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Title: Lexical development in early bilinguals: Approaching early bilingualism development in the case of Spanish-Basque bilinguals.

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Abstract

Early bilingual toddlers who were exposed to English and Spanish from the very beginning were taken in order to participate in a study about lexical and grammatical development by using the MacArthur-Bates' CDI in a study carried out by Marchman *et al.* (2004). The MacArthur-Bates' CDI is a parental questionnaire that allows to know the lexical and grammatical development of a child in a given language. Over and above some factors, what was striking was that every child presented the same characteristics: everyone reported stronger relationships between lexicon and grammar within language, and weaker relationships across language. The aim of the current study was to show that in the case of 5 children, who were exposed to both Spanish and Basque from the very beginning, within language lexical-grammatical associations were stronger than across languages lexical-grammatical associations by using the IDHC and KGNZ. These two instruments are the different CDI adaptations in Spanish and Basque, respectively, owing to the different properties Spanish and Basque have. For this reason, in order to come across with the lexical-grammatical relations, in the current study the focus has been established in the *clothes* and *body parts* section in the vocabulary part, then in the section *how the child uses and understands the language*, and then in the grammatical part *words endings, verbs* and *ML3*. Results have shown that in every child's case within language relationships in Spanish and in Basque were stronger while across language relations were weaker, as happened in Marchman *et al.* (2004). Furthermore, methodological difficulties while completing the children's questionnaires in this study were found, so suggestions for further research in this kind of situation have been proposed.

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1. Introduction

It is known that children's language development goes through two different periods; in the first year (12-14 months) the first words start to appear and in the second one (24 months approximately), the period called 'words burst' starts when word production and combination start to be notable. As a consequence of this division of these two periods, some studies such as Pinker (1999, cited in Marchman *et al.* 2004) stated that grammar was acquired in an autonomous way from the way lexicon was acquired, meaning that vocabulary and grammar were acquired in different ways and they did not have any influence on each other. Nevertheless, other studies proposed that vocabulary and grammar could develop together and not separated: for example, Fenson *et al.* (1994) noted a strong correlation ($r=.75$) between vocabulary production and grammatical forms by using the MacArthur Communicative Development Inventory (CDI) with children who were in the age frame of 16-30 months. Moreover, Bates and Goodman (1997) found similar results in a longitudinal sample of 27 toddlers; and further, not only in English, but also similar results were obtained in other languages such as in Italian (Caselli, Casadio & Bates, 1999, apud in Marchman *et al.* 2004).

As a consequence of those theories that hinted that vocabulary and grammar of a language could be related, some new claims appeared providing possible explanations for lexical-grammatical associations in language development. For example, Marchman & Bates (1994; apud Marchman *et al.*, 2004) claimed that '*vocabulary learning provides the foundation for later grammar learning*'. This means that children acquire vocabulary and after learning the properties, regularities and irregularities of vocabulary, the child starts mastering the grammar. Another claim stated that lexicon and grammar are learnt case-by-case, meaning that the child learns a language by repetition, by routine (Akhtar, 1999; Lieven *et al.* , 1997; Tomasello, 2001; apud in Marchman *et al.*, 2004). Furthermore, other claims such as Anisfeld *et al.* (1998); Gleitman, (1990); Naigles, (1990), all of them apud Marchman *et al.*(2004) stated the contrary, so that children first acquire grammar and then they start acquiring vocabulary.

However, it may be the case that vocabulary-grammar relationships are indirect. For example, grammar and lexicon could be influenced by mechanisms or representational requirements that operate outside '*lexical-grammatical associations may simply reflect a*

strong correlation between general cognitive skill and each of individual tasks of learning words and grammar.' (Marchmann *et al.*, 2004). At the same time, environmental influences such as the amount of a language a child hears per day could have an impact in lexical-grammatical associations. For example, *'features of language learning environment that enhance children's learning of words might also enhance the mechanisms guiding the acquisition of grammar'* (Hart & Lyons, 1995; Huttenlocher *et al.*, 1991; apud in Marchman *et al.*, 2004).

Nonetheless, it could be the case that within language relationships could be attributable to general individual differences. *'Children who are good at learning vocabulary could be good at learning grammar, and vice versa.'* (Marchman *et al.*, 2004). However, in the case of monolingual children it is very difficult to distinguish the influence of general language learning from that one of specific lexical-grammatical links: as a matter of fact, in Marchman *et al.*'s study they examined language-specific and language general predictors of lexical and grammatical development in simultaneous bilinguals who were exposed to Spanish-English. In the case of monolinguals there is individual variation in outcomes and a distinct level of accomplishments, and the same happens with bilinguals. An explanation for this individual variation can be that *'A child's achieved level of language must be, to some degree, a function of the age of the child, as well as language learning environment. (...) At the same time, general language learning could also contribute to that variation'*. Another possibility can be that *'lexical and grammatical learning are associated in a large language-specific fashion, only moderately affected by general factors'* (Marchman *et al.*, 2004).

After these two possibilities of the causes of within-language relationships were stated, Marchman *et al.* (2004) examined the influence of age and language exposure to English and Spanish on lexical and grammatical outcomes in each language; then they examined the relationship between lexical-grammatical accomplishments both within and across languages. After these examinations, two predictions appeared; the first one took into account the following: in the case of monolinguals, general language learning skills represent close lexical-grammatical associations, so consequently, in the case of bilinguals within and across language relations will be expected to be closed. The second possibility in Marchmann *et al.* (2004) claimed was that lexical-grammatical relationships

could be only strongly correlated within language, but weakly correlated across-languages.

In order to verify which of the two predictions that have been mentioned in the previous paragraph was fulfilled, they used the Communicative Development Inventory (CDI), an instrument, which was elaborated by Bates in 1975, and has been evolving since that date. Now, it is known as the MacArthur and Bates Inventory, and has been reported to be a good instrument in terms of evaluating the language development of children in their early age.

In Marchman *et al.*'s (2004), participants were n=113 after discarding children who had suffered ear infections. Notwithstanding the results, although children showed differences in lexicon-grammar language development owing to general factors (age, exposure), or specific factors (intelligence, learning skill), over and above them the most striking point Marchman *et al.* (2004) found was that lexical-grammatical relations were highly stronger than across-language relations.

The obtained lexical-grammatical relations within language were discovered to be indirect, meaning that the progress in learning lexicon and grammar is not the same, because the learning process of both components is not parallel. This means that vocabulary increase is not corresponded with the grammar one at the beginning: in other words, '*grammar starts being presented after an amount of vocabulary is acquired*' (Marchman *et al.*, 2004, pp. 218). As a matter of fact, indirect relations between lexicon and grammar seem to be contradictory to previous studies that did not take into account indirect relations between lexicon and grammar, and consequently, those previous studies did not come across with the true associations between vocabulary and grammar.

In the current paper, I will take Marchman *et al.*'s (2004) conclusion as my hypothesis, according to which within language relations would be stronger than across-language relations, so I predict that in this study Spanish-Basque bilinguals will report stronger associations within language vocabulary-grammar than across-language.

The current study is divided in three sections; in the first section participants will be presented, and also their age in months and their amount of exposure towards Spanish

and Basque. Then, in the materials section KGNZ and IDHC, which are the instruments I have used will be presented so that the reader know on what they consist and the sections they have. In the third section of the study section the procedure will be presented. Then, results will be presented and at last a summary of all the results will be presented. In the discussion section results, predictions and hypotheses will be discussed, and after this there will be a section where I will deal with methodological implications that I have found in the study.

2. The study

In order to test my hypothesis, an empirical study has been designed. In this section, participants, their features and their language situations will be presented. Then, materials I have used in order to carry out this study will be presented. After this, the procedure I have followed will be shown, as well as the reasons why I have decided to follow it. At last, results of this study will be presented.

2.1 Participants

The number of participants in this study I got in this study was $n=5$, so it is very small. Despite the questionnaires are prepared for children who are between 16-30 months, 2 children out of the 5 children of this study were out of this target age, because they were older than 30 months. Nonetheless, I decided to include them because it would widen my sample, and because it may happen that these two last children exhibit different kinds of relations within and across language.

Data collected in the study were provided by parents whose children were exposed to Basque and Spanish; three of these children were exposed to Spanish at home and start receiving Basque input when they started to go to kindergarten, becoming this place the only place they receive Basque input. The other two were exposed to Basque before kindergarten: one was exposed to Basque since he was 5 months old, and the other one since he was born his mother has been talking to him at least 2 hours per day in Basque.

Table 1 describe the participants of this study; in the first column the names written are not the children's real names; they are nicknames children were given in order that their

identity could be safe. In the second column, children’s age in months appear, and in the last column, since the amount of exposure to Spanish or Basque is relevant, the amount of exposure they have to each language is presented in hours per week.

Some informants reported that their child spend 220 hours of exposure per week, although this quantity must be impossible, because per week there are 168 hours, and the number of hours of sleeping time per day have to be discounted, so the sleeping hours they were given are 8 hours per day. That is to say, 56 hours of sleeping per week have to be discounted. At last, 112 hours of amount of exposure for each child per week were decided to be the average.

