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Developing cognate awareness through pedagogical translanguaging

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ABSTRACT

This article is on pedagogical translanguaging, understood as planned instructional strategies used with a pedagogical purpose in a multilingual educational context. The paper reports a study on cognate identification and cognate awareness carried out in a multilingual primary school. The study aims at analyzing whether the identification of cognates in three languages is related to linguistic factors and to teaching. The relationship between teaching cognates and metalinguistic awareness is also explored. Half of the participants took part in an intervention based on pedagogical translanguaging using multilingual resources from the students' own repertoire while the other half followed regular classes. Participants completed a background questionnaire and a cognate recognition task. Information was also gathered by means of a think-aloud protocol and an interview. The results indicate that the identification of cognates is connected to the linguistic characteristics of cognates but not to having Basque or Spanish as a first language. Participants who had taken part in the intervention showed a higher development of cognate awareness but there were no significant differences between the groups in cognate identification. The results are exploratory but they indicate that using the languages in the students' whole linguistic repertoire can create more opportunities for language learning.

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Introduction

Translanguaging can be seen as an umbrella term that embraces a wide variety of theoretical and practical examples of the fluid use of languages (Cenoz and Gorter 2014; García and Li 2014; Leung and Valdés 2019). In its origin, the term translanguaging was limited to a specific teaching strategy inside the classroom (Jones 2017) but nowadays its meaning is wider. In this paper, we will focus on pedagogical translanguaging which can be understood as planned instructional strategies used with a pedagogical purpose in a multilingual educational context (Cenoz and Gorter 2017). In pedagogical translanguaging the focus is on language integration and the use of resources from the whole linguistic repertoire to enhance language and content learning.

In this study, we explore the development of cognate awareness in primary education. The study is part of a larger project on pedagogical translanguaging aimed at enhancing metalinguistic awareness so as to develop communicative competence in Basque, Spanish and English. Pedagogical translanguaging strategies can apply to different areas of language learning, including vocabulary,

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discourse and pragmatics. This article focuses on vocabulary by looking at the identification of cognates in the three languages.

Translanguaging pedagogies and cognates

Traditionally, language learning in school contexts has been linked to the separation of languages so as to avoid mistakes in the target language. However, this can be problematic and delay learning because it blocks the range of resources multilingual speakers can use in language learning. In fact, students can make progress in the target languages by activating the resources they have in their linguistic repertoire (see, for example, Cummins 2007; Cummins and Persad 2014).

Softening boundaries between languages through pedagogical translanguaging takes into consideration the resources multilingual students can potentially have in their linguistic repertoire. One way to use these resources in language learning is to work with cognates across languages. According to Proctor and Mo (2009, 126), a cognate is 'a word that shares similar orthographic and semantic characteristics in two languages'. As Ringbom (2007) explains, the formal similarity between cognates can have different degrees. Cognates are common not only among languages that have a common origin such as English and Dutch (*water/water*; *green/groen*) but also among languages that are not typologically related but are in contact, such as Spanish and Basque (*calle/kalea* meaning *street*).

Several studies have highlighted the importance of cognate identification in language learning. Proctor and Mo (2009) reported a higher level of cognate awareness for fourth grade English-Spanish bilinguals than for monolinguals in a study conducted in California. They concluded that instruction which promotes cognate awareness for bilinguals deserves to be implemented. Nagy et al. (1993) reported a study conducted with 74 English-Spanish bilingual students (Grades 4–6). They found that students' accuracy in identifying cognates was strongly correlated with their performance on an English multiple-choice vocabulary test including key concepts from reading passages. Students who identified more cognates obtained better results in English. Nagy et al. (1993) also explained that students failed to identify as cognates many words that they had reported as being known in English and Spanish. For this reason, they consider that instruction on cognates could be useful (see also Otwinowska-Kasztelanic 2009; Lubliner and Hiebert 2011).

Research on cognate knowledge has also looked at the possible effect of training on cognate recognition. Dressler et al. (2011) reported a study based on a pedagogical intervention to improve vocabulary that included activities to recognize English-Spanish cognates. Participants in this study were fifth grade English-Spanish bilinguals and monolinguals and the data were gathered using a think-aloud protocol and an interview. The results indicate that cognate knowledge gave students an advantage in vocabulary and that they used both sound and print to make the connection between the English and the Spanish words. Dressler et al. (2011) also reported that students could identify cognates with shared phonological and orthographic features more easily than more opaque cognates. The frequency of a term in Spanish also contributed to the identification of English cognates.

