that there are different sensitive periods for different aspects, 6 for phonology and 15 for morphological and syntactic aspects. Contrary to the views of these two researchers, Martohardjono and Flynn (1995) argue that, whereas non-innate aspects of L2 proficiency (like lexical learning is considered by them to be) may be susceptible to age-related degradation, innate aspects (basically syntax and phonology) are likely to be immune to such degradation, as access to biologically endowed support for language acquisition continues into adulthood.

Independently of the name chosen to describe and account for the advantages or disadvantages that age may or may not offer when learning a SL, the question of age in SLA always involves a question of time, as will be expounded in the next section.

2.4. Age and time in SLA

The role of age in SLA is intrinsically related to an issue of time, which can be understood as ‘time to start learning a language’ -Age of Onset (AO)- or as ‘hours required to learn a language’(duration).

As regards the question of AO, it is a popular belief that the earlier one starts learning a language, the better (Scovel, 2000). This idea, though, allows for two interpretations (see a compelling discussion in Bialystok, 1997). The first considers children better SL learners than adults because they are equipped with a better system for language learning; it assumes that there are biological constraints or innate

mechanisms that determine the learning of the language. For example, Bley-Vroman's Fundamental Difference Hypothesis (1989) attributes the differences between child and adult language acquisition to adult learners' lack of direct access to the principles and parameters of Universal Grammar (UG).

The second interpretation is that, on average, children are more successful than adults when faced with the task of learning a SL; they are more motivated and less inhibited. Bialystok (1997), for instance, suggests that no maturational constraints are needed to account for differences between adult and child language L2 acquisition. According to Bialystok, children's advantage would have no biological basis and would not reflect any sensitive period. What makes the difference between younger and older learners are processing differences. For example, as some of the category boundaries needed to represent the SL would be different from the L1, adults and children would make use of different procedures to cope with them. Adults will extend the linguistic categories in their L1, because they are in the process of consolidating knowledge and seeking overall similarity. However, children will create new linguistic categories, which is their most natural option as they are constantly creating categories in their L1.

Regarding the question of time as 'duration', a distinction has to be made between *rate* (how fast the language is acquired) and *ultimate attainment*, which is the final level of proficiency achieved. In 1979, after reviewing the literature available on age and language learning, Krashen, Long and Scarcella (1979/1982:161) summarised the results obtained by researchers up to that moment in three generalisations, which can be considered still valid today. The first two are concerned with rate:

- 1) Adults proceed through early stages of syntactic and morphological development faster than children (where time and exposure are held constant).
- 2) Older children acquire faster than young children in early stages of syntactic and morphological development (where time and exposure are held constant).

As Singleton (1995) points out, they both limit their claim about the short-term attainment of adults and older children to the areas of syntax and morphology. Therefore, it can be said that the advantage is limited both in time (in the long run, young learners will probably overtake them) and in scope (older learners superiority is restricted to certain linguistic aspects, like morphosyntax).

The oldest learners' shortest time, i.e. quickest rate, could be accounted for in terms of the different mechanisms they use for learning. According to Dekeyser and Larson-Hall (2005), this initial advantage for older learners may be attributed to the fact that they use explicit learning mechanisms, which are faster than the implicit learning mechanisms that younger learners use.

Regarding the scope of the advantage, older learners have usually shown superiority on areas such as morphology and syntax (Collier, 1987; Fathman, 1975/1982; Ervin-Tripp, 1974; García Mayo, 2003; Harley, 1986; Swain & Lapkin, 1989)⁴. A possible explanation for the superiority to be shown in these areas is suggested by Cummins (1980) and Cummins and Swain (1986) and it is as follows: older learners are

⁴ Nonetheless, contrary to the results found by the mainstream literature, Slavoff and Johnson (1995) did not find significant differences in the morphosyntactic intuitions of early and late arrivals in the US; these researchers observed that only age studies involving languages typologically similar to the L1 of the learners found age-related differences in morphosyntax.

better at acquiring cognitive or academic L2 skills because these skills are related to the development of literacy skills in L1 and L2⁵. Concerning the skill typology, Cummins (1979) had already made a difference between ‘basic interpersonal communication skills’ (BICS) and ‘cognitive/academic language proficiency’ (CALP). BICS refer to aspects like accent, oral fluency and sociolinguistic competence, while CALP refers to areas closely related to the development of literacy skills (syntax, morphology, vocabulary or reading comprehension). He predicts that older learners, with a better developed CALP, would acquire academic L2 skills more rapidly than younger learners, but that this would not necessarily happen in aspects of L2 proficiency unrelated to CALP, which would be less sensitive to academic development. However, he does not specifically state which aspects of L2 learning, apart from phonology, will be more efficiently acquired by young learners, as Harley (1986) notices. Probably, the advantage for older learners would not be shown in pronunciation or oral fluency, which are considered less cognitively demanding aspects.

Interestingly enough, Snow and Hoefnagel-Höhle’s (1978) results in the Netherlands showed that the most remarkable differences between young and older learners were to be found in tests that examined components that depended on rule acquisition (syntax, morphology, vocabulary and metalinguistic ability), contrary to the tests that examined comprehension or communicative skills, where the differences between younger and older learners were less noticeable or more rapidly eroded, as it was seen in successive data collections.

⁵ This would show, according to Cummins, the interdependence of academic skills across languages: older learners start acquiring an L2 with L1 developed skills (reading and writing) and with other linguistic knowledge (grammatical and lexical).

The third generalization presented by Krashen, Long & Scarcella (1979/1982) is concerned with ultimate attainment in the long run, that is, the level of proficiency achieved after a substantial amount of time.

3) Acquirers who begin natural exposure to the L2 during childhood generally achieve higher L2 proficiency than those beginning as adults.

