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## **The development of receptive vocabulary in CLIL vs EFL: Is the learning context the main variable?**

### **ABSTRACT**

This paper explores the impact of exposure on the development of receptive vocabulary knowledge of L2 learners in two different types of instructional context -mainstream English as a Foreign Language (EFL) and Content and Language Integrated Learning (CLIL). In order to measure vocabulary size, the 2K and academic version of the Vocabulary Levels Test (VLT; Schmitt, Schmitt & Clapham, 2001) were administered to 138 secondary-school learners with different learning backgrounds in terms of language learning approach (CLIL vs. EFL) and amount of exposure to the L2. The data obtained indicate that the amount of input does not play a significant role in the differences between CLIL and EFL learners' receptive vocabulary knowledge, but rather it is the educational context which seems to benefit the CLIL group in terms of vocabulary growth.

**Keywords:** receptive vocabulary size, CLIL, exposure, secondary education.

## **1. INTRODUCTION**

Vocabulary knowledge is a key aspect in L2 proficiency. However, for decades, the established language teaching approaches ignored the fundamental import of this language area, which was generally attended to with the aim of assisting translation (for a review, see Boers & Lindstromberg, 2008). It was not until the 1980s, with the development of the Communicative Approach, that new horizons opened for vocabulary studies. During those years, a substantial body of research (Laufer, 1986, 1990; Meara, 1980, 1996a, 1996b; Nation, 1974, 1975, 1990; Richards, 1976; Widdowson, 1978; Wilkins, 1972; Xue & Nation, 1984) started to show the potential of explicitly teaching vocabulary in the L2 classroom. Their main findings were soon applied to teaching practice. Syllabi and curricula started to incorporate explicit information on the kind of vocabulary to be taught, while teaching materials integrated the latest scientific insights into the selection of vocabulary to be learned in class.

This paradigmatic change has not been restricted to the creation of EFL materials but has also been incorporated into educational approaches whose development is more recent. This is the case of CLIL (Content and Language Integrated Learning), a dual-focused approach that promotes the learning of school content subjects through the use of an additional language enabling thus the development of both disciplinary and L2 knowledge (Coyle et al., 2010). CLIL started in Europe in the 1990s and, in the last two decades, both critics and supporters have attempted to clarify the impact of this educational approach on language learning in general and on vocabulary acquisition, in particular (see

Pérez Cañado 2012 for a review). Although research into CLIL has covered the most common SLA topics, –e.g. grammar (Lorenzo & Rodríguez, 2014; Ruiz de Zarobe, 2008), L1 transfer (Agustín-Llach, 2009; Lexenficker, 2009) or attitudinal aspects (Lasagabaster, 2011; Lasagabaster & López Belouqui, 2015; Lasagabaster & Doiz, 2017; Sylvén & Thompson, 2015)– it seems to have been particularly fruitful in relation to vocabulary studies. It has been shown that CLIL promotes lexical development (Lorenzo & Rodríguez, 2014), as learners are required to have a good command of a large amount of academic and subject-specific vocabulary to be able to deal with disciplinary content in a foreign language. The well-known distinction established by Cummins (1979) between BICS (Basic Interpersonal Communicative Skills) and CALP (Cognitive Academic Language Proficiency) can be used to characterise the different type of language input that L2 learners are exposed to in EFL vs. CLIL contexts. In EFL contexts, learners are mostly exposed to everyday language (BICS) and some academic input whereas CLIL classes feature a combination of some daily language but, mostly, academic and subject-specific language. This richer language input is expected to bring about positive benefits for CLIL learners as reflected in numerous research studies, which have found that CLIL learners present a larger receptive vocabulary size than mainstream EFL learners (see, among others Jiménez Catalán & Ruiz de Zarobe, 2009; Merikivi & Pietilä, 2014; Ruiz de Zarobe, 2008; Xanthou, 2011). However, it has also been pointed out that some other variables related to the implementation of CLIL —such as amount of L2 exposure or age of onset— could also partially explain these encouraging results for CLIL learners (Agustín-Llach & Canga Alonso, 2016; Agustín-Llach & Terrazas Gallego, 2009; Canga Alonso, 2015a, 2015b, Jiménez Catalán & Agustín Llach, 2017).

The usual methodology employed in this type of studies has been to test and compare the vocabulary results obtained by groups of CLIL vs. non-CLIL learners (Agustín-Llach & Canga Alonso, 2016; Arribas, 2016; Canga Alonso, 2015; Terrazas Gallego & Agustín Llach, 2009). In our opinion, this methodology may be problematic since the two types of programmes are not only intrinsically different (the aim of the learning process in mainstream EFL is to master the L2 whereas in CLIL the L2 is the medium of instruction) but also pedagogically distinct, as their practical implementation also differs greatly not only in relation to the time of exposure to the foreign language but mostly in relation to the role of language in the classroom which affects the type and quality of input to which learners are exposed.