Another study on English-Spanish bilinguals was carried out by Arteagoitia and Howard (2015), who looked at the effect of cognate knowledge on English vocabulary and English reading comprehension. The study followed 230 Spanish-speaking students in grades 6–8. They reported that specific instruction on cognates had a positive effect on vocabulary learning and English reading comprehension. Arteagoitia and Howard (2015) concluded that their results provide evidence of the need to give explicit instruction.

White and Horst (2012) reported a study that examined the effect of specific instruction on cognates carried out in Canada. In this study, fifth and sixth grade Francophone learners of English in the experimental group received instruction on vocabulary by raising awareness on cognates. Students in the control group also worked on vocabulary but without specific materials to raise cross-linguistic awareness. The impact of the training was assessed both quantitatively and qualitatively by a cognate recognition test and a cognate awareness question. The results indicate that students in the experimental group, who had received specific instruction on cognate recognition, did not

obtain significantly higher scores in the cognate recognition test than students in the control group. However, the results also indicated that students in the experimental group had a higher score in the question on metalinguistic awareness about the use of cognates. Teachers who participated in the intervention reported positive feedback about training in cognate recognition and the development of metalinguistic awareness. In sum, research studies point in the direction that specific instruction on cognate awareness can have a positive effect even if this instruction is not always associated with better scores in cognate identification.

There are also some factors that can influence cognate identification in texts, such as orthographic transparency, which is usually measured by the Levenshtein algorithm. Levenshtein distance (LD) is estimated by taking into consideration the number of insertions, deletions, or substitutions of single characters needed to transform a word in one language into the word in the other language. The normalized Levenshtein distance (NLD), which will be used in the research study reported here, is obtained by dividing the LD by the length of the longest word of each pair of words that are cognates. NLD has been used in studies of cognates so as to analyze the degree of transparency between cognate pairs (see, for example, Otwinowska 2016; Schepens, Dijkstra, and Grootjen 2012). Orthographic transparency has been found to be an important predictor of cognate identification (Nagy et al. 1993; Bowers, Mimouni, and Arguin 2000; Vanhove and Berthele 2015). In some studies, cognates have been more easily identified when there are similarities at the beginning of the word and similarities in the case of consonants (see Vanhove and Berthele 2015 for a review). Bosma et al. (2019) also found that the degree of similarity influences the oral recognition of cognates when measuring receptive vocabulary. Otwinowska and Szewczyk (2019) reported that orthographic similarity interacts with L2 proficiency. They found that learners with a high level of proficiency can identify cognates which are not similar, while participants with a low level of proficiency only identify cognates that are orthographically very similar. They explained this difference as related to a highly proficient learner knowledge of morphology and grapheme-to-phoneme mappings.

Cognates are more common among languages that are typologically closer. Otwinowska (2016) explains that typologically close languages share more cognates than typologically distant languages but also that these cognates tend to be orthographically transparent because they are identical or very similar. Learners may have more problems identifying less similar cognates. Another interesting concept is psychotypology, which refers to how learners feel about linguistic typology. Otwinowska (2016, 120) explains that 'learner beliefs about the distance between L1 and the target language in a way "block" noticing crosslinguistic similarity'. This is relevant for the research study reported here because it involves three languages with different degrees of typological distance. Spanish and English are Indo-European languages that belong to two different families, Romance and Germanic. Basque is a non-Indo-European language that is not typologically related to Spanish and English. However, due to the language contact of Basque and English with Latin, and intense contact of Basque and Spanish, a large number of cognates can be found in the three languages.

Another factor that can influence cognate identification is semantic transparency, which, in the case of cognates, refers to the degree of meaning shared in the languages involved. As reported by Lubliner and Hiebert (2011), polysemic words are challenging and may cause problems in cognate identification. Context is a key factor in these cases and also when cognates do not have a high degree of orthographical transparency. Möller and Zeevaert (2015) reported that learners focused on formal similarities when cognates were identical or very similar but paid more attention to the context when trying to identify cognates that were not orthographically transparent.

Otwinowska (2016) explains how students often fail to recognize or even accept cognates if they do not have specific instruction. She adds that as most second or third language teaching materials focus on the target language only, students may not notice cognates. Training in cognate recognition fits into the new trends in the acquisition of multilingual competence because it uses resources that go across languages as a form of pedagogical translanguaging (Cenoz and Gorter 2020).

Most studies on cognate identification are limited to two languages. The study reported here goes further by examining cognate identification and cognate awareness in three languages. Going beyond bilingualism is important because, as Vanhove and Berthele (2015) reported, multilingual participants activate resources not only from their L1 but also from other languages in their linguistic repertoire when trying to identify cognates.

