

CLIL and L1 Competence Development



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Abstract One of the major concerns regarding Content and Language Integrated Learning (CLIL) education is the detrimental effect it may have on first language development and achievement. In light of contradictory evidence, the present investigation set out to investigate this controversial issue in a specific monolingual context (Andalusia, Spain); additionally it attempted to fill some voids in the literature concerning the impact of intervening variables (gender, setting (urban vs. rural), parental education level, extramural exposure to the foreign language (English), verbal intelligence and academic motivational factors) on L1 attainment. In order to guarantee the homogeneity and, hence, the comparability of the groups, participants were previously matched in terms of verbal intelligence and academic motivation. The study sample consisted of 720 school students. Of these, 247 (34.3%) were 6th Grade Primary school students aged 11–12 and 473 (65.7%), 4th Grade Compulsory Secondary Education school students aged 15–16. Results indicate that the curricular competence in Spanish (L1) of CLIL students was not negatively affected when L1 school grades are compared to those of their peers in regular classes. Additionally, intervening variables such as setting, gender, parents' education level, extramural exposure to English seemed to have a dissimilar effect on the grades of CLIL and non-CLIL groups. Furthermore, the effects of the variable verbal intelligence and the four motivational factors considered by the study (desire to work and self-esteem, exam anxiety, lack of interest in studying and realistic personal self-demand) on school grades in Spanish were more pronounced in the Secondary Education CLIL group.

1 Introduction

One of the major concerns associated with Content and Language Integrated Learning (henceforth CLIL) programmes is that they might entail detrimental effects on first

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language (L1) development and proficiency (Baetens Beardsmore, 2002; Halbach, 2009; Merisuo-Storm, 2006; Pladevall-Ballester, 2015; Wolff, 2005). Several studies have compared the performance of CLIL and non-CLIL groups on different measures of L1 competence (e.g. Merisuo-Storm, 2006, 2007; Merisuo-Storm & Soinen, 2014; Seikkula-Leino, 2007). Most of them conclude that the learners' L1 development is not hindered by CLIL instruction; however, some conflicting results are also found in the literature (Hämäläinen, 1998; Koivumäki & Stara, 1994). These inconsistent findings call for more research attention into an issue—that of L1 attainment of students participating in CLIL programmes—with potentially far-reaching consequences. Additionally, although the study of the effects of CLIL programmes on the mother tongue is one of the areas around which CLIL research has been conducted (Wolff, 2005), there are still gaps in the literature which need to be addressed, such as the effect of possible intervening variables on L1 achievement in CLIL—in comparison with non-CLIL—programmes. Lastly, in order to draw firm(er) conclusions, the relationship between CLIL instruction and L1 development and achievement across a range of contexts (geographical, educational, etc.) should be explored.

In light of this analysis, this chapter is an attempt to contribute to fill this void in the literature by investigating the effects of certain variables on L1 attainment in CLIL and non-CLIL students of Primary and Secondary Education in two provinces in the south of Andalusia (Spain). Specifically, this study tried to answer the following research questions:

1. Is the curricular competence in Spanish (L1) of CLIL-educated students negatively affected in comparison to that of their conventionally schooled peers?
2. What is the effect of intervening variables (gender, setting—urban vs. rural—, parents' educational level, extramural exposure to English, verbal intelligence and motivational factors) on the level of attainment in Spanish of CLIL-educated students, both in itself and compared to their conventionally schooled peers?

The study aimed to explore the effect of CLIL on L1 competence within the framework of the two government-funded research projects referred to in the Introduction to this book. It did so by addressing the methodological flaw in CLIL research discussed in the literature concerning the comparability of CLIL and non-CLIL groups (e.g. Lyster, 2007; Madrid Fernández, 2006; Ruiz de Zarobe & Lasagabaster, 2010).

2 Literature Review

As previously mentioned, although most research has attested to the beneficial effect of CLIL instruction on L1 development and achievement, some contradictory results are also found in the literature (Hämäläinen, 1998; Koivumäki & Stara, 1994). In addition, methodological flaws in the study design that have been relatively common in CLIL research may have been responsible for erroneous attributions of gains in L1 observed in CLIL groups to CLIL education solely (e.g. Bonnet, 2012; Bruton, 2011a, b, 2013, 2015; Dallinger et al., 2016; Paran, 2013; Pérez-Cañado, 2012).