This paper attempts to circumvent the methodological problem arising from equating CLIL and non-CLIL learning experiences in terms of lexical development by analysing the amount of input, i.e. number of hours of instruction, and exploring the receptive vocabulary size of 138 secondary-school learners in grade 9 (secondary education, 14-15 years old) with different language learning backgrounds in an attempt to determine whether the differences between CLIL and mainstream EFL learners are related to the amount of L2 exposure or to the different language learning contexts. In addition to this main aim, our study also explores the extent to which not only the amount but also the type of exposure afforded by EFL and CLIL programmes can have an influence on the knowledge of a specific vocabulary band, that is, academic vocabulary. Although it is likely that the language used in CLIL will prove beneficial in this respect, the research literature has paid little attention to it.

## 2. LEXICAL DEVELOPMENT IN INSTRUCTED SLA

Lexical development is often considered one of the determining factors when learning a foreign language (cf. Boers & Lindstromberg, 2008; Jiménez Catalán & Terrazas Gallego, 2005; Nation, 2001; Schmitt, 2008, 2010). Different studies have acknowledged that the understanding and mastering of the 1K most frequent word families facilitates interaction in daily conversations (Meara, 2010) while the mastery of a broader range of vocabulary, that is, between the 2K and the 3K most frequent word families, leads to the understanding of 95% of any academic text (Adolphs & Schmitt, 2003; Nation, 2006). In this regard, measuring vocabulary knowledge is important to explore learners' progress, and estimating their vocabulary size has become one of the most widely used dimensions when it comes to analysing L2 lexical development.

Vocabulary size refers to the number of words a person has some knowledge of (Anderson & Freebody, 1981; Hatami & Tavakoli, 2012; Meara, 1996a). In turn, this knowledge can be measured from two complementary perspectives (López Campillo, 1995; Schmitt, 2010): receptive and productive vocabulary. Given the multifaceted nature of vocabulary (Milton, 2013), the distinction between these two dimensions offers the possibility of analysing vocabulary knowledge in a more detailed and narrower way, as both dimensions differ in their behaviour.

Even though in the literature dealing with receptive and productive vocabulary size there are some studies exclusively exploring lexical competence (Canga Alonso, 2013a, 2013b), most of the research into this topic investigates how different factors affect lexical development. Among these, we can highlight

studies focussing on the age of onset (Agustín-Llach & Jiménez Catalán, 2018; García Mayo & García Lecumberri, 2003; Miralpeix, 2007; Muñoz, 2006, 2014), specific learning programmes (Agustín-Llach & Canga Alonso, 2016; Agustín-Llach & Terrazas Gallego, 2009; Canga Alonso, 2015a, 2015b; Canga Alonso & Arribas García, 2014; Jiménez Catalán & Ruiz de Zarobe, 2009; Merikivi & Pietilä, 2014; Ruiz de Zarobe, 2008), or the amount and quality of input (Pladevall-Ballester & Vallbona, 2016).

### **2.1. Age of onset**

In recent decades, educational authorities have opted for bringing forward the age of onset of foreign language learning programmes (Eurydice, 2017). Yet, this policy has been implemented with little empirical evidence supporting its potential benefits. In fact, the research carried out does not seem to endorse this measure. This concern was addressed in García Mayo & García Lecumberri's edited volume (2003). For instance, Cenoz (2003) compared EFL learners who started to take lessons at different ages but had the same amount of exposure to English, concluding that learners who had started later obtained higher results in all English proficiency measures. García Mayo (2003), in the same volume, examined learners' performance in grammaticality-judgement tasks, concluding that those learners whose first exposure to the FL was at age 11-12 performed better than those who started at age 8-9.

Similarly, Muñoz (2006) presented the results of a project exploring the effects of the age of onset on language development, in areas such as listening, oral fluency, written skills or vocabulary knowledge. In this project, five groups of EFL learners with different ages of onset were shown to differ in their rate of

learning. It was found that, keeping constant the amount of exposure, older learners (11-year-olds) had a faster initial rate of learning and experienced a greater linguistic development than younger starters (8-year-olds).

More recently, Muñoz (2014) explored long-term effects of the age of onset on oral performance of mainstream EFL learners. She examined factors such as starting age, quality and length of exposure, and contact with native speakers, concluding that cumulative exposure, input quality and contact with native speakers were more decisive factors than age of onset.

Focusing exclusively on lexical knowledge, Miralpeix (2007) studied the impact of age of onset and amount of exposure on lexical production. To do so, three groups of secondary-school learners who differed in age of onset and/or amount of exposure to English were asked to write a composition to compare their written production. In light of her results, she concluded that lowering the age of onset in formal contexts does not result in richer vocabulary production.