Differences in rate and ultimate attainment have been generally observed in naturalistic acquirers of a SL. Normally, older acquirers tend to surpass children in the first stages of learning a language, but children catch up with older acquirers in the long run, for example in grammar (Johnson & Newport, 1989; Patkowski, 1979/1982) or in pronunciation (Asher & Garcia, 1969/1982; Munro, Flege & MacKay, 1996; Oyama, 1976/1982; Scovel, 2000; see Fullana 2005 for an up-to-date review on pronunciation and the age factor). A quantification of the amount of time required to talk about ultimate attainment was proposed by Dekeyser (2000), who suggested a 10-year minimum period of residence in an immersion setting (naturalistic context) for learners to have reached ultimate attainment levels⁶. This attempt at defining what ultimate attainment supposes in terms of exposure must be distinguished from other time indications given in the literature that refer to the period of time needed by young children to catch up with older children. This period, according to indications by Snow and Hoefnagel-Höhle (1978), could be of 12 months in a situation of immersion with

⁶ Muñoz (2008) alerts about the fact that although ‘ultimate attainment’ has usually been identified with ‘nativelike proficiency’, it is in fact, as Birdsong (2006) claims, the final outcome of L2 acquisition.

unlimited exposure.⁷

In addition to making reference to ultimate attainment, Krashen, Long and Scarcella (1979/1982) distinguish in this third generalization between formal and informal learning contexts (which is something that is not mentioned in the previous two generalisations); this last claim can only be applied to situations in which learners are in a naturalistic setting.

In FL learning, the situation is different from that of naturalistic contexts. The main differences are due to reasons which are closely related. The first is that the sources of input in formal contexts are usually rather poor, the target language is not spoken outside the classroom and sometimes not even inside the classroom, as not always teachers have enough command of the FL to use it fluently. The second is that there is limited temporal exposure to the language. As Harley and Hart (1997) note, exposure is very much reduced when the medium of instruction in the class is not the FL but the mother tongue, as it is often the case in instructional settings. Exposure has been shown to be an important element in language acquisition, Muñoz (1997:21) insists that “exposure maybe as crucial as the age at which initial exposure takes place, that is, the age at which pupils begin their instruction in the foreign language”. It can also be the key to explaining the results of the studies in naturalistic and instructed settings that will be reviewed below, especially as regards the long term benefits (Singleton, 1995).

As Torras and Celaya discuss “the problem one comes across in formal contexts is that the advantage in ultimate attainment of younger learners that seems to exist in

⁷ Singleton (1995:3) suggested that for the older learners’ initial advantage to begin to disappear, more than 18 years should be spent in a formal instruction setting.

naturalistic contexts cannot always be tested empirically in instructional settings [...] so there is a need for studies measuring the long-term effects of an early introduction to a FL” (2001:105). However, these long-term effects would not be regarded as ‘ultimate attainment’ in formal settings.

It is precisely because of the lack of exposure or unlimited input that Muñoz (in press) considers that “the issue of reaching the end state loses its relevance in FL settings”. Muñoz breaks in her article a series of symmetries that have usually been assumed as regards the effects of age in naturalistic and instructed L2 learning. One of the symmetries Muñoz talks about is that of ultimate attainment and argues that there has been a misapplication of the term in instructional settings. If in a formal context the requirement of crucial conditions like amount of exposure and quality of input fails, the concept of a final product cannot be adopted. Secondly, by definition, to reach an ultimate attainment entails the cessation of learning, which would not be the case when learning in formal settings.

Studies examining a possible ultimate attainment in natural settings fall within a kind of age-related research whose objective, according to Muñoz is to “elucidate the existence and characteristics of maturational constraints on the human capacity for learning second languages”. There is, however, a second orientation in age-related research whose aim is to “identify age-related differences in FL learning, often with the aim of informing educational policy decision”⁸. The work in the present dissertation

⁸ While the first trend would have been initiated by researchers like Penfield and Roberts (1959) or Leeneberg (1967), the second would have probably commenced with studies by Justman and Nass (1956) and Andersson (1960). Justman and Nass observed that there was no apparent advantage, in terms of SL achievement, for American students of French who had begun SL instruction in the elementary school, as compared with those who had started at high school. Andersson, in a state-of-the-art article about when and how to start languages at school, proposed to start the instruction of the SL as earlier as

would find place within this second orientation, and it purports to identify these age-related differences in vocabulary acquisition in particular.

2.5. Age and SL vocabulary acquisition

As Ellis (1985: 5) acknowledged: “SLA refers to all the aspects of language that the language learner needs to master. However, the focus has been on how L2 learners acquire grammatical sub-systems[...]. Research has tended to ignore other levels of language. A little is known about L2 phonology, but almost nothing about the acquisition of lexis” (see also Meara, 1980 for the essential reasons of this neglect). In Gass’ words, the lexicon has not exactly been a neglected component, as many areas of research related to lexical issues (word coinages and borrowings have been studied as communication or learning strategies and other studies analysed the use of idioms or prefabricated patterns). In her view, “the lexicon has been dealt with somewhat tangentially” (Gass, 1987:130). Also Haastrup and Henriksen (2001) acknowledge that there has always been “a dominance of syntax over lexis in models which claim to offer general accounts of second language acquisition” (2001:70).

Since the early 80s, though, the number of studies dealing with vocabulary in SL learning has steadily increased and, in a parallel way, there has been a reconsideration of the role that vocabulary plays in language teaching (see Boyd Zimmerman, 1997 for a review). Such has been the growth in vocabulary studies that Schmitt and McCarthy admit that “the mushrooming amount of experimental studies and pedagogical reference

possible, as younger learners are considered to have an advantage over the older ones.

material being published is enough to swamp even lexical specialists trying to keep abreast of current trends” (1997:1).

The relationship between age and vocabulary acquisition in the L1 is well documented. A growing number of studies analyse L1 vocabulary development in children (D’Odorico et al., 2001 -in Italian-; Hamilton & Plunkett, 2000 -in English-; Jackson- Maldonado et al., 1993 -in Spanish-), adults (Ellis & Lambon Ralph, 2000; Laumann & Shaw, 2000), late talkers, handicapped learners (Wachal & Spreen, 1973) or bilinguals (Engel & Whitehead, 1993; Vihman, 1985).

As regards lexical acquisition in any SL or FL, the literature covers both early and late vocabulary learning (for instance, Yoshida, 1978 in children and Altman, 1997; Broeder et al. 1988; Broeder, Extra & van Hout, 1993; Service & Craik, 1993 in adults). There is also a number of studies looking for differences between younger and older learners as regards learning styles (Papalia, 1975; Turner, 1983), mnemonic strategies (Pressley & Dennis-Rounds, 1980; Pressley, Levin & McCormick, 1980), word associations (Sökmen, 1993), meaning production (Verhallen & Schoonen, 1993), transfer (Cenoz, 2003; Ringbom, 1987) and representation and access of words (Silverberg & Samuel, 2004).