The aim of this study is to explore the potential influence of linguistic factors and specific instruction across languages on cognate identification. The study also aims at exploring the relationship between specific instruction and the development of metalinguistic awareness. The specific research questions of the study are the following:

RQ1. Is the identification of cognates in three languages related to linguistic factors?

RQ2. Is the identification of cognates in three languages related to instruction?

RQ3. Is instruction on cognate identification in three languages related to the development of metalinguistic awareness?

Context

The data for this study is part of a larger research project carried out at a public school in the Basque Autonomous Community in Spain. The general aim of the project is to implement pedagogical translanguaging by softening boundaries between languages and integrating the curricula of school languages. Students participated in an intervention based on pedagogical translanguaging. The idea was that students used the resources in their own repertoire instead of blocking them when learning each of the three languages. The teaching activities were planned so as to combine two or three of the languages and focus on the similarities and differences between them (see also Leonet, Cenoz, and Gorter 2020). The activities included explicit instruction on cognate recognition strategies, which is the focus of this article. The idea of working across languages was regarded as innovative by language teachers because they were used to using only the target language in the class and trying to avoid all reference to the other languages (see also Arocena, Cenoz, and Gorter 2015). The main activity related to cognates during the intervention was to identify cognates in texts in Basque, Spanish or English and to fill in tables with the cognates words in the three languages. The activities occurred in the Basque, Spanish and English language classes and they included cognates with different degrees of orthographical and semantic transparency. Students did not use dictionaries to identify cognates but they could talk to other students.

Methodology

Participants

Twenty-four 5th grade students participated in this study. The language of instruction was Basque for all school subjects except Spanish and English. Nowadays, Basque, a minority language, is the main language of instruction in the Basque Autonomous Community, even for students who speak Spanish as a home language. Spanish and English are taught as school subjects (Cenoz 2009; Gorter et al. 2014). The number of hours for Spanish and English is the same, three hours per week, but there are important differences between the two languages. In the case of Spanish, the majority language, the syllabus is the same in Basque-medium and Spanish-medium schools and it is not taught as a second or foreign language. English is introduced in kindergarten and it is taught as a foreign language.

The study reported here focuses on cognates but the four-month intervention included other pedagogical translanguaging activities as well. Out of the five 5th grade classes in this school, three participated in the intervention and two continued to follow their usual curriculum. A selection of students from both the experimental and control groups participated in this study (Leonet 2018).

Half of the students ($N = 12$) participated in the translanguaging intervention for 12 weeks (experimental group). The other 12 students (control group) followed the regular school curriculum for the same number of hours per week. According to the background questionnaire completed by participants, 37.5% of the students were speakers of Basque as their L1 while 62.5% were Spanish L1 speakers. This distribution is in accordance with the sociolinguistic context of the school. There were 14 male participants and 10 female participants. The criteria to select participants was a similar level of multilingual competence in the three languages as measured at the beginning of the academic year. Participants in this study worked in pairs. In order to know if more cognates were identified in the first language or in the second language, only those pairs of students who shared the same L1 were selected. A total of seven pairs (14 students) spoke Spanish as a first language and three pairs (6 students) spoke Basque as a first language. The other two pairs (4 students) were mixed with one speaker of Basque as a first language and one speaker of Spanish as a first language. There were six pairs in the experimental group (1-E to 6-E) and six pairs in the control group (7-C to 12-C). Table 1 shows the fictional names of the participants, their gender and first language (Basque or Spanish). The names of the students have been changed to protect their identities.

Instruments

Background questionnaire

All students completed a background questionnaire including information about sociodemographic variables. Students were asked about their gender, age and home languages.

Cognate recognition task

Students were asked to read a passage about Antarctica in English. The text was 86 words long and contained 13 cognates, ten nouns and three verbs. Students then circled in the text all the words that, in their view, had an equivalent cognate in Basque and/or Spanish. After that, they wrote the words they had circled in a chart. First, they had to write the cognates identified in English in the first column. Then, they added the cognates in Spanish to the second. Finally, they put the Basque cognate in the third column. Instructions included examples of English-Spanish-Basque cognates. As can be seen in Table 2, ten cognates were shared by the three languages and the other three only had equivalents in one of the languages. The English words *covered* and *discover* have cognates in Spanish and not in Basque, while *land* has a cognate in Basque but not in Spanish. Each correctly identified cognate scored one point. Therefore, the maximum score for English-Spanish was 12 and for English-Basque was 11.

Table 1. Student background information.

