



RESEARCH ARTICLE

COLORED WORD ORDER TO FACILITATE L2 AND L3 SYNTACTIC INTUITIONS IN BASQUE: A LONGITUDINAL STUDY

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ABSTRACT

Research shows the use of learners' L1 enables and channels the acquisition of L2/L3, for which *Word Order* serves as a canvas for learners to build the linguistic knowledge of any target language upon. This study tests the linguistic intuitions of participants in Basque with transitive constructions which involve full use of word order and morphological patterns necessary to test how participants elaborate their intuitions. Participants are newly-arrived migrants with no previous experience with Basque. Data obtained out of three tests —*Comprehension Test*, *Production Test*, and *Grammaticality Judgment Test*— shows that the layout and distribution of word order(s) and all functional and lexical categories as colored cutouts representing syntactic aspects of L1 and L2/L3 enables learners' active manipulation of these different elements crosslinguistically, allowing them to build up their own syntactic knowledge comparatively with greater cognitive and syntactic efficiency, scarce errors, and accomplishing significantly higher motivational rates than in traditional settings. As colored cutouts act as visual enhancers of morphosyntactic patterns boosting cognitive efficiency, patterns become easier to internalize and higher motivation levels appear as frustration is reduced. Finally, perceived similarity between Basque as L2 or L3 and the participants' L1 plays a key role, for which colored patterns have the role of facilitating the participants' predictions with English as a filter, increasing metalinguistic awareness and competence.

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INTRODUCTION

This study investigates a new language teaching methodology based upon the use of word order parameter with colored cutouts representing grammatical and syntactic categories to teach a target language with the active use of typological patterns aimed at the cognitive efficiency when learning a L2/L3 with greater efficacy and higher motivational rates than in traditional grammar-based language instruction (Cenoz, 2003; De Angelis, 2007; Cenoz and Gorter, 2011; Carretero Guzmán, 2018; Fernández, Ipiña & Sagasta 2018). Such methodology was applied with students who attend classes in Basque for the first time with very scarce or no previous experience in the language, which limits their academic life and education. The main hypothesis of this study is that word order acts as the primary element to bridge linguistic gaps between Basque as the target language and the students' L1, due to colored cutouts being used as functional grammatical and syntactic tools to represent crosslinguistic behavior and help students transfer syntactic structures (Cenoz, 2003, Cenoz and Gorter, 2011).

A second research hypothesis predicts that, should there be a situation of perceived lack of similarity, English may act as a pivoting mechanism to help the student resolve the perceived difference in word order and grammatical and/or syntactic behavior of Basque and the L1, channeled through the use of colored cutouts holding visually and cognitively efficient color sequencing strategies and correspondences to help internalize linguistic serialization of grammatical and syntactic components. A third hypothesis points at the role of colors, which are predicted to help higher cognitive efficiency when elaborating syntactic intuitions crosslinguistically. Finally, as a consequence, a final hypothesis predicts higher intrinsic motivational rates and reduction of frustration, alongside a greater learning pace due to the development of more efficient syntactic and cognitive mechanisms. Results show greater competence and performance rates when developing syntactic intuitions, very scarce errors, and radical improvements in motivation when compared to traditional language teaching methodologies.

LITERATURE REVIEW

Universal Grammar (UG) and Principles and Parameters: In short terms, as Principles and Parameters attempted to explain language acquisition as a set of universal Principles and language specific Parameters that intertwine and interact in complex manners, Universal Grammar (UG) would refer to that universal knowledge of language a human being possess biologically and genetically, which would operate on these Principles (Artiagoitia, 2000; Carnie, 2013; Černý, 1998; Satterfeld, 1999). However, UG cannot explain the reasons why many —rare or infrequent— sentences that children may not have ever heard are judged as grammatically correct and understandable by these children. Hence, as adult language does display errors in performance, children seem to not operate on these errors and would not be part of the linguistic data which would determine their grammars (Carnie, 2013). Consequently, and albeit UG may be innate and subject to a possible biological explanation, it does not account for language variation (Carnie, 2013; Černý, 1998; Chomsky, 1957, 1965, 1974; Katz, 1964; Katz and Postal, 1964; Pereplyotchik, 2017; Satterfeld, 1999) or ‘Plato’s problem’ (Lalleman, 2010; Satterfield, 1999; Sharwood Smith, 2010). Later developments of Chomskyan study of language, such as the Minimalist Program, assume that a set of universal principles do exist in the mind with language-specific parameters that would enable the development of human language (Carnie, 2013; Lefebvre and Lowenthal, 2014; Rashed Al-Mutairi, 2014).

Word Order parameter: *Word Order* is the parameter displaying *what order* the different linguistic units adopt to form sentences. The student is able to access the linguistic systems of L1, L2 and L3 simultaneously as they may ‘compare’ the different word orders and the behavior of other morphological components to establish the necessary transformations from L1 to L2 and/or L3 (Cenoz, 2003; Cenoz and Gorter, 2011; Comrie, 1989; De Angelis, 2007; Moure, 2001). *Word order* acts as the skeleton upon which all other transformations act and the color distributions of all syntactic and morphological patterns function as a whole, not as isolated systems upon the knowledge of the L1 to reach target languages through the comparative combination of these parameters while retaining syntax and semantics. Therefore, color distribution of forms may act as cognitively efficient (Cuetos, 2009, 2011; Dörnyei, 2010) and, as a consequence, increase motivation (Carretero Guzmán, 2018).