However, as Singleton points out, “the age factor, as it relates to second language lexical acquisition, is not a matter that receives a great deal of attention” (1995:10). When it comes to the study of language learning and age-related constraints, most studies concentrate on phonology and morphosyntax. Other authors have also acknowledged this lack of research on lexis and age. For instance, Long (1990:272) claims that “there appears to have been little or no published work on ultimate

attainment in the area of lexis and collocation”. Harley and Wang (1997:24) call attention to the fact that Lenneberg, who first posited the idea of a CP for language acquisition, “seems to have viewed vocabulary learning as exempt from maturational constraints, or at least, that his primary concern was with syntax and phonology”.

2.5.1. Vocabulary: A neglected area in age studies

The emphasis on syntax and phonology and the oversight of vocabulary in age studies may be due to several reasons. First of all, studies on age have usually been related to the idea of finding (or not) a CP for language acquisition, either in the L1 or in the L2. As suggested in Muñoz (2006b), the idea about the existence of a CP, that is, a biologically determined period for language acquisition, stems from an innatist conception of language, which claims that children are biologically programmed for language. This conception gave rise, for instance, to generative grammar and Chomskian proposals. According to Chomsky and his followers, a child possesses an innate endowment known as UG (Universal Grammar) which consists of a set of principles common to all languages. The CPH would fit easily in this theory, as it would add the idea that these set of common principles available at childhood would not be accessible forever. In an innatist position, vocabulary does not have a central role, it is structure that is basic and the set of principles in UG are grammar-related. Therefore, this theory would support the notion that children can achieve different levels of vocabulary but all achieve full mastery of the language structure.

From a different perspective, the existence of a set of universal principles is a possibility which is also proposed in a model of representation of knowledge put forward by Bialystok (1994). According to Bialystok, each individual has a Language Centre (LC) which contains all the universal principles that underlie language structure, this LC could be comparable to Chomsky's UG and is built up in humans before 5 years of age. Another area of storage contains the representation of semantic knowledge about the world (without which meaning could not be expressed) and finally, the last components of this model are the Language-Specific details (LSD), which provide the lexicon with its grammatical surface features and the pragmatic rules. Consequently, in this model of representation of knowledge, vocabulary is seen as exempt from any maturational constraints. What is more, depending on the number of languages a person learns, more LSD would be made progressively available for each new language added to the speaker's repertoire.

Another reason why vocabulary has not been studied in relation to age is that, contrary to syntax or phonology, learning vocabulary is a never-ending process even in the L1 (Gass, 1999; Service & Craik, 1993; Stubbs, 1986), while grammar is not.

“Lexical competence simply never approaches this kind of completeness [that takes place in grammar]. The learning of new vocabulary is clearly very rapid in childhood, and then slows down. But a person's vocabulary may nevertheless keep growing throughout their whole life. New meanings can be learned for old words, and new relations between words can be formed” (Stubbs, 1986:59).

It is thought that the acquisition of syntax is complete at a particular point in time, while the lexicon is not considered a closed set of rules but a list that can always

be enlarged. Therefore, some claim that it is possible to find age effects on syntactic but not on semantic knowledge:

“There are aspects of phrase structure that serve no purpose (i.e., no semantic, phonological, or pragmatic end) other than to satisfy the syntax module. It may be that the demands of this syntax module are satisfied in native speakers as a consequence of some innate mechanism and it may be that, once satisfied, *the syntax module assumes a mature state in which modification is unnecessary for native speakers and possibly resisted for learners of a second language. This state of affairs does not exist in the case of semantics.* Because the world of meanings is very large, or possibly infinite, human languages need to be able to grow as new meanings are constructed. This being the case, *the semantics module remains quite flexible, whereas the syntax module becomes rather rigid at an early age.* One would therefore expect that learners would not be able to acquire syntactic frames incidentally; if by incidentally the concept of attention is also invoked, although they might very well acquire enough semantic knowledge to successfully negotiate second language tests.” (Gass, 1999:330 -my italics-)

Nevertheless, there is no agreement as regards modularity: Bates and Goodman (1997) cast doubt on a modular distinction between grammar and lexis. They support a “unified lexicalist approach to grammar” because there is evidence from language development and real-time language processing that emergence of grammar highly depends on vocabulary size. These findings would be in line with Robinson’s position that “learning about grammar takes place through, not before, learning about lexis” (1989:543) and with the frequently asked question in the literature “what does it mean to know a word?”. Actually, both semantic and syntactic aspects converge in the answer. Nation (1990:31) classifies different types of word knowledge (what a person should master to know a word) into meaning, grammatical behaviour, collocations, frequency... Also Schmitt (2000) talks about meaning and organization as well as about word form and grammatical knowledge.

In addition to syntax, most research on the CP has focussed on phonology, as ultimate attainment has usually been identified with a native-like command of the language, especially as regards ‘foreign accent’⁹ in speech. Therefore, studies have concentrated in finding (or not) a relationship between the AO and the degree of ‘foreign accent’ in the SL (see for instance Flege, 1981; Olson & Samuels, 1973/1982).

It has probably been a combination of all the causes identified in this section what has made of vocabulary a neglected aspect in age studies. Nonetheless, the next section will consider arguments and counterarguments that demonstrate the interest of studying vocabulary acquisition in relation to age.

2.5.2. Why it is relevant to study vocabulary in relation to age

There are mainly two reasons why we believe it is appropriate to study vocabulary in relation to age, as will be seen below. One has to do with the fact that vocabulary acquisition entails not only explicit but also implicit skills. The other is related to possible neurological differences between syntax and vocabulary: that they might be placed in different brain locations does not necessarily mean the former can be affected by age while the latter cannot.

⁹ ‘Foreign accented speech’ is defined by Munro (1998:139) as “nonpathological speech produced by second language (L2) learners that differs in partially systematic ways from the speech characteristic of native speakers of a given language.”