Finland stands out as the country in which research into the association between CLIL instruction and L1 learning has been most extensively studied. Seikkula-Leino (2007) refers to research conducted in this country (Hämäläinen, 1998; Koivumäki & Stara, 1994; Merisuo-Storm, 2000, 2002; Rahman, 2001) that provides mixed evidence as to the positive impact of CLIL on L1 development. In the first of these studies, Koivumäki and Stara (1994) focused on the first and second grades of comprehensive school and concluded that, although the CLIL group outperformed the so-called normal group in the reading speed test, the reverse was the case with mechanical writing skills, reading comprehension and vocabulary. Hämäläinen's (1998) outcomes confirmed these study results with reference to vocabulary skills from the second to fifth grades. It must be noted that the test consisted mainly of vocabulary items related to the fields of nature and the environment. However, results obtained by Merisuo-Storm (2000, 2002) would seem to suggest otherwise; in her first study (Merisuo-Storm, 2000), the development of pupils' reading and writing skills during the first school year between the learners taught in Finnish and those taught in a foreign language (henceforth FL) were comparable. Similar results were obtained in a further study (Merisuo-Storm, 2002) that confirmed that pupils partly taught (20% of their teaching) in an FL in the first two years of school developed better reading skills than those who were taught in Finnish. And, finally, Rahman's (2001) research also provides support to the claim that CLIL does not exert a negative effect on the pupils' mother tongue. Furthermore, the learning of L1 reading and writing skills of CLIL and non-CLIL classes from grades 5 and 6 did not differ significantly in Seikkula-Leino's (2007) study, which led the researcher to conclude the following:

... this study shows that as regards Finnish as a mother tongue, the pupils' learning results were similar in both Finnish and CLIL classes. CLIL pupils overachieved even more strongly than those in Finnish teaching, even though the difference was not remarkable ... Hence, the results of this study strongly support the idea that the mother tongue skills of pupils learning in a foreign language were not weaker than the skills of those learning in their mother tongue. (p. 336)

The long-term effects of participating in an immersion programme on L1 writing were assessed by Bergroth (2006) in the context of the Finnish university entrance examination. Participants were involved in an immersion programme that started when they were 3–6 years old and ended by the end of elementary school (9th grade). Results indicated that a) most immersion students demonstrate a level of competence in written composition comparable to the average level in Finland among Finnish-speaking students; and b) the fact that “There is a lower number of low results in mother tongue texts amongst the immersion students than expected by the matriculation board” (p. 128) could be indicative that the programme might support L1 acquisition among weaker students. Similarly, Merisuo-Storm (2006, 2007) found no negative effect of CLIL teaching—20% of the instruction was delivered in English—on Primary learners in a longitudinal study in Finland, with the CLIL group performing particularly well in reading comprehension skills. The researcher concludes: “The results of the study support the view that when most of the teaching is carried out in the pupils' first language, CLIL does not affect the development of first language literacy

skills negatively” (p. 233). This supports the analysis adopted by Wolff (2005) who, while recognising language competence in the L1 as one of the controversial issues concerning CLIL, argues that, provided only a limited number of subjects are taught through the FL, “An impoverishment of first language competence can be regarded as rather exceptional” (p. 18). More recently, another longitudinal study investigated the effects of CLIL on the development of Primary students’ L1 literacy skills during the first six school years (Merisuo-Storm & Soininen, 2014). The study concluded that CLIL classes had a statistically significant advantage over regular classes in terms of L1 reading and writing skills, and they also showed more positive ideas towards reading, writing and FL learning.

In a Secondary school context in The Netherlands, no negative effect was found on the school leaving exams for Dutch when a group of students receiving bilingual education was compared with a regular Secondary group (Admiraal et al., 2006). As pointed out by Pérez-Cañado (2012), the cohorts were not matched with respect to baseline L1 scores; additionally, the authors also admit that results may be influenced by the fact that bilingual schools were part of an experimental programme that may have benefitted from the extra support allotted to them and the knowledge and experience in bilingual education they had accrued over the years. Further evidence that the L1 is not negatively affected by CLIL education was obtained by Gebauer et al. (2012) in Germany. They compared the development of CLIL and traditionally educated students’ L1 reading fluency and orthographic skills during elementary school. Cognitive abilities and socio-economic background were used as covariates. The study also detected that CLIL students’ reading fluency progressed faster.