Word Order parameter of the languages in the research. An insight into Basque, English, Spanish, French, and German word order in simple sentences: As the current experiment approaches word order of Basque as the target language, it is only natural to introduce the reader to what the experiment is attempting to prove. Basque displays a 132 or SOV order in declarative sentences, whereas the others possess a 123 or SVO word order. This poses serious difficulty for the participants, especially, considering they have almost no knowledge of Basque, or none at all. Hence, only simple sentences with transitive structures were used so as to be able to display word order totally, including ‘Yes/No’ questions and the use of a patient complement of a transitive verb. Bearing in mind the amount of information at hand across languages,

Table 1. Representation of word order for the languages in the research

Language	Word Order						Type of sentence
	0	(0.5)	1	3	2	1.5	
Basque	Wh-? Bai/Ez (Yes/No)	Aux ?	S	O	V	Aux	Declarative & Interrogative
	0	(0.5)	1	1.5	3	2	Negative
English	Wh-? Cond. Relatives Yes/No	Aux ?	S	Aux	O	V	Declarative, Negative & Interrogative
	0	(0.5)	1	(1.5)	2	3	
Spanish	Qu-? Cond. Relatives Sí/No	Aux ?	S	Aux	V	O	Declarative, Negative & Interrogative
	0	(0.5)	1	(1.5)	2	3	
French	Pron-? Cond. Relatives Oui/Non	Aux ?	S	Aux	V	O	Declarative, Negative & Interrogative
	0	(0.5)	1	(1.5)	2	3	
German	W-? Cond. Relatives Ja/Nein/Doch	Aux ?	S	Aux	V	O	Declarative, Negative & Interrogative
	0	(0.5)	1	(1.5)	2	3	

transitive sentences with a sole verb in declarative, negative, and interrogative forms with ‘Yes/No’ format were considered to be sufficient in terms of the targeted difficulty, though valid in order to show cognitive and linguistic strategies and patterns across languages. Thus, interrogative sentences with complemental answers were ruled out, though estimated for further experiments. Verb forms were used only in the present forms in order to avoid morphological complexities verbs display across languages. Table 1 summarizes this:

The challenges of language teaching methodologies: Traditional language teaching methodologies have often been featured by great lack of appropriate dynamics (Gimeno Sacristán, 2008; Marina, 2015). In the past, learners have undergone methodologies based upon the mechanical drilling of exercises affecting short-term memory (Krashen, 1985; Larsen-Freeman and Long, 1991; McLaughlin, 2013), and deriving in failure as far as learners with linguistic and/or other difficulties are concerned, due to the inability to address and properly establish the post-semantic mechanisms operating beyond the circular transformation in the target language drilling acts upon (Kessler, 1975; Dekeyser and Criado, 2012). Nevertheless, repetition of tasks also provides positive output, as it drives learners’ focus on specific elements of language, the importance of which is high at both early ages and initial stages (Azkarai and García Mayo, 2016; Brown, 1987). L2 acquisition operates upon different mechanisms which are used when learning L1 (Ferguson, Dingwall, Bever, Clark & Kessler, 1975). Nonetheless, the brain seems to act in a similar manner, for certain structures seem to be acquired in the same order and at the same time both in L1 and L2 (Kessler, 1975). Multilingual pedagogy can be accessed through the active use of the learners’ mother tongue using *word order* —one of the patterns acquired at earliest stages (Hawkins, 1983; Pinker, 1994)— visually represented in color cutouts, which are thought to help learners effectively deal with —*their*— predictions they can make as they acquire different patterns, along syntax and its problems (Brown, 1987; Hakuta, Dulay and Burt, 1975). Following Krashen’s *Input Hypothesis* (1985) and Azkarai and García Mayo (2016), it is of uttermost importance to provide significant input so that the student may

correctly develop adequate learning strategies, for the age of learners and the quality of exposure to L2 and/or L3 may derive in different levels of proficiency (Cenoz, Genesee, and Gorter, 2014). Pronunciation has a double edge: on one hand, it is the vehicle for content transmission which needs to be processed cognitively, for which the participants' brain needs to compare its own phonetic and sound imagery with that of the target language; while, on the other hand, sounds may be actively taught as a subject per se, which would lay its focus on sounds as the matter of content itself. Therefore, according to the perceived similarity of phonetic systems (Flege, 1995), students may find written and phonetic similarities between grammatical and/or lexical words crosslinguistically, as color codification may act as a visual net within and upon which the students' cognitive work may act (Comrie, 1981; Cuetos, 2009, 2011; Derwing, 2008, 2010; Henry, Dörnyei and Davydenko, 2015; López Morales, 1989; Moreno Fernández, 2008; Robins, 1992; Wardhaugh, 1986) and help develop gradual language assimilation with greater cognitive efficiency as for L2 and/or L3 (Cenoz, 2003; De Angelis, 2007; García Mayo, 2012; Sun, 2013), especially, since acquisition hierarchies are respected to the implied additive explanations of the learning process (Dulay and Burt, 1975), favoring emotional aspects to reduce frustration to the minimum (Cuetos, 2009, 2011; Dörnyei, 1994, 1998, 2001, 2010; Gardner, 1985; Gardner and Tremblay, 1994; Gardner, Masgoret and Tremblay, 1999) and enabling feedback between different cognitive strategies (Gardner, 1993; Pinker, 1994; Cuetos, 2009, 2011; Gimeno Sacristán, 2008).

