

AGE AND THE ACQUISITION OF FOREIGN LANGUAGE PHONOLOGY IN AN INSTRUCTIONAL CONTEXT

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ABSTRACT

The effects of age on successful language acquisition constitutes one of the most widely investigated topics within the field of Second Language Acquisition (SLA). In fact, the study of SLA has, since its inception, attempted to prove the existence of a putative Critical Period (CP) for language development, a CP beyond which language acquisition would be rather incomplete. A considerable body of research conducted in naturalistic settings has shown that an early onset age (OA) is a good predictor, if not a necessary requirement, for a person to attain native-like language skills. Moreover, the results obtained in investigations that have focused on the acquisition of phonology in naturalistic contexts suggest that this particular domain is the most heavily affected by the maturational factor. Nevertheless, some recent research findings on the native-like attainment of L2 phonological skills by late beginners have forced linguists to come upon other factors that may explain age-related differences. These factors include: the interconnection of the first language (L1) and second language (L2) phonetic systems, learners' individual characteristics, the amount of L2 use and the type of input.

The main goal of this paper is to determine whether “the earlier, the better” notion is applicable to the acquisition of pronunciation in instructional contexts where the quality and the quantity of input learners receive is scant. Drawing on data from two carefully designed longitudinal studies carried out in Spain it will be demonstrated that individuals' proficiency on the perception and production of the foreign language (FL) sounds is inherently joined to the surrounding environment and that OA works differently from setting to setting. In instructional contexts, indeed, the effects of exposure turn out to be greater than the effects of age. This implies that to really increase the effectiveness of early foreign language learning (FLL) educational systems need to boost the creation of learning environments in which students benefit from extensive high-quality input and also from the increased opportunities for interaction in the TL.

In this sense, many authors argue that the most effective means of FL teaching is content and language integrated learning (CLIL). However, CLIL programmes are still in their infancy and their implementation has proven to be rather ineffective in pronunciation.



Keywords: Onset age (OA), FLL, pronunciation, type of input, CLIL

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1. Introduction

Despite the fact that the rather complex relationship between age and successful language acquisition can be hardly understood unless taking into consideration the learning environment (e.g. Singleton 1989; Dekeyser & Larson-Hall, 2005), age is often considered as if it were an isolated, self-sustaining factor standing far “beyond external control” (Ellis, 1994, p. 35). Accordingly, research evidence from naturalistic settings, in which early starters for the most part outperform late learners, has probably not only been misconceived and over-extrapolated to foreign language environments without taking into account context-specific variables (Birdsong, 1999), but also in many cases taken as a compelling argument for a so called “critical period” (CP) for second language acquisition (SLA). Indeed, the question of whether there is a CP for language development has caused a heated controversy among linguists. While some linguists argue that younger learners are globally more efficient than older learners (see Dekeyser, 2006), some others assert that, with respect to second language (L2) learning, adults far exceed younger beginners (see Asher & Price, 1967 as cited in Krashen, Scarcella, & Long, 1982; Cook, 1986); or that younger L2 learners surpass their adult counterparts only in some respects (see Fathman & Precup, 1983; Scovel 1988) or in the long run (see e.g. Krashen, Scarcella, & Long, 1982; Snow & Hoefnagel - Höle, 1978ab, as cited in Singleton & Ryan, 2004).

The strongest evidence for the CP comes from the study of L2 phonology where older starters hardly ever achieve the native-like accent younger starters display. Some studies have suggested that onset age (OA) 6 is the upper boundary to attain pronunciation mastery (Long, 1990), while further revealing that those who are exposed to an L2 after puberty will frequently exhibit a high degree of foreign accent (FA) due to the loss of brain plasticity (Scovel, 1988). Nevertheless, recent research findings on the native-like attainment of L2 phonological skills by late beginners have expedited the emergence of diverse alternatives towards the neurophysiological maturation account. Thus, explanations including the relevance of the learners’ native language (NL) phonological system, learners’ individual characteristics, and

the type of input and context seem to currently frame the interpretation of OA effects in plenty of L2 phonological acquisition studies (Muñoz, 2006).

Given the fact that age cannot be disentangled from the learning context, the present paper aims at determining whether the early introduction of L2 instruction results in a more native-like perception and production of the target language (TL) sounds. The paper will be structured as follows: In section 2, after briefly referring to first language (L1) related evidence concerning the Critical Period Hypothesis (CPH), I will examine L2 evidence concerning an optimum start of L2 acquisition with a particular emphasis on phonology. Section 3 focuses on the differences between naturalistic and formal contexts. In section 4 I will focus on two longitudinal studies dealing with the acquisition of phonology at diverse ages in strictly formal contexts. Subsequently, in the light of the results obtained in purely formal settings, I will examine the role of early immersion on students' phonological outcomes. Finally, in section 6, I will draw a set of conclusions.

2. Language acquisition and the age factor

Based on their studies of speech recovery after brain damage, the Canadian surgeons Penfield and Roberts (1959) first popularised the notion of a CP for L1 acquisition. They cited evidence foregrounding children's ability to recover oral skills to age-appropriate levels when injuries or damage to the language centre of the brain (e.g. cerebral trauma, asphyxia or seizure disorder) result in acquired childhood aphasia. Conversely, the same injuries in adult life entail irreversible forms of language breakdown. In other words, what this means is that transfer of speech functions from the impaired dominant hemisphere – usually the left – to the minor one can only be successfully completed in childhood as the immature brain exhibits substantially greater plasticity than the mature brain (Singleton & Ryan, 2004). In light of this, they felt justified to infer that “for the purposes of learning languages, the human brain becomes progressively stiff and rigid after the age of nine” (Penfield & Roberts, 1959, p. 236). Penfield and Roberts (1959) further expanded upon this claim and suggested that the actual brain plasticity in early stages of life would allow children to learn two languages as easily as one, his comments being that “when languages are taken up for the first time in the second decade of life, it is difficult...to achieve good results...because it is unphysiological” (p. 255). By this

means, the innate mechanisms which make L1 acquisition possible would be less effective, or even non-functional after age 10, in such a way that successful L2 development would no longer be possible.

Theoretical support came soon on the part of Lenneberg (1967), who is widely recognised as the “father” of the CPH. After interpreting data from individuals enduring sudden deafness, he found that children deafened before age two did no better in speech than those deaf by nature. This conclusion led him to introduce a well-defined reference to an optimum starting point for language acquisition in his *Biological Foundations of Language*: “Between the ages of two and three language emerges by an interaction of maturation and self-programmed learning” (Lenneberg, 1967, p. 158).