Name	Age (in months)	Amount of exposure reported (average per week, 112 hours)
Alfred	28	Spanish: 94.5 hours. Basque: 17.5 hours (kindergarten) since he was 12 months old.
Basil	30	Spanish: 92 hours. Basque: 20 hours (kindergarten) since he was 12 months old.
Corey	30	Spanish: 97 hours. Basque: 15 hours (kindergarten) since he was 5 months old.
Desmond	36	Spanish: 94.5 hours. Basque: 17.5 hours (kindergarten) since he was 19 months old.
Ernest	38	Spanish: 80.5 Basque: 17.5 hours (kindergarten), 14 hours (mother) = 31.5 hours. Since he was born.

Table 1: children; name, age, amount of exposure.

As shown in table 1, the amount of exposure to Spanish is much higher than to Basque, because all of them except Ernest, who spends two extra hours of exposure to Basque with his mother every day, only receive Basque input at kindergarten (between 15-20 hours), whereas they receive the remaining exposure in Spanish (more than 80 hours per week).

Basing on the hypothesis that within-language relations will be stronger than across-language relations, and taking into account these participant’s specificities I make the following predictions: firstly, by viewing the big difference between the amount of

exposure to Spanish and to Basque, I expect that in the Communicative Development Inventory (CDI) in Spanish these children will obtain higher scores than in the KGNZ. Secondly, I expect that Ernest will be the most balanced bilingual, because the amount of exposure he spends to both language is much equal than the others.

2.2 Materials

Materials parents filled were the Inventario del Desarrollo de Habilidades Comunicativas (IDHC) that is a Spanish adaptation of the CDI in the Spanish version of Spain, and Komunikazio Garapena Neurtzeko Zerrenda (KGNZ), a Basque adaptation of the CDI in Basque.

According to Lopez-Ornat *et al.* (2005), the Spanish version from Spain is an adaptation of the CDI in English, where some modifications in culture and in linguistics were made taking into account the final version of the IDHC from Mexico by Jackson-Maldonado *et al.* (2003, apud in Lopez-Ornat *et al.*, 2005), as well as the Galician version by Pérez Pereira & García Soto (2003, apud in Lopez-Ornat *et al.*, 2005).

Both Basque and Spanish inventories are different adaptations of the CDI in English due to the different characteristics of the Basque, Spanish and English. Both English and Spanish are fusional languages, whose suffixes and prefixes contain morphological and grammatical information in words inflection. However, they are not similar, because Spanish has a richer morphology: for example, in the case of conjugations of verbs, or the case of the gender.

On the other hand, Basque is an agglutinative language where lexemes, which are the invariable part of a family of words, and affixes, a part that is added to a word so as to derive into another word, are presented. For example, from the lexeme *etxe* (house), the affix *-ko* can be added and now the word has another meaning (from the house). As a matter of fact, there are sections in the Spanish questionnaire which do not appear in the Basque adaptaion and in the English adaptation, and vice versa.

Questionnaires in both languages are divided in two sections; the first one is the lexical part, and the second one is the grammar part. Here the Spanish version will be first described and then the Basque one.

The first part of the Spanish version or IDHC is the lexical-vocabulary part, which consists of 23 sections and a final section called *how the child uses and understands the language*, which had 5 questions. Totally there were 863 items apart from the 5 last questions.

Section	Items
Onomatopoeia of animals and things (Vocalizations)	25
Animals (real or toys)	73
Vehicles (real or toys)	22
Toys	45
Food and drinks	85
Clothes	43
Parts of the body	39
Domestic and personal objects	59
Furniture, rooms and places of the house	45
Objects out of the house	19
Places	31
People	35
Games, routines and social formulae.	43
Actions, processes and verbal states.	128
Qualities and attributions	54
Time	17
Pronouns, demonstratives and determinants	42
Questions	9
Prepositions, locatives and mode	15
Quantifiers and articles	21
Auxiliaries	5
Connectors	8
TOTAL: 23	TOTAL: 863

Table 2: sections and items of the lexical part (IDHC)

Then, there is a section called *how the child uses and understands the language*, which includes 5 questions that refer to the language use by the children in terms of past, future, absence, ownership and understanding of requests in Spanish.

In the second part of the IDHC is the grammatical part. As shown in table 3, there are 6 sections: the first one is the ending of words section, where parents have to report the

frequency their children add suffixes when they speak, such as the plural (-es), gender (male or female) or suffixes of decrease or increase of size. In addition, in the final question of this section three regular verbs appear, which are referred to a type of conjugation in Spanish; the first verb is *jugar* (play), which is referred to the first conjugation of Spanish (verbs ending in -ar), then we have the verb *comer* (eat), which is a verb of the second conjugation of the Spanish verbs (verbs ending in -er), and at last we have the verb *subir* (to go up), which is related to the third conjugation (verbs ending in -ir): each verb is conjugated in the present form of the indicative mode, with all the subjects of the verb: I, you, he/she/it, we, you, they. Each ticked item is counted as 1 point.

The following section is the uneasy verbs section: these verbs are called uneasy verbs because children tend to make mistakes of overregularization due to the form of regular verbs (e.g: *yo cabo* instead of *yo quepo*). In this section in IDHC there are 22 irregular verbs, and all of these irregular verbs are conjugated in the first person of singular (I). Each answered verb is counted as 1 point.

Then, in IDHC there is a section of surprising words; it can be seen that at the beginning of this section there is a question that says: *Sometimes children make mistakes while speaking although they aim to speak in a correct way. Have you ever seen your child said something like this?* And then two questions are presented: the goal of the first question is to see whether the child is familiarized with the irregular participle form that goes together when the verb *hacer* is an auxiliary: for example, by taking the verb *escribir* (to write), children tend to say *he escribido* because they follow the general conventions of the participles when the correct form is *he escrito*. The second question is a question about knowledge of gender (e.g. for *flor* (a flower), it seems male, so the child may say *un flor*, which is the male article, whereas this word has a female gender, so the correct article would be the female *una flor*), or the invention of a male or female gender in words which seem to have a male or female form, and this word is valid for male or female (e.g for *idiota* (idiot), a child can say *idiotto* if they are referring to a male person). Here nothing is counted, this question is only valid for information about the child.

Then, in the morpho-syntactic complexity section parents have to report the way their children speak; for this, different variants appear (from a simple one to a more complex

one). For example, a question here says: *el niño empieza a toser. Le pregunta: ¿Qué tiene el niño? El niño responde: a) nene tos, b) nene tene tos, c) tengo tos, d) el niño no dice nada parecido* (your child starts coughing. You ask them: What is the matter with you? The child answers: a) child cough, b) child have cough, c) I have a cough or d) the child does not say anything like this). What is new in this section is that here there can be more than a unique punctuation per question, because after the explanation of this question there is the following warn: *‘Sometimes in the same day the child answers the question in two modes; if your child does this, you can mark both answers’*. The answer here is counted as 1, even though two answers have been chosen. Nothing will be counted if the answer is: *the child does not say anything like this*).

Finally, there is a question about if the child combines words or not, and if they do it, parents are supposed to write the three longest sentences they have heard their child saying in Spanish (ML3), so what is counted here is the amount of words a sentence has. In total, there are 74 items that can be fulfilled in the whole section of grammar.

Section	Items
Ending of words and regular verbs	30
Irregular verbs	22
Striking words	2
Morpho-syntactic complexity	16
Word combinations	1
ML3	3
TOTAL: 6	TOTAL: 74

Table 3: sections and items of the grammatical part (IDHC).

On the other hand, in the Basque version 21 sections are presented in the lexical-vocabulary part. In KGNZ, in the section of locatives there are two parts in this section: in the first one words that refer to places and have a proper meaning are presented. The second part, on the other hand, as Basque is an agglutinative language, there is a part of suffixes that denote prepositions like direction, ownership, material. Although this distinction exists, every item will be counted at one in table 4. In total, each answer is counted as 1, and the maximum punctuation a child can achieve is 657 items.

Section	Items
Onomatopoeia of animals and things (Vocalizations)	12

Animals (real or toys)	43
Vehicles (real or toys)	14
Toys	18
Food and drinks	68
Clothes	29
Parts of the body	27
Little objects in the house	50
Places and rooms	33
Things out of home	31
Places out of home	22
People	28
Games and routines	26
Actions, processes and verbal states	103
Words to describe	63
Time words	12
Pronouns, demonstratives and determinants	20
Questions	9
<i>Prepositions and locatives</i>	26
Quantifiers	17
Connectives	6
TOTAL: 22	TOTAL: 657

Table 4: sections and items of the lexical part (KGNZ)

Then, there is a section called *how the child uses and understands the language*, which includes 5 questions that refer to the language use by the children in terms of past, future, absence, ownership and understanding of requests in Basque.

The second part of the Basque version is the grammar part. Here there are 4 sections: the first one is the *ending of words* section, where parents have to report if their children know how to use morphology of the language such as ergative (-k) for the doer of the action, plural (-(a)k) or suffixes to refer something little: (-txo/ño).

The second section is the *verbs* section, where there are *aditz trinkoak*, or lexical verbs that do not need an auxiliary because they by themselves have a meaning and *aditz laguntzaileak*, which are verbs who work as auxiliaries and they appear with a main verb. An example of *aditz trinkoa* is *nago* (I am), because *nago* refers to the first person of the singular and also refers to the verb to be. An example of *aditz laguntzaileak* or auxiliary verbs is *etorri naiz*: *etorri* is the main verb that means ‘to come’, and *naiz* is the auxiliary that refers to the first person of singular.