Table 2. Countries of origin and Educational Stage

Country	N	Males	Females	Primary	Secondary
Algeria	35	23	12	21	14
Australia	2	0	2	2	0
Argentina	8	3	5	1	7
Belarus	2	1	1	2	0
Belgium	4	1	3	2	2
Bulgaria	1	0	1	0	1
China	24	13	11	16	8
Croatia	3	2	1	0	3
Ecuador	11	7	4	2	9
El Salvador	9	4	5	2	7
England	5	3	2	1	4
France	5	3	2	0	5
Germany	6	2	4	2	4
Ireland	14	8	6	6	8
Italy	2	1	1	2	0
Japan	5	3	2	3	2
Morocco	32	24	8	9	23
Romania	45	22	23	19	26
Russia	3	1	2	1	2
Scotland	1	1	0	1	0
Sweden	2	1	1	0	2
United States	7	3	4	2	5
Total	226	126	100	95	131

Table 3. L1s of foreign students

Students' L1	N	Spanish as L1 (N)	Knowledge of Spanish	Males	Females	Primary	Secondary
Arabic	67	24	1, 2, 3, 4	17	7	10	14
English	29	11	2, 3, 4	6	5	4	8
Spanish	110	110	4	46	64	51	59
Belarussian	2	2	4	1	1	2	0
French	9	4	4	3	1	0	4
Bulgarian	1	1	4	0	1	0	1
Mandarin	24	16	2, 3, 4	10	6	9	7
Croatian	3	2	4	1	1	0	2
German	6	2	2, 3, 4	1	1	1	1
Italian	2	0	1	1	1	2	0
Japanese	5	3	2, 3, 4	2	1	2	1
Romanian	45	12	1, 2, 3, 4	5	7	4	8
Swedish	2	2	3, 4	1	1	0	2

I: None; 2: Low; 3: Intermediate; 4: Advanced

Justification of the study: The main purpose of this research is to research into the way cognitive and crosslinguistic inherent knowledge that already exists in students may be enhanced and channeled through typological patterns aimed at the cognitive efficiency when learning a L2/L3 as a means to obtain greater speed rates, efficacy, and higher motivational rates than those in traditional grammar-based language instruction. As utter beginners of Basque, their ability to internalize contents while in class is extremely limited. Moreover, the improvement in their level of Basque is very slow and, very often, scarce. Students possess a plethora of backgrounds, origins, educational levels and L1s, which often poses great difficulty when introducing them to Basque. This is summarized in Table 2 and Table 3.

Design of the study: It is a longitudinal study initiated in September 2023 and ending in June 2024, which relates to the whole length of an academic year. I am aware of the fact the results need to be considered with due caution, as the number of participants who took part may require featuring larger numbers so as to obtain more detailed results. Further studies with more L1s and more complex structures would provide more exhaustive data.

Table 4. Mean values of participants' profiles

	N	Mean	Std. Deviation
Age ¹ : 1 -12; 2 -13; 3 -14; 4 -15; 5 -16; 6 -17; 7 -18	40	3	0.81
Age of arrival ² : 1 - <12; 2 - 12; 3 - 13; 4 - 14; 5 - 15; 6 - 16; 7 - 17	40	3	0.82
Level of English: 1 - Beginner; 2 - Intermediate; 3 - Advanced; 4 - Proficiency	40	1	0.56
How long living in the Basque Country: 1 - <1 month; 2 - 1-3 m.; 3 - 4-6 m.; 4 - 7-9 m.; 5 - 10-12 m.; 6 - > 12 m.	40	4	0.93
Level of Basque: 1 - Beginner; 2 - Intermediate; 3 - Advanced; 4 - Proficiency	40	1	0
How long had lessons of Basque: 1 - none; 2 <1 month; 3 - 1-3 m.; 4 - 4-6 m.; 5 - 7-9 m.; 6 - 10-12 m.; 7 - > 12 m.	40	4	10.57

Table 5. Percentages of participants' profiles

	N	%	Std. Deviation
Exposure to Basque	35	29.21	3.34
Interest in Basque	40	62.48	12.37
Importance of Basque	40	82.85	12.59
Perceived difficulty of Basque	40	94.08	7.34
Knowledge of Basque	40	20.59	9.06
Enjoyment of Basque	40	51.13	23.83
Intention to learn Basque	40	70.05	20.86

METHODOLOGY

Objective and research hypothesis: The current study hypothesizes that *Word Order* pattern can accelerate L2/L3 learners' learning process by making use of their metalinguistic knowledge to — efficiently— access target language through its word order. Such word order would consist of representations of morphophonetic, grammatical, and syntactic strings and patterns laid out as color-based cutouts which help students build linguistic and grammatical parallelisms between the native and the target languages, and subsequent greater efficiency (Cuetos, 2009, 2011; García Mayo, 2012; Sun, 2013). The study has five working assumptions: First, participants may access Basque as a target language after knowing word order of English and/or Spanish with the help of colored cutouts within a short period of exposure as it may provide a comprehensible skeleton for the language (Comrie, 1981; Cuetos, 2009, 2011; Moure, 2001).

Second, English as L2 or L3 for non-natives of English will play an important role due to its syntactic ‘simplicity’ to bridge access to Basque as metacognitive strategies favor transparency of forms (Cuetos, 2009, 2011; López Morales, 1989; Pinker, 1994; Wardhaugh, 1986).

Table 6. Distribution of groups

Experimental (N = 20)				Control (N = 20)			
males	N	females	N	males	N	females	N
L1 Spanish	5	L1 Spanish	5	L1 Spanish	5	L1 Spanish	5
L1 French	4	L1 French	4	L1 French	4	L1 French	4
L1 German	1	L1 German	1	L1 German	1	L1 German	1
Total	10	Total	10	Total	10	Total	10

Third, this will occur since perceived similarity between the learners’ L1, and English will provide direct linguistic bridging as structure simplicity shall be strengthened by color sequencing of patterns—the experiment was conducted in Spanish though using examples in Basque and in English—to help participants bridge syntactic gaps that may have a different degree of similarity, for which colors and manipulative capacity of cutouts is thought to actively help bridge these gaps. Fourth, the extent to which the use of colored cutouts allows learners to define and facilitate the creation and acquisition of valid syntactic intuitions in L2/L3 will be significant due to its efficiency of cognitive demand (Gardner, 1985, Gardner and Tremblay, 1994; Gimeno Sacristán, 2008). Fifth, this role of colored cutouts and the cognitive efficiency they may generate is believed to play a very important role in terms of generating an increase in motivation as well as reduction of frustration rates (Carretero Guzmán, 2018; Cuetos, 2009, 2011; Dörnyei, 1994, 1998, 2001, 2010; Gardner, 1985, 1993; Gardner and Tremblay, 1994; Gardner, Masgoret and Tremblay, 1999; Marina, 2015; Gimeno Sacristán, 2008; Pinker, 1994).