With regard to an upper boundary for language development, Lenneberg saw puberty (age 13) as a turning point for language acquisition, this period concurring with a decline of cerebral plasticity caused by the completion of the lateralization process of the brain (Singleton & Ryan, 2004). In this context, the case of Genie – an adolescent girl who for most of her life underwent social isolation and experiential deprivation and was first encountered and reintegrated in society in 1970 when she was 13 years – seems to be noteworthy as it presented researchers with a unique opportunity to prove the validity of Lenneberg’s theory. If given an enriched learning context and a customized educational programme, could Genie’s post-pubescent brain fully recover her linguistic abilities to native like levels? While it is true that certain post-rescue progress in specific areas was observed (e.g. semantics and pragmatics), Genie’s oral language proved rather problematic. That is why Genie’s language development has been interpreted as evidence for and against CPH. Curtiss argues that her limited and abnormal speech sound representation may suggest “specific constraints and limitations on the nature of language acquisition outside of... the critical maturational period” (Curtiss, 1977, p. 234). Contrarily, De Villiers and De Villiers’ review of Genie’s progress led them to the conclusion that although “her development is laborious and incomplete, the similarities between it and normal acquisition outweigh the differences” (De Villiers & De Villiers, 1978, p. 219).

Meanwhile, noticeable and even more striking discrepancies have emerged when it comes to seeking agreement or consensus on the specific age limit for the period in question. Contrary to Lenneberg’s 1967 claim that the onset of language development is set down at age 2, subsequent studies in speech perception have stressed that there is no postnatal phase in which

language is not in the process of being acquired. This is the case of Eimas, Siqueland, Jusczyk and Vigorito's (1971) study in which infants' sensitivity to voice onset time (VOT) differences was tested; the results showing that newborns as young as one month are able to discriminate between phonologically relevant categories just the same as adults do. To return to the terminus of the CP, Lenneberg's (1967) age proposal has been challenged by converging evidence indicating that hemispheric specialisation for language is already present around age 5 (see Kinsbourne & Hiscock, 1997; Krashen 1973); while other authors (e.g. Flege, Munro, & McKay, 1995) have proposed age 6 as the upper boundary, as the L1 sound system seems to be fully acquired by that age; a fact that could have a detrimental impact on the accent-free phonological acquisition of subsequent languages.

Clearly, the fact that different researchers have specified different ages for both the onset and the offset of a putative CP generates great uncertainty and favours the emergence of the skeptical. Moreover, while some of the evidence at issue indicates linguistic advantages related to untimely L1 acquisition, there are no clear grounds for believing that language absolutely cannot occur through early adulthood and beyond, though it seems to be incomplete. Likewise, the particular circumstances surrounding feral children and the pathological kind of evidence provided by patients suffering from aphasia should be treated with care and caution due to their exceptional nature.

After providing a brief background about L1-related evidence concerning the CPH, the following section will review L2 evidence related to an optimum start of L2 acquisition by placing a greater emphasis on the phonological domain.

2.1 From the Critical Period (CP) to “the younger, the better” belief in L2 acquisition

The cases analyzed by Lenneberg (1967) were isolated in nature and unique circumstances and, therefore, his interpretation of the data is very far from being universally accepted. Nevertheless, his conception of a CP for L1 acquisition revolutionized academia and researchers turned to SLA so as to test the possible effects of neurophysiological maturation on language learning.

Taking as a point of departure observations of immigrants acquiring L2s in a naturalistic form, considerable research has revealed that an early age of entry into a host country represents a driving factor towards successful acquisition of its language (García Mayo & García Lecumberri, 2003), at least in the long run when ultimate attainment, that is, final level of proficiency is examined. Nevertheless, within the so-called immigrant studies, both rate of learning - how fast a language is acquired - and ultimate attainment have been widely explored.

The first research study in this paper in support of an early onset age (OA) is the one led by Ramsey and Wright (1974), who after administering language skills tests encompassing subsets in aural perception, intonation and knowledge of functions and idioms to 5000 “new canadian” students differing in their age of arrival – age 5, age 7 and age 9 respectively – to the city of Toronto, determined that those learners being exposed to the L2 after age 7 obtained worse outcomes than those pertaining to previous grades.

With regard to age-related effects on the acquisition of L2 lexis, Mägiste’s (1987) investigation over 151 young native Germans who had resided in Sweden for an extended time frame, concluded that younger students exhibited a vocabulary-acquiring advantage in both pictured objects and two-digit numbers naming.

In the case of morphosyntax, Johnson and Newport (1989) administered grammaticality judgement tests to investigate age effects. The subjects of this research study were 46 asiatic immigrants in the USA starting the acquisition of English at diverse ages. Nevertheless, all of them had been American citizens for at least five years. Results from this study once again appeared to be consistent with the “the younger, the better” notion. A slightly similar approach was adopted in Hyltenstam’s (1992) investigation of the Swedish proficiency of immigrants in Sweden. He found that the number of grammatical errors produced by younger arrivals were unvaryingly in a lower range than those produced by students who had arrived in their host country after age 7.

As for speech production and perception, some authors have claimed that phonology is the only aspect of language which is subject to neuromuscular programming in L2 learning. Scovel, in his 1988 extensive review of the CP, asserted that phonological accents in L2s, more than other linguistic competencies, would most display age effects since accent is the only part of language which is physical, and is consequently affected by the developmental changes in

the brain. Following this line of reasoning, he ventured to assert that learners who begin learning an L2 after age 12 “cannot ever pass themselves off as native speakers phonologically” (Scovel, 1988, p. 185). Thus, while early learners’ speech lacks any trace of foreign accent, adults’ oral communication is seldom accent-free (Scovel, 1969). Like Scovel, Seliger (1978) accepts the evidence of very early laterality, but posits the existence of different time spans for the development of different language aspects. Thus, authentic accent in an L2 can be hardly acquired beyond puberty, while grammatical competencies seem to be attainable much later in life (Seliger, 1978).

Similar to the aforementioned studies on lexis and grammar, data on the experience of immigrants acquiring L2s through natural exposure has also demonstrated that age of arrival in the TL environment is the factor which best associates with marked FA. In this respect, a study by Asher and Garcia (1969) revealed that those who had arrived in the USA between the ages of 1 and 6 years and had been living in the host country for at least five years, were the ones to be closer to native accent.

Other investigations such as the ones conducted by Oyama (1976, 1978) contributed to reconceptualizations of traditional views of the CPH; being for her the so-called “sensitive period” the most suitable empirical formula for age related effects on L2 phonological acquisition. She analysed data from 60 male Italian immigrants in the United States, who had arrived at ages ranging from 6 to 20 years and their length of residence in the host country fluctuated from 5 to 18 years. The results showed that after age 11 subject’s speech production capacity diminished linearly, rather than abruptly vanishing. A steady linear decline that led Oyama (1976) to infer that:

This sensitive period is obviously not an all-or-nothing phenomenon; adults can and do learn to speak new languages, and often very well. Whether the efficiency of the acquisition process simply decreases as a person grows older or whether the process actually ceases to function, so that one must use other abilities whose efficiency is not so closely tied to maturation, learning to “speak like a native” seems to be quite difficult for all but the very young (p. 33-34).