Different verbs with the most frequent forms are included for each verb. Forms inflected for different subject persons (1s, 2s, 3s), and for different objects such as absolutive, dative, singular and plural, and also imperative forms appear. Finally, the time of the verb can be showed with the auxiliary verb. For example; ‘naiz’ refers to the first person in singular with an intransitive value in the **present** time, while ‘nintzen’ refers to the first person in singular with an intransitive verb value in a **past** time. In the KGNZ, section of the verbs are separated: the first group consists of verbs which ask the case nor or zer (who or what → Which bear one only overt person marking (subject of intransitive and of transitive forms)); the second group is called nor-nori → (The inflected form agrees with the absolutive and the dative); the third group is called nor-nork: the inflected forms agree overtly with the ergative subject and the object in 1st, 2nd and 3rd person in singular or plural), and the last group is called nor/zer-nori-nork (who does to whom something → The inflected form agrees with three arguments).

The third section is the ML3, which corresponds to the three longest sentences parents have heard their children say. This section allows the researcher to measure the length of the sentences their children say.

In the last section, which is called *complexity of sentences*, parents have to report in which way their children speak; for example, in the case of the question *Nola esaten du haurrak? A) ez daukat begia b) ez daukat begirik* (How does the child speak? it does not have any eye), informers have to choose in which way their child speaks (option A or B)

Section	Items
Ending of words	9
Verbs (auxiliaries)	37
ML3	3
Complex sentences	21
TOTAL: 48	TOTAL: 70

Table 5: sections and items of the grammatical part (KGNZ).

At last, both questionnaires include a final part where there is an information piece of paper which asks for children’s data, their knowledge of a language or more languages and their exposition towards these languages with their parents, members of the family or a caretaker and information about the completion of the questionnaire: who completed it, personal information of the family members, and parents’ academic level. An example

of this sheet can be found in appendix A for Spanish and Basque. Personal information of these children is very important, because in this sheet parents report their children's features. These features are exposure to a given language, as well as whether the child has suffered ear infections, because they are usually excluded from normative studies if they have suffered too many ear infections or grave infections. However, in this study no child was reported to have ear problems, so I did not exclude any child.

2.3 Procedure

Data were collected in Escolapios, a school from Vitoria-Gasteiz. First of all, an advertisement was written where parents who have bilingual Spanish-Basque were required. Then, a day for an arrangement was established in order to inform them about the compliance of the questionnaire. To this arrangement 5 parents presented themselves as volunteers.

In that meeting they were explained the instructions they had to follow while completing the questionnaires, as well as possible doubts they may have had were clarified, such as doubts when trying to fulfil the reported words their child said. They were said that since the pronunciation is not relevant for this study, if a child happens to realize a word in a different form but the child knew about it, for example; instead of "Ambulancia", "Ninonino", the onomatopoeia, or "abechas" for "llaves", an invented word used by the child in order to refer an object or person. In that case, if words were understood by parents, the words should be accepted and included in the questionnaires. Apart from completing the lexicon and words' section, they were asked to complete the grammatical section. In the ML3, they were also said to write the whole heard sentence, although the child happened to use an invented word with a unique meaning for the child. In order that they could fulfil the questionnaires, parents were advised to complete the questionnaires while playing with toddlers or while taking care of them. After the explanation and clarifying doubts, parents were given a time of 2 weeks to complete both questionnaires at the same date if possible, and after those two weeks they were given, questionnaires were collected.

After checking all the questionnaires, lexical development and grammatical development in Spanish and Basque were taken into account. For this, in order to measure lexical development only some of the info was chosen: total amount of reported words were

taken into account, as well as the sections of *clothes* (43 items in Spanish & 29 items in Basque) and *body parts* (39 items in Spanish & 27 items in Basque) because in these two sections there are words that mean the same, so with this children would recognize equivalent words in both language. However, in the current study there will be differences in terms of recognition and in scores obtained by children. Consequently, results of these two sections may show a general view of the scores obtained by each child.

Additionally, a final section of *how the child uses and understands the language* (5 items in both questionnaires) was taken into account, because the answers from there would reveal the language use these toddlers have in each language. For this, children in this section will be scored as the following: if they report 'not yet', they will receive no point; but whether they report sometimes or usually, they will be given 1 point. Consequently, the maximum score here is 5/5, and the minimum 0/5.

On the other hand, in order to measure grammatical development in Spanish and Basque, the *words ending* section, the *verbs* section and the *ML3* sections would be used. The *words ending* section measures if a child adds suffixes to words: in the case of Spanish, for example, if the child knows how to form the plural or the genre, and in Basque, if the child knows the ergative or how to form the Basque plural. Participants' development can be measured there by seeing if they know how to use the suffixes. As done in the section *How the child uses and understands the language*, 'not yet' fulfilled squares will mean no points, and sometimes and usually 1 point. In the IDHC the maximum score is 11, and in KGNZ is 9.

Moreover, the *verbs* section allows to measure if the child is able to conjugate regular and irregular verbs in Spanish, and in the case of Basque if the child is engaged with *aditz trinkoak* and *aditz languntzaileak*. At last, the *ML3* section will show the children's length of the sentences of this study.

Different ways have been used along this paper to determine children's accuracy in a way that allows intra-linguistic and inter-linguistic comparison. The first one is based on the percentages obtained in every section from the lexical-grammatical part. The criterion for establishing a percentage high, medium or low is the following: a percentage will be considered to be high when it goes from 70% to 100% because this will mean children is

familiarized with near most of the items. Then, a percentage will be considered to be medium when it goes from 40% to 69%, because this will mean children recognize half of the items they have been presented, and, to end, a percentage will be considered to be low when it goes from 0% to 39%, because this will imply very few or no items will be known by children. This criterion will be used in the vocabulary part, as well as in the *words ending* section and *verbs* section.

The second criterion that will be used in order to determine children's accuracy that allows intra-linguistic and inter-linguistic comparison is comparing the tables of average results, including their distribution in percentiles for each age group that appear in Lopez-Ornat *et al.* (2005) and Barreña *et al.* (2008) with the results that have been obtained in this study. This criterion will be taken into account in the section of *how the child uses and understands language*.

The third criterion used along this paper to determine children's accuracy in a way that allows intra-linguistic and inter-linguistic comparison is the percentile. The percentiles show the values that can be overcome by a certain percentage of a population. For example, if a 22 months child would correspond to percentile 65 according to Barreña *et al.* (2008, pp. 109), the child would score 2/9. This percentile 65 means that 65% of the children who are 22 months old would score 2 points out of 9 here or less. Percentiles which are higher than 90 are considered to be extraordinary percentiles, and percentiles who are lower than 10 are considered to be in a low range. This criterion will be used in the *words ending* section, in *verbs* section and in *ML3* section.

2.4 **Results**

In this section, data regarding the sections I have chosen (clothes and body parts in the vocabulary section so as to measure lexical development, and in the grammar section words ending, verb inflection and MLU3 in order that their grammatical development can be measured) will be presented.

In the sections of the vocabulary part tables 6 and 8 will show the lexical items that appear in the vocabulary sections that have been chosen in this study. Firstly, these lexical items

are translated into English, and then they are presented in Spanish and Basque, respectively.

Then, the section of *how the child uses and understands language* will be presented. The 5 questions are the same in both IDHC and KGNZ; however, they are not presented in the same order in both inventories, so in order that the questions can be presented, the IDHC order will be followed while showing the questions and answers of this section.

Then, the *words ending* will indicate if these children manage with the usage of suffixes in Spanish and Basque. However, the last question of this section in IDHC has been moved to the *verbs* section. The reason for this is that in this question conjugation of regular verbs are presented and it has been moved to the *verbs* section.

Although in the IDHC in the *verbs* section only appear the irregular verbs of Spanish, here the irregular verbs will be counted together with the regular verbs of the twelfth question of the section of *words ending*. For this reason, the maximum score in IDHC in this section will be 40, and not 22.

At last, the final section is the ML3 part, where every word each child has used will be counted.

Vocabulary part; the usage of words; clothes.

Here the *clothes* section will be analysed; in the CDI of Spanish there were 43 items in this section, and in the Basque edition there were 29 items in this section. Obviously, not all of them were the same in both questionnaires, because an item in Spanish could appear in the CDI but not in Basque and vice versa. In table 6, common and different words from each section in Spanish and Basque will be presented in English so as to allow the reader to know all the common words in both questionnaires and the different ones. Then the Spanish common and different items will be presented in Spanish, and at last the Basque common and different items will be presented in Basque.