First of all, age is said to have an effect on components of language that are learned implicitly. DeKeyser (2000), for instance, points out that one of the implications of the Fundamental Difference Hypothesis by Bley-Vroman could constitute a reconceptualization of the CPH: age effects would depend on the availability of implicit learning procedures. Both phonology and morphosyntax seem to adhere to this condition of ‘implicitness’ better than vocabulary might seem to do. Rieder notes that “psychological studies about implicit/explicit learning in language acquisition have typically been concerned with the acquisition of grammatical structures” (2003:24).

By revising the available studies on incidental and intentional learning, which are two terms commonly taken for ‘implicit’ and ‘explicit’ learning, one realises that “there are virtually no experimental L2 grammar learning studies which are explicitly presented as intentional learning studies” (as most grammar is thought to be learned implicitly), but there is “a vast literature of empirical studies in incidental and intentional vocabulary learning” (Hulstijn, 2003:349). Wesche and Paribakht’s edited issue of *Studies in Second Language Acquisition on incidental L2 vocabulary instruction* in 1999 can be an example.

A clarification is needed at this point as regards the terms *implicit vs. explicit* and *incidental vs. intentional* because, according to Rieder “it seems that the debate about implicit/explicit learning and vocabulary acquisition has frequently been blurred by a confusion of the issue under discussion” (2003:24).

For many authors, incidental and implicit on the one hand and intentional and explicit on the other, are taken as synonyms. However, there are others such as Hulstijn (2003) who recommend maintaining the distinction between incidental and implicit and

between intentional and explicit, as commented below.

Ellis gives a behavioural definition of implicit learning, which is “the acquisition of knowledge about the underlying structure of a complex stimulus environment by a process which takes place naturally, simply and without conscious operations”, while explicit learning is “a more conscious operation where the individual makes and tests hypothesis in search for structure” (1994a:1). Therefore, implicit vocabulary learning occurs “when the meaning of a new word is acquired totally unconsciously as a result of an abstraction from repeated exposures in a range of activated contexts” and explicit vocabulary learning means that “there is some benefit to vocabulary acquisition from the learner noticing novel vocabulary, selectively attending to it, and using a variety of strategies to try to infer its meaning” (1994b:219). Gass (1999), however, points out that with vocabulary learning, the criterion of not being the focus of deliberate attention is difficult to show.

It is true that in the specific area of vocabulary, the distinction ‘incidental-intentional’ resembles that of implicit-explicit: incidental would be “the learning of vocabulary as a by-product of any activity not explicitly geared to vocabulary learning” (Hulstijn, 2001:271) or according to Ellis (1994b:219) “[incidental vocabulary learning] takes place when we acquire the new vocabulary item without intending to do so, it is learned without the object of that learning being the specific focus of attention”. In incidental vocabulary acquisition, learner’s attention is focussed primarily on communicative meaning, not on form (Huckin & Coady, 1999). Intentional vocabulary learning would be “any activity geared at committing lexical information to memory” (Hulstijn 2001:271).

Therefore, incidental and implicit are not synonyms, in the same way that intentional and explicit are not either. There are more authors that opt for keeping the distinction between these terms as well. Paradis (1994) claims that implicit competence is acquired incidentally, stored implicitly and used automatically and that implicit learning entails much more than what is meant by incidental learning. Rieder (2003) describes incidental vocabulary acquisition as [- intention] and as being composed of implicit learning processes, which would be classified as [-intention,-awareness], and/or explicit learning processes [-intention,+ awareness]. Ellis (1994b) suggests that incidental vocabulary acquisition is non-explicit (the main aim is text comprehension) but it is not implicit either (that is, unconscious); and he goes a step further and concludes that incidental vocabulary acquisition involves implicitly and explicitly acquired skills. It involves implicit skills as regards learning of productive/receptive aspects of vocabulary such as surface forms (spelling patterns, collocations...); even amnesics with impaired explicit memory can acquire new vocabulary in this sense, and it involves explicit learning processes as regards acquisition of meaning aspects and reference (like semantic representations). Therefore we must be cautious and take this into account when interpreting findings or summarising beliefs that use these terms, like the widely spread idea that most vocabulary is acquired incidentally as a by-product, as the notion of “incidental” implies both implicit and explicit skills.

Gass (2003) investigated the extent to which focussed attention affects the learning of some parts of language as opposed to others, as it might be the case that different aspects of language are processed and stored in different ways or require more or less attention. She predicted that focussed attention would have more effects on the

lexicon (which is more ‘isolatable’, less abstract or less complex than grammar). Therefore, it would be shown that the lexicon does need to be learned as opposed to the growing that needs to occur for syntax acquisition and this would demonstrate that there is a difference between lexical and grammatical development. However, results showed that focussed attention was more useful for syntax than for vocabulary, a large amount of learning took place without explicit attention in the area of the lexicon. She interprets this finding as an indication that attention is not necessary, “lexical learning is an area that can be learned on the basis of one’s own internal mechanisms” (or that “learners do in fact use attentional mechanisms in learning new lexical items but that they are able to more readily use their internal devices to generate attention”(Gass, 2003:527; Gass & Álvarez-Torres, 2005:22).

Consequently, we cannot consider vocabulary a completely explicit part of the process of learning a language, or even think that if there are age effects in SL learning, we can leave vocabulary aside. It has been shown that talented learners could pass as NSs as regards their pronunciation, while there was evidence of their non-nativeness in the syntactic/semantic judgement tasks (Coppeters, 1987). Also Sorace (2003) points out that the syntax-semantics interface is more problematic for the L2 learner than syntax itself. Eubank and Gregg (1999) suggested that critical or sensitive periods not only could affect in different ways the various linguistic domains (phonology, syntax, lexicon...), but also the sub-components of each domain (lexical items, syntactic effects of abstract features...).

In line with this suggestion by Eubank and Gregg, different authors analyse various sub-components of linguistic competence: Slabakova (2006) wonders if there

is a critical period for semantics, which she divides into lexical semantics and phrasal semantics, the latter at the interface between syntactic structure and conceptual structure. As she finds no failure for the adult learner to acquire phrasal semantics, she concludes that there is no CP for semantics. Another example could be Service and Craik (1993), who found that spread of activation in semantic memory is not affected by age.

Finally, it is worth observing that tests designed to check L2 ultimate attainment have basically been grammaticality judgement tasks, or elicited imitation tasks to evaluate phonetic/phonological attainment. According to Long, other vocabulary tasks might be used to explore the lexical domain and ultimate attainment, for example he points out that “it seems that lexical voids and collocation errors will be less easy to conceal in longer spontaneous speech samples, or even in writing samples, especially under speeded conditions” (Long, 1990:273).