Hence, after the hypothesized sensitive period successful L2 phonological acquisition would be imperfect and irregular rather than impossible or unattainable; since periods of heightened

responsiveness to certain kinds of environmental stimuli are commonly followed by time intervals of lesser sensitivity.

We now place our focus on Piper and Cansin's (1988) study, which also appears in support for "the younger, the better" belief. The subjects of this study were 29 advanced English as a Second Language (ESL) students who had arrived in Canada from pre-age 6 to 28+. All subjects were interviewed in English and asked to tell an episode from their personal experience. Certain sections of the interviews were later submitted to native speaker judgements. An analysis of these judgments revealed that subjects' OA in the English-speaking environment was the best indicator of accuracy of their pronunciation in English.

The last research study on natural L2 phonological acquisition advocating for the widespread "the younger, the better" belief in the present paper, corresponds to Flege and his colleagues (e.g. Flege, Mackay, & Meador, 1999; Flege, Munro, & Mackay, 1995). Flege et al. (1995) aimed at examining the phonological proficiency of 240 native Italian learners of English who had been Canadian citizens for at least 15 years by the time they were assessed. These subjects were asked to read aloud five short English sentences, meanwhile, the same sentences were produced by a control group of 24 native English participants. Sentence productions of both groups were then arbitrarily presented to native English speakers from Ontario who unsurprisingly rated with higher marks the native English participants; the ratings of the native Italian participants dwindled as OA increased. Flege et al. (1999) embraced an identical design as the 1995 research study in order to test the speech production of 240 native Korean speakers settled in the USA. Once again, the capacity to sound native decreased systematically as OA increased.

Despite the clear influence of OA on L2 phonological acquisition, the age at which one begins learning a L2 may not constitute a universally sufficient condition for an overall native-like mastery of the L2 (e.g. Romaine, 1989). A number of recent studies have shown that some late bilinguals may indeed be able to acquire native-like pronunciation (e.g. Bongaerts, 1999, Ervin-Tripp, 1974; Ioup et al., 1994, Kuusinen & Salin, 1971; Olson and Samuels, 1973). Conversely, investigations on early bilingualism have revealed that even very young beginners are sometimes found to speak TL sentences with a slight but a detectable foreign accent (see Flege, Frieda, & Nozawa, 1997; Flege & Liu, 2001; Flege, Mackay, & Meador, 1999; Piske, Mackay, & Flege, 2001). These contributions have led authors to call into question the CPH

and to put forward factors other than maturational constraints to deal with age-related difficulties underlying the phonological acquisition of an L2.

One of the alternative explanations for phonological age effects relies on the interaction of learners' L1 sound system in the perception and production of novel non-native categories. It has long been disclosed that learners tend to map what they hear in the TL onto their L1 phonetic system (Trubetsky, 1969). Different models have been developed so as to show how L1 linguistic experience warps hearers' perceptual sensitivity to non-native phonological contrasts, weighing heavily on the categorisation of new, non-native sounds, and the extent to which the interconnection between learners' native and non-native systems determines their accent free phonological acquisition. Three of the most influential models have been Flege's (1992) Speech Learning Model (SLM), Kuhl's (1993) Native-Language Magnet effect (NLM) and Best's (1994) Perceptual Assimilation Model (PAM).

The SLM by Flege (1992) predicts that adults' ability to create new L2 phonetic categories remains intact throughout their entire life. However, the probability to perceive the cross-language phonetic differences between L1 and L2 sounds seems to decrease with age; so that learners starting their L2 acquisition after age 7 – age at which the formation of the L1 phonetic categories is complete – will have difficulties to develop new phonetic categories for new L2 sounds. Furthermore, Flege (1992) states that the L1 and L2 share a common phonological space. As a result, learners tend to perceive new L2 sounds through the filter of their native language phonetic system. The L1 and L2 are wreathed in a relation of bidirectional interaction in which the category subsystem of the L1 influences the subsystem of the L2 and vice versa (Flege, 1999). Therefore, learners' potentiality to create new L2 sounds relies on the degree of similarity they perceive between the closest L1 sound and a comparable L2 sound. In this sense, Flege (1992) anticipates that the creation of new categories will be easier in those cases in which there is a great phonetic dissimilarity between the L1 and the L2. Phonetic similarity between L1 and L2 phones, by contrast, will hinder L2 category formation. If learners fail to perceive these phonetic differences, new category formations will be blocked and their speech production will remain accented.

Kuhl's (1993) NLM renders attention to the phonetic "prototypes" established by the infant learner. A central claim of this theory is that the phonetic perceptual space is divided into relevant sound categories represented by prototypes or ideal exemplars. These phonetic



prototypes act as magnets by assimilating neighbouring auditory representations, that is, sounds that are similar to the prototype itself (Kuhl, 1993). When applied to SLA, this would imply that learners' perceptual sensitivity to a new L2 phone is governed by the drawing force of the L1 prototype and that the pull exerted by the prototype will force listeners to perceive the new sound as the prototype. Besides, non-prototypical sounds – exemplars that remain far from the prototype's area of influence – will not exhibit the perceptual-magnet effect.

Best's (1994) PAM was first devised to account for the naïve listeners' perception of non-native or previously unheard phonetic contrasts. The model's recent version, The Perceptual Assimilation Model of Second Language Speech Learning (PAM-L2, Best & Tyler, 2007) extends the fundamentals underlying the perceptual ability of monolingual subjects to acquire non-native speech sounds to the acquisition of a L2 phonological system of bilingual individuals. According to PAM-L2 (Best & Tyler, 2007), non-native speech sounds will be assimilated to native sounds as a result of articulatory similarities. Once a non-native sound is perceived as an archetype of a native sound, it is categorised as a good, poor or deviant exemplar of the L1 sound category. Moreover, when a non-native sound fails to be recognized as an archetype of the native sound but it is still perceived as a speech sound, it will certainly be uncategorised. In cases where a non-native sound is not perceived as a sound but rather as some sort of noise – the sound is not phonetically encoded – it is non-assimilated.