Language	N° items	Common ones:	Different
		coat, bib, swimsuit, lab coat, boots, button, knickers, scarf, shocks, shirt, T-shirt, belt, skirt, zip, cap, knitted hat, gloves, jersey, leotards, trousers, nappy, pyjama, sandals, trainers, shoes.	Spanish: bath, rope, baby, blouse, body, jacket, nightshirt, waistcoat, glasses, earrings, handkerchief, stockings, mitt, parka, clothes, dress, duffle coat, beach shoe, hat. Basque: Coverall, boxer shorts, polo, tracksuit.
Spanish	43	25: abrigo, babero, bañador, bata, bota(s), botón, braga(s), bufanda, calcetín(es), camisa, camiseta, cinturón, cremallera, falda, gorra, gorro, guantes, jersey, leotardos, pantalón(es), pañal, pyjama, sandalia, zapatilla(s), zapato(s).	18: Albornoz, baby, blusa, body, camisón, chaleco, chaqueta, gafas, manoplas, medias, pañuelo, pendientes, parka, playeras, ropa, sombrero, trenka, vestido.
Basque	29	25: alkandora, baberoa, bainujantzia, bata, bisera, botak, botoia, bufanda, galtzerdia, gerrikoa, gona, eskularruak, jertsea, kamiseta, kreailera, kuleroa, leotardo, painala, pyjama, prakak, sandaliak, txamarra, txanoa, zapatak, zapatilak.	4: buzoa, kantzontziloa, poloa, txandala.

Table 6: common and language specific words in the IDHC and KGNZ clothes section.

Table 6 shows that 25 items in the clothes section are the common ones, whereas there are 18 different words in Spanish and 4 in Basque. In table 7 the amount of reported words in both languages per child will be shown. Then, total number of the reported words in this section with the respective percentage will be presented so as to have a general vision of the reported items of this section. If the reported words per child wanted to be known, a table with every reported words can be found in Appendix B.

Name and age in months	IDHC (43)	KGNZ (29)
Alfred (28)	Common ones: 22 Different ones: 5 Total: 63%	Common ones: 0 Different ones: 0 Total: 0%
Basil (30)	Common ones: 22 Different ones: 9 Total: 31= 72 %.	Common ones: 0 Different ones: 0 Total: 0%
Corey (30)	Common ones: 22 Different words: 8 Total: 30= 70%	Common ones: 3 Different ones: 1 Total: 4= 14%
Desmond (36)	Common ones: 17 Different ones: 6	Common ones: 0 Different ones: 0

	Total: 23= 53%	Total: 0=0%.
Ernest (38)	Common ones: 19 Different ones: 8 Total: 27= 63%	Common ones: 9 Different ones: 1 Total: 10= 35 %.

Table 7: Results of the items in clothes section in both questionnaires.

It can be appreciated in table 7 that Basil and Corey obtained a high percentage in this section (70-100%), and the other three are in a medium frame, between 40%-69%, because the percentages they have reported are respectively (Alfred 63%, Basil 72%, Corey 70%, Desmond 53% and Ernest 63%).

Meanwhile, in the section of Basque the quantity of items they know is low or null (less than 40 %) compared with the amount of Spanish items they know (Alfred 0%, Basil 0%, Corey 14%, Desmond 0% and Ernest 35%).

Vocabulary part; the usage of words: body parts.

Here the *body parts* section will be analysed. In the IDHC, it has 39 items meanwhile in KGNZ there are 27 items; yet in common there are only 26. Nevertheless, there are words like *barriga* or *tripa* that refer to the same body part in the IDHC and are counted like two items, whereas in the KGNZ there is only a single item with two synonym words to refer to this part *tripa/sabela*. Furthermore, the same happens in the other way, because in Basque we have two different items to refer the same body part (*titia/bularra*), whereas in Spanish there is only one item (*pecho*). As they refer to the same part and can be treated like synonyms, for this reason, I have decided to count the two items of the IDHC (*barriga* & *tripa*) as a single item, as well as the two items of the KGNZ (*tripa* & *sabela*). As it has been done in the clothes section, in table 8 common and different words are translated into English. Then the Spanish items are written in Spanish, and the Basque ones are written in Basque.

Language	N° items	Common ones	Different ones
		beard, chin, belly, mouth, head, face, vagina, penis, neck, ass, fingers, teeth, back, lips, tongue, hands, nose, eyes, umbilicus, ears, boobs, hair, legs, feet, knees, nail.	Spanish: moustache, arms, eyebrow, mole, snot, chubby cheek, eyelash, ankle, armpit, drool, elbow. Basque: forehead.

Spanish	39	26: barba, barbilla, barriga/tripa, boca, cabeza, cara, chichi, pitilín, cuello, culo, dedos, dientes, espalda, labios, lengua, mano(s), nariz, ojos, ombligo, orejas, pecho/teta, pelo, piernas, pies, rodillas, uña.	11: bigote, brazos, ceja, lunar, mocos, mofletes, pestaña, tobillo, axila, baba, codo.
Basque	27	26: Ahoa, alua, atzamarra, atzazalak, aurpegia, begia, belarria, belauna, bizarra, bizkarra, burua, eskua, ezpainak, hortza, hanka, ilea, ipurdia, lepoa, mihia, oina, kokotxa, susurra, titia/bularra, tripa/sabela, zakila, zilborra.	1: kopeta.

Table 8: common and specific words from the section parts of the body.

As it has been presented in the clothes section, in this section the amount of common and different words will be presented, and also the total percentage so as to get a general vision of the amount of language. If words of this section want to be known, in Appendix C they will be able to be found.

Name and age in months	IDHC (39)	KGNZ (27)
Alfred (28)	Common ones: 25 Different ones: 9 Total: 34 = 87%	Common ones: 0 Different ones: 0 Total: 0 %
Basil (30)	Common ones: 26 Different ones: 5 Total: 31 =79%	Common ones: 4 Different ones: 0 Total: 4 =15%
Corey (30)	Common ones: 24 Different ones: 4 Total: 28= 72%	Common ones: 15 Different ones: 0 Total: 15 =56%
Desmond (36)	Common ones: 13 Different ones: 1 Total: 14 =36%.	Common ones: 0 Different ones: 0. Total: 0%
Ernest (38)	Common ones: 22 Different ones: 2 Total: 24 = 62%	Common ones: 15 Different ones: 0 Total: 15 =56%

Table 9: results out of the 26 items that are part of the section parts of the body.

In table 9 it can be appreciated that the percentage of items each child is reported to speak in Spanish is for Alfred 87%, for Basil 79%, for Corey 72%, for Desmond 36 %, and for Ernest 62%. Results of table 9 show that Alfred's, Basil's and Corey's percentages are high (70-100%), Ernest's percentage is in a medium frame (40-69%), and Desmond's percentage is a bit low (Less than 40%).

In the Basque section, however, Alfred's and Desmond's percentages are null (0%), and Basil's is low (15%), although it is notable that in table 9 two children's (Corey & Ernest) percentage in Basque are in a medium frame (both 56%).

To finish with this section: percentage differences are not only a fact of the two sections I have analysed from the vocabulary part, because total number of the reported words were counted in Spanish and in Basque: in the whole vocabulary section toddlers' expressive vocabulary range goes from 394 to 705 words, out of 872 items, meanwhile, in the Basque CDI toddlers' expressive vocabulary range goes from 13 to 116 words out of 657 items.

First Part; The usage of words: how the child understands and uses the language.

In table 10 only the scores in IDHC and KGNZ will be presented, and the questions and answers will appear in the appendix D.

Name and age in months	IDHC score (out of 5)	KGNZ score (out of 5)
Alfred (28)	5/5	0/5
Basil (30)	5/5	0/5
Corey (30)	5/5	0/5
Desmond (36)	5/5	2/5
Ernest (38)	5/5	2/5

Table 10: how the child uses and understands the language section scores.

It can be seen that every child scored 5/5 in the section *how the child uses and understands the language*. However, in the case of Basque, children who are older than 30 months (Desmond and Ernest) obtained 2/5, whereas Alfred, Basil and Corey received 0/5.

In Lopez-Ornat *et al.* (2005, pp. 79) and in Barreña *et al.* (2008, pp. 59), there are tables that show average scores of children in the section of *how the child uses and understands the language*. In the IDHC Lopez-Ornat *et al.* (2005) use, the maximum score is 4, because only the questions about future, past and absence are presented, and in addition there is a question that does not appear in the questionnaires I handed out that is: *Does your child ask questions?*, so the questions about ownership and requests understanding are not in Lopez-Ornat *et al.* (2005), because the version I have used is an older version than that one Lopez-Ornat *et al.* (2005) used.

By looking at the table in Lopez-Ornat *et al.* (2005, pp. 79), 28 months children's score is 3.7/ 4; for this reason, a 28 months child should answer 3 or 4 questions of this section out of 4. The same average (3,7) is for 30 months children. However, children's who are older than 30 months average is not here, although it can be seen Desmond and Ernest also obtained the maximum score in this section of IDHC. Although the number of questions and some questions are not the same in this study and in Lopez-Ornat *et al.*'s (2005), these children obtained the maximum score here, so their Spanish language use has a good level.

Meanwhile, according to Barreña *et al.* (2008, pp. 59), in the KGNZ a 28 months old child would score between 4 and 5 points in this section, because the average is 4, 59/5, so Alfred should score between 4 and 5 in KGNZ, yet he scored 0. Further, children who are 30 months old should score 4, 63 here in KGNZ, but Basil and Corey scored 0. The remaining ones, Desmond and Ernest, scored 2 out of 5, yet the average does not appear in the table of Barreña *et al.* (2008, pp. 59), because the limit of this table is 30 months, and Desmond and Ernest are respectively 36 and 38 months old. However, as 30 months children average is between 4 and 5, the maximum score, older children average should be near to the maximum score rather than in a low score than 2/5. In other words, these children's Basque use is low or null. After examining the results of this section, at this point a question is raised: how is it possible that children know when and how to use, for example, the past or future use in Spanish, whereas in Basque they do not know when and how to use the past or future? Is this a task effect or an effect of the methodology used?