Table 7. Representation of Word Order for English and Basque

Language	Word Order						Type of sentence
English	0	(0.5)	1	(1.5)	2	3	Declarative, Negative & Interrogative
	Wh-?	Aux ?	S	Aux	V	O	
	If Relatives Yes/No						
Basque	0	(0.5)	1	3	2	1.5	Declarative & Interrogative
	Wh-?	Aux ?	S	O	V	Aux	
	Bai/Ez (Yes/No)						
	0	(0.5)	1	1.5	3	2	Negative
	Wh-?	Aux ?	S	Aux	O	V	

In order to design the tests, one-verb sentences with transitive constructions were used in three forms: (i) declarative sentences with transitive verbs; (ii) negative sentences with transitive verbs; and, (iii) interrogative *yes/no* questions with transitive verbs. The purpose of one-verb transitive constructions was to make use of full subject-verb-object structure, hence transitive verbs, in declarative, negative, and interrogative sentences with sufficient morphological and syntactic complexity. Syntactic structure difficulty was controlled through verb choice in order to keep structures within certain constraints, such as a) correct use of inflection relating to subject and object contained within the verb; b) subject and object pronouns and their correct use of form and content; and, c) the correct use of ‘not’ and ‘al’ particles for negative and interrogative forms. Transitive verbs provided the necessary use of subject and object pronoun systems with

due efficiency to check upon syntactic and cognitive mechanisms the students made use of when elaborating the outputs required. The study considered that (i) perceived similarity between Basque—as L2/L3—and the participants’ L1/L2 and/or English plays an important role as it may confront the learners’ L1 when English is L2 in search for functional similarity when elaborating predictions; and, (ii) as motivation and attitudes towards language learning would increase and avoid negative shaping of prejudices, I believe that (iii) this visual approach is able to increase and enhance motivation and positive attitudes towards language learning as it aids learners’ immediate test of crosslinguistic intuitions out of a metacognitive strengthening as output is always subject to physical manipulation of cutouts as a mirror of cognitive mechanisms with a self-check system, which provides a skeleton the students’ intuition is to ‘assemble’ and its output immediately confirmed, which results in a positive emotional response (Brown, 1987; Carretero Guzmán, 2018; Dörnyei, 1994, 1998, 2001, 2010; Gardner, 1985, 1993; Hakuta, Dulay and Burt, 1975).

The sample: A set of 40 students was selected and divided into 20 participants for the *Experimental* group and 20 for the *Control* group. Due to the great variety of L1 students possess, in order to fulfill a criterion of practicality related to the control of syntactic similarity or differentiation across languages, 20 out of those with Spanish as L1 were selected, 16 with French as L1, and 4 with German as L1; all of whom display little or no knowledge of Basque, and low or low intermediate knowledge of Spanish as for those with French and German as L1. Languages related to different alphabets or posing complex written opacity as L1 with no L2 knowledge were discarded as well as students showing learning or academic difficulties, the former due to the nature of this study not being cross-alphabetical performance, while the latter was linked to not interfering in the learning process of the students. All of the selected have low or low intermediate knowledge of English. These levels were confirmed by direct consultation with their teachers after being tested through a *level test*. Participants were distributed displays equal numbers of males and females per group. Regarding to the participants’ profiles, as seen in Table 4 and Table 5, which show mean values and percentages of the various variables; it can be seen that participants’ mean age is 14 (3) and arrived in the Basque Country when being 13 (3). They possess upper beginner or low intermediate level of English and are (utter) beginners of Basque. However, after living in the Basque Country between 7 and 9 months (4) and having lessons of Basque for 4-6 months (4), their perception of its interest and importance are high—62.48% and 82.85%, respectively—though their exposure to the language scarce and insufficient—29.21%—. Additionally, they believe their knowledge of the language is low as well—20.59%—and highly difficult to learn—94.08%—. Their experience shows mid-levels of enjoyment when learning the language—51.13%—, although their intention to learn it is high—70.05%—.

As formerly stated, the selection of these students follows a requirement of practicality in terms of displaying certain similarities in word order patterns and are thought to act upon a crucial role when it comes to the use of cognitive strategies related to English as a pivoting language—especially, for those with French and German as L1—when word pattern or

morphological similarities are not encountered. A larger study may involve a greater variety of L1. *Control* group procedures include equal treatment of grammatical and syntactic contents but in a traditional teaching environment.