Secondly, it is relevant to consider here the argument that vocabulary may not be subject to age-related differences when learning a SL on the basis that its location in the brain is different from the location of grammar. Certainly, there is evidence that suggests that semantic and grammatical functions are neurobiologically different, that the organization of the brain is not the same for syntax in early and late bilinguals, while it is similar for the lexicon. Nevertheless, it does not follow automatically that vocabulary cannot be affected by age effects because its location in the brain is different from that of syntax.

Neville, Mills and Lawson (1992) studied the processing of open and closed class words in deaf and normal-hearing subjects. Open class words provide primarily

semantic information, while closed class words provide primarily syntactic information. Event-related brain potentials (ERP) indices for open class words (semantic processing) were similar in deaf and hearing subjects, while they were different in closed class words (grammatical processing), this finding is thus used as an indication of the fact that semantic and grammatical processing are not the same thing. Paradis (1994:398) argues that “patterns of cortical organisation associated with the processing of morphosyntax are altered as a function of age of acquisition to a greater extent than those associated with the processing of vocabulary”.

Similarly, Ullman et al. (1997) point out that lexicon and grammar in the mother tongue depend respectively upon two brain memory systems: lexical memory relies on declarative memory, which subserves the learning and use of fact and event knowledge and which late SLA seems to rely on; whereas grammatical aspects involve procedural memory, which subserves the acquisition and expression of motor and cognitive skills. Therefore, in the learning of a SL, there will be a shift in processing grammar from the procedural memory system to the declarative memory system, but there would be no shift from procedural to declarative memory systems for SL lexical processes, as they depend on the declarative memory system both for the L1 and the L2. In a similar vein, Fabbro (2002) reviews some studies which show that the lexicons of the L1 and L2 are represented in the same brain areas (declarative memory systems in the left cortical associative areas) regardless of the age of acquisition¹⁰. This does not happen with other linguistic aspects: the representation of grammatical aspects, for example, is claimed to

¹⁰ Also Franceschini, Zappatore and Nitsch (2003) review some studies which lead to conclude that lexical processing is associated with the same brain areas regardless of age of acquisition or proficiency.

be different in the two languages if the L2 is acquired later than age 7.

However, even if data from amnesic patients in declarative and non-declarative tasks might seem to give support to the existence of these two types of memory systems, Green (2003) casts doubt on the evidence of this dual system. He reviews some studies on the learning of artificial grammars which suggest that a difference in performance can be obtained within a single memory system.

Kim et al. (1997) concluded after conducting a study with early and late bilinguals, that the former activated just one brain area in a sentence-generation task, while the latter used two centres of activation (for the L1 and the L2). Nevertheless, proficiency level was not controlled in this study and it is extremely important not to mix up proficiency with age of acquisition, as very different results could be obtained. As Bialystok and Hakuta (1999) state, a neurological difference does not mean a difference in language proficiency. Therefore, a difference or similarity in brain location at certain points in time does not necessarily mean that the learner is more or less proficient or that the lexical or grammatical abilities cannot be similarly or differently affected by any other aspect such as age.

Perani et al. (1996, 1998) confirm that both the L1 and L2 are processed in a single and common left-sided network, comprising all the classical language areas when L2 is acquired early (before the age of 5). In contrast, for late bilinguals, activation of brain areas are different for grammar but the same for semantics. Nevertheless, the critical factor is not the age of acquisition but the degree of language proficiency that each individual can attain: highly proficient late bilinguals activate similar areas in the left hemisphere for L1 and L2, but less proficient learners have different activation

patterns for the two languages. Also Abutalebi, Cappa and Perani (2001) point to the fact that proficiency and language exposure may be more important than age of acquisition as determinants of the cerebral representation of languages.

Research with deaf individuals offers interesting findings on vocabulary and age in natural settings. Lederberg and Spencer (2005) claim that as far as exposure to the visual language takes place before adulthood, some abilities (like some word learning processes that establish reference to words) depend on the level of vocabulary development rather than the age at which vocabulary development began. Nevertheless, they suggest that there is a CP for some aspects of semantic development: age of exposure seems to affect the automatic semantic processing in the long run as well as the lexical growth rate: this rate is faster for those children exposed early to the language, that is, those who have had a cochlear implant early in life. It is not clear, however, if the growth rate declines quickly after one or two years of age or if the decline is more gradual through childhood. In addition, they point out that if there is a CP for syntactic processing, it will also slow lexical growth. According to Mayberry and Eichen, age of acquisition exerts multiple and discrete effects at each level of language structure, specifically, they claim that age of acquisition “exerts one effect that reverberates throughout the processing of language structure” (1991:507) and this primary effect is basically lexical. In the initial stages of language processing, there are theories that claim that the identification of the lexical stem is prior to the identification of bound morphemes (inflectional or derivational) and to syntax. Therefore, according to them, the multiple effects of age of acquisition may originate from one single source: difficulty in lexical access. Hence, it is surprising that those who claim that there are

maturational constraints do not include vocabulary as an area of study. Likewise, it is difficult to support the hypothesis that lexis is an area totally unaffected by age, although not even Penfield claimed any neurological advantage for children in learning the vocabulary of a SL.

2.6. Main findings on SL vocabulary and age

Although the mainstream literature has not dealt with vocabulary and age, there have been some studies that have dealt with age and lexical acquisition in a SL and the aim of this section is to examine them. As Singleton (1995) acknowledges, there is a small amount of published research available on the topic. He has offered a thorough review of studies dealing with age and the SL lexicon in two specific sections of his publications (Singleton, 1995:10-16; Singleton & Ryan, 2004:97-100). Since these sections present a very complete state of the art already, the following is basically a digest of those sections. However, further comments have been incorporated and other studies have been added. As chapter 3 of the present dissertation deals specially with the measurement of vocabulary, we will concentrate here on the results obtained in the studies on lexical issues and age and not in the measures used, but we will start by considering first some widespread beliefs and conceptions on the topic.