Grammar: ending of words.

In table 11, scores of this section in IDHC and KGNZ will be presented, yet the questions and answers can be seen in Appendix E.

Name and age in months	IDHC score (out of 11)	KGNZ score (out of 9)
Alfred (28)	9/11 (82%)	0/9 (0%)
Basil (30)	9/11 (82%)	0/9 (0%)
Corey (30)	10/11 (91%)	0/9 (0%)
Desmond (36)	8/11 (73%)	0/9 (0%)
Ernest (38)	9/11 (82%)	0/9 (0%)

Table 10: IDHC and KGNZ ending of words section scores.

Children of this study scored 0 out of 9 in KGNZ, so they do not know how to use suffixes in Basque. If Barreña *et al.* (2008, pp. 109) is taken into account, as the children of this study have scored 0/9, all of these children are in a low percentile. Furthermore, according to my criteria, they all obtain a low percentage in this section (less than 40%), indeed 0.

In the IDHC, as Alfred scored 9, Basil 9, Corey 10, Desmond 8 and Ernest 9; in Lopez-Ornat *et al.* (2005, pp. 149) percentiles of the section of ending of words is presented. However, the IDHC by Lopez-Ornat *et al.* (2005) is another adaptation, so the maximum score is not 11; it is 17 instead, because it counts the regular verbs questions. However, there is a difference, because in IDHC I have used each verb is conjugated and the conjugation with its respective subject I, you, he, she, we, you, they; and in Lopez-Ornat *et al.* (2005), the questions refer to the using of conjugations with its respective person such as first person singular. In other words, if children know how to conjugate verbs in the respective person (1st, 2nd, or 3rd), singular or plural. Nonetheless, according to Lopez-Ornat *et al.* (2005, pp.149) from 27 months toddlers are supposed to reach the maximum score (17); however, in this study it is not the case, yet children of this study are in a medium-high frame of percentile. Furthermore, according to my criteria, these children in this section in CDI Spanish obtain a high percentage score in this section, because their scores are higher than 70 %.

Part two: sentences and grammar: verbs

The quantity of verbs each child speaks in Spanish and Basque can be seen in appendix F.

Names	KGNZ	IDHC
Alfred (28)	0%	5/40 (13%)
Basil (30)	0%	27/40 (68%)
Corey (30)	3/37 (8%)	17/40 (43%)
Desmond (36)	0%	12/40 (30%)
Ernest (38)	0%	11/40 (28%)

Table 11: verbs.

By looking at the obtained results in table 11, it can be appreciated that children of this study have some knowledge in using Spanish verbs. Moreover, among them there are differences; for example, in the cases of Alfred and Basil in the *verbs* section, where Alfred scored 5/40 and Basil scored 27/40, respectively. However, this can happen because of specific factors.

In the IDHC by Lopez-Ornat *et al.* (2005), regular verbs are counted in the ending of words section, for this reason, in Lopez-Ornat *et al.* (2005, pp. 152) the maximum score is 19, yet in the IDHC I have used the difficult verbs are 22; this happens because the irregular forms *yo puse, yo estuve* and the participle form '*yo he dicho*' are not in Lopez-Ornat *et al.*'s IDHC. By looking at Lopez-Ornat *et al.* (2005, pp. 152), as the quantity of verbs they use and my quantity is different, no percentile can be taken out; additionally, I cannot guess their percentiles because I do not have the sources to do it. However, if I only count the amount of irregular verbs they are reported to say, it can be supposed that children of this study would be in a normal percentile, because Alfred would obtain 2/22, so he would obtain a percentile 20; Basil would obtain 12/22, so he also would be in percentile 75, and Corey would obtain 8/22, so he would be in percentile 50. In the case of Desmond and Ernest, although the table only measures until 30 months, Desmond obtain in this section of verbs 6/22 and Ernest 5/22; however, so if they would be in the average or below the average cannot be known, because 5 or 6 verbs out of 22 in the column of 30 months are referred to percentile 25 (5 verbs), or 30-40 (6 verbs), yet 6 verbs for Desmond (36), and 5 verbs for Ernest (38) could be in a lower percentile than the average. Nevertheless, after calculating percentages by following my criteria, Basil's and Corey's scores are in a medium frame (40%-69%), yet the scores of the other three are in a low frame (less than 40%).

However, in terms of the KGNZ, according to the reported results of this study the children of this study do not say neither any *aditz trinkoak* nor any *aditz laguntzaileak*, except Corey, who obtained 3/37, so Alfred, Basil, Desmond and Ernest in Barreña *et al.*'s table (2006, pp. 110) would be in a lower percentile, but Corey would be in a normal percentile (25-30), although every child scores a low percentage in this section according my criteria.

Part two: sentences and grammar: ML3.

The sentences that have been counted in terms of words can be seen in the appendix G.

Names and age in months	IDHC	KGNZ
Alfred (28)	Sentence 1: 5 words Sentence 2: 4 words Sentence 3: 5 words	Here the answer was ' <i>not yet</i> ', so no sentences were written here.
Basil (30)	Sentence 1: 8 words Sentence 2: 7 words Sentence 3: 11 words	Here the answer was ' <i>not yet</i> ', so no sentences were written here.
Corey (30)	Here the answer was ' <i>usually</i> ', although no sentence was written down here.	Here the answer was ' <i>sometimes</i> '; nevertheless, neither any sentence was written down here.
Desmond (36)	Sentence 1: 3 words Sentence 2: 7 words Sentence 3: 5 words	Here the answer was ' <i>not yet</i> ', so no sentences were written here.
Ernest (38)	Sentence 1: 9 words Sentence 2: 11 words Sentence 3: 14 words.	Here the answer was ' <i>not yet</i> ', so no sentences were written here.

Table 12: ML3.

In table 12, it can be appreciated children of these study did not answer in KGNZ, so it suggests they do not show any Basque grammatical development. Furthermore, although Corey reports '*sometimes*' in the question about if the child has started to combine words so as to make sentences, no sentence is reported there. In Barreña *et al.* (2006, pp. 111), these children are in a low percentile.

In IDHC, Corey reports no sentences although he reports '*usually*' in the question about if the child has started to combine words so as to make sentences. The rest of the children reported sentences only in IDHC; Alfred reported 4-5 words sentences, Basil 7-11 words sentences, Desmond 3-7 words sentences and Ernest 9-14 words sentences. In Lopez-Ornat *et al.* (2005, pp. 155), Alfred is in percentile (40-65), and Basil is in percentile (70-90). Talking about Desmond and Ernest, although the table measures until 30 months, Desmond in the 30 months column would be between percentile 20-50, so this child can be supposed to be in a table that measures until 36 months between a low-average percentile. Ernest, on the other hand, would be in the 30 months column between percentiles 85-100, so this child would also be in a normal percentile if there was a table that measures until 38 months.

However, as those children have reported no sentences in KGNZ, these children can be placed in a low percentile of *ML3* section. In fact, it seems that they do not know how to construct sentences in Basque.

2.5 Summary

To sum up, table 13 summarizes the obtained results in every section of IDHC and KGNZ that has been examined in the current study.

KGNZ	IDHC
<p>Lexicon:</p> <ul style="list-style-type: none"> • Alfred: clothes → 0 (0%) Body parts → 0 (0%) Language use → 0/5 (0%). • Basil: clothes → 0 (0%). Body parts → 4 (15%) Language use → 0/5 (0%). • Corey: clothes → 4 (14%) Body parts → 15 (56%) Language use → 0/5 (0%). • Desmond: clothes → 0 (0%) Body parts → 0 (0%). Language use → 2/5. • Ernest: clothes → 10 (35%) Body parts → 15 (56%) Language use → 2/5. 	<p>Lexicon:</p> <ul style="list-style-type: none"> • Alfred: clothes → 27 (63 %) Body parts → 34 (87 %) Language use → 5/5. • Basil: clothes → 31 (72%) Body parts → 31 (79%) Language use → 5/5. • Corey: clothes → 30 (70%) Body parts → 28 (72%) Language use → 5/5. • Desmond: clothes → 23 (53%). Body parts → 14 (36%). Language use → 5/5. • Ernest: clothes → 27 (63%). Body parts → 24 (62%) Language use → 5/5.
<p>Grammar:</p> <ul style="list-style-type: none"> • Alfred: ending of words → 0/9. Verbs → 0. MLU3 → 0. • Basil: ending of words → 0/9. Verbs → 0. MLU3 → 0. • Corey: ending of words → 0/9. • Verbs → 3/37 (8%). • MLU3 → 0. • Desmond: ending of words → 0/9 Verbs → 0. 	<p>Grammar:</p> <ul style="list-style-type: none"> • Alfred: ending of words → 9/11. Verbs → 5/40 (13%) ML3 → 5/4/5. • Basil: ending of words → 10/11. Verbs → 27/40 (68%) MLU3 → 8/7/11. • Corey: ending of words → 10/11. Verbs → 17/40 (43%) MLU3 → not answered. • Desmond: ending of words → 8/11. Verbs → 12/40 (30%)

<p>MLU3 → 0.</p> <ul style="list-style-type: none"> • Ernest: ending of words → 0/9. Verbs → 0. MLU3 → 0 	<p>MLU3: 3/7/5.</p> <ul style="list-style-type: none"> • Ernest: ending of words → 9/11. Verbs: 11/40 (28%) MLU3 → 9/11/14.
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Table 13: summary of the results.