Tests and Materials: The materials include a set of colored cutouts that represent word order of English and Basque, and the various sentences used in both languages for the treatment. Colors are maintained consistently across languages in order to induce the students to bridge cross linguistic gaps through colors. These represent the basic structure of the languages used: *Subject* pronouns are represented in pink and occupy position 1; *Verbs* are represented in grey and occupy position 2; the Noun Phrase ‘*an apple*’ as Object occupies position 3 and is represented in dark green; *Auxiliary* forms are presented in light green color in position 1.5 for declarative and negative sentences, whereas they occupy position 0.5 for interrogatives, following a dual color format formed by the light green Auxiliary—an intermediate blue 3rd person singular ‘-s’ morpheme—and a black ‘*n’t*’ bound morpheme representing the ‘not’ morpheme. The structure is completed by additional blue colored cutouts in 0 position for ‘*Wh-*’ form questions, ‘*If*’ for Conditionals, Relative pronouns and the forms ‘*Yes*’ and ‘*No*’ for questions, thus completing the full structure of a sentence. The example(s) to be used for the experiment consisted of a main sentence with a transitive verb to permit word order to fully expand to the use of subject and object pronouns in due forms, alongside verbs and full inflection; which requires participants to make full use of their abilities to test their own linguistic intuitions while sequencing every element in the right order across the sentence. The use of a sole complement is considered to be sufficient so as to maintain complex constructions of sentences with more than a complement. For that matter, circumstantial complements were also discarded to prevent complexity. Thus, transitive constructions with an agentive subject pronoun and a patient complement pronoun were used. This was considered to be valid as the verbal inflection in the verb and/or the auxiliary is to reflect this morphology. When tackling interrogative forms, simple ‘*Yes*’ or ‘*No*’ questions were used. A main set is included for the general treatment for the *Experimental* group with the forms in English and in Basque, which follow mirroring color patterns. These are used to illustrate the way word order works in English and Basque. Once the process is explained using a main sentence in English and in Basque, students are grouped in sets of 2 with 2 sets in English and in Basque, per group, which is left before them in case they may want to check their own intuitions when performing the different tasks of the experiment.

The tests themselves constitute an initial *Comprehension Test* formed by a set of 12 sentences spoken to the students in Basque and to be translated into English, which also implied an element of production, though it was not considered per se as a production element, but as a comprehension one. Subsequently, a *Production Test* with equal number of 12 examples to be produced in Basque based upon a given form of a verb in Basque; and, finally, a *Grammaticality Judgement Test* with a set of 12 sentences in Basque in any form—declarative, negative, and interrogative—for the students to assess their grammaticality. A copy of each task was distributed to each student. Those in the control group had to carry out similar tasks but were explained whatever

grammatical aspect of Basque traditionally. The whole experiment was recorded in audio and video formats for later data processing. Audio was recorded with two Neumann TLM 107 large diaphragm condenser microphones through a MOTU 896-mk3 audio interface on Cubase 12 recording sequencer and mastering workstation. Video was recorded with a Canon HD camera. Both audio as a wav file and video as a mp4 were processed on Cubase. The whole system was used on a Mac.

Procedure

Tests: In the first task, *Comprehension Test*, participants were expected to understand 12 orally produced sentences in Basque and translate them into English in an allotted time of 30 seconds per sentence. A handout including the test items was provided for each participant. All tested sentences were structured so that only verbs were replaced in order to keep control of its difficulty. Among the test items, the first one was regarded as a pre-test item, which would be excluded from the analysis. Participants were allowed to manipulate cutouts in front of them and to ask for help whenever they encountered problems. Should this happen, they would have been given any due explanation but, exclusively, for the first test item. This never occurred. As for the *Production Test*, participants were to translate 12 orally produced English sentences into Basque. They were given a time of 30 seconds to complete each item, during which they had to write down their answers and orally produce their translation. Finally, in the *Grammaticality Judgement Test*, participants received a handout with 12 Basque sentences, which they had to judge as *correct* or *incorrect*. As before, participants were entitled to manipulate the cutouts when necessary. These address the order the different elements in both languages possess within sentences. Table 7 shows this:

Participants in the *Experimental* group were received in the allotted room for the test, which had all necessary materials correctly arranged and equipment ready. I explained the model to them with an example, first in declarative sentences, then with negatives, and, finally, with interrogative forms. Once finished, sets of cards were said to be available for them should they need consultation along the tasks to be performed. This pre-training task took close to 10 minutes. Then, they were introduced to the first test: *Comprehension Test*. They were explained they had to produce written English translations for the sentences in Basque I read out within a given 30-second time span to write each translation. The verb used was shown to them on every sentence. 12 sentences were performed. 10 minutes was the time required for the task. Secondly, in the *Production Test*, participants were to produce in Basque the equivalent to the sentence in English I read out. As before, the verb used was shown to them and they were given 30 seconds for each item. Close to 8 minutes were required. Finally, the final task consisted of a *Grammaticality Judgement Test*, which included sentences participants had to judge upon based on their grammaticality. As before, they were read out one by one and they had to write down their judgment every 30 second. The task was completed in close to 8 minutes. They had to write ‘correct’ or ‘incorrect’. On all three tasks, participants were instructed to draw a line if they were not to produce an answer. All three tasks included even number of declarative, negative, and interrogative sentences in order to have an even balance. Once the tests were completed, data transcribed and codified on the CHAT transcription

format within the CLAN program, which was created by Mac Whinney and Spektor. Results were statistically analyzed on SPSS, developed by IBM, with a series of ANOVA analyses for the various variables analyzed, T-tests for mean comparisons, and non-parametric tests for further clarifications. Table 8 displays the whole shape of how the colored distribution:

Table 8. Colored distribution of cutouts in Basque

	0	(0.5)	1	3	2	1.5
	Wh-?	Aux/Modals-?	S	O	V	Aux/Modals in decls/negat.
	If	Relatives	Yes/No-Bai/Ez			
Declarative:	0	(0.5)	1	3	2	1.5
	Nik	sagarrik	jaten	d u t		
	Zuk	sagarrik	jaten	dozu		
	Hark	sagarrik	jaten	du		
	Guk	sagarrik	jaten	dugu		
	Zuek	sagarrik	jaten	duzue		
	Haiek	sagarrik	jaten	duete		
Indexation of pronouns:	1st p	Nik	sg	1st p	Guk	pl
Negative:	0	(0.5)	1	(1.5)	3	2
	Nik	ez d u t	sagarrik	jaten		
	Zuk	ez duzu	sagarrik	jaten		
	Hark	ez du	sagarrik	jaten		
	Guk	ez dugu	sagarrik	jaten		
	Zuek	ez duzue	sagarrik	jaten		
	Haiek	ez dute	sagarrik	jaten		
Interrogative:	0	(0.5)	1	3	2	1.5
	Nik	sagarrik	jaten	al d u t ?		
	Zuk	sagarrik	jaten	al duzu ?		
	Hark	sagarrik	jaten	al du ?		
	Guk	sagarrik	jaten	al dugu ?		
	Zuek	sagarrik	jaten	al duzue ?		
	Haiek	sagarrik	jaten	al dute ?		
Bai		(nik)	(sagarrik)	jaten	... d u t	
BUT: Word order for negatives is different						
Ez		(nik)	ez d u t	(sagarrik)	Jaten	
Article underlining: <u>an</u> apple: <u>an</u> is the article, which is a free word, but in Basque it is a bound morpheme attached to at the end of the word: <u>sagarrik</u>						
Structure of Auxiliary: <u>d u t</u> (d = object (3 rd p sg); u = root vowel; t = S)						
As the auxiliary displays both subject and object morphemes, the nouns and pronouns may be omitted, which is why parenthesis () is included						

Finally, there is no statistical difference in performance when considering the participants' L1. Table 9 shows the results:

Table 9. ANOVA analysis for Comprehension Test results

	Sig.	95.0% Confidence Interval	
		Lower Bound	Upper Bound
Group: 1 - Experimental; 2 - Control	.005	-14.11	-2.84
Gender: 1 - Male; 2 - Female; 3 - Other	.268	-11.46	3.31
Language: 1 - German; 2 - French; 3 - Spanish	.371	-7.26	2.80
Exposure to Basque	.325	-0.43	1.27
Interest in Basque	.404	-.18	.44
Perceived difficulty of Basque	.903	-.47	.42
Knowledge of Basque	.631	-.54	.33
Enjoyment of Basque	.329	-.21	.07

Participants' answers were consistent, which indicates they were able to process the word order and grammatical features of Basque in the three declarative and interrogative forms and recognize the *ez* 'not' particle of the negative and render all correctly into English. Prior knowledge of English was sufficient to make them infer the output sentences directly and correctly from Basque, therefore, L1 played little or no role as it did not affect the output due to L1 word order nuisances. On the contrary, the type of mistakes in the *Control* group were greater in quantity and quality, including omissions of pronouns, grammar, or word order mistakes due to direct word equivalent, not word order equivalent. English word order did play a role as the sentences followed English word order and not that of L1. Figure 1 displays mistake typology with examples:

Experimental Group		
Type of mistake	Example	Explanation of mistake
Hark - Haiek confusion	She doesn't pay (for) an apple	Use of plural form when singular needed
	Does she steal an apple?	Use of singular form when plural needed
Zuk - Zuek confusion	You ₂ don't touch an apple	Use of plural form when singular needed

NOTE: Morphological features and word order of English were fully maintained.

Control Group		
Type of mistake	Example	Explanation of mistake
Wrong subject pronoun identification	You, bring an apple	Use of 2 nd person singular form when 1 st person plural needed
	Do we buy an apple?	Use of 1 st person plural form when 3 rd person singular needed
	Do they buy an apple?	Use of plural form when singular needed
	You, don't see an apple	Use of 2 nd person singular form when 1 st person singular needed
Direct transference of L1	__ buy an apple?	Lack of subject pronoun
	I no see an apple	Omission of auxiliary
No output	He buy an apple?	Omission of auxiliary
	__?	Lack of translation

NOTE: The actual number of examples is higher. Morphological features and word order of English were fully maintained sometimes but L1 forms also appeared.

Figure 1. Typology of mistakes in Comprehension Test

Table 10. ANOVA analysis for Production Test results

	Sig.	95.0% Confidence Interval	
		Lower Bound	Upper Bound
Group: 1 - Experimental; 2 - Control	.000	-70.34	-53.12
Gender: 1 - Male; 2 - Female; 3 - Other	.892	-10.53	12.04
Language: 1 - German; 2 - French; 3 - Spanish	.269	-3.43	11.82
Exposure to Basque	.229	-.52	2.08
Interest in Basque	.720	-.56	.39
Perceived difficulty of Basque	.687	-.55	.82
Knowledge of Basque	.405	-.39	.94
Enjoyment of Basque	.662	-.17	.26

Regression analysis for the *Production Test results* displays an R value of .953 with a p value of .000. Therefore, as in the first task, significant results had occurred. This task was believed to be the most demanding of all three, as participants

RESULTS AND DISCUSSION

The experiment was first subject to an outlier detection analysis so as to ensure participants' answers fitted in the model. The answers of participants 8 and 17 in the *Experimental* group, and those of participants 1, 2, and 17 in the *Control* group related to the *Exposure to Basque* variable were removed, as they displayed their values outside the range of the model. The other answers related to all other variables posed no problem. Once having performed this, a reliability test was conducted in order to check on its internal consistency. Cronbach's Alpha index was .953, which was accepted as valid. A regression analysis was performed for each one of the tasks. As for the *Comprehension Test* results, an R value of .974 with a p value of .047 indicate there are statistically significant results in the task: they do not display statistically significant differences based upon *gender* —p value of .268—, *exposure to the language* —p value of .325—, *knowledge*, *interest*, or *enjoyment*—p values of .631, .404, and .329, respectively—, or *perceived difficulty of Basque* —p value of .903—. As participants, prior to the experiment, displayed similar values to these respects, such results were expected. However, as it was also expected, the change was thought to differentiate in the groups, which show such change and higher results in favor of the *Experimental* group with a p value of .005 and 95% Confidence Interval values of -14.11 and -2.84.