2.6.1. Folk beliefs on age and SL vocabulary acquisition

It is a popular belief that the aspects that children will learn more efficiently in the first stages of learning a SL are pronunciation and vocabulary. In a study carried out

by Burstall et al. (the NFER Evaluation Project, 1974) on the effects of an earlier introduction of French in primary schools in the UK, most of the teachers considered that starting the SL when children were younger than twelve was positive. They held that an earlier start “would help pupils to acquire a wider vocabulary” and that it was the time “to get children speaking French quite naturally, assimilating new words and sounds without difficulty” (1974:69-70).

Also Torras, Tragant & García (1997) interviewed parents whose children started learning a FL at a young age. They report that parents believe that, at this early age, children have a special ability to learn pronunciation and that of all the linguistic components, they would basically learn vocabulary, as grammar structures would be too difficult to learn. As regards instruction in the school context, the majority of parents note that what children learn in class is vocabulary (i.e. isolated words), which they consider obvious as children cannot read or write yet; grammar structures would come later on. Their opinions can be therefore summarised as follows: children learn words that will be used in the following years to construct messages in the FL and the result of the learning will be seen in the long term. There seems to be a contradiction, though, between the beliefs held by parents as the authors indicate: the parents interviewed think that children assimilate languages better than adults, but that they mainly learn vocabulary. According to a priori belief then, this would mean that an early start will be better especially for vocabulary learning.

Nonetheless, these are all beliefs that may or may not correspond to what actually takes place. Empirical studies in this area will have to (dis)confirm what is assumed by popular knowledge. Among the studies on age and SL vocabulary acquisition, we can

distinguish those carried out in naturalistic settings and those conducted in formal settings. Depending on the length of the study, we could also further classify these studies into short-term or long-term studies.

2.6.2. Naturalistic settings

As regards naturalistic settings, most studies reveal that younger learners do not perform as well as older learners in the short term. Snow and Hoefnagel-Höhle's research in the Netherlands, with English learners of Dutch, shows that adolescent and adult learners' results in the Peabody Picture Vocabulary Test -PPVT- (Dunn, 1959) were better than those of the younger learners, thus suggesting an advantage for the older over the younger learners in vocabulary, as well as for aspects of the SL skill that depended strongly on rule acquisition such as syntax and morphology (Snow, 1983; Snow & Hoefnagel-Höhle, 1978). At the end of three months, the older learners were better at all aspects in Dutch except pronunciation. Also older immigrants were shown to overtake younger ones after less than a year in Sweden in most of the proficiency variables studied by Ekstrand (1976/1982). The lexical component in his study is embedded in each task, and there is no specific vocabulary test.

Swain (1981) compared L1 English-speaking adolescents in late French immersion programmes¹¹ in Canada with younger children in early immersion programmes. She found that adolescents performed as well on a cloze test after about

¹¹ Note that, contrary to what happens in immersion in natural settings, these immersion programmes at school, which are quite common in Canada, do not necessarily imply a contact with the SL outside it.

1,400 hours of immersion as the children did after 4,000 hours (the young were better in listening though). Also Cummins and Swain (1986) found that older learners would acquire cognitively demanding aspects of L2 proficiency more rapidly than younger learners; in lexis, older learners in an immersion context in Canada acquired more vocabulary in the same amount of time than did younger learners, as evaluated in a Picture Vocabulary Test. In the same line, Harley (1986) working with students in immersion programmes found that older learners had a greater range of verb vocabulary than the younger early total immersion students after about 1,000 hours of exposure.

In spite of this initial LS advantage, research has shown as well that Early Starters (ES) will most probably overtake Late Starters (LS) in the long run. Snow and Hoefnagel-Höhle's younger subjects, for instance, began to catch up with the older ones after about a year in sentence translation tasks or storytelling. However, Cook (1991) raises the point that long-term research has mostly used immigrants (and very often to the US) and hence factors such as immigration cannot be disentangled from the age variable, other factors such as attitude and sociolinguistic variables should also be taken into account.

There are two well-known immigrant studies in Sweden that focus on lexis and long-term achievement: Hyltenstam (1988, 1992), whose results seem to indicate the same as Spadaro's (1998) and Matsunobu's (1981) in the US, and Mägiste (1987). Hyltenstam analyses the written and oral production of three groups of secondary school students: 12 Swedish monolinguals that form the control group, 12 bilinguals with an AO below age 6 (ES) and 12 bilinguals with an AO above age 7 (LS). One of his main aims is to see the effect of AO in the degree of nativeness in the SL learner's ultimate

attainment. Grammatical and lexical analyses of the errors in the data were carried out and the following conclusion was reached: all bilinguals that arrived after age 7 committed more errors than the native monolinguals, whereas the young arrivals' group was more heterogeneous (some subjects behave similarly to the monolingual group and some were closer to the other bilingual group). According to Hyltenstam, this finding suggests that what has normally been assumed for phonology may also take place in the lexicon:

“The age of 6 or 7 does seem to be an important period in distinguishing between near-native and native-like ultimate attainment. The results, in particular, support the idea that acquisition after the age of 7 does not only hinder native-like attainment of phonology, which the studies reviewed by Long (1990) clearly lent support to, but may also lead to non-completeness and to the promotion of fossilization in the realm of grammar and lexicon.” (Hyltenstam, 1992:364)

There is also another study on vocabulary and long-term achievement that concludes that there is probably a sensitive period for lexical acquisition in a SL, which closes around the age of 6: Spadaro (1998) analysed the lexical performance of four groups: a NS control group (N=10) and three groups of NNSs (N=38) with various L1s and three different ranges of AO of learning (0-6, 7-12 and later than 13). Although all the groups performed similarly in a word association task, the group that started learning English between 0 and 6 years of age was judged to be more native-like in an oral task. Learners in this group also completed a series of written lexical tasks, which tested the use of core vocabulary and multi-word units, similarly to the way NSs did. The results were consistent even when length of residence was not a variable in the analysis. It must be noted, though, that the judges who rated the oral tasks were given the manuscripts to

read and, therefore, they did not have just lexical information to arrive at their final decision but also grammatical, morphological and pragmatic. In line with these results, Matsunobu (1981, quoted in Long 1990) found that several NS judges could distinguish the compositions written by NS freshmen from those written by NNS freshmen who have resided for a reasonable time in the US. Judges identified that collocation errors in the NNS writing and the idiomatic phrasing in the NS samples as key features in their decisions.