As shown in table 13, in general terms results of IDHC are higher than results in KGNZ. In spite of this, what is striking is that there is a relationship between vocabulary and grammar within language, because it can be seen that in Basque vocabulary results of table 13 are low or near null, and the same happens with the grammatical results in Basque. Meanwhile, in Spanish vocabulary results are inside the average or high, and the same happens in the grammatical part.

In Spanish, results in general terms are in a medium frame or in a high frame (more than 40 %). Apart from this, in the section of usage and understanding of Spanish, these kids are able to make questions and to use language, because they are able to speak about past situations, situations that have not happened yet, absent bodies, objects and their owners. Moreover, in the grammatical part, in the section of *words ending* scores values were at least 8/11, so all of these children are capable of using the suffixes in the grammar of Spanish. Furthermore, in the verbs section they obtained some score in the verbs section, from 13% to 68%, and in ML3 section the length of the sentences goes from 3 to 14 words; so all these children, except Corey, who does not report anything, are capable of making accomplishments in Spanish; Accomplishments go from “*Mamá, ¿me ayudas?*” to “*Aparca bien el coche, no subas encima de la acera, que viene la policía*”. Additionally, each child’s reported scores are within language high related: for example, Basil has been reported to score high in both sections of vocabulary (72% & 79%) and how the child uses and understands language (5/5), and in grammar high scores too have been obtained by him: in ending of words 10/11, in the verbs section (68%), and 8/7/11 in the ML3 section, placing him in the ML3 section in percentiles 70-90. Nevertheless, Desmond scores shorter scores in vocabulary (53% & 36%), and he also scores shorter in grammar, such as in ending of words (8/11), verbs (30 %) and ML3 (3/7/5).

Nevertheless, in the KGNZ, vocabulary scores are really low, and in some cases, they are null, such as in the case of Desmond and Alfred; however, not only in vocabulary their

scores are low, in grammar also their scores are really low or null. In the vocabulary part, their scores are lower than in IDHC, and in the case of Alfred and Desmond the scores are null. It is notable that in the case of Corey and Ernest in the body parts section they score well (56%), although in the whole KGNZ they report 116 (Corey) and 86 (Ernest) out of 657 items in the vocabulary part. Furthermore, in the section *how child uses and understands language*, no point was obtained there by children who are 30 months or less, and older ones than 30 obtained 2 out of 5 in common questions, whilst results show us that these children do not know how to use language in past situations, future or absence. Referring to the grammar section, they do not report any knowledge about ending of words, like gerunds or partitives. Apart from this, in the Basque section all squares like ownership and ergative are marked as '*not yet*'. Furthermore, in the verbs section only Lander is reported to produce some verbs, but the percentage is quite low (8%). In addition, in the part of MLU in Basque the three expected sentences were not written, because the square of '*not yet*' was marked in every questionnaire, although in the case of Corey the square '*often*' was fulfilled in the ML3 section, no word was written there. The meaning of this is that they are not capable to produce any kind of sentence in Basque.

To sum up, it can be seen that there are relationships in terms of within language in Spanish in the case of all these children, as well as in Basque. Results have shown that in this study children's knowledge in Basque is low, and furthermore that there is a relation between the amount of vocabulary they know and the amount of grammar they know. In the case of Spanish, although they have reported to have a bigger knowledge in Spanish than in Basque, Spanish lexicon and Spanish grammar have been shown to be related.

3. Discussion

Going back to the hypothesis, I expected that within language relations would be higher than across-language relations, which is what Marchman *et al.* (2004) came across with. In Marchmann *et al.*'s study (2004), apart from these language relations, they stated that language development could be influenced by general factors (environment, input, age) and specific factors (cognitive skills, intelligence). However, in this study only general factors have been measured here because this information appears in the information sheet,

whereas no specific factor has been measured because I have no instrument to measure them.

In the participants section of this study two predictions appear: a) by viewing the big difference between the amount of exposure to Spanish and to Basque of all the children, I expected that in IDHC these children would obtain higher scores than in KGNZ, and b) I expected that Ernest would be the most balanced bilingual, because he spends the double or near the double time in a Basque context.

Referring to the first prediction, based on the hypothesis that within language associations are more strongly correlated than across-language associations, data show that the vocabulary in IDHC was in a medium-high frame concerning the criteria that have been used so as to measure the results; that is to say, percentages in general terms have been higher than 50% in the vocabulary section. However, in the KGNZ, results in the vocabulary section have been shown to be low in general terms with values smaller than 30 %, and sometimes null scores (0%) have been obtained. Then, referring to the section of language usage and understanding, results in IDHC in Spanish have been shown to be in the maximum (5/5) frame, whereas in KGNZ children who are 30 months or less have reported a null (0/5) score, and only children who are older than 30 months have reported to be capable of using Basque in the case of ownership and understanding of requests.

Then, in the grammatical part, in IDHC scores have been in a medium-high frame in general terms: in *words ending* scores have been in a frame of 8-10 points out of 11 which are the maximum; and moreover, the percentages of the scores of this section have been shown to be higher than 70%, which is the established frame so as to name a score high or medium. Then, although in the verbs section scores have gone down, the scores are related to the other scores, because children who have obtained the highest scores during the IDHC have also obtained the highest score in the *verbs* section. Then, in the *ML3* section, percentiles have demonstrated that in general terms these children are in a frame between percentile 10 and 90, and sometimes some children reached percentile 90, which is a high percentile. Referring to the KGNZ, their scores in the *words ending* section have been shown to be null 0/9, and the same happens in the *verbs* section except in the case of Corey, which obtained 3/37 and in percentage this is 8%, yet this is a low score. Then,

in the *ML3* section, no sentence was reported, so they all have reported to be in a low percentile frame.

To end with this prediction, scores in IDHC have been shown to be much higher than KGNZ scores, and this has happened indeed because of these children's exposure.

The second prediction was about Ernest: in the participants section, I predicted that Ernest would be the most balanced bilingual, because he spends more time in a Basque environment than the other children. For this reason, his scores should be more similar: this means that scores in vocabulary-grammar in Spanish and vocabulary-grammar in Basque should be more equilibrated comparing them with the other children's scores. However, as said before while referring to the first prediction, in general terms Ernest's scores were like the other children: high scores in IDHC, and low scores in KGNZ. For this reason, results do not confirm this expectation about Ernest to be the most balanced bilingual, and consequently, language development is not at all a fact of exposure as I thought.

I considered to find a parallel development in both domains (lexicon-grammar) within language, so that participants showing high scores at lexical level will also obtain high scores across the different items considered to indicate grammatical development; further, if participants show medium scores in the vocabulary part, they will show medium scores in the grammatical part and if their lexical development is low, their grammar development is low. In the grammatical part, although in the *verbs* section they obtained lower results than in the other sections, in the *words ending* they scored high scores and in *ML3* they reported to be in a normal or even high percentile. Consequently, it can be seen that there is an association between vocabulary and grammar in Spanish in general terms.

On the other hand, these children scored very low percentages in KGNZ in the sections of vocabulary. Even though Corey and Ernest obtained more than 50% in *body parts* section, this can have happened due to the fact of being a casualty, because throughout the whole questionnaire they scored low percentage of known words: 18% for Corey and 13% for Ernest. Moreover, in *how the child uses and understands language*, children who were 30 months old or younger score nothing here, and only older children than 30

months scored 2/5. Furthermore, in grammar Desmond, Ernest, Basil and Alfred scored nothing in every section, and although Corey 8% in *verbs* section, in the remaining sections he scored nothing. At this point, it can be seen that there is a relation between the obtained scores in vocabulary and grammar by these children.

Going back to the hypothesis I took in the introduction, the obtained results could be taken as evidence for the hypothesis of this study, because it has been demonstrated that vocabulary and grammar in Spanish are strongly related, and the same happens in Basque, whereas across language associations are not as strong as within language relationships. Consequently, after analysing the obtained results in this study, although the sample is very little, it has been proven that within language lexical-grammatical relations between Spanish and Basque are strongly correlated; whereas across-language correlations are weakly correlated, so these results prove Marchman *et al.*'s (2004) conclusion.

Further, I explained in the participants section that I decided to include children who are older than 30 months because it would widen my sample and because it may be the case that these two children may happen to present evidence for different kinds of relations within and across language. However, results demonstrate that these two children have shown the same kind of associations within language and across language.

4. Methodological implications

The experience made in gathering data lead me to think that there is a matter of task or methodology effect, because in the section of *how the child uses and understands the language*, children were reported to know how to use past, future or absence in IDHC while in KGNZ these children do not know how to use them. Further, some parents (Basil's, Corey's and Desmond's) have reported not to be engaged with Basque, so how have they completed the KGNZ questionnaire? It seems that some contradictory information is found in the reports.