Apart from the interconnection of the L1 and L2 phonetic systems, the effects of several other variables on L2 learners' production and perception of L2 sounds have been lately examined. The assumption that socialisation plays a very important role in L2 phonetic acquisition is supported by the results of various sociolinguistic research studies (see Krashen, 1985; Labov, 1972; McLaughlin, 1987; Scherer & Giles, 1979). Social views of L2 attainment see accent as the strongest marker of social allegiance; hence, learners' phonological acquisition is strictly linked to the construction of social identity. According to McLaughlin (1987), early adolescence is the most appropriate age for L2 phonological development since, at this point, learners show a greater need to belong to a group; to affiliate with others and be socially accepted. From puberty onwards, personality factors such as introversion and low self-esteem or emotions including anxiety, embarrassment and fear are commonly heightened, thus impeding or blocking accessibility to the comprehensible input used for acquisition (e.g. Krashen's (1985) Theory of Affective Filter). It is also at the social level that learning motivation is determined (e.g. Ellis, 1994; Giles, Bourhis, & Taylor, 1977; Krashen & Terrell,

1983; R. Gardner & MacIntyre, 1991; Smit & Dalton, 1997). Krashen and Terrell (1983) uphold that “performers with certain types of motivation, usually, but not always “integrative” and with good self-images do better in second language acquisition”. (Krashen & Terrell, 1983, p. 38). Smit and Dalton (1997) additionally discern between intrinsic (or inside) and extrinsic (or outside) motivation. They suggest that it is the fulfillment of inner needs for competence and self-determination that lead learners towards good pronunciation. Along with personal motivation, beliefs about the TL and stereotypical judgements from native speakers may play a significant role here, too (e.g. Bialystok, 1997; Birdsong, 1994).

More recent studies focus on characteristics of the learning process such as the quality and quantity of L2 input (e.g. Singleton, 1989), the amount of L2 use (Flege et al., 1999), learning strategies (e.g. Hazan & Barrett, 2000; Pertz & Bever, 1975) and choice of instructional approaches (e.g. Ioup, 1995). These factors have been identified to account for the common observation that children are more successful than adults in their phonological acquisition. Some of these factors will be further examined in the following sections.

On the whole, OA has been the most examined age variable in research conducted in naturalistic settings. The results of the vast majority of these studies support the view that the earlier an L2 is learned, the more successful its acquisition will be. Regarding speech perception and production, the observed lack of accent-free performance on the part of adult learners has been thought to provide evidence for the CPH. Other authors, by contrast, prefer to talk about a hypothesised sensitive period for native-like L2 pronunciation. This period foreshadows a linear decrease in learners’ speech production capacity as opposed to the sharp drop-off or discontinuity the CP would imply.

Besides, an early OA does not automatically lead to L2 speech that is free from accentedness. Some recent studies have postulated that post-pubescent learners may still be able to perform as native speakers. That is why the “the younger, the better” view should be recognised as valid only in terms of a general tendency. To understand the course of phonological acquisition, one should not rely on age *per se* but on the linguistic, environmental and socio-psychological factors that may interfere with age.

Once having examined L2 evidence of an optimum start of L2 phonological acquisition, the following section will be devoted to the explanation of the main differences between L2 acquisition and foreign language learning (FLL).

3. L2 acquisition vs. Foreign Language Learning (FLL)

It is worth noting that, both the notion of CP and the folk wisdom that early beginners learn languages more efficiently than their older peers undoubtedly underlies the political pressure to introduce L2 instruction at an early stage (Singleton & Ryan, 2004). The 1950-60 movement favoring Foreign Languages in the Elementary School (FLES) has benefited from the growing institutional commitment of the European Commission from the last decades of the 20th century up to the present day. The Commission's White Paper 'Teaching and learning: Towards the Learning Society' (1995) concludes that European inhabitants should experience multilingual education – master three community languages – and endorses foreign language teaching at kindergarten so as to guarantee successful acquisition of additional foreign languages in high school. Such remarks have had a profound impact on the heart of the Spanish educational system and have prompted the reconstitution of its Education Law; a reconstitution entailing a previous introduction of the FL in primary education from 11 to 8 years. Currently, however, there are many schools which encourage even an earlier introduction of FLs through the implementation of special teaching programmes. In the Basque Country, for instance, most schools have already initiated FL exposure in preschool years via content-based methodology (Lasagabaster & Ruiz de Zarobe, 2010; Merino & Lasagabaster, 2015, 2017).

The modifications above have been integrated in the elementary curriculum without considering the differences that exist between a naturalistic language learning setting and a FLL setting and, as noted by Piske (2007), “one might claim that immigrant populations should not be compared with students in a foreign language classroom, because the conditions under which immigrants learn an L2 are completely different from those prevalent in the classroom” (Piske, 2007, p. 300).

The disparity between L2 and FL situations lies in the role a language plays in a specific community. L2 acquisition occurs in geographical contexts in which the language plays an institutional and social role, whereas FLL takes place in settings where the language fails to

function as a recognized means of communication and its acquisition is mainly subservient to the classroom. Therefore, FL learners' exposure to the TL is very limited and the average quality of the input they received is scant (Cenoz, 2003). Making a generous estimate, a formal FL learner receives 2-4 sessions of approximately 50 minutes per week for 40 weeks of the year (i.e. 160 hours per year). If we assume that a naturalistic L2 learner receives an average of 10 hours of input per day (i.e. 3650 hours of input in one year), it would take more than 18 years for FL learners to attain as much input as L2 naturalistic learners do in one year (Singleton, 1995). Consequently, the instructional environment only lets us certify the rate of achievement or ultimate school attainment (Gallardo del Puerto, 2007).

As for the teaching personnel, FL learners typically have non-native teachers who not only exhibit a limited oral fluency and a foreign accented pronunciation of the TL, but also overuse their L1 in the teacher-learner interaction (Gallardo del Puerto & Gómez Lacabex, 2015; Johnson & Johnson, 1999). In fact, some authors underline that FL teachers may not be properly trained to teach pronunciation (Derwing, 2008). One consequence of this shortcoming is that teachers provide students with defective information. For instance, Wang and Munro (2004) claim that, when trying to explain students the main difference between a vowel pair such as /ɪ/ and /i:/, teachers tend to pay attention to vowel length and not to vowel quality (i.e. tongue, lips, lower jaw position and shape of mouth and pharynx). Another effect of the lack of preparation is FL teachers' over-reliance on published materials, disregarding the specific learning difficulties their students may encounter (Derwing, 2008). Similarly, the course materials used in FL contexts place little value on pronunciation teaching (e.g. Davies & Pearse, 2000; Nunan, 1999) and, many of the pronunciation materials that have been available for FL teaching in the last decades have failed to explore suprasegmental – sound, stress and intonation–features of pronunciation (Gallardo del Puerto, 2005; Thomson & Derwing, 2014). L2 learners in natural settings, on the contrary, receive substantial amounts of high-quality input that comes mainly from native speakers.