were to put into practice grammatical and syntactic knowledge across their mother and target languages with pivoting English depending upon perceived similarity between Basque word order and that of their L1. As before, there was no significant change differentiated by gender or the other factors, but an overall statistically significant performance difference occurred between both groups. Such results were expected, as participants had not been exposed to the experimental method before, hence results being differentiated between groups and having a neutralizing effect upon exposure, difficulty, or other factors. What was believed to happen was participants in the *Experimental* group were to increase their motivation level after the treatment, which was confirmed by results. To sum up, it may be said that with a p value of .000 and 95% Confidence Interval values of -70.34 and -53.12, the *Experimental* group performed significantly better. Participants in the *Experimental* group made very few mistakes, mostly consisting of two types: a) wrong inflection of Basque auxiliary verb due to confusion between singular and plural forms inflection of 2nd person singular for plural while retaining correct form of subject; and b) omission of interrogative particle ‘al’ while retaining the rest of the sentence in Basque fully correct. A third type of mistake was lack of output, which was explained by participants to be due to lack of time. As the task progressed the mistakes became resolved, which indicates the participants were able to directly act upon English and become actively efficient in the processing of Basque morphology and word order and its correct transformation into English, which is significantly evident in the non-systematic nature of the mistakes. Participants in the *Control Group* displayed mistakes following the same trend as in the first task, that is, greater in number and in typology. Figure 2 shows this:

Figure 2. Below displays mistake typology in Production Test

Experimental Group		
Type of mistake	Example	Explanation of mistake
Wrong inflection in Aux.	Zuek sagarra saltzen duzu	Use of singular form when plural needed
Omission of al particle	Nik sagarra prestatzen dut?	No particle but correct interrogative
Lack of output	---	No time to produce output

Control Group		
Type of mistake	Example	Explanation of mistake
Wrong subject pronoun identification	Guk sagarra lapurtzen.?	Use of 1 st person plural form when 3 rd person plural needed. Lack of al particle and auxiliary too
Lack of inflected auxiliary with subject	Haiek sagarra lapurtzen.?	No inflected auxiliary but subject pronoun is identified. Lack of al and -ik particles
Lack of inflected auxiliary with no subject	___ sagarra lapurtzen.?	No inflected auxiliary but subject pronoun is identified. Lack of al and -ik particles
Wrong Aux. inflection	Zuk... duzuk; Zuek... duzu; etc.	Inflectional roots identifying subjects were not correctly identified and reproduced
No al in interrogatives with subject and/or Aux	Haiek sagarra lapurtzen.?	No particle is used and auxiliary lacks inflection despite subject being identified
No al in interrogatives with no subject and/or Aux	___ sagarra lapurtzen.?	No particle is used and auxiliary is missing due to no subject being identified
V-O order confusion	___ lapurtzen sagarra? Guk eskaintzen sagarra	English and L1 word order interference
No -ik in negatives and interrogatives with L1 interference	___ lapurtzen sagarra.?	English and L1 word order interference
No -ik in negatives and interrogatives with no L1 interference	Zuk ez duzu sagarra moztzen	Lack of -ik particle. English word order and morphology are maintained
Wrong word order	Haiek sagarra ez dute hartzen	Object is placed in the wrong position
No output	___?	Lack of translation

NOTE: Often were mistakes recurrent and its types cumulative, that is, several mistakes appear in the output.

Figure 2. Typology of mistakes in Production Test

Finally, as for the *Grammaticality Judgement Test*, a regression analysis was conducted, which displayed an R value of .950 with a p value of .131, indicating results did not significantly differ as a whole. Nevertheless, values of -16.07 and -3.41 at 95% Confidence Interval display there was a statistically significant difference in performance between both groups in favor of the *experimental*. As a consequence, it can be established that performance was differentiated, as in the previous two tasks. Table 11 displays these values —see also Figure 3—:

Table 11. ANOVA analysis for Grammaticality Judgement Test results

	Sig.	95.0% Confidence Interval	
		Lower Bound	Upper Bound
Group: 1 - Experimental; 2 - Control	.004	-16.07	-3.41
Gender: 1 - Male; 2 - Female; 3 - Other	.368	-11.99	4.59
Exposure to Basque	.511	-.64	1.26
Interest in Basque	.577	-.25	.44
Perceived difficulty of Basque	.578	-.36	.64
Knowledge of Basque	.946	-.47	.51
Enjoyment of Basque	.906	-.15	.16

Experimental Group		
Type of mistake	Example	Explanation of mistake
Wrong interpretation of word order (negatives and interrogatives only)	Guk ez dugu sagarrrik erosten Haiek sagarrrik al dute bidaltzen?	Correct sentence interpreted as incorrect Incorrect sentence interpreted as correct
Correct word order interpretation with inflection oversight	Hark sagarra ikusten dute	Correct word order detected but not the wrong inflection in the auxiliary

Control Group		
Type of mistake	Example	Explanation of mistake
Wrong interpretations of word order (across declarative, and negative sentences. Often the same participant)	Nik sagarra galtzen dut Guk ez dugu sagarrrik erosten	Correct sentence interpreted as incorrect Correct word order detected but not the wrong inflection in the auxiliary
L1 influence	Guk uzten sagarra dugu	Verb-Object incorrect order
No output		Lack of translation. Possible English-L1 interference when determining validity

Figure 3. Typology of mistakes in Grammaticality Judgment Test

When analyzing the means of the performance results in the three tasks, we may see that p values of .000 for *Comprehension* and *Production* tests and .001 for *Grammaticality Judgement* test show there are statistically significant differences in the means of the results of all three tasks. As analyzed before, the *Experimental* group performed significantly better and means show that on the *Comprehension Test* the mean value is that of 69.72%, whereas the control group displays a mean of 59.16%. As of the *Production Test*, the difference is highly noticeable with a mean value of 91.04% for the *Experimental* group, very much differentiated from the much lower 28.22% of the *Control* group. Finally, regarding the *Grammaticality Judgement Test*, the mean value of the *Experimental* group is higher than that of the control group with mean values of 70.13% for the former and 61.29% for the latter.