In one of the latest studies on this issue, Agustín-Llach and Jiménez-Catalán (2018) compared the vocabulary production of children (aged 11) and adults EFL learners who shared the same amount of exposure to the FL. They concluded that adults obtained better and richer results than children, despite having a similar amount of exposure and language level (A2).

Therefore, there seems to be some evidence supporting that in formal instruction settings an earlier exposure to the FL does not result in larger vocabulary knowledge. However, there is still a paucity of studies on this matter and further work is needed to clarify whether an earlier exposure is better in terms of general lexical development.



## **2.2. The influence of the type of learning context: the case of CLIL**

Since the beginning of CLIL implementation in Europe, a considerable amount of research has emphasized its benefits in relation to language development. One of the main novelties of CLIL is the re-conception of the role of language in the classroom. Unlike in EFL contexts, where language occupies the centre stage, CLIL mostly conceives language as a vehicle for the transmission of disciplinary knowledge. Thus, as the focus in this latter context is on language use, rather than on metalinguistic tasks, students are more likely to draw on implicit language processing. But not only does the role of language change, there is also a different kind of language needed. Whereas, in other settings, the objective is the use of the language in an everyday context, in CLIL, language is used in an academic context, and this affects the kind of input learners are exposed to, mostly teacher talk (Coxhead, 2017) and content textbooks (Coxhead & Boutorwick, 2018).

The beneficial effect of CLIL on language learning has been shown in different language areas and lexical development has not been an exception. To focus exclusively on studies exploring this positive impact on school-age learners, we can mention, in the first place, Xanthou (2011), who found that CLIL 6<sup>th</sup> grade learners outperformed EFL learners in vocabulary knowledge. Merikivi and Pietilä (2014) reached the same conclusion when comparing the vocabulary size of CLIL 6<sup>th</sup> graders (aged 11-12) versus that of mainstream EFL 9<sup>th</sup> graders (aged 14-15). Likewise, Moghadam and Fatemipour (2014) also revealed positive vocabulary effects of CLIL in secondary education.

One of the main obstacles researchers face when contrasting the results in CLIL vs EFL programmes is the comparability of the samples. In most of the studies on this topic, subjects are the same age, but they have been exposed to different amounts of instruction. Thus, while different authors (i.e. Agustín Llach, [2012] for 4<sup>th</sup> graders, aged 9-10; Canga Alonso [2015a] for 5<sup>th</sup> graders, aged 10-11; and Arribas [2016] for 10<sup>th</sup> graders, aged 15-16) have consistently shown a better performance of CLIL students in this vocabulary dimension, they all acknowledge that this should not be interpreted as conclusive evidence of the higher effectiveness of these bilingual programmes as CLIL learners are exposed to larger amounts of inputs because of the longer hours of instruction. In other words, the studies were not able to tease apart the contribution made to vocabulary size by two important independent variables: the educational approach (CLIL) and the amount of exposure.

Other studies opted for exploring differences between CLIL and regular EFL learners by controlling for amount of exposure, even if this meant comparing students of different ages. This is the case of Agustín-Llach and Jiménez-Catalán (2018) or Canga Alonso (2015b), who examined the receptive vocabulary knowledge of two groups of learners with the same amount of exposure in different grades (6<sup>th</sup> grade CLIL learners vs 10<sup>th</sup> grade mainstream EFL learners) and did not find significant differences between both groups. In our view, comparing students of different ages, particularly when they are so young, may lead to overlook many other confounding variables at play –e.g. the maturity of the learners or the importance of their social backgrounds. As a result, this methodological approach does not seem to be the most appropriate if what we want to do is to clearly identify the impact of the learning context, in our case

CLIL.

*Table 1. A summary of studies exploring CLIL-EFL differences as regards receptive vocabulary size*

Table 1 shows a summary of the studies discussed above. As can be seen, after 1,000 hours of exposure to English, learners are approximately able to understand the 1K band, which according to Meara (2010) is essential to interact in daily conversations. However, what those studies lack is an analysis of the impact of both quantity and type of input on the differences between CLIL and regular EFL learners' receptive vocabulary size. In other words, we need to identify the extent to which the effect of the increased exposure in CLIL would explain, in and by itself, the differences found between CLIL and EFL learners' vocabulary size.

### **3. RESEARCH QUESTIONS**

The main objective of this study is to explore the role played by both the amount of exposure to the L2 and the learning context in the development of receptive vocabulary size. In order to circumvent the methodological issue pointed out in sections 2.1 and 2.2, this study analyses two different situations: (1) learners who differ in the amount of exposure they have received as a result of being in different learning contexts (CLIL vs EFL); and (2) learners with different amount of exposure within the same educational programme (CLIL) because they have joined the programme at different ages. Specifically, this study aims to provide an answer to the following three research questions:

RQ1: Are there significant differences between the receptive, non-academic vocabulary sizes of CLIL and EFL learners?