Pair	Students	Gender	L1
Experimental group			
1-E	Mikel-Nerea	M-F	Basque-Basque
2-E	Beñat-Eider	M-F	Spanish-Spanish
3-E	Iker-Malen	M-F	Spanish-Spanish
4-E	Alex-Itsaso	M-F	Spanish-Spanish
5-E	Borja-Eneritz	M-F	Spanish-Spanish
6-E	Urko-Joanes	M-M	Spanish-Spanish
Control group			
7-C	Aitana-Garazi	F-F	Basque-Basque
8-C	Manex-Haizea	M-F	Spanish-Spanish
9-C	Ekhi-Xabi	M-M	Basque-Basque
10-C	Jon-Erika	M-F	Basque-Spanish
11-C	Ibon-Unai	M-M	Spanish-Basque
12-C	Peru-Miren	M-F	Spanish-Spanish

Table 2. Orthographic and semantic transparency.

English	Spanish	Basque	NLD Spanish	NLD Basque	Semantic
1. Antarctica(n)	Antártida	Antartika	.20	.20	yes
2. Location (n)	Localización	Lokalizazio	.42	.64	no
3. Continent (n)	Continente	Kontinente	.10	.20	yes
4. Covered (v)	Cubierto	–	.62	–	no
5. Scientist (n)	Científico	Zientzialari	.50	.67	yes
6. Study (v)	Estudiar	Estudiatu	.50	.55	no
7. Climate (n)	Clima	Klima	.29	.43	yes
8. Land (n)	–	Landa	-	.20	yes
9. Dinosaur (n)	Dinosaurio	Dinosauro	.20	.11	yes
10. Fossil (n)	Fósil	Fosil	.17	.17	yes
11. Discovered (v)	Descubierto	–	.54		yes
12. Island (n)	Isla	Irla	.33	.50	yes
13. Glacier (n)	Glaciar	Glaziar	.14	.29	yes

The cognates were analyzed for their orthographic and semantic transparency to determine their difficulty. Orthographical transparency between cognate pairs was measured by using the normalized Levenshtein distance (NLD). As has already been explained, LD is estimated by counting the minimum number of insertions, deletions, or substitutions of single characters needed to transform the word in one language into the word in the other language. For example, the LD for the transformation of 'fossil' in English to 'fosil' in Basque is 1 because there is only one change of one letter. NLD measures the relation between the LD and the length of the longest word in a cognate pair. It is obtained by dividing the LD by the maximum length of the longer word. In the case of 'fossil-fosil', the NLD is .17 (1 change divided by 6 letters). NLD establishes a range between 0 and 1, where score 0 means full orthographic overlap, while score 1 means the greatest difference. As the text was in English, the NLD analysis was conducted both for English-Spanish and English-Basque cognates. Graphemes differing only in orthographic accent in Spanish were considered identical because this diacritic does not hinder identification (see also Vanhove and Berthele 2015).

The data in Table 2 shows that there are important differences in orthographic transparency between cognates. Some cognates such as *continent* or *dinosaur* are very close in the three languages, while others are less transparent. The NLD score is higher for Basque than for Spanish cognates. This is to be expected because Basque, a non-Indo-European language, is linguistically more distant from English than Spanish. In spite of this, it is still interesting to see that 11 out of the 13 English words have a cognate in Basque.

Semantic transparency was also taken into account to determine the grade of difficulty of each cognate. Thus, cognate pairs were classified as being transparent or non-transparent. Transparent cognates were those with only one possible meaning, such as *glacier*, whereas non-transparent cognate pairs had more than one meaning, such as *study*. It is more challenging to evaluate semantic transparency than orthographic transparency because some cognates may have more than one meaning, but only one meaning is known by the students. Information obtained from the students' textbooks and class observations was used to determine semantic transparency for this group of participants.

The target cognates were common academic words in the science curriculum which students had been exposed to in Basque but not in their third language, English.

Think-aloud protocol

A think-aloud protocol was designed to gather information about participants' use of metalinguistic strategies. Think-aloud protocols, which are the simultaneous verbalization of thoughts during a specific task, have been used for the study of cognates (Dressler et al. 2011; Möller and Zeevaert 2015).

Students were told to think aloud during the reading comprehension and cognate recognition tasks. They were encouraged to discuss and reach an agreement before writing the responses. Each pair of students was provided with a single worksheet so as to promote more collaboration between them. All the students were familiar with the format of the task and they all received the same instructions in English and Basque. During the think-aloud protocol, the language used by the researcher was Basque as it is the main language of the school, but students were explicitly allowed to use Spanish and English as well.