It has even been suggested that the linguistic advantage of CLIL-educated students may extend beyond their L1 development; the higher performance in mathematics of a group of CLIL students in Belgium when compared with their conventionally schooled peers led Surmont et al. (2016) to conjecture that the increased metalinguistic awareness found in bilingual students evidenced in a better understanding of and insight into linguistic structures could also lie behind the better performance in the understanding of the abstract language of maths shown by CLIL Secondary students.

Studies conducted in Spain also seem to attest to the absence of detrimental consequences of CLIL programmes on the students’ mother tongue. Egiguren (2006 cited in Ruiz de Zarobe & Lasagabaster, 2010) concluded that CLIL did not negatively affect the acquisition of two co-official languages (Basque and Spanish) in Primary school students. Several studies have also corroborated the positive effect of CLIL on attitudes towards languages in general (e.g. Lasagabaster & Sierra, 2009) and towards trilingualism (Lasagabaster, 2009; Ruiz de Zarobe & Lasagabaster, 2010). As Ruiz de Zarobe and Lasagabaster (2010) concluded from their study with a group of 3rd and 4th year students of Compulsory Secondary Education, “CLIL can be influential in producing more positive attitudes towards languages and the language learning process” (p. 23).

In the Andalusian (monolingual) context, Ramos et al. (2011) researched the effect of CLIL on L1 achievement in three school types (private bilingual, public bilingual and monolingual and charter (semiprivate) monolingual), thus adding the type of

school as an intervening variable in CLIL impact research. Unlike the present study, the authors constructed an *ad-hoc* Spanish (L1) test to gauge attainment of L1 knowledge and skills. The test was aimed at evaluating the official curricular objectives and competences at the time of the study. As a whole, CLIL groups achieved higher levels of attainment than non-CLIL groups. The public school CLIL sample outperformed the public school non-CLIL sample with statistical significance both in Primary and in Secondary Education; additionally, the private school CLIL group obtained significantly higher scores than the public school non-CLIL sample in Primary Education, although the difference between these two samples was small in Secondary Education. The private school CLIL group also obtained significantly higher scores than the charter school one in Secondary Education, whereas no significant difference was found in Primary Education.

As previously mentioned, methodological weaknesses in CLIL research studies compromise the validity of results concerning the attribution of the L1 attainment advantage of CLIL over non-CLIL students to CLIL education. In order to address methodological flaws found in other studies on CLIL impact on L1 learning, the participants in the bilingual and the monolingual samples in Pérez-Cañado's (2018) study had previously been matched in terms of verbal intelligence and motivation so as to guarantee the homogeneity of the treatment and comparison groups. They were Primary and Secondary Education students from three monolingual communities in Spain: Andalusia, Extremadura and the Canary Islands. Furthermore, she explored the effect on the Spanish competence of the following intervening variables: type of school (public, private, charter), setting (rural vs. urban) and socio-economic status. The study concluded that the L1 (Spanish) academic competence was not negatively affected by CLIL instruction; in fact, the CLIL sample outstripped the monolingual one at the end of both educational levels. As to the effects caused by moderating variables, it was substantial for type of school and socio-economic status, but not for rural vs. urban setting. Public and private bilingual school groups performed significantly higher than the public non-bilingual school counterpart. Socio-economic status, on the other hand, caused statistically significant differences for CLIL and non-CLIL strands both in Primary and in Secondary Education.

3 The Study

3.1 Participants

The study sample consisted of 720 school students from 13 public ($n = 551$, 76.5%) one private ($n = 42$, 5.8%), and three charter schools ($n = 127$, 17.6%). Of these, 247 (34.3%) were 6th Grade Primary Education students aged 11–12 and 473 (65.7%), 4th Grade Compulsory Secondary Education students aged 15–16. The schools were located in the provinces of Cádiz and Málaga (southern Andalusia, Spain).