RQ2: Are there significant differences between the receptive, academic vocabulary sizes of CLIL and EFL learners?

RQ3: Is the amount and type of input to which learners are exposed a determining variable that may result in the differences in vocabulary size?

## **4. METHOD**

### **4.1. Context**

Data were collected from four secondary schools located in a medium-size town in Extremadura (150,000 inhabitants). Extremadura is a monolingual region with a sparse population located in the south-west of Spain on the border with Portugal. These characteristics have influenced the way in which CLIL programmes have been implemented and resulted in, for example, an attempt to promote the learning of Portuguese as a second language or a fair distribution of CLIL programmes in rural and urban areas.

CLIL programmes started to be officially set up by the regional educational authorities in the academic year 2004/2005 in six primary and secondary schools located in different towns in Extremadura. These programmes have been gradually implemented, reaching 289 schools in the academic year 2019-2020.

### **4.2. Design of the study**

#### *4.2.1. Treatment*

The participants in this study were a convenience sample of 138 secondary-education students in their 3<sup>rd</sup> grade (aged 14-15). A group of them (82) were enrolled in the CLIL programme and the other group (56) were mainstream EFL learners. Participants came from schools with comparable backgrounds. Learners presented a similar socio-economic status (SES), schools had a consolidated experience in CLIL programmes (more than six years), and the promotion of foreign language learning was stimulated with the participation in European programmes. Therefore, it would seem that main differences among learners' language learning history were related to the language approach they followed and the hours of exposure to the foreign language, considering also that not all the CLIL learners started at the same age. In order to ensure homogeneity in our sample, instead of grouping learners into school categories, a classification based on the amount of exposure to English was designed. To calculate the hours of exposure, we checked the regional curricula, established by law (Junta de Extremadura, 2007a, 2007b, 2015a), for primary and secondary education. Participants were, thus, clustered bearing in mind (1) whether they were following a CLIL programme and (2) considering the age at which they joined the programme. This distribution resulted in the following four groups:

- CLIL 1 ('Early CLIL learners'): this group had participated in CLIL experiences from 1<sup>st</sup> grade of Primary Education and consisted of 23 learners. These learners were enrolled in a special CLIL programme developed by the British Council in cooperation with the Spanish Ministry of Education and Science, in which the Spanish and British curricula were integrated. In primary education, they learnt Social and

Natural Science, Arts, and Literacy through English. In secondary education, they joined standard CLIL secondary schools in which between 2 and 3 disciplinary subjects were taught in English. The subjects offered by the schools included Geography and History, Biology, Technology, Music, and Physical Education (PE). Additionally, learners had an extra hour of EFL per week. In total, these learners had been approximately exposed to 3,000 hours of English –1,300 in EFL and 1,700 hours in content subjects.

- CLIL 2 (‘Standard CLIL learners’): this group comprises 25 learners who joined a CLIL programme in 4<sup>th</sup>, 5<sup>th</sup> or 6<sup>th</sup> grade of primary education. The subjects they learnt through English in primary school were typically Natural and Social Sciences, and Arts and Crafts, although some of the learners reported having attended PE lessons in English. In secondary education, the subjects varied depending on the school and level, as described above. These learners had been exposed to approximately 2,400 hours of English.
- CLIL 3 (‘Late CLIL learners’): This is the group with the highest number of participants, 34. The learners started CLIL at the beginning of secondary education, which means that their only input in primary education consisted in EFL classes. The disciplinary subjects learnt through English in secondary education varied every year as in the previous groups. They had received an approximate amount of input of 2,000 hours in total –1,300 in EFL and 700 in content subjects.

- EFL learners: This group was made up of 56 learners who were only exposed to English in the EFL subject that they started to take when they were in 1<sup>st</sup> year of pre-primary education (age 3). These learners had been exposed approximately to 1,200 hours of English only in the EFL subject.

*Table 2. Learners' features*

#### *4.2.2. Data Gathering Instruments*

In order to measure receptive vocabulary size, we used the Vocabulary Levels Test (VLT) developed by Schmitt, Schmitt and Clapham (2001), as it is a validated and reliable test which is widely used in SLA research contexts (Schmitt, 2010).

Only the 2K and academic bands of the Vocabulary Levels Test (VLT) were used. As shown by the literature reviewed in the introduction, learners in 9<sup>th</sup> grade are expected to be far from mastering the 3K and higher bands. Including these bands may have added additional irrelevant data. However, in contrast to previous studies, considering that participants were learning the FL in an academic setting, we decided to also include the academic band.

#### *3.3.3. Data Collection*

Data were collected in one session during school time. The format of the test was pen and paper and the time allotted to complete the task was 6 minutes per band as specified by the authors of the test (Schmitt et al., 2001). At the beginning of the test, clear instructions were given in both Spanish and English in order to ensure participants' understanding of the procedure, and examples were also provided.