Interview

The interview was conducted immediately after students finished the task and aimed at obtaining more specific information about participants' metalinguistic awareness. The researcher used the following questions as a guide:

1. *If you know the word 'zientzialari' in Basque, does it help you to understand the word 'scientist' in English? Explain why*. This specific question about the cognate strategy was adapted from White and Horst (2012).
2. *You know Basque, Spanish and a bit of English. Does the knowledge of the three languages help you to complete the task better? How?*

Procedure

Students worked in pairs while they completed the reading comprehension and cognate recognition tasks. Students were first asked to read the text and then to think aloud and discuss the answers so as to complete the cognate recognition task. The data collection concluded with the interview conducted immediately after finishing the task. The whole session was carried out in an empty room during school hours. Each pair of students received oral and written instructions before starting the task. Each session was audio recorded and lasted around 30 min.

Results

Several analyses were carried out to answer the three research questions. The first research question aimed at examining the relationship between linguistic factors and cognate identification. In order to answer this question, we first looked at the number of cognates students identified in their first and second language and then we examined whether the cognates identified were related to orthographic and semantic transparency.

Table 3 shows the numbers and percentages of cognates identified from the total number of possible cognates that the Spanish L1 and the Basque L1 pairs identified.

The number of cognates that could be identified in the task was the same for all students (12 cognates from English to Spanish and 11 from English to Basque) but as there were seven pairs of students with Spanish as their L1 and three pairs of students with Basque as their L1, the maximum number of cognates that could potentially be identified was not the same for both groups. The Spanish L1 group could identify a maximum of 84 cognates in Spanish (12 cognates by seven pairs) and 77 cognates in Basque (11 cognates by seven pairs). The Basque L1 group could

Table 3. Identification of cognates according to the L1.

	Spanish L1 (7 pairs)		Basque L1 (3 pairs)	
Cognates in Spanish	43/84	51.2%	24/36	66.6%
Cognates in Basque	40/77	51.9%	22/33	66.6%

potentially identify 36 cognates in Spanish (12 cognates by three pairs) and 33 cognates in Basque (11 cognates by three pairs).

The results are only exploratory but we can see that students identify similar percentages of cognates in their first and second language. Spanish L1 students identified 51.2% of the total cognates in Spanish (43/84) and 51.9% in Basque (40/77). Basque L1 students identified 66.6% of the maximum number of cognates in Spanish (24/36) and also 66.6% of the maximum number of cognates in Basque (22/33). The results show a trend indicating that when students were given words in English and asked to identify cognates in Spanish and Basque, they identified very similar percentages of cognates in Basque and Spanish and not more in their L1 than in their L2. This trend was observed both for Spanish L1 and Basque L1 students.

In this study, we also looked at linguistic factors related to the characteristics of the cognates. The characteristics considered were orthographic and semantic transparency. Table 4 shows the number of cognates identified by all the students taking part in this study, that is, the 12 pairs of students.

The maximum score for the identification of English-Spanish cognates is 144 (12 cognates by the 12 pairs) and for English-Basque cognates it is 132 (11 cognates by 12 pairs). We can see that a total of 95 English-Spanish cognates were identified (65.9% of the maximum number of cognates) and 75 English-Basque cognates (56.8% of the maximum number of cognates). This means that a large number of cognates were not identified even when students were explicitly asked to identify them.

The results also indicate that there are important differences between the cognates and clearly indicate that orthographic transparency measured by the normalized Levenshtein distance (NLD) plays an important role. The cognates that were identified more easily are the ones that are more transparent orthographically and have a lower NLD. These were *continent* in Spanish (.10) and Basque (.20), *dinosaur* in Spanish (.20) and Basque (.11), *fossil* in Spanish (.17) and Basque (.17) and *Antarctica* in Spanish (.20) and Basque (.20). These four cognates were identified by 10 or more pairs of students both for English-Spanish and English-Basque.

Students found it much more difficult to identify some cognates with a higher NLD, such as *location* in Spanish (.42) and Basque (.64), *covered* in Spanish (.62), *discovered* in Spanish (.54) and *study* in Basque (.55). These cognates were either not identified by the students or exceptionally by one or two pairs of students. As has already been seen in Table 2, there were only three cognates that were not transparent at the semantic level: *location*, *covered* and *study*. The first two, *location* and *covered*, were identified by very few pairs of students but they were not orthographically transparent either. The word *study* is not semantically transparent because it is polysemic but it was identified by seven pairs of students in Spanish. It is interesting that this word was identified only by one

Table 4. Number of cognates identified.