Table 1 Information on the primary education sample

School type		Programme		Gender	
Public n (%)	Charter n (%)	CLIL n (%)	Non-CLIL n (%)	Men n (%)	Women n (%)
182 (73.7)	65 (26.3)	81 (67.2)	166 (32.8)	111 (44.9)	136 (55.1)

Table 2 Information on the secondary education sample

School type			Programme		Gender	
Public n (%)	Charter n (%)	Private n (%)	CLIL n (%)	Non-CLIL n (%)	Men n (%)	Women n (%)
369 (78.0)	62 (13.1)	42 (8.9)	275 (58.1)	198 (41.9)	253 (53.5)	220 (46.5)

The majority of students attended urban schools ($n = 594$, 82.5%) (see Tables 1 and 2 for further information on the sample).

3.2 Instruments and Measures

At a preliminary stage of the investigation, the CLIL and the non-CLIL groups were matched for verbal intelligence through the subtest for verbal aptitude in the EFAI (*Evaluación factorial de las aptitudes intelectuales*) (Santamaría et al. 2014). The level 2 verbal aptitude subtest was used for Primary students and the level 4 subtest was employed for Secondary students. This subtest has acceptable levels of difficulty and discrimination indices, and good internal reliability (coefficient $\alpha = 0.75$ for Level 2 subtest and $\alpha = 0.70$ for Level 4 subtest). The authors also report adequate measures of validity for the overall test. The subtest for verbal aptitude in the EFAI has a multiple-choice format, and each question has four possible answers. The level 2 subtest contains 26 questions, and the level 2 subtest, 23.

In order to guarantee the homogeneity and, hence, the comparability of the groups in terms of motivation, Pelechano's (1994) MA test was used. This self-report questionnaire consists of 36 statements, each of which has a dichotomous (yes/no) response format and identifies four motivational factors: (i) desire to work and self-esteem (10 items); (ii) exam anxiety (9 items); (iii) lack of interest in studying (with a potential negative (inhibitory) effect (9 items); and (iv) realistic personal self-demand (7 elements). The score in L1 (Spanish) was used as a measure of academic competence in Spanish (L1). Spain uses a 10-point grading scale for Primary and Secondary Education divided into categories where 9.0–10 is “outstanding” (*sobresaliente*), 7–8.9 “very good” (*notable*), 6–6.9 “good” (*bien*), 5–5.9, “sufficient” (*suficiente*), and below that, “fail” (*insuficiente*).

A questionnaire based on an instrument developed by Sundqvist and Sylvé (2014) was employed to obtain information on length of time of extramural exposure to English. Extramural English is a term coined by Sundqvist (2009 cited in Sundqvist & Sylvé, 2014) to refer to “all types of English-related activities that learners come in contact with or are engaged in outside the walls of the English classroom, generally on a voluntary basis” (Sundqvist & Sylvé, 2014, p. 4). The parents’ highest level of education together with demographic data was obtained through an initial questionnaire administered to the student.

Tests and questionnaires were distributed in all the participating schools during class time under the researchers’ supervision. The test for verbal aptitude and the motivation questionnaires were administered in the same session in February–March 2015. The schools provided the researchers with the end-of-year scores in Spanish in June 2015. Previous to the data gathering stage of the study, the prescriptive permissions had been obtained from both the Education Administration and the participating schools.

3.3 Data Analysis

For statistical data analyses, chi square tests were used in order to compare the CLIL and the non-CLIL samples’ attainment in L1, and the effect of gender, setting (urban vs. rural), parents’ educational level, and extramural exposure to English on the CLIL sample’s L1 competence. The school grades “fail”, “sufficient” and “good” were collapsed into one category, and those of “very good” and “outstanding” into another. The education levels of the mother and of the father were distributed into non-university and university level. As to the time spent on extramural activities in English, two categories were used: up to 9 h and more than 9 h of weekly exposure to extramural English.

ANOVA tests were conducted in order to detect the effect of verbal intelligence and motivational factors (desire to work and self-esteem, exam anxiety, lack of interest in studying and realistic personal self-demand) on the L1 competence. In this case, three categories of grades were used: fail, the collapsed category of “sufficient” and “good”, and that of “very good” and “outstanding”.