#### 3.3.4. *Data analysis*

In order to estimate the number of words known by the learners, Nation's formula (1990, p. 78) was applied: "Vocabulary size = N correct answers multiplied by total N words in dictionary (the relevant word list) divided by N items in test". In this case, as the objective was to explore the learners' familiarity with the 2,000 most frequent words and with the 570 academic items contained in the AWL (Academic World List; Coxhead, 1984), results were respectively multiplied by these two figures and then divided by 30 (the number of items of the tests).

The analysis of the data was performed using IBM SPSS Statistics version 23 and R version 3.6.1. To check whether there were statistically significant differences between the different groups, t-tests were carried out, since a Shapiro-Wilk test showed that all the variables presented a Gaussian distribution. Levene tests were used to check the equality of variances, and a Welch's t-test was performed to compare mean values in case of unequal variances. Once the p values were obtained, they were corrected using the False Discovery Rate (FDR) method for multiple comparisons and the 95% confidence level was used to determine statistical significance. Finally, Cohen's d values were calculated to obtain the effect sizes of the differences among the groups studied. Following Plonsky and Oswald (2014), in SLA 1.00 and above is considered a large effect size, from 0.5 to 0.99 is considered a medium effect size and below 0.5 is considered a small effect size.

## 5. RESULTS



### **5.1. RQ1: Are there significant differences between the receptive, non-academic vocabulary size of CLIL and EFL learners?**

A preliminary description of the whole sample of learners tested shows that they knew, on average, 56.84% of the 2K band, which in absolute terms, means that these 9th graders had an average receptive knowledge of approximately 1,136 words, according to Nation's formula (1990). Both the standard deviation (SD) of 20.97, and the maximum and minimum scores (96.67 and 10 respectively) indicate a certain degree of variation in the sample.

If we focus on the type of context (CLIL vs EFL), we can see from table 3 that CLIL learners had an average score on receptive knowledge of the 2K-band of 67.61 with a SD of 15, while regular EFL learners had 39.88, with a SD of 15.4. In absolute terms, these results mean that CLIL learners knew approximately 1,352 words, whereas non-CLIL learners presented a lower result with a mean mastery of approximately 797 of the 2,000 most frequent words in English.

*Table 3. CLIL and EFL learners' knowledge of the 2K band (in % and no. of words)*

In order to determine whether the differences found in the descriptive analysis were significant, a t-test was carried out. The results show a statistically significant difference in the recognition of the 2K most frequent non-academic terms in favour of CLIL learners ( $t(7.978) = 8.0037, p < 0.0004, d = 2.07$ ). The effect size ( $d=2.07$ ) indicates that the difference found is not marginal. In other words, CLIL and regular EFL learners differ in their recognition of the 2K non-academic most

frequent words, having, the CLIL group, a significant larger receptive knowledge of the 2K band.

## **5.2. RQ2: Are there significant differences between the receptive academic vocabulary size of CLIL and EFL learners?**

The results obtained for the academic vocabulary band show that the whole sample of learners know more than half of the words included in this list, more exactly 50.46% (SD = 26.50, min. = 0, max. = 100). This section of the test was designed using Coxhead's Academic Word List (1984), which consists of the 570 most frequent word families in academic texts without considering those belonging to the 2K band. Thus, in absolute terms, and applying Nation's formula (1990), participants seem to know an average of 288 academic words.

The comparison between the two types of educational programmes is shown in table 4, where we can see that CLIL learners had a mean percent score in this band of 65.12, whereas EFL learners only obtained an average percent score of 28.99. In absolute terms, this means that CLIL learners had an average receptive knowledge of 371 the words in Coxhead's list, whereas mainstream EFL learners only recognised an average of 165 words.

*Table 4. CLIL and mainstream EFL learners' knowledge of the academic band  
(in % and no. of words)*

The t-test carried out shows that difference between both groups was statistically significant ( $t(136) = 10.602$ ,  $p. < 0.0004$ ,  $d = 1.83$ ). Moreover, the calculation of the effect size also shows a large effect size ( $d = 1.83$ ) for differences

found in the receptive knowledge of the academic band according to Plonsky and Oswald's scale (2014). In other words, CLIL learners had a receptive knowledge of the academic band significantly higher in comparison to their EFL counterparts. This finding is quite relevant as it indicates that the implementation of CLIL results in a better command of academic vocabulary.

### **5.3. RQ3: Is the amount of input to which learners are exposed a determining factor that may result in the differences in vocabulary size?**

The results presented so far are in line with previous findings indicating an advantage of CLIL over mainstream EFL students as regards receptive vocabulary knowledge. However, our study intended to go a step further by analyzing not only the demonstrated impact that the amount of input may have on the receptive vocabulary of the learners but also by considering the learning context (CLIL vs EFL).