English	Spanish cognates	Basque cognates
1. Antarctica(n)	11	11
2. Location (n)	2	0
3. Continent (n)	12	10
4. Covered (v)	0	–
5. Scientist (n)	9	8
6. Study (v)	7	1
7. Climate (n)	10	9
8. Land (n)	–	0
9. Dinosaur (n)	12	12
10. Fossil (n)	12	10
11. Discovered (v)	1	–
12. Island (n)	9	6
13. Glacier (n)	10	8
Total	95 65.9% Max = 144	75 56.8% Max = 132

pair of students in Basque but this could also be related to the higher frequency of a word with the same meaning, *ikasi*. It can also be observed that the English word *land* was not identified by any of the student pairs even though it has a Basque cognate *landa*. It could be that the Basque word is less frequent than other Basque words that can be translated as *land*.

The second research question focuses on the relationship between the identification of cognates and instruction. As we have already seen, half of the participants took part in an intervention based on pedagogical translanguaging that aimed at developing metalinguistic awareness across languages including exercises on cognates. In order to answer this research question, a comparison was made between the means obtained in the cognate identification task by the group who had received specific instruction on cognate identification (experimental group) and the group who had not received specific instruction (control group). As the size of the group was very small (six pairs of students in each group), the non-parametric Mann–Whitney U test was carried out. The results can be seen in Table 5.

The results of the test indicate that the scores of the two groups did not differ significantly (Mann–Whitney $U = 10.5$, $n_1 = n_2 = 8$, $P < 0.05$ two-tailed). It can be seen that the means for the experimental group were slightly higher than those of the control group, but we do not have sufficient evidence to conclude that the two groups differ in cognate identification.

As has already been said, students identified the most transparent cognates better than the opaque ones. When both the experimental and control groups were compared, it could be observed that the experimental group did slightly better in the cognates *island* and *glacier*. These cognates were semantically transparent and had intermediate NLD values for orthographic transparency both in Spanish and in Basque. Cognates that were not semantically transparent were difficult to identify for all students and cognates that were orthographically and semantically transparent were easily identified by both groups of students.

The third research question looks at the relationship between instruction and metalinguistic awareness about cognates or cognate awareness. In order to answer this question, students' verbalization in the think-aloud protocol and the interviews carried out after completing the task were analyzed. There were some interesting differences between the two groups showing that the students who had received instruction on pedagogical translanguaging including cognate recognition had made more effort to make a connection between the languages and had developed higher metalinguistic awareness. Here we present some examples of the think-aloud protocol and the interviews to illustrate this point.

Excerpts 1 and 2 are examples of two pairs of students working on the cognate recognition task. Excerpt 1 shows the verbalization of two students discussing the word *discovered* and its cognates in Spanish and Basque. There is no cognate for this word in Basque and the students discuss the possibility of adapting the Spanish word *descubrir* to Basque and conclude that this strategy does not work. They add a comment about the possibility of having an English-Spanish cognate but not an English-Basque cognate because English and Spanish are linguistically closer than English and Basque. These students try hard to find the Basque equivalent of *discovered* but are right to realize that it does not exist. In comparison with this discussion, we can see that students in excerpt 2 discuss a similar situation, trying to find the English-Basque cognate for the word *continent*. Unlike the students in the experimental group, they do not try hard and they just go on even though the Basque word is quite close to the English one (NLD .20).

Table 5. Cognate identification by student pairs in the experimental and control groups.

	Experimental		Control			
	M	SD	M	SD	*U*	*P*
Spanish (max = 12)	8.33	1.96	7.50	2.74	17.00	.86
Basque (max = 11)	6.83	2.56	5.67	2.42	11.50	.28

Excerpt 1 Think-aloud protocol (Pair 5-Experimental)

Eneritz: discovered …
Borja: descubrir eta … bueno ez edo bai [*discover (in Spanish) well yes or no*]
Eneritz: eske euskaraz izango zen desberdina [*it would be different in Basque*]
Borja: bai [*yes*]
Eneritz: ez descubrir, ze deskubritu ez da existitzen [*not discover (in Spanish) 'deskubritu' does not exist*]
Borja: deskubirtu … [*deskubirtu* …]
Eneritz: ba utzi hori, ze euskaraz ez badago uzten dugu horrela. [*let's leave it, if there isn't [a word] in Basque, we'll leave it like this*]
Researcher: bai, posible da baliokiderik ez izatea, eh! [*yes, it is possible not to have an equivalent*]
Eneritz: ze egon al da euskaraz eta gaztelaniaz baina ez … hau da, ingelesea eta gaztelania dira oso … [*yes it can be in Basque and Spanish but not … that is, English and Spanish are very* (puts her hands together to indicate closeness)]

Excerpt 2 Think-aloud protocol (Pair 12-Control)

Miren: continent
Researcher: eta badakizue horren baliokidea zein den? [*do you know the equivalent of this?*]
Miren: continente … eta euskaraz … [*continente … and in Basque*]
Peru: euskaraz … [*in Basque*]
Miren: ez dira, euskaraz ez dago [*they aren't, there isn't [one] in Basque*]

The next four examples are from the interviews that took place immediately after completing the text. Excerpts 3 and 4 are the answers to the following question:

If you know the word 'zientzialari' in Basque, does it help you to understand the word 'scientist' in English? Explain why.