4 Results and Discussion

The chi square test results indicate that there are no statistically significant differences in the school grades in Spanish (L1) between the CLIL and the non-CLIL sample either at Primary ($\chi^2 = 0.26$, $df = 1$, $p = 0.79$, $V = 0.05$) or Secondary Education ($\chi^2 = 0.032$, $df = 1$, $p = 0.96$, $V = 0.012$). This would lend support to previous findings in that CLIL instruction does not have a damaging effect on the students’

L1 competence (e.g. Gebauer et al., 2012; Merisuo-Storm, 2000, 2002, 2006, 2007; Merisuo-Storm & Soininen, 2014; Seikkula-Leino, 2007).

When Secondary urban and rural CLIL students are compared in terms of attainment in Spanish, no statistically significant difference is found ($\chi^2 = 0.26$, $df = 1$, $p = 0.74$, $V = 0.05$). This result is consistent with that obtained by Pérez-Cañado (2018), also in connection with L1 performance. In the case of English as a FL, however, Alejo and Piquer-Píriz (2016) found that urban CLIL students reached a higher level of attainment than their urban counterparts. Contrarily, a statistically significant difference is observed in the case of non-CLIL students ($\chi^2 = 9.54$, $df = 1$, $p = 0.004$, $V = 0.28$). Rural non-CLIL students performed significantly lower than their urban counterparts; whereas 22.22% of the former obtained grades between “very good” and “outstanding” in Spanish, more than double (56.04%) of the latter obtained such grades.

The variable gender only had a significant effect on the Spanish competence of non-CLIL secondary students ($\chi^2 = 5.68$, $df = 1$, $p = 0.03$, $V = 0.22$). In this group, 59.65% of the female students obtained grades between “very good” and “outstanding” (this value was 52.54% in the CLIL sample), whereas 37.70% of the male students achieved such grades (41.19% in the CLIL sample). This result seems to corroborate Merisuo-Storm and Soininen’s (2014) findings that led them to conclude that “especially the boys seemed to have benefited from bilingual education” (p. 72) as, while the girls’ literacy skills were significantly better than the boys’ in regular classes in their study, this was not the case in CLIL classes. Additionally, in light of this result it can be conjectured that CLIL instruction may contribute to narrow the gap between girls and boys in literacy performance, though this should be confirmed in further studies. It should be noted that in PISA 2015 girls achieved better scores than boys in reading in all OECD countries (OECD, 2016).

Studies have shown that parental level of education influences their children’s academic performance as this level impacts on the beliefs and attitudes that promote learning; besides, a strong connection has been found between mothers’ educational level and children’s academic achievement and cognitive development (Davis-Kean, 2005; Sirin 2005). In our study, the mother’s education level seemed to have a considerable impact on the participants’ school achievement in L1. Students in all groups whose mothers have a higher educational level (that is, a university level) obtain better grades in Spanish. This effect achieves a statistically significant level in the case of the Primary non-CLIL sample ($\chi^2 = 8.32$, $df = 1$, $p = 0.008$, $V = 0.32$), the Secondary CLIL sample ($\chi^2 = 5.84$, $df = 1$, $p = 0.03$, $V = 0.22$) and the Secondary non-CLIL sample ($\chi^2 = 10.48$, $df = 1$, $p = 0.003$, $V = 0.30$). In contrast, the impact of the father’s education level did not seem to be so evident as it only reached statistical significance in the case of the Secondary CLIL sample ($\chi^2 = 4.81$, $df = 1$, $p = 0.05$, $V = 0.20$).

Quite unexpectedly, the chi square result indicates a relationship between the extramural exposure to English and Secondary non-CLIL students’ level of attainment in Spanish ($\chi^2 = 6.69$, $df = 1$, $p = 0.03$, $V = 0.22$). In this group, 40% of those exposed to English up to 9 h a week obtained grades between “very good” and “outstanding”; of the students exposed to English more than 9 h 62.79% achieved

those grades. It may be hypothesised that exposure to language—to any language—may have an impact on the person's development in other language(s) of his or her repertoire; this hypothesis, however, needs confirmation.

The results from the descriptive statistics and the ANOVA tests aimed to detect the effect of verbal intelligence and motivational factors (desire to work and self-esteem, exam anxiety, lack of interest in studying and realistic personal self-demand) on L1 attainment are shown in Tables 3 (Primary Education) and 4 (Secondary Education). As expected, the descriptive statistical results indicate that, overall, the higher the performance in the verbal intelligence test, the higher the school grade in Spanish L1. The ANOVA test revealed that, except in the case of the CLIL Primary group, there are statistical significant differences in Spanish performance between all the different attainment groups.