Mägiste's study (1987) involved students from Germany in primary and secondary schools. They had been living in Sweden for different lengths of time and performed two production tasks in German and Swedish: naming pictures and naming numbers. It was shown that it took less time for the elementary students (6 to 11) to acquire an elementary vocabulary in a SL, as she found that the point at which response times in the two languages intersected was after 4 years for primary school learners and after 6 for the secondary school pupils. However, these young learners did not exhibit such a considerable advantage in a more difficult task such as number naming, where the performance of both groups was alike; the advantage young learners have for lexical acquisition seems then to counterbalance task difficulty. When the task was cognitively more demanding, the response was similar for both groups (the two groups' response times for Swedish coincided with their response times for German at about the same point). Therefore, she concludes that although there might not be a critical age for SL learning, there can be an optimal age because "if the language task allows for the students' cognitive level, younger students will generally acquire that task with greater ease" (1987:56).

2.6.3. Formal settings

Studies in formal settings also show that older learners outperform younger ones in the short-run. Asher and Price (1967/1982) showed that young children (8-year-olds) had the poorest retention in a listening comprehension of commands in their SL. These commands, that could be formed by one up to four words, were better retained by adolescents and adults. Stankowski Gratton (1980) compared, at the end of the course, two groups of Italian elementary students who started to learn German in Italy during the first and the third grade respectively. The method used to teach students was the “Komm bitte”, which consists in learning phrases and sentences that can be combined and used in different situations. Results indicate that LS obtained more benefits from the course as their scores were a bit higher than those of ES, although the difference was not large. Knowledge of isolated words was tested but the results are presented as relative or absolute overall profit, without separating the different aspects that were tested.

Hence, it seems that in both contexts (naturalistic and formal) rate increases with age, because if the amount of exposure time is held constant, older learners learn faster than younger ones. McLaughlin, Osterhout and Kim (2004) studied the rate of L2 vocabulary learning of adult learners during the first classes in a SL. They reach the conclusion that adult language learners rapidly gather information about different aspects of L2 words (initially about form and then about meaning). Adult L2 learning is not “uniformly slow and laborious” as “some aspects of the language are acquired with remarkable speed” (2004:704). Also Ervin-Tripp specifies that adults “tend to pay most attention to vocabulary” (1974:123). Two other studies (cited in Singleton, 1995)

confirm the slow rate of young learners as regards vocabulary. They both involve observation of FL classes in primary schools and they conclude that pupils' acquired vocabulary is very poor (Scottish Education Department, 1969) and that they have a minimal and fragmentary knowledge regarding the small number of isolated words (Audin, Ligozat & Luc, 1999).

The only study that gives opposite results to the mainstream literature in formal contexts is Yamada et al. (1980); as it concludes that there is an immediate advantage for younger learners. In this study, 30 Japanese learners of English who had not had any exposure to this language before, were divided into three groups of 10 students each: first graders, third graders and fifth graders aged 7, 9 and 11 respectively. Each subject was given four concrete nouns to learn (two 1-syllable words and two 2-syllable words) with their corresponding pictures, in two learning sessions separated by 24 hours. A 3x2x2 Analysis of Variance design (the variables being age, session and syllable) indicated a significant effect of the session alone and an interaction of the three factors. An Analysis of Trend showed that the mean scores decreased significantly with age, thus indicating that younger children learned words faster than older children. They account for this finding by suggesting that young children have better rote memory (the ability to retain the association of words with the corresponding picture) and motor ability (which is related to the accuracy in pronouncing sounds). For the nature of the task being performed, the results obtained seem difficult to generalise, as different authors have already acknowledged (for instance Harley, 1986 and Singleton, 1995). Also Krashen, Long and Scarcella (1979/82) suggest that findings in favour of young learners could actually show younger children's superiority for mimicry, that would perhaps justify the

finding that ‘in the short run, the older the age the lower the score in a formal setting’.

In the long term, in contrast to what happens in naturalistic contexts (e.g. Snow & Hoefnagel-Höhle, 1978), younger learners do not seem to catch up with older learners. The same conclusions are reached by studies carried out in different countries: Burstall et al. (1974) in UK, Oller and Nagato (1974) in Japan, Griffin (1993) in the US, Harley and Jean (1999) in Canada, Singleton (1995, 1999) in Ireland and Cenoz (2002) and Muñoz (2006a) in Spain.

Results in Burstall et al. (1974), indicate that an early start does not lead to a better long-term performance. She reports that students who had been taught French from the age of 8 did not reveal, by the age of 16, any substantial gains apart from listening comprehension, the only test in which they were a bit better. Vocabulary in this study was assessed in the following ways: students were asked to identify the pictures that corresponded to printed items and then to choose the words needed to complete sentences (in the reading comprehension test). In the oral test, the answers to questions referring to illustrations were scored for structure and vocabulary using 4-point scales (Burstall, 1968). There was no test of free conversation ability even for those belonging to Grade 11 (sixteen year olds). However, a number of flaws have been noted in this study, one of them being that control students were sometimes mixed in the same class with experimental subjects, which may have affected the final results of the students.

Oller and Nagato (1974) carried out a cross-sectional study at grades 7, 9 and 11 with Japanese learners of English. Despite an advantage of 6 years in EFL for ES, LS outperformed them towards the end of high-school education. This fact led the authors to conclude that an early start does not necessarily mean a lasting benefit. However,

lexical competence was assessed only by means of cloze tests and ES and LS were integrated into the same class in the third year at high-school, which could have made it easier for LS to catch up with ES, although they were separated into different proficiency levels.

Griffin's (1993) study analyses the long-term achievements of two groups of American learners of French at the end of high-school. One group had started learning French between kindergarten and Grade 4 (ES), while the other had started between Grades 5 and 8 (LS). She found a clear advantage for LS despite having received less exposure to the language. Two tests were used in the assessment: the ETS French Achievement Test, in which vocabulary precision was assessed in a reading task by means of a multiple choice, and the Advanced Placement Examination Test. In this test, students wrote an essay, which was evaluated holistically for vocabulary, grammar accuracy, idiom usage, organization and style, and they told a story in French. Similar tests were used in a project in the Basque country, where Basque/Spanish bilinguals learn English as an L3. After six years of EFL instruction, LS (starting at 11 and being 16 when they were tested) significantly outperformed ES (starting at 8 and being 13 when they were tested). Vocabulary was assessed in an oral storytelling task, a cloze and a composition, using the Jacobs et al. profile (1981) to rate the writing task (see Cenoz, 2002). The older the students were, after a similar amount of English language instruction, the greater the lexical complexity found in their compositions (Lasagabaster & Doiz, 2003).