The interaction in excerpt 3 shows that the two students in the experimental group have a clear idea of what cognates are, they even use the term 'cognate' and they think they can be useful. The students in excerpt 4 do not share the idea that cognates are useful to the same extent. There is a clear difference between the two conversations about the possibility of using their own multilingual repertoire as a resource. It seems to be a strategy used by the students in excerpt 3 but not for students in excerpt 4.

Excerpt 3. Interview (Pair 6-Experimental)

Urko: bai. [*yes*]
Researcher: nola laguntzen dizue horrek? [*how does it help you?*]
Joanes: sustraikideak direlako. [*because they are cognates*]
Researcher: eta horrek zer esan nahi du? [*and what does that mean*?]
Urko: antza handia dutela hitzek. [*that there is a strong similarity between words*]
Joanes: pista bat ematen dizu. [*it gives you a hint*]

Excerpt 4. Interview (Pair 10-Control)

Erika: batzuetan [*sometimes*]
Jon: bada oso desberdina bada ez [*not if it is very different*]
Researcher: eta kasu honetan, zientzialari hitzarekin? [*and in this case, the word scientist?*]
Jon: kasu honetan bai. [*in this case, yes*]
Researcher: eta zuri Erika? [*and you, Erika?*]
Erika: bai [*yes*]
Researcher: hizkuntzak elkarren ondoan ikusten dituzuenean antzekotasun gehiago ikusten dituzue hizkuntzen artean? [*Do you see more similarities between languages when they are next to each other?*]
Jon: gutxi [*a bit*]
Researcher: eta zuk Erika? [*And you, Erika?*]
Erika: gutxi baina apur bat [*just a bit*]

Excerpt 5 and 6 are also from the interviews and they are the answers to the following question:

> You know Basque, Spanish and a bit of English. Does the knowledge of the three languages help you to complete the task better?

The students in the experimental group in excerpt 5 explain that knowledge of the three languages is useful and there is some reflection about how their multilingual resources can be used for improving comprehension. Students in excerpt 6 are in the control group and they also agree with the idea that knowledge of the three languages is useful. However, they do so in a more limited way. Ibon says it is only useful for English, while Unai says it is for the three languages. The main difference when compared with the students in excerpt 5 is that they do not provide other explanations and they show a lower level of metalinguistic awareness than in the case of the students in the experimental group.

Excerpt 5. Interview (Pair 1-Experimental)

Mikel: bai [*yes*]
Nerea: bai [*yes*]
Researcher: zergatik? [*Why*?]
Mikel: ze holan dakizu hitz gehiago laguntzen dizu [*You know more words and it helps*]
Nerea: adibidez ba sustraikideak badira eta hauek sustraikideak dira, ez badakizu zelan den ba adibidez [*For example, if they are cognates and these are cognates if you don't know what it is, for example*]
Mikel: ulertzen duzu hobeto [*you understand better*]

Excerpt 6. Interview (Pair 11-Control)

Ibon: bai [*yes*]
Researcher: zergatik? [*why?*]
Ibon: niri bakarrik ingelesean [*it helps me only in English*]
Researcher: zuri ingelesa bakarrik, eta zuri? [*only in English, and you?]*
Unai: hiruak [*In the three*]

In sum, these examples show that there are some differences between the two groups regarding the effort they make to find cognates across languages, their beliefs about how useful cognates in the three languages in their repertoire are and the depth of their metalinguistic explanations.

Discussion

This study focuses on the identification of cognates in three languages and the development of metalinguistic awareness. It is based on a larger project of pedagogical translanguaging which aims to activate students' resources from their whole linguistic repertoire. The intervention included activities on cognates in English, Basque and Spanish. The results of the first research question indicate that the identification of cognates is not related to having Basque or Spanish as a first language but that it is connected to the characteristics of the cognates themselves. After reading a text in English, students identified similar percentages of English-Spanish and English-Basque cognates independently of whether they were Spanish or Basque first language speakers. This result could be related to the context in which the study was carried out, as the students had high exposure to both languages in their daily lives. Spanish is the majority language in society and Basque is the main language of instruction, so students are fluid in both. When students are asked to find cognates for the English words in both languages, they are not able to identify all the cognates, but when they manage to identify some of the cognates they do not have an advantage associated with being cognates in their first or second language.