As shown in tables 5 and 6, early CLIL learners, that is, learners who joined the CLIL programmes in the 1st grade of Primary Education, presented the largest vocabulary knowledge of the 2K and academic bands, scoring 72.22 and 70.29 respectively. For their part, standard CLIL learners, that is, learners who joined CLIL when they were in grades 4<sup>th</sup>, 5<sup>th</sup> or 6<sup>th</sup> of primary education, scored 70.40 and 65.87. Finally, late CLIL learners, who joined CLIL programmes in secondary education, scored 64.97 in the 2K band test and 61.08 in the academic words test.

*Table 5. Statistical descriptions of groups' knowledge of the 2K band (in %)*

*Table 6. Statistical descriptions of groups' knowledge of the academic band (in %)*

In absolute terms, this means that early CLIL students recognized 1,490 out of the 2K most frequent words and 401 words of the academic list (570), standard CLIL learners recognized 1,408 general and 375 academic terms, and late CLIL learners knew 1,310 and 348 out of the 2K and academic bands respectively (see table 7).

*Table 7. 2K and academic VLT results in absolute terms*

These results were analysed to determine whether there were any statistically significant differences. Thus, regarding the recognition of the 2K band, the differences were found to be non-significant when comparing early and standard CLIL ( $t(46) = 0.977, p = 0.333, d = 0.49$ ), standard and late CLIL ( $t(57) = 1.305, p = 0.295, d = -0.02$ ), or early and late CLIL groups ( $t(55) = 2.381, p = 0.062, d = 0.52$ ). Moreover, the effect size calculation shows a medium effect size for the differences between early and standard ( $d = 0.49$ ) and early and late CLIL groups ( $d = 0.52$ ), but a nearly negligible effect size for differences in receptive 2k non-academic vocabulary knowledge between standard and late CLIL groups.

In the case of the academic band, non-significant differences were found when comparing early and standard CLIL learners ( $t(46) = 0.793, p = 0.450, d = 0.23$ ), standard and late CLIL learners ( $t(57) = -0.915, p = .265, d = 0.24$ ) and early and late CLIL groups ( $t(55) = -1.733, p = 0.162, d = 0.46$ ), with moderate size effects for the difference between the early and late CLIL groups.

Finally, significant differences were found in the comparison between all the CLIL subgroups and the EFL one. In the case of the receptive knowledge of the 2K band, differences between early CLIL and EFL learners ( $t(77)= 9.980, p < 0.0004, d = 2.46$ ), standard CLIL and EFL learners ( $t(79)= 8.932, p < 0.0004, d = 2.13$ ) and late CLIL and EFL learners ( $t(88)= 8.465, p < 0.0004, d = 1.84$ ) were statistically significant. In these three comparisons, large effect sizes were found.

Similarly, CLIL and EFL groups' rates of recognition of the academic band were compared and differences between early CLIL and EFL groups ( $t(77)= 8.597, p < 0.0004, d = 2.14$ ), standard CLIL and regular EFL participants ( $t(79)= 7.829, p < 0.0004, d = 1.88$ ) and late CLIL and mainstream EFL learners ( $t(88)= 5.457, p < 0.0004, d = 1.61$ ) were statistically significant. Moreover, results show large effect sizes for differences between the receptive knowledge of the academic band of each of the CLIL subgroups and the EFL group.

## **6. DISCUSSION**

The present study was designed to analyse the individual impact on the vocabulary size of L2 school learners of two variables usually conflated by the literature: amount of exposure and learning context (CLIL vs EFL). As shown in the literature review, previous vocabulary studies carried out in school contexts do not make this separation as participating in a CLIL programme immediately means an increase in the amount of exposure. CLIL students, in contrast with EFL students, do not only attend regular EFL classes but are also in contact with English in the content subjects taught through the medium of this language. There is no doubt that both types of programmes promote active engagement with the L2

encouraging meaningful spoken and written production on the learners' part and, above all, relevant teacher-student and student-student interactions. However, research has also confirmed higher levels of cognitive engagement in CLIL settings that have an impact on L2 acquisition (Dalton-Puffer, 2007).

Previous studies have shown that CLIL learners outperform mainstream EFL learners in vocabulary size and this has been mostly interpreted as a consequence of a larger amount of exposure. However, what remains to be answered is whether the type of language experience provided by CLIL also has a particular role in contributing to these results or, on the contrary, any teaching approach involving an increase in the amount of exposure would have obtained similar results. In other words, to what extent CLIL success is only due to an increased exposure to the foreign language. Our results could provide some answers to this question.