As to the motivational factors in Pelechano's (1994) MA test, results were, on the whole, not surprising either in CLIL or in non-CLIL groups. Without exception, the higher the grades obtained in Spanish, the higher the values in the desire to work and self-esteem factors. Differences between attainment groups achieved significant levels only in Secondary Education. Exam anxiety exhibited a somewhat erratic behaviour, though, and did not yield any significant difference between groups. When it comes to the potentially debilitating lack of interest in studying factor, higher values in it also corresponded to lower grades; additionally, differences between levels of attainment in Spanish regarding this factor reached significant level at Secondary Education both in the CLIL and the non-CLIL group, although the effect size in the latter was considerably smaller. Finally, the relationship between self-demand and the school grades in Spanish followed the expected trend as higher values in this motivational factor corresponded to higher grades; however, the difference in this factor between attainment groups in Spanish was statistically significant only in the Primary non-CLIL group and in the Secondary CLIL group, where the eta squared value indicated a large effect size.

In general, as Table 4 shows, the effects of the variable verbal intelligence and the four motivational factors in the MA test on school grades in Spanish seem to be more pronounced in the Secondary Education CLIL group, as both the p and the effect values indicate. A different effect of enrolment in a CLIL class on L1, FL and subject content learning outcomes was observed by Madrid and Barrios (2018).

5 Conclusion

It is reasonable to suppose that the L1 competence of students in CLIL programmes—who are consequently exposed to fewer hours of instruction in Spanish—may be negatively affected as a result of their participation in such a programme. In view of this possibility, this study aimed at investigating whether CLIL instruction had a detrimental effect on Spanish (L1) competence in a specific monolingual context

Table 3 Mean, standard deviation and variation in verbal intelligence and motivational factors according to school grade levels in Spanish (Primary Education)

Non-CLIL						
Variable	Scores			<i>F</i> (2, 93) (<i>p</i>)	η^2	Comments
	Insufficient (I) (n=13)	Sufficient + good (SG) (n=29)	Very good + outstanding (VO) (n=54)			
	M (SD)	M (SD)	M (SD)			
Verbal intelligence	8.69 (2.87)	12.83 (2.70)	15.00 (2.93)	26.73 ($< .001$)	.37	VO>SG>I**
Desire to work and self-esteem	3.77 (1.96)	4.79 (1.98)	5.06 (1.71)	2.60 (.080)	.053	
Exam anxiety	7.08 (1.115)	6.28 (1.579)	6.30 (1.609)	1.46 (.24)	.030	
Lack of interest in studying	4.08 (1.44)	3.55 (1.76)	2.74 (1.81)	4.04 (.080)	.080	
Self-demand	1.23 (1.42)	1.55 (1.27)	2.41 (2.02)	3.65 (.030)	.073	VO>I*
CLIL						
	Scores			<i>F</i> (2, 17) (<i>p</i>)	η^2	Comments
	Insufficient (I) (n=1)	Sufficient + good (SG) (n=9)	Very good + outstanding (VO) (n=10)			
	M (SD)	M (SD)	M (SD)			
Verbal intelligence	9.00	9.33 (3.32)	11.30 (4.27)	.68 (.52)	.074	—
Desire to work and self-esteem	3.00	3.22 (1.20)	5.70 (1.49)	8.40 (.003)	.50	—
Exam anxiety	6.00	6.33 (1.23)	5.90 (1.45)	.25 (.78)	.028	—
Lack of interest in studying	2.00	2.89 (2.03)	2.40 (1.17)	.28 (.76)	.032	—
Self-demand	2.00	1.89 (1.05)	3.10 (1.73)	1.71 (.21)	.17	—

* Note Significant at a level of $p < 0.05$ ** Note Significant at a level of $p < 0.001$

Table 4 Mean, standard deviation and variation in verbal intelligence and motivational factors according to school grade levels in Spanish (Secondary Education)