Once having outlined the major differences between both learning contexts, doubts begin to surface as to whether the introduction of early L2 instruction may help in the production of a more native-like TL sounds. In order to provide an evidence-informed response to the question raised, the following section will review two carefully designed longitudinal studies carried out in Spain. Both studies employ age as the major testing variable so as to determine the differences in phonological development for students starting strictly formal exposure to

English at different ages. Moreover, these research studies attempt to prove the validity of “the younger, the better” belief for speech perception and production in formal language instruction and to come upon other factors that may explain age-related differences in this type of context.

4. Phonological research in instructional environments

4.1 The Barcelona Age Factor (BAF) project

The first study to be summarized in this paper looks at the perception and production of sounds by Spanish/ Catalan learners of English as a foreign language (EFL). The participants of this study are part of the BAF project carried out at the *Universitat de Barcelona* (Spain) by Fullana (2006). A total of 281 Spanish/Catalan learners of EFL were arranged in 11 groups differing in the OA of FL learning (8,11,14 and 18+ years) and in the amount of formal exposure to English received (200, 416, 726 hours which corresponds to an average of 2.5, 4.5 and 7.5 years respectively). In this respect, it is worth stressing that none of the participants had had extracurricular exposure to the TL. In addition, a control group of 13 English native speakers (NSs) was included in the study (see Table 1).

With regard to the speech materials, two different tasks were designed: (1) a same-different discrimination task to assess learners’ English sound perception and (2) an imitation task to assess their English sound production. In the perceptual task, 20 pairs of words were presented by a female native speaker of Standard British English via tape recorder. From the 20 word pairs presented only 13 were minimal pairs¹ (8 pairs focused on the discrimination of vowel sounds and 5 pairs drew attention to consonant perception).

The imitation task required the repetition of 34 English one-syllable words reproduced by the same female native speaker as in the auditory discrimination task. This time, however, only 148 out of 281 subjects were examined. Seven NSs of General Canadian English were chosen as listeners/ judges to assess learners’ production. Their average age was 26.14 years and all of them had been previously trained in phonetics and communication disorders.

¹ Pairs of words that differ only in one phonological element and have distinct meaning.

The words selected in both tasks contained features of the English phonetic system which Spanish/Catalan native speakers commonly identify as troublesome for their successful perception and production. Such features include tense/lax vowel distinction, word-final consonant voicing contrast and consonant clusters in both word-initial and final position (e.g. Cebrian 2000; Flege, Munro, & Skeleton, 1992; Rescasens, 1984).

As for the procedure, each task was performed only once. Participants in the perceptual task were asked to identify the selected word pairs as minimal pairs or distractors (non-minimal pair). In the production tasks subjects repeated a word just after hearing it from the taped female model voice. Subjects' answers to both tasks were tape-recorded.

The responses to the perceptual task were calculated and afterwards analysed via Statistical Package for the Social Sciences (SPSS). To evaluate learners' productions of English words together with their corresponding segments, an additional study was set in motion. Here, English NSs estimated the degree of FA in the participants' production of English sounds. Thereafter, they were asked to recognize the same English sounds in a 15-response forced-choice identification task (Fullana, 2006). In particular it aimed at seven English vowel segments / i, ɪ, e, æ, ɒ, u, ʌ / in 11 words. These words were presented twice to each judge. In the first presentation of words, judges assigned a FA score to each vowel sound on a 9-point scale of FA (1 corresponding to no FA and 9 corresponding to very strong FA). In the second presentation of words judges were asked to identify the vowels that participants had produced in the same words by choosing among 15 potential response options presented on the computer screen (see Fullana (2006) for further details on FA rating and vowel identification task).

As observed in Table 1, the results of the perceptual task showed that, contrary to what was expected, early starters (8 years) discriminated vowel and consonant contrasts at lower correct rates than late starters (ages 11, 14 and 18+).

Table 1: Characteristics of learner groups in the AX discrimination task, correct discrimination scores (%) for vowel and consonant sound contrasts, and distractors (adapted from Fullana, 2006)

Group	N	OA	exposure (in hours)	all 20 pairs (%)	vowel contrasts (%)	consonant contrasts (%)	distractors (%)

A1	29	8	200	69.85	66.75	37.20	96.57
A2	36	8	416	71.14	70.12	45.60	91.28
A3	27	8	726	80.20	82.00	57.00	94.71
B1	28	11	200	76.95	75.87	50.80	97.00
B2	29	11	416	76.40	82.75	44.80	91.57
B3	40	11	726	77.90	81.62	52.00	92.14
C1	22	14	200	76.80	83.50	44.60	92.14
C2	7	14	416	77.85	78.62	51.40	95.85
D1	49	18+	200	79.50	84.12	50.60	94.71
D2	10	18+	416	83.00	88.75	56.00	95.71
D3	4	18+	726	75.00	81.25	50.00	85.71

Overall, younger learners (8 -year-old starters) with 200 and 416 hours of formal exposure scored worse on vowel discrimination contrasts than the remaining age groups (see table 1). Nevertheless, these rate differences seemed to disappear when all groups had reached 726 hours of exposure. Regarding consonant sound discrimination, a similar tendency was observed for participants whose OA was 8; the only difference being that, in this case, 416 hours (and not 726) of exposure were sufficient for 8-year-old starters to catch up with older beginner groups. In fact, when young beginners reached 726 hours of formal exposure they tended to discriminate consonant contrasts at even higher rates (although minimally) than older learners. In any case, all learner groups' overall discrimination scores on the perceptual task, together with the scores in vowel/consonant contrasts, failed to be native-like.

All in all, the effect of increased exposure in accurate sound discrimination was imperceptible, except for the youngest beginners. Participants of the remaining age groups perceived English sound contrasts in similar ways irrespective of an additional experience. All learner groups obtained significantly higher discrimination scores on distractors. Besides, vowel contrasts were discriminated at higher rates than consonant contrasts.

We turn now to the results obtained in the imitation task. As already mentioned, in order to assess learners' productions two tasks were carried out. First, NSs of English estimated the degree of FA in the participants' production of English sounds on a nine-point scale of FA (FA

rating task) and, later on, they were asked to recognize these sounds in a 15-response forced-choice identification task (vowel identification task). For this reason, in what follows, the results of the FA rating task will be presented followed by the ones emerging from the vowel identification task.

To assess the effects of OA and amount of exposure in learners' FA rating task the groups with greater number of participants will be examined in this section: 8 and 11 OA groups. Concerning the vowel sounds, four of the seven English vowel segments included in the task will be discussed owing to the major role they play in L2 phonological acquisition research: / i, ɪ, e, æ / (see Table 2).