In order that this doubt could be clarified, I called parents that did not report they are engaged with Basque; Basil's, Corey's and Desmond's, and although they told me they were, they decided to write they do not know Basque because they used Basque in a very

few situations, and moreover, their Basque knowledge was not as their Spanish knowledge.

In order to overcome problems of methodology in bilingual fields, O'Toole (2013) carried out a study in Ireland by using CDI in English and Irish; although Irish is a minority language, in O'Toole's case Irish was known by every family, yet this can imply parents would have had problems while comparing words in English and Irish, because parents may have had problems with CDIs because of the following reasons: problems in recognizing equivalent words in both languages, loss of time in translating, translation of a word in a wrong way and hesitation while deciding whether the child has said a word or another word. For these reasons, she created a bilingual CDI in Irish-English. Its validity was confirmed and this kind of questionnaire was proposed to further researches, because with monolingual CDI parents could be in trouble. Further, a bilingual CDI seems not to be a good alternative either, because reporters are also important, as well as it can be the case that a single report discriminate some words when a second reporter would not. Additionally, more than one reporter could show in a better way the child language development. O'Toole (2013) herself defended the necessity of having more than a single reporter because it '*may ultimately increase the reliability and inter-individual comparisons of the CDI, and lead to more accurate insight into the structure and nature of early vocabulary in bilinguals*' (De Houwer et al., 2006; apud in O'Toole, 2013).

The fact is that the necessity of more reporters apart from mothers, who would be well engaged to Spanish and Basque would be the solution to the problem I have reached in this study; for example, KGNZ could be done by teachers and IDHC by parents. This will entail that more than a single reporter in Spanish and Basque would be necessary, as well as well engaged reporters in each language.

5. Conclusion

As Marchman *et al.* (2004) came across with, in the current study it has been proven that lexicon and grammar have stronger relationships within language: it can be seen in the results and scores obtained by the children. In the case of IDHC, scores are in a medium-high frame and grammar is so. The same happens with KGNZ, where scores have been

low in vocabulary, and the same in grammar. These associations within language not only have been proven in children who are 30 months old or less, but also in children who are older than 30 months. Furthermore, the prediction about higher scores in IDHC than in KGNZ has been found to be right as expected, due to the influence of the big exposure to Spanish comparing to Basque. However, the prediction about Ernest to be the most balanced bilingual has been found to be not the same as I expected, because he obtained similar results in the sections that were analysed comparing with the other children. This has taught me that language development is not at all a fact of exposure. Nevertheless, methodological implications have been found because of the null parents' reported Basque knowledge in this study. At last, suggestions for future searching have been proposed in order to avoid the methodological effects that have been in this study.

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8. Appendix

Appendix A

INFORMACIÓN GENERAL

DATOS DEL NIÑO

Fecha de nacimiento 20/10/2011 Edad 2

Nombre del niño _____ Sexo: F M

Dirección completa _____

Tel. _____

Orden de nacimiento del niño 1° 2° 3° otro (especifique)

¿Cuántos hijos tiene su familia? 1

¿Con quién pasa el niño la mayor parte del día? mamá abuela otro (especifique)
PAPA

Contacto con otras lenguas

¿El niño tiene contacto con lenguas que no sean el español? sí no

Si contestó sí, ¿con qué lengua o lenguas tiene contacto? Euskara ¿Desde qué edad (en meses)? 8

¿Quién lo habla? COLEGIO ¿Cuántas veces por semana? 5 DIAS ¿Cuántas horas al día? 3'5

Información sobre la salud del niño

¿El niño nació antes de los nueve meses? sí no ¿Cuánto pesó al nacer? 3'325

¿El niño ha tenido enfermedad o problemas de audición o lenguaje? sí no

Si contestó sí, por favor describa el problema.

¿El niño ha tenido infecciones de oído? sí no

Si contestó sí, ¿cuántas al año?

LOS PADRES

Nombre _____

Lugar de origen _____

Nombre _____

Lugar de origen _____

Quién llenó el cuestionario madre padre otro (especifique) _____

Indique de manera específica el tipo de trabajo del padreo de la madre; por ejemplo, en vez de cajero, indique en qué tipo de comercio trabaja (por ej., cajero en una tienda); en vez de maestro, indique también el nivel (maestro de primaria, preparatoria, etc.)

Ocupación FUNCIONARIO Breve descripción ABOGADO

Ocupación FUNCIONARIO Breve descripción TECNICO

Indique el nivel más alto de escolaridad.

sin escolaridad

primaria

secundaria

preparatoria

universidad

PADRE sin escolaridad

primaria

secundaria

preparatoria

universidad

Information sheet: KGNZ

23. Nola adierazten du haurrak norbait atzo etorri zela?
 a) Etorri b) Etorri da
 c) Etorri zen

24. Nola adierazten du haurrak atzo zerbait ikusi zuela?
 a) Ikusi b) Ikusi duten / doten
 c) Ikusi nuen

25. Nola esaten du sagarrak ekarri dituela?
 a) Ekarri dut b) Ekarri ditut

26. Nola esaten du sagarrak eman dizkizula?
 a) Eman dizut b) Eman dizkizut

27. Nola adierazten du haurrak zu ikusi zaituela?
 a) Ikusi dizut b) Ikusi zaitut

28. Nola egiten ditu haurrak galderak?
 a) Etxea non? b) Etxea non dago?
 c) Non dago etxea?

29. Nola erantzuten du haurrak "zertarako nahi duzu?" galdetzen zaionean?
 a) Margotu b) Margotzeko

31. Nola erantzuten dio "zergatik egin duzu hori?" galderari?
 a) Nahi dut b) Ze / zergatik nahi dut
 c) Nahi dudalako d) Nahi dut eta / nahi baitut

32. Nola esaten du zerbait ez dakiela?
 a) Ez dakit zer da b) Ez dakit zer den

33. Nola erantzuten dio "zertan zabilta" galderari?
 a) Jolastu b) Jolasten

34. Zer esaten du bila ibili den panpina erakustean?
 a) Panpina! b) Galdutako panpina!

35. Zer esaten du bila ibili den panpina erakustean?
 a) Panpina! b) Galdutako panpina!

36. Nola esaten du ez duela nahi?
 a) Ez nahi dut b) Ez dut nahi

37. Nola esaten du haurrak?
 a) Zara tontoa b) Tontoa zara

INFORMAZIO OROKORRA

Hemen eskatzen zaizun informazioa erabat konfidentziala da, baina datuen tratamendurako guztiz beharrezkoa. Horregatik ahalik eta galdera gehien erantzutea eskertuko genizuke.

HAURRAREN DATUAK

Izen-deiturak _____
 Herria _____ Telefonoa _____
 Zenbat neba-arreba dira? 1 Seme-alabetan, zenbatgarrena da? _____
 Zenbat lagun bizi zarete etxean? 3

Ondoko pertsonekin zenbat denbora egiten du haurrak eta zein hizkuntza erabiltzen du?

	Zenbat ordu egunean?	Zenbat egun astean?	Zein hizkuntza?
Aita	<u>4/10</u>	<u>5/7</u>	<u>GASTELANIAZ</u>
Ama	<u>4/10</u>	<u>5/7</u>	<u>"</u>
Irakaslea	<u>3/5</u>	<u>5</u>	<u>EUSKARAZ</u>
Zaintzailea	<u>2/5</u>	<u>5</u>	<u>GASTELANIAZ</u>
Besteren bat, zein?	_____	_____	_____
Besteren bat, zein?	_____	_____	_____

Haurraren osasuna
 Zazpikia edo zortzikia izan zen? Ez Zein pisurekin jaio zen? 3'325 kg
 Entzumen edo mintzamen arazorik izan du? _____ Baiezkoa bada erantzuna, esan ezazu zein _____

Izan al du belarriko infekziorik? Ez Baiezkoan, urtean zenbat? _____
 Beste gaitz larririk izan du? Ez Zein? _____

GURASOEN DATUAK

Noiztik daki
 amak euskaraz? Betidanik 2006
 Euskaldun berria 19__ (e)tik (urtea)
 Ez daki

Noiztik daki
 aitak euskaraz? Betidanik
 Euskaldun berria 19__ (e)tik (urtea)
 Ez daki

Euskaraz egiten dute gurasoek beraien artean? Beti edo gehienetan Batzuetan Inoiz ez

Appendix B

Table 1: Clothes section.