Non-CLIL						
Variable	Scores			<i>F</i> (2, 215) (<i>p</i>)	η^2	Comments
	Insufficient (I) (n=23)	Sufficient + good (SG) (n=38)	Very good + outstanding (VO) (n=57)			
	M (SD)	M (SD)	M (SD)			
Verbal intelligence	9.35 (2.95)	10.03 (3.27)	11.02 (2.66)	3.066 (.050)	.051	
Desire to work and self-esteem	3.43 (1.70)	4.05 (1.94)	4.72 (1.98)	3.985 (.021)	.065	VO>I*
Exam anxiety	5.65 (2.10)	5.89 (1.81)	5.96 (1.96)	.213 (.808)	.004	
Lack of interest in studying	5.26 (1.51)	4.97 (2.11)	4.18 (1.66)	3.950 (.022)	.064	VO>I*
Self-demand	1.04 (1.15)	1.37 (1.50)	1.74 (1.49)	2.091 (.128)	.035	
CLIL						
	Scores			<i>F</i> (2, 120) (<i>p</i>)	η^2	Comments
	Insufficient (I) (n=15)	Sufficient + good (SG) (n=50)	Very good + outstanding (VO) (n=58)			
	M (SD)	M (SD)	M (SD)			
Verbal intelligence	9.67 (3.70)	9.64 (3.32)	11.69 (2.96)	6.248 (.003)	.094	VO>I*
Desire to work and self-esteem	3.87 (1.73)	3.90 (1.91)	4.90 (2.12)	3.901 (.023)	.061	VO>SG* VO>I*
Exam anxiety	5.53 (2.48)	6.34 (2.00)	6.12 (1.84)	.956 (.387)	.016	
Lack of interest in studying	5.93 (2.40)	4.94 (2.39)	3.14 (1.70)	15.705 ($< .001$)	.207	VO>I** VO>SG**
Self-demand	.67 (.72)	1.08 (.92)	1.98 (1.40)	12.191 ($< .001$)	.169	VO>I** VO>SG**

* Note Significant at a level of $p < 0.05$ ** Note Significant at a level of $p < 0.001$

(Andalusia, Spain). Additionally, the study sought to determine the effect of moderating variables (gender, setting (urban vs. rural), parental education level, extramural exposure to the foreign language (English), verbal intelligence and academic motivational factors) on level of Spanish competence attainment in Spanish.

Results indicate that the L1 competence is not jeopardised by participating in the CLIL programme, thus supporting the view that a limited number of subjects taught through the medium of the FL does not adversely impinge on the students' competence in L1. Secondary urban and rural CLIL students do not significantly differ in their school competence in Spanish. However, the attainment in Spanish (L1) in the CLIL group seems to be affected differently by other variables depending on the educational programme. In this sense, gender has a statistically significant effect on the attainment of non-CLIL secondary students only. Also, while in Secondary Education the mother's education level significantly impacts on the Spanish competence in both the CLIL and the ordinary educational programmes, the father's education level only has a significant impact on the Spanish competence of the CLIL group. Additionally, more than 9 h of weekly exposure to English has a significant impact on L1 attainment only in the Secondary non-CLIL group. Concerning the effect of verbal intelligence and the four academic motivational factors included in the study on L1 competence, our study concludes that it is more pronounced in the Secondary CLIL group.

These results must be taken with caution, though, as our study clearly has some limitations. Firstly, given both the sample size and the distinctive implementation of CLIL in Andalusia, results may not be transferable to other contexts in which CLIL is being implemented. Secondly, only studies with a pretest–posttest design which control for potentially confounding and intervening variables can determine whether findings are attributable to the educational programme (although in our study participants were matched for verbal intelligence and academic motivation, no baseline data were available). Thirdly, since the end-of-year scores were used as a proxy for attainment in Spanish there is no guarantee that such scores are reliable indicators of the different levels of attainment in Spanish since there is the danger that each school sets its own standards.

Further studies in this field are therefore required that use pretest–posttest design with a control group. Additionally, standardised instruments are needed to measure L1 attainment in different schools and programmes (e.g. Ramos et al., 2011). Finally, although our findings are promising, they should be validated by a larger sample size. Notwithstanding these limitations, this study provides further evidence as to the learning impact of participating in a CLIL programme and explores a research area—that of the effect of intervening variables on learning in this programme in comparison with the regular educational programme—that has not been thoroughly investigated so far.

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