First of all, in relation to the question about whether there exist differences between CLIL and regular EFL learners' receptive, non-academic vocabulary size (RQ1), we have been able to confirm previous findings, as the CLIL learners in our study nearly doubled regular EFL learners' receptive knowledge in the 2K, non-academic band. In this regard, it is important to highlight the fact that CLIL learners surpassed the 1K most frequent words, whereas mainstream EFL learners are still on their way to master this essential vocabulary. The knowledge of the 1K band allows learners to cope with some predictable linguistic tasks (Meara, 2010) although they would still have problems to engage in a daily conversation, as a knowledge of the most frequent 2K words is needed to face this situation (Agustín-Llach & Canga Alonso, 2016; Schmitt, 2010). Thus, our results indicate that CLIL learners would not have many difficulties in understanding familiar and predictable linguistic situations, whereas regular EFL learners may need an extra

effort in similar contexts.

Regarding the second question we explored, that is, whether there exist differences between CLIL and mainstream EFL learners' receptive academic vocabulary sizes (RQ2), we have provided information about the differences in the vocabulary knowledge of CLIL and regular EFL learners in the academic band. Given the importance of this type of vocabulary in CLIL and the fact that it has been underexplored by the literature, this analysis seems to be relevant. In this respect, we have found significant differences in favour of CLIL learners. In fact, the gap between the academic vocabulary of the two groups of learners is even more pronounced than the one found for the 2K band. Over a total of 570 word families, the percentage of academic words known by CLIL learners is 124.62% greater than those known by their EFL counterparts (371 vs 165). This result highlights one of the main differential contributions of the CLIL approach, in contrast with EFL. The kind of input students are exposed to in CLIL, mostly teacher talk (Coxhead, 2017) and content textbooks (Coxhead & Boutorwick, 2018), gives them an obvious advantage in this respect.

In relation to whether the amount of input to which learners are exposed is a determining factor that may result in the differences in vocabulary size (RQ3), we have been able to isolate the role played by the learning context in vocabulary size by comparing learners of the same age but with different amount of exposure within the same learning context (CLIL), and by contrasting each of the three identified kinds of CLIL experiences (varying in amount of exposure: early, standard and late CLIL learners) with regular EFL.

Results indicate that the three CLIL subgroups do not present statistically significant differences in the receptive knowledge of the 2K and academic bands,

despite having been exposed to quite different amounts of instructed input (up to 1,000 hours of difference/ instruction). In contrast, regardless the variations in the number of hours of instruction, differences between the various CLIL sub-groups and the mainstream EFL group always remain statistically significant. Interestingly, when comparing late CLIL and mainstream EFL groups, a difference of 800 hours of instructed input in favour of the CLIL sub-group results in a significant larger receptive 2K and academic knowledge by CLIL learners. That is, a difference of 1,000 hours of instruction within the same programme does not result in significant variations regarding general and academic vocabulary knowledge, whereas smaller input variations in different learning contexts lead to significant differences in lexical knowledge. These findings are in line with previous studies on the impact of age of onset in language learning (Cenoz, 2003; García Mayo, 2003; Muñoz, 2006, 2014) and vocabulary acquisition (Miralpeix, 2008; Muñoz, 2006).

One possible explanation of these results may be methodological. The statistical analysis of the difference between early and late CLIL groups' knowledge of the general, non-academic and academic bands yielded no significant differences between them but indicated moderate effect sizes (0.49 and 0.46 respectively). These magnitudes may be indicating that the lack of significance may be caused by the limited sample contained in the different groups.

There may be, however, a second explanation to these results: the nature of a CLIL approach and the role that language plays in it. CLIL encourages language learning through focus on meaning and learners are exposed to a wide variety of input related to the different academic subjects they have to learn in the foreign



language. This re-conceptualization of the language role in the classroom may result in a better lexical command.

## **7. CONCLUSION**

The present study has explored the differences in the receptive vocabulary size of secondary-school students in two different learning contexts (CLIL vs. EFL) produced by variations in the amount and type of exposure to the L2. Our results are in line with previous findings and important differences between CLIL and EFL learners' vocabulary size have been found. In addition, we also measured academic vocabulary in the two groups of learners and found an even greater positive difference in favour of the CLIL group. Interestingly, an important difference in the number of instructed hours (up to 1,000 hour difference) within the same learning setting (i.e., CLIL) did not result in correlative receptive vocabulary size variations whereas a smaller difference (800 hours) between the EFL and late CLIL group does have an important impact in favour of the CLIL learners. Our results, therefore, indicate that the type of language experience provided by a CLIL educational approach may play a key role in receptive lexical development.

In our view, some intrinsic features of CLIL enrich this particular learning environment. First, CLIL incorporates changes in the quantity of input to which learners are exposed. Moreover, this increase in the amount of input also brings about a change in the type of input, which thus becomes richer and more varied. Not only are students exposed to everyday, general language but they can also

have access to the academic and subject-specific language which is part and parcel of the different disciplines. Secondly, CLIL enhances peer interaction and meaningful learning opportunities, in which learners have to build new content based on their prior knowledge, experiences and skills, which promote language learning (Dalton Puffer, 2007; Ellison, 2017; Mehisto, Marsh & Frigols, 2008).