Table 2: Characteristics of learner groups in the production task and their FA ratings (per cent scores) on English / i, ɪ, e, æ / (adapted from Fullana, 2006)

Groups	OA	/i/	/ɪ/	/e/	/æ/
A1	8	3.67	3.57	4.14	3.92
A2	8	4.07	4.13	4.12	4.64
A3	8	3.73	4.14	4.31	5.21
B1	11	3.62	4.57	4.18	4.85
B2	11	4.10	3.96	4.56	4.26
B3	11	3.95	3.77	4.01	4.46
NE (Control group)	-	1.46	1.27	1.53	1.73

Broadly speaking, starting age was not found to be a significant factor in accent scores, although most judges tended to perceive younger beginners' (8 years) productions as more foreign-accented than late starters. As for the effect of exposure in FA scores, a higher amount of formal instruction led to a higher degree of FA for participants with OA 8 (though being minimal). Yet, when it came to the rate FA of the older groups (11 years), judges found difficulties to reach an agreement. Certain judges rated 11-year-old starters' productions as less foreign-accented once formal exposure increased, others concluded that the accumulated experience made older beginners produce vowel sounds more accented.

Concerning the FA scores on the four English vowels / i, ɪ, e, æ /, two conclusions may be drawn. On the one hand, vowel productions of each and every learner group were rated as

foreign-accented. On the other hand, participants’ productions of /i/ and /ɪ/ vowel sounds were more native-like than those of /e/ and /æ/.

With regard to the vowel identification task (Table 3), the results here reported will focus on the same age groups and vowel sounds as in the FA rating task above. In this case, the NSs control group identified target vowels at higher rates than learners (success rate ranging between 89.01% – 98.35% for the control group as opposed to 46.70% – 89.67% for FL learner groups). It should be noted that for the learner groups, neither OA of FL learning nor exposure to the TL were conclusive in the various results obtained depending on the sound examined. Regarding identification scores on /e/, both younger and older groups obtained high rates (83.61% for OA 8 and 89.28% for OA 11), though they were still far from the rates of the NSs control group. Conversely, different exposure effects were perceptible in learners' production of /æ/: participants with OA 8 produced /æ/ at lower correct rates as experience in English increased. Older learners (age 11), by contrast, seemed to benefit from this increase in exposure since they tended to produce /æ/ at higher rates.

Table 3: Correct identification scores (%) on English / i, ɪ, e, æ / (from Fullana, 2006)

Group	/i/	/ɪ/	/e/	/æ/
A1	69.74	60.5	83.61	61.76
A2	64.54	56.87	89.67	55.55
A3	64.28	55.16	88.45	46.70
B1	69.22	51.64	86.26	47.79
B2	64.53	68.82	89.28	69.38
B3	61.90	57.14	89.04	60.47
NE	92.85	97.80	98.35	89.01

Finally, the misidentification patterns obtained for / i, ɪ, e, æ/ showed that /i/ was often produced by subjects as [i] and [ɪ]; /ɪ/ was often pronounced as [i] and [i:]; /æ/ was commonly substituted by [a] and [ɑ]; while [i] was the chosen substitution for /e/ (Fullana, 2006).

To sum up, the results of the study by Fullana (2006) show that “the earlier, the better” notion may not be applicable to instructional contexts. In fact, late OA is somehow associated

with a better perception and production of English sounds in the present study. Likewise, Fullana (2006) demonstrates that exposure to English does not seem to have an impact on the attainment of native-like pronunciation of the TL sounds in FLL contexts (8-year-old learners produced English sounds with a higher degree of FA as their exposure to the TL increased). The following section will review another longitudinal study carried out in Spain, more specifically, in the Basque Country. This study, just like the one by Fullana (2006), employs age as the major testing variable so as to determine differences in phonological development for students starting strictly formal exposure to English at different ages.

4.2 The Research in English Applied Linguistics (REAL) project from the University of the Basque Country

The second longitudinal study to be reviewed in this paper was carried out by García Lecumberri and Gallardo del Puerto (2003). The participants in this study were Basque-Spanish bilinguals learning English as a third language (L3) and had begun formal exposure to the TL at three different ages: age 4, age 8 and age 11 (see Table 4). By the age they were tested all learners were in their 6th-7th year of formal instruction. Each of the age groups was formed by 20 individuals, with a total of 60 subjects. None of the participants in this study – just as learners explored in the study by Fullana (2006) – were exposed to English outside the classroom.

Table 4: Characteristics of the learning groups (adapted from García Lecumberri and Gallardo del Puerto, 2003)

Age groups	Onset age (in years)	Exposure (in years)	Age of testing
Group 1	4	6-7	9-11
Group 2	8	6-7	13-15
Group 3	11	6-7	16-18

Oral data were gathered by different instruments. In the first place, learners were requested to tell the story *Frog, Where Are you?*, a story by Mercer Mayer (1969) which was familiar to all of them. Subsequently, they were asked to narrate a story which, in this case, was different for each learner group. Learners fulfilled the narrations of both stories on their own while an interviewer recorded their speech productions on audio-tape. Three minute samples of these oral productions were afterwards presented to an untrained English native speaker (lacking previous linguistic/phonetic training) who assessed them for degree of FA and intelligibility on

a 9-point scale; the lowest rate (1) equating higher degree of FA accent and lower intelligibility and the highest rate (9) equating lower degree of FA and better intelligibility.

In addition to the production tasks, two minimal pair discrimination tasks – one focused on consonant contrasts and one intended for vowel contrasts – were administered to the children in order to assess their English speech perception. There were a total of 45 English minimal pairs, 23 for consonant contrasts and 22 for vowel contrasts. All the words within the minimal pairs were monosyllabic, so as to help learners with the recognition of the TL sound oppositions. Based on previous research on consonant difficulties for Spanish, Basque and English language (e.g. Quilis & Fernandez, 1996) and on researchers' own teaching experience, target consonant sounds were selected. While some of the consonant contrasts within the monosyllabic minimal pairs dealt with problematic initial positions, other consonant contrasts were devoted to final position. A similar criterion was used for the selection of the target vowel minimal oppositions. Here, by contrast, the vowel sounds appeared in monosyllabic words with consonant-vowel-consonant (CVC) structure. The 45 minimal pairs were recorded by a British female native speaker with no regional accent. A few months before the minimal pair tests were administered, teachers were provided with a list of words (the words that would appear in the tests) they should incorporate in their English lessons so that students could get familiar with the vocabulary by the time they were examined. Since teachers were never informed about the test design, they did not focus on the pronunciation of the words provided in their lessons but on their meaning.

The results of the students' oral production tasks (story narration) showed that older learners' (OA 11) speech was less foreign-accented. When comparing OA 4 and OA 8 groups, no statistically significant differences were discovered in the degree of FA (see Table 5; OA 4 = 2.25 vs. OA 8 = 2.20). As for intelligibility, once again and contrary to expectations, early beginners tend to be less intelligible than older starters (OA 4 = 2.0 vs. OA 11= 4.70). This variable seems to increase linearly with age so that the older the students are, the more intelligible their speech is considered to be.