The results also indicate that orthographic and semantic transparency are related to the identification of cognates. Students were successful in identifying orthographically transparent cognates, such as *continent*, *dinosaur* or *fossil*. However, most students failed to identify less transparent

cognates, such as *discovered* or the three cognates that were semantically opaque: *location* in Basque and Spanish, *covered* in Spanish and *study* in Basque. These results show the importance of the linguistic characteristics of the cognates (orthographic transparency and semantic transparency) and confirm the results obtained in other research studies (see, for example, Nagy et al. 1993; Lubliner and Hiebert 2011). As shown in Table 2, the NLD is higher for English-Basque cognates than for English-Spanish cognates and this is because English and Basque are typologically more distant. Some students identified the same number of cognates for Spanish and Basque but other students identified a higher number of cognates in Spanish. Even if the data are limited, to draw some conclusions on this point, one possible explanation could be psychotypology as explained by Otwinowska (2016). It could be that the expectations students have when trying to find English-Basque cognates make them less aware of crosslinguistic similarities.

The second research question looked at the relationship between cognate identification and instruction. The results indicate that even if students in the experimental group scored slightly higher than the students in the control group, the differences were not significant. These results are similar to those obtained by White and Horst (2012) in Canada, who did not find significant differences between the group that had received specific training in cognates and the control group. White and Horst (2012) explain that this could be due to the pedagogical practices of the control group, who were also encouraged to guess the meaning of words by comparing English and French words. This could also have happened in the context of this research because teachers may have made comparisons across languages even though the students in the control group did not carry out specific tasks on cognates in class. Another possible explanation is that significant differences could not be found because of the characteristics of the cognate identification task. As has been seen, the cognates that were orthographically and semantically transparent were easily identified by all the students. The results indicate that even when students have not had specific instruction on cognate identification, they can easily identify transparent cognates if they are asked to do so. In addition, the results show that both experimental and control students were not successful in identifying cognates that were not transparent and that frequency of use also played a role, confirming the results obtained by Dressler et al. (2011). It seems that some of the cognates that were orthographically and semantically opaque were too difficult even for students who had received specific instruction. Therefore, the differences seem to be limited to those cognates that were semantically transparent but with intermediate levels of orthographic transparency as measured by NLD. It is important to explore this possibility in future studies on cognates because instruction could be more effective if it focused on developing strategies to identify cognates that were not completely transparent rather than on all types of cognates. An important factor that might explain the poor results obtained in opaque cognates could be the students' level of proficiency in English (see Otwinowska and Szewczyk 2019).

The third research question related instruction on cognate identification to the development of metalinguistic awareness. Our results show that students identified some cognates but failed to identify others. This finding confirms those of Nagy et al. (1993) and Lubliner and Hiebert (2011), who also reported that students were not aware of all the cognates and that there was a lot of room for improvement. Our results obtained in the think-aloud protocol indicate that some of the students who received instruction in cognate identification tried harder to find cognates than students in the control group. This difference in strategy could be very useful for students when trying to understand texts.

During the interviews carried out after completing the task, students in the experimental group showed more awareness of the cognate strategy. Our results confirmed those of White and Horst (2012) when we asked students if the word '*zientzialari*' in Basque helped them to understand the word *scientist* in English. Students who had received instruction on cognates found the Basque word more useful and provided explanations that were more complex, showing more awareness of what cognates are than students in the control group. The answers to the question about their

knowledge of the three languages being helpful also indicate that metalinguistic awareness was higher in the case of the students who had received instruction. They understood the usefulness of cognates better and this could be seen in their explanations, which were more elaborate than those of the control group.

This research study has some limitations because of the number of participants, therefore its findings can be considered exploratory. The results do not provide enough evidence to show the advantages of instruction on cognate identification but indicate that students who had received instruction developed metalinguistic awareness about the potential benefits of using multilingual resources when identifying cognates. Our findings highlight the importance of orthographic and semantic transparency in the identification of cognates. The results indicate that using the languages in the students' whole linguistic repertoire can create more opportunities for language s to support a body of evidence which suggests that pedagogical translanguaging alearning (Cenoz and Gorter 2019, 2020). This study provides some fascinating insights and helplso enhances metalinguistic awareness in the case of cognates. The activation of the students' repertoire is even more necessary when there are more than two languages involved because the languages can reinforce each other.

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