Singleton's study (1995, 1999) analyses the performance of a group of university students who started learning a FL before age 12 and a group who had started after this

age. The study, which involves three data-collection times, seemed to reveal a long-term benefit of an early start by the time of the second data collection, but the differences in favour of the ES group did not persist in the third data-collection time. Here, the only measure of lexical performance that was taken into account was the C-test, and there is a question over whether C-tests are actually good tests of lexis (Chapelle, 1994). Moreover, neither in Singleton (1995, 1999) nor in Griffin (1993) was it possible to separate the age at which learners had begun the instruction in the FL from the amount of time it had been going on. This fact, i.e., that an early start also implied more exposure (and that not even in this way did ES outperform LS) is also an indication that results found in SLA differ from those in naturalistic settings.

The same happens in Harley and Jean's study (1999). In Ontario, early immersion students in a French immersion programme were better than late immersion students if grade was held constant in a yes/no vocabulary recognition test (in spite of being the same age, ES had more exposure). Nevertheless, a more rapid progress in word analysis skills was observed for late immersion students. For instance, they had better abilities to produce words in the same family of the stimulus word and they easily converted words into cognates. Therefore, the authors concluded that, to some extent, maturity counts by overriding the disadvantage of less exposure.

As regards the project in which the research in this dissertation took place, the *BAF* Project, which takes as participants Catalan/Spanish bilinguals learning English, it has been shown that LS do normally produce more and that significant differences in favour of the ES are very rarely found. An advantage of LS over ES in lexical knowledge (especially written) might be present from the first stages of learning the FL.

In writing, for instance, LS gains after 200 hours of school instruction are superior to those of ES after the same number of hours of exposure (Miralpeix, 2002). They were also superior after 416 hours of instruction as observed by Torras and Celaya (2001) and it was found that both groups of learners obtained higher means in the area of lexical complexity than in grammatical complexity, which led the authors to conclude that learners “seemed to use all lexical resources available even when their syntax was not yet sufficiently complex” (2001:116). In a study carried out by Navés (2006), twenty-two measures of lexical complexity were used to analyse writing performance and it was found that after 726 hours LS also outperformed ES, especially when measured by adverb TTR and total number of verb types. The only advantage for ES was shown in noun variation and noun types. In a storytelling task, Muñoz (2000) found significant differences between the verb/noun ration of ES and LS, who were already performing better than their peers. Moreover, after 416 hours of instruction, LS did not resort to the L1 as often as ES did (Muñoz, 2003), which would mean that LS had more vocabulary available in the L2.

In the field of vocabulary learning, Singleton offers what he believes to be the most plausible conclusion now regarding the age factor and lexical acquisition:

“The age factor operates in relation to second language vocabulary learning in the same way as it operates in relation to other aspects of second language learning, i.e. *older beginners exhibit an initial advantage which is progressively eroded as younger beginners catch up with them and eventually overtake them.* This pattern is clear in the naturalistic evidence, and is undisturbed by most of the evidence from formal instructional situations, provided that one takes into account the very much longer timescale that must be required for the eventual advantage of an early start to manifest itself under conditions of sparse exposure.”
(1995:20 -my italics-)

The need for evidence from formal instructional situations that extend for a long period of time is evident. Furthermore, we should bear in mind that most of the long-term studies reviewed in this chapter have been shown to have weaknesses, especially those that found long-term disadvantages for ES. First of all, most of the studies use different methodologies. Although it can be seen as an advantage, especially if the same results are arrived at by different procedures, the use of different methods in different contexts and a disparity of measures can lead to results that are not conclusive. Secondly, as noted by Singleton and Ryan (2004) children who start learning a language earlier in an instructional setting are at some point mixed with those students that started later (Burstall et al., 1974; Oller & Nagato, 1974); therefore, we could find a blurring effect: there might be a masking effect of the older learners' initial superiority and it will also be hard to find an advantage for ES in the long run, as there will possibly be a levelling-off of their scores with those of LS. In the third place, it is very difficult to separate AO and exposure, as learners who start early have normally received more hours of instruction (Griffin, 1993; Harley & Jean, 1999; Singleton, 1999). Consequently, if results in favour of ES were found, they could be due to the amount of exposure, to age or to an effect of these two combined variables. Moreover, there are practically no studies which follow up the effects of earlier and later L2 programmes over long periods, and they are thought to be "essential if the debate about the value of early L2 instruction is ever to be settled" (Singleton & Ryan, 2004:28).

Together with this claim for more longitudinal studies on age, we find this other one by Snow and Hoefnagel-Höhle, which suggests that the different components of language should be examined in relation to age effects:

“A complete test of the hypothesis that there are no age differences in second language acquisition requires separate tests for all the separate identifiable components of language skill - receptive and productive control of morphology, syntax, vocabulary and fluency skills as well as phonology” (1978:335)

Accordingly, then, the first concern in our study is to explore if students who started learning English earlier in a formal setting will have larger productive vocabularies than those who started later, after having received the same amount of instruction, towards the end of secondary education. As we have mentioned above, only two age studies, Griffin (1993) and Cenoz (2003), analyse lexical abilities in free oral production tasks. Apart from these two, there is a lack of long-term formal studies on age and vocabulary that focus on productive vocabulary, especially free-productive (see the typologies in chapter 4). Therefore, our study will concentrate on the vocabulary used in FL production tasks. In addition, the design of the project on which this dissertation is based overcomes the problem of mixing up ES and LS in the same class, at the same time that exposure is controlled for both ES and LS without interfering with AO, that is, an earlier AO does not entail more exposure to the language for the younger group. The study aims at analysing long-term effects, as the time-span between the start of the FL at school (primary education) and the end of instruction (last grade of secondary education) ranges from seven to ten years, which is the maximum amount of compulsory instruction of English our learners could get in the curricular framework of the Spanish educational system at the time.