Table 5: Foreign accent and intelligibility (adapted from García and Gallardo del puerto, 2003)

	Onset age 4	Onset age 8	Onset age 11
Foreign accent (min = 1, max = 9)	2.25	2.20	3.20

Intelligibility (min = 1, max = 9)	2.0	2.95	4.70
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Apart from the degree of FA and intelligibility, further conclusions were drawn from the scrutiny of students' speech productions. All groups were found to produce the TL vowel and consonant sounds under the influence of their NL phonetic system, in other words, the main TL pronunciation strategy employed by students in all the three groups is transfer.

Regarding the perception test results, the older learner group (OA 11) exhibited better skills than the youngest group in the discrimination of vowel and consonant contrasts (though only slightly). Besides, discrimination differences between the two youngest learner groups were not significant.

Table 6: Vowel and consonant perception (adapted from García Lecumberri and Gallardo del Puerto, 2003)

	Onset age 4	Onset age 8	Onset age 11
Vowels (max = 22)	14.80	15.80	17.10
Consonants (max = 23)	15.20	16.55	18.95

When considering vowel and consonant perception for each group, all age groups were found to perform better in consonant discrimination (see Table 6), a result which contrasts with Fullana (2006), where vowels were more accurately perceived by all age groups.

As noted above, the main purpose of these longitudinal studies was to prove the validity of the “the younger, the better” belief for FL sound perception and production in instructed settings. Unfortunately, data from these experiments have failed to demonstrate that an early start in FL learning leads to higher proficiency levels in the phonological domain. Reasons that have been proposed for the notorious failure of younger starters have included the proposition that instructed settings do not provide children with the extensive input their implicit learning mechanisms require (Pfenniger & Singleton, 2017). In this sense, Sze (1994, as cited in Pfenniger & Singleton, 2017) suggests that the reason why older instructed learners outperform early beginners is that their general cognitive maturity allows them to profit from the explicit resources available in classroom contexts. Likewise, Lightbown (2003) infers that “in

instructional settings where the total amount of time is limited, instruction may be more effective when learners have reached an age at which they can make use of a variety of learning strategies, including their L1 literacy skills, to make the most of that time” (2003, p. 8). Also, as age increases, learners’ approaches to given tasks seem to become more effective and refined (Tomlin & Villa, 1994).

Additional explanations for late learners’ superiority refer to rate of acquisition. As already seen in the studies by Fullana (2006) and García Lecumberri and Gallardo del Puerto (2003), older starters advance faster in early stages of FL learning. This makes them more successful learners – they achieve higher scores – in the short and mid-term, which means that they are granted a rate advantage. The short-term attainment of older learners in instructed language learning settings has also been attested in older learners in naturalistic language learning settings. Probably the most outstanding examples of this rate advantage in naturalistic contexts correspond to Snow & Hoefnagel-Höhle (1978ab, as cited in Singleton & Ryan, 2004), who found that after one year of natural exposure adults and adolescent beginners’ advantage wore away and in some cases younger learners managed to surpass older starters. As we know, a period of one year of natural exposure to an L2 represents more than 18 years of formal learning. Therefore, the eventual attainment of early starters would take longer to appear in instructional contexts (Gallardo del Puerto, 2007). In fact, it may manifest itself only at a stage well beyond the end of formal schooling so, that is the reason why the concept of rate advantage in formal contexts needs to be linked to longer real-time periods (Singleton & Ryan, 2004). By the same token, Dekeyser (2000) states that a minimum of 10 years are indispensable in natural settings to ascertain that it is the ultimate attainment and not rate advantage that is being measured. If we equate time of immersion with time of instruction, 10 years of residence would result in more than 180 years of formal exposure (Singleton & Ryan, 2004).

In the long run, hence, an early OA seems to be beneficial once combined with extensive FL exposure. The problem is that formal school environments which adopt traditional teaching methods, as we have already observed, may never provide early starters with the amount of time they require to benefit from their young age. Due to the lack of very long term studies it is unfeasible to ponder in a well- documented manner the long-lasting positive effects of early L2 instruction against the drawbacks thereof (Singleton & Ryan, 2004). Yet, without fear of contradiction it can be stated that early FL instruction should be followed by a sustained growth in the number of hours devoted to regular TL exposure.

Eventually, the fact that none of the students within both studies were anywhere near sounding like native speakers of English should not go unnoticed. As shown in Tables 2 and 5, all participants have failed to discriminate FL segment contrasts at native-like levels regardless of starting age and amount of exposure. These results must be partly due to the influence of their NL sound system. Based on Flege's SLM, it was expected that the weight of NL interference would be lighter for the younger participants since the formation of their L1 phonetic categories is still fairly incomplete. However, the tendency to map TL sounds onto the L1 phonetic system seems to constitute a main strategy for both young and old learners. Apart from the NL interference, other age-varying factors such as the type of input (low quality input from non-native English speakers) must be responsible for students' defective articulations of TL sounds.

To sum up, the evidence from instructional contexts does not support "the younger, the better" notion. In these contexts, indeed, the age variable *per se* does not seem to facilitate FL sound acquisition. Students will never succeed in the pronunciation of a FL unless they are provided with teaching methodologies that ensure a substantial exposure to high-quality (NSs as main source) input. Besides, successful acquisition of FL sounds also seems to be dependent on the amount of TL use. This implies that to really increase the effectiveness of FL teaching, educational systems need to boost the creation of learning environments in which students not only benefit from extensive NS input but also from the increased opportunities for interaction in the TL (see García Mayo & Lázaro Ibarrola, 2015; Piske, 2007). The following section offers an overview of the effects of early immersion, more specifically, content and language integrated learning (CLIL) on student's phonological outcomes.

5. Content and Language Integrated Learning (CLIL): A way to maximize exposure

Many authors argue that the most effective means of school FL teaching is early immersion (e.g. Wesche, 2002). A central aspect of the immersion approach is that a FL is used as a vehicle for the instruction of curricular content (Dalton- Puffer, 2011). Accordingly, schools enrolled in immersion programmes aim at offering students the most suitable environments; meaningful

and contextualized (real-life) contexts which help them to experiment the TL and its uses in their own right. In recent years, these programmes have become extremely popular all over the world and, in a bid to narrow the distance between the FL and the L1 learning process, many initiatives have been carried out. The most extended one, which can be found in Spanish schools, is CLIL. As stated by Coyle, Hood & Marsh (2010) CLIL is “a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language (2010, p. 1). This implies that mastery is to be achieved in both the content subject and the language in which the subject is taught (Lasagabaster, 2011).