The findings of our study may have some pedagogical as well as language-policy related implications. There is a current support in some countries such as Spain, possibly related to an assumed acceptance of generalizations of findings from natural to instructional L2 settings, towards bringing forward the onset of EFL and CLIL programmes with the aim of increasing the amount of L2 exposure in order to favour a greater competence in the L2. However, more and earlier exposure in an L2 instructional context does not necessarily equate with better linguistic results. Our study has provided evidence, in line with previous research (Agustín-Llach & Jiménez-Catalán, 2018; Miralpeix, 2007), that an increased amount of exposure in a formal learning setting derived from lowering the age of onset does not necessarily result in significant improvements regarding lexical development. Our results suggest that it is not only a question of the quantity but mostly of the type of input that CLIL affords. As Muñoz (2008: 591) puts it “an early start leads to success but only provided that it is associated with enough significant exposure”. It would be important that educational authorities direct their efforts and resources towards ensuring the methodological quality of these programmes -by means of, for example, providing CLIL teachers with robust linguistic and methodological training programmes- rather than extending them to earlier stages. CLIL teachers need to become aware of the importance of the type of input and interactions that a CLIL classroom affords and exploit them to their

full potential.

The results of the present study should be, notwithstanding, treated with caution, as there are some limitations that should be taken into account when interpreting them. First, a larger sample would have increased the level of significance of the results. Likewise, this cross-sectional study would need to be complemented with longitudinal studies that would allow us to separate more clearly the two main variables (amount of exposure and learning context) under study within the same group of learners.

Further studies exploring other variables that may affect lexical development, such as the role of the teacher, the type of interactions found in CLIL and EFL contexts or the methodological techniques employed in the classroom, would also be welcome.

Likewise, it would also be relevant to expand the scope of this paper and explore the same variables, that is, context and amount of exposure, in other linguistic aspects and skills in order to better understand their impact on SLA.

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Table 1

Study	Tuition	Hours of instruction	Grade	Test used	Estimation of no. of words
Canga Alonso	EFL	1049	10th	VLT	936
(2015)	CLIL	949	6th	VLT	903
Arribas (2016)	CLIL	Not provided	10th	VLT	1330
	EFL			VLT	1200
Agustín Llach & Terrazas	CLIL	734	4 <sup>th</sup>	1K WT 2K VLT	470
Gallego (2012)	EFL	419	4 <sup>th</sup>		595
Canga Alonso	CLIL	839	5th	VLT	696
(2013a)	EFL	524	5th	VLT	499
Canga Alonso	CLIL	944	6th	VLT	903
(2013b)					
Terrazas	CLIL	524	5 <sup>th</sup>	VLT	509
Gallego &	CLIL	629	6 <sup>th</sup>	VLT	631
Agustín Llach	CLIL	734	7th	VLT	817
(2009)					

Table 2

	CLIL 1 ('Early CLIL learners')	CLIL 2 ( 'Standard CLIL learners)	CLIL 3 ( 'Late CLIL learners)	EFL group
N	23	25	34	56
Hours of Instruction	Total: 3,000	Total: 2,400	Total: 2,000	Total: 1,200
	EFL: 1,300	EFL: 1,300	EFL: 1,300	EFL: 1,200
	CLIL: 1,700	CLIL: 1, 100	CLIL: 700	

Table 3

	CLIL	EFL
Max	96.67	96.67
Min	36.67	10.00
Mean	67.61	39.88
SD	15.00	15.4
No. of words recognized	1,352	797

Table 4

	CLIL	EFL
Max	100	70.00
Min	13.33	00

Mean	65.12	28.99
SD	19.79	19.57
Estimation of no. of words	371	165

Table 5

	CLIL 1 (early)	CLIL 2 (standard)	CLIL 3 (late)	EFL
Max	96.67	93.33	96.67	96.67
Min	36.67	36.67	40.00	10.00
Mean	72.22	70.40	65.49	39.88
SD	14.16	14.79	19.61	15.4

Table 6

	CLIL 1 (early)	CLIL 2 (standard)	CLIL 3 (late)	EFL
Max	100	96.67	100	70.00
Min	26.67	13.33	26.67	00
Mean	70.29	65.87	61.08	28.99
SD	18.96	19.61	20.16	19.57

Table 7

	CLIL 1 group (‘Early CLIL)	CLIL 2 group (‘Standard CLIL’)	CLIL 3 group (‘Late CLIL’)	EFL learners
N	23	25	34	56
Hours of instruction	3,012	2,400	2,052	1,200
No. of words known out of the 2K band	1490	1408	1310	756
No. of academic words known	401	375	348	165