Name	Items in Spanish (43)	items in Basque (29)
Alfred (28)	Common ones (22): coat, bib, swimsuit, boots, button, knickers, scarf, shocks, shirt, T-shirt, belt, zip, cap, knitted hat, gloves, jersey, trousers, nappy, pyjama, trainers, shoes. Different ones: (5) body, jacket, glasses, handkerchief, clothes.	Common ones: 0 Different ones: 0
Basil (30)	Common ones: (22) coat, bib, swimsuit, lab coat, boots, button, knickers, scarf, shocks, shirt, T-shirt, belt, zip, cap, knitted hat, gloves, jersey, trousers, nappy, pyjama, trainers, shoes. Different ones: (9) body, nightshirt, jacket, glasses, handkerchief, earrings, clothes, hat, dress.	Common ones: 0 Different ones: 0
Corey (30)	Common ones: (22) coat, bib, swimsuit, lab coat, boots, button, knickers, scarf, shocks, T-shirt, belt, skirt, zip, cap, knitted hat, gloves, jersey, trousers, nappy, pyjama, trainers, shoes. Different ones: (8) body, glasses, jacket, waistcoat, handkerchief, earrings, clothes, dress.	Common ones: (3) knitted hat, coat, shocks. Different ones: (1) boxer slip.
Desmond (36)	Common ones: (17) bib, swimsuit, lab coat, button, shocks, T-shirt, belt, zip, cap, knitted hat, gloves, jersey, trousers, nappy, pyjama, trainers, shoes. Different ones: (6) waistcoat, jacket, glasses, handkerchief, clothes, hat.	Common ones: 0 Different ones: 0
Ernest (38)	Common ones: (19) bib, boots, button, knickers, scarf, shocks, T-shirt, belt, skirt, zip, knitted hat, gloves, jersey, leotards, trousers, nappy, pyjama, trainers, shoes. Different ones: (8) body, jacket, glasses, handkerchief, earrings, beach shoe, clothes, dress.	Common ones: (9) trainers, shoes, pyjama, bib, boots, button, gloves, jersey, T-shirt. Different ones: (1) boxer slip.

Appendix C

Table 2: body parts section

Name	Items in Spanish (39)	Items in Basque (27)
Alfred (28)	<p>Common ones: (25) chin, mouth, beard, head, face, neck, penis, ass, fingers, teeth, back, lips, tongue, hand, nose, eyes, umbilicus, ears, hair, legs, feet, knee, boob, belly (tripa), nail.</p> <p>Different ones: (9) drool, moustache, eyebrow, arms, elbow, mole, snot, eyelash, ankle.</p>	<p>Common ones: 0</p> <p>Different ones: 0</p>
Basil (30)	<p>Common ones: (26) chin, mouth, head, beard, face, neck, penis, ass, fingers, teeth, back, lips, tongue, hand, nose, eyes, umbilicus, ears, hair, legs, feet, knee, boob, belly (tripa and barriga), nail.</p> <p>Different ones: (5) moustache, arms, snot, eyelash, ankle.</p>	<p>Common ones: (4) eyes, head, ass, belly.</p> <p>Different ones: 0</p>
Corey (30)	<p>Common ones: (24) chin, mouth, beard, head, penis, ass, fingers, teeth, back, lips, tongue, hand, nose, eyes, umbilicus, ears, hair, legs, feet, knee, boob, belly (tripa and barriga), nail.</p> <p>Different ones: (4) moustache, arms, snot, ankle.</p>	<p>Common ones: (15) mouth, eye, ear, knee, beard, head, hand, hair, ass, tongue, feet, nose, boob, belly, dick.</p> <p>Different ones: 0</p>
Desmond (36)	<p>Common ones: (13) mouth, beard, head, penis, ass, fingers, teeth, hand, nose, eyes, hair, legs, belly (tripa).</p> <p>Different ones: (1) snot.</p>	<p>Common ones: 0</p> <p>Different ones: 0</p>
Ernest (38)	<p>Common ones: (22) beard, mouth, head, face, neck, penis, ass, fingers, teeth, back, tongue, hand, nose, eyes, umbilicus, ears, hair, legs, feet, boob, belly (tripa), nail.</p> <p>Different ones: (2) arms, snot.</p>	<p>Common ones: (15) mouth, vagina, eye, ear, head, hand, leg, hair, ass, tongue, feet, boob, belly, penis, nose.</p> <p>Different ones: 0</p>

Appendix D

Table 3: Questions and answers of the section How the child uses and understands the language.

Name and age	Alfred (28)	Basil (30)	Corey (30)	Desmond (36)	Ernest (38)
Questions					
1. Past					
2. Absence					
3. Future					
4. Understanding of requests					
5. Ownership					
Results:					
• Basque: Alfred, Basil and Corey reported not yet in the 5 questions. Desmond: not yet in the first three questions, sometimes in the 4 th and 5 th . Ernest: not yet in the first three questions, usually in the 4 th and sometimes in the fifth.					
• Spanish: in the first question, all of them usually. In the second question, all of them usually. In the third question, Alfred, Basil, Desmond and Ernest sometimes. Corey usually. In the fourth question, all of them usually. In the fifth question: all of them usually.					

Appendix E

Table 4: ending of words section

Second part; Sentences and grammar: Endings of word; KGNZ

Name and age	Alfred(28)	Basil (30)	Corey (30)	Desmond (36)	Ernest (38)
Questions	<ol style="list-style-type: none"> 1. Plural (-k) 2. Ownership (-ren) 3. Origin (-ko) 4. Ergative (-k) 5. Something happens to someone (-ri) 6. Diminutives (-txo/ño) 7. Participle (-ta) 8. Frequency (-ten/-tzen) 9. Future (-ko/-go) 				
Results	here all the children in all the answers reported Not Yet.				

Part two; sentences and grammar: end of words. IDHC

Name and age	Alfred (28)	Basil (30)	Corey (30)	Desmond (36)	Ernest (38)
Questions	<ol style="list-style-type: none"> 1. Plural (-s) 2. Gender (-o/-a) 3. Diminutives and augmentatives (-ico, -ito/ -ote, ón) 4. Result of an action (eg: <i>está roto</i>) 5. Thing that has happened recently (e.g <i>he llorado</i>) 6. Past (e.g <i>cayó</i>) 7. Narration of facts (e.g <i>there was/were</i>) 8. Gerunds (e.g <i>jugando</i>) 9. Something is near to happen (e.g <i>vamos a bañar</i>) 10. Future (e.g <i>comerá</i>) 11. Orders (e.g <i>Come here</i>) 				
Results	<ul style="list-style-type: none"> • Alfred (28) Not yet: question 6. Sometimes: question 2, 3, 6, 9, and 10. Usually: question 1, 4, 5, 8. Not answered question: 11. • Basil (30) Not yet: question 7, 10. Sometimes: nothing. Usually: question 1, 2, 3, 4, 5, 6, 8, 9, 11. • Corey (30) Not yet: question 3. Sometimes: 2, 7 and 10. Usually: question 1, 4, 5, 6, 8, 9, 11. • Desmond (36) Not yet: question 3, 6, 7. Sometimes: question 1, 4, 5, 8, 9, 10, 11. Usually: question 2. • Ernest (38) Not Yet: question 6, 10. Sometimes: 7, 11. Usually: question 1, 2, 3, 4, 5, 8, 9. 				

Appendix F

Part two: grammar: verbs. IDHC

Name and age →	Alfred (28)	Basil (30)	Corey (30)	Desmond (36)	Ernest (38)
Verbs					
Regulars:					
Juego	X	X	X		X
Juegas		X	X	X	X
Juega		X			
Jugamos		X	X	X	X
Jugáis					
Juegan		X			
Como	X	X	X		X
Comes		X	X		
Come		X			X
Comemos		X	X	X	
Coméis					
Comen		X			
Subo	X	X	X	X	X
Subes		X	X	X	
Sube		X		X	
Subimos		X	X		
Subís					
Suben		X			
Irregulars:					
Soy	X	X	X		X
Eres		X			
Son		X			
Voy		X	X	X	X
Doy		X	X		
Caigo		X	X	X	X
Pongo		X		X	
Quepo					
Sé		X	X	X	X
Digo		X			
Hice					
Fui					
Dije					
Puse					
Estuve					
Di					
Me caí					X
He roto	X	X	X	X	
He escrito					

He hecho		X	X	X	
He puesto					
He dicho		X	X		
Total: 40.	5/40	27/40	17/40	12/40	11/40

Verbs: KGNZ

Name and age	Corey (30)
Verbs (total = 37)	Hemen nago Hemen dago Goazen
	3/37

Appendix G

Part two: grammar: ML3.

Spanish	Basque
<p>Alfred (28): usually. MLU: 5, 4, 5 → Average: 4, 8.</p> <p>Basil (30): usually. MLU: 8, 7, 11. → Average 8, 7.</p> <p>Corey (30): usually, although no sentence was reported by him.</p> <p>Desmond (36): usually. MLU: 3, 7, 5 → Average: 5.</p> <p>Ernest (38): usually. MLU: 9, 11, 14 → Average: 11.3</p>	<p>No child reported a sentence here.</p>
<p>Sentences:</p> <ul style="list-style-type: none">• Alfred: -Se ha roto el cuento. -Han chocado los coches. -A arreglar el camión grande. • Basil: -Mamá, quiero ir al parque con la moto. -Quiero contar el cuento del lobo feroz. -Cuando sea mayor yo voy a “coducí” un coche con “abechas” (llaves). • Desmond: -Mamá, ¿me ayudas? -Mamá, primero duermo y luego veo los dibujos. -¿Hoy vamos a la ikastola? • Ernest: -Papá es muy fuerte y levanta a las personas. -Es que no viene, está ocupada, es que no puede salir. -Aparca bien el coche, no subas encima de la acera, que viene la policía.	