The implementation of CLIL has proven to be effective in many respects (Pfenniger, 2016). In comparison with students who attend regular FL lessons, students undergoing CLIL programmes happen to be more skillful regarding listening/reading comprehension, oral fluency, vocabulary, grammar and confidence/ risk taking in the TL as a result of the growing increase in exposure (see e.g. Celaya & Ruiz de Zarobe, 2008; Collins & White, 2012; Serrano & Muñoz, 2007). A further benefit of this growing exposure is that it leads naturally to implicit modes of learning, which have been argued to be helpful for younger learners (e.g. Coyle, 2008; Hulstijn, 2002). Besides, CLIL programmes are thought to possess the means required to diminish or even eradicate the influence that individual differences, such as language learning aptitude, seem to exert on traditional school systems (e.g. Collins & White, 2011, 2012).

In spite of the abundance of studies extolling the strengths of CLIL, its shortcomings have come to the fore lately. On the one hand, the pronunciation variable appears to be relatively unaffected by CLIL either when age and exposure are controlled or when exposure is monitored but not age (e.g. Gallardo del Puerto, Gómez Lacabex, & García Lecumberri, 2009; Rallo Fabra & Juan-Garau, 2010; Rallo Fabra & Jacob, 2015). Gallardo del Puerto et al. (2009), for instance, examined the degree of FA of similar groups (Basque-Spanish bilinguals) of CLIL learners and traditional EFL learners whose ages by the time they were tested ranged from 14 to 16 years. The CLIL group (14 participants) had received 980 hours of instruction. The EFL group (14 participants), by contrast, had been exposed to an average of 721 hours. Results showed that CLIL learners’ oral productions were rated as more intelligible and less irritating than those of the learners receiving traditional EFL instruction. However, no significant differences for degree of FA were found between the two groups of learners. In the same vein, Rallo Fabra and Juan-Garau (2010) conducted a longitudinal study so as to explore

intelligibility and accentedness differences between CLIL and non-CLIL students over a year. Curiously enough, no differences between the two testing times (one year apart) were found within the CLIL group. Finally, Rallo Fabra & Jacob (2015) aimed at investigating the effects of CLIL on intermediate Spanish-Catalan learners' oral fluency and accuracy in EFL. Two groups of EFL learners (a CLIL group and traditional EFL group) were recorded performing a story-telling task (to test fluency) and a read-aloud task (to test accuracy) at two testing times separated by a 2-year interval. Although both groups improved in their oral fluency rates after 2 years of instruction, they did not experience any improvement in their pronunciation accuracy.

The neutral effect of CLIL on the acquisition of phonology is not surprising given the fact that content and language do not seem to have the same weight and amount of attention in class (see e.g. Coyle, 2007; Genesee, Paradis, & Crago, 2004), and that there is a tendency to favour focus on meaning over focus-on-form (FonF). Lyster (2007) argues that to overcome this tendency in content-based classrooms, “students need to do so much more than briefly and fortuitously focus on form” (2007, p. 133). Therefore, within a balanced CLIL approach, the attention and focus given to FonF should not be incidental or implicit but rather intentional, conscious and explicit, such as tasks that draw learners' attention to form and corrective feedback (Lyster, 2007).

On the other hand, although it is true that CLIL programmes provide young learners with more opportunities to use their implicit learning mechanisms, research studies on the timing of CLIL still show that the rate of acquisition of older learners is faster than that of younger pupils (Muñoz, 2015). These results, once more, indicate that an early start is not the most important and robust forecaster of the outcomes of FL learning in instructional environments and that a middle or late CLIL implementation may be more beneficial than an early one (Muñoz, 2015).

All in all, CLIL has to be carefully planned and implemented in order to obtain positive outcomes. FonF should be more present in teachers' discourse, otherwise students will not be able to benefit from the additional opportunities given by this approach. In relation to the timing of CLIL, the additional exposure provided by CLIL may not be still sufficient for the implicit learning mechanisms of the younger to operate. Moreover, the impact of the CLIL methodology seems to be greater in the long run (Pérez Cañado, 2018).

6. Conclusion

At the beginning of this BA dissertation it was stated that it is impossible to disentangle age from context-specific variables. The results obtained from the analysis of recent studies in instructional contexts have shown that individuals' proficiency on the perception and production of FL sounds is inherently joined to the surrounding environment and that OA works differently from setting to setting. While in naturalistic contexts an early start commonly guarantees the achievement of positive results, in an input-poor environment such as the FL classroom, the effects of exposure turn out to be greater than the effects of age. The early instruction of FLs in classroom settings will not lead to satisfactory results unless instructional time is used in an effective manner and students are provided with intensive high – quality input. With the later implying that: (1) the teacher personnel should consist of NSs of the TL or NNSs with authentic TL accent who avoid using the L1 they share with their learners in the teacher-learner interaction (Gallardo del Puerto & Gómez Lacabex, 2017), (2) instructors should be properly trained in pronunciation teaching and phonetic knowledge (Thomson & Derwing, 2014), (3) the teaching materials should be varied – focusing attention on both segmentals and suprasegmentals – and aimed at particular age groups with particular speech characteristics (Derwing, 2008, Moyer, 2008), (4) teachers should activate corrective feedback whenever students produce defective articulations of the TL sounds (Lyster, 2007) and (5) both learner-teacher and learner-learner (between peers) interactions should be encouraged, thus maximizing the use of the TL (García Mayo & Lázaro Ibarrola, 2015).

Although it is true that in recent years CLIL programmes have made huge efforts in an attempt to diminish the differences between naturalistic and instructional contexts, these programmes are still in their infancy and their implementation has proven to be ineffective in the phonological domain (students who undergo early immersion continue to show a high degree of FA due to the lack of balance between focus on meaning and FonF). That is why I believe that more research should be done regarding the effects of explicit FonF in CLIL settings (see Gómez Lacabex & Gallardo del Puerto, 2020; Milla & García Mayo, 2014). A great number of CLIL instructors are currently unaware that this approach should promote both content-based and form-focused instruction. Perhaps bringing research and teaching together would help instructors better understand the possible applications of FonF when aiming at improving students FL phonological accuracy. Moreover, given the fact that we do not know



for certain which is the perfect timing for CLIL (as attested in Muñoz (2015) older starters have been found to be more successful than younger starters), further research should take this aspect into consideration. The outcomes of recent studies such as the one conducted by Pérez Cañado (2018) suggest that pronunciation requires longer time periods in order to be positively affected by the CLIL approach. Therefore, a greater emphasis should be placed on how much time is needed for the impact of CLIL to be felt on FL pronunciation in future investigations.

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