Table 12. Comparison of means between groups

1 - Experimental (N = 20)		Comprehension Test	Production Test	Grammaticality Judgment Test
2 - Control (N = 20)				
1	Mean	69.92	91.04	70.13
	Std. Deviation	8.25	11.38	7.83
2	Mean	59.16	28.22	61.29
	Std. Deviation	8.76	9.85	8.31

On the other hand, when considering gender differences in performance, p values of .631 for the *Comprehension Test*, .845 for *Production Test*, and .888 for *Grammaticality Judgment Test* displayed no significant difference in performance between boys and girls. However, as it was expected, the girls performed better than the boys, though not statistically differentiated. Table 13 displays the values of means:

Table 13. Comparison of means according to gender

1 - Males (N = 20)		Comprehension Test	Production Test	Grammaticality Judgment Test
2 - Females (N = 20)				
3 - Other (N = 0)				
1	Mean	65.21	60.29	65.92
	Std. Deviation	11.39	36.25	9.75
2	Mean	63.39	58.57	65.50
	Std. Deviation	8.51	31.42	8.74

A regression for *Pre-Test Motivation* displayed an R value of .960 with a p value of .020. Consequently, there were significant differences in motivation before the experiment took place. As the values in Table 14 indicate, age and group displayed no difference in motivation, but females displayed higher rates. The regression analysis of the *Post-Test Motivation* displayed an R value of .950 with a p value of .000, hence proving significant changes in motivation had taken place in groups, sex, and also differentiated in age, whereas the motivation before the experiment showed no differences between groups or age.

Table 14. ANOVA for Pre-Test Motivation level

	Sig.	95.0% Confidence Interval	
		Lower Bound	Upper Bound
Group: 1 - Experimental; 2 - Control	.43	6.74	-15.50
Gender: 1 - Male; 2 - Female; 3 - Other	.003	6.43	28.16
Age: 1 -12; 2 - 13; 3; 14; 4 - 15; 5 - 16; 6 - 17; 7 - 18	.942	-6.68	7.18

Table 15. ANOVA for Post-Test Motivation level

	Sig.	95.0% Confidence Interval	
		Lower Bound	Upper Bound
Group: 1 - Experimental; 2 - Control	.000	78.91	140.96
Gender: 1 - Male; 2 - Female; 3 - Other	.000	-44.51	-22.03
Age: 1 -12; 2 - 13; 3; 14; 4 - 15; 5 - 16; 6 - 17; 7 - 18	.019	2.31	24.26

Table 16. T-Test for Motivation Level

	1 - Experimental 2 - Control	N	Mean	Std. Deviation
		20	63.96	18.83
Post-Test Motivation Level	2	20	88.84	10.51
		20	54.73	23.28

Table 17. Coefficients for T-Test

	Levene's Test for Equality of Variances	F	Sig. (2-t.)	95% Conf. Interval of the Dif.	
				Lower	Upper
Pre-Test	Equal variances assumed	0	.991	-16.45	7.51
	Equal variances not assumed		.455	-16.45	7.51
Post-Test	Equal variances assumed	4.568	.039	22.54	45.67
	Equal variances not assumed		.000	22.37	45.84

After the treatment the level of motivation was statistically significantly differentiated in the *Control* group with a p value of .000.

Such difference had taken place in boys with a p value of .000 and 95% Confidence Interval values of -44.51 and -22.03. Finally, as age also displayed a change in motivation, it may be said that the older the participants became the more prone to suffer motivation changes they become. In order to analyze this change in greater depth, a T-Test was conducted, shown in Table 16 and Table 17. 2-tailed p value of .000 shows the changes in motivation had taken place as a cause of the treatment.

CONCLUSION

As predicted, the experimental treatment provided participants with a more visual and competence-driven efficiency to access complex morphonology through word order. Moreover, color systems helped participants systematize morphological patterns in such a way in which direct Basque-English and English-Basque could occur due to the simplicity English word order possess, hence, playing a key role when participants needed to confront L1 as crosslinguistic word order comparison inevitably happened. Nevertheless, as predicted, English enabled word order pivoting between L1 and Basque when participants perceived similarity or differentiation between word orders. Additionally, colored-cutouts provided quicker and more efficient competence-based linguistic access to Basque than traditional methodologies, which had an effect upon self-sustained and self-motivated enhancement of motivation and interest in Basque. Additionally, levels of frustration decrease as learners develop efficient and effective use of linguistic knowledge of L1 and L2 in order to access L3 with more solid and complex linguistic and metacognitive strategies.

Limitations and further lines of research: The main limitation of the experiment was to find participants who were willing to participate, as Basque is a language they do not know, hence academic and social life becoming delicate and often complicated. As newcomers, they are still adapting to a life in a new social and linguistic environment, often difficult and full of numerous little nuisances. However, their initial reluctance became enthusiasm. On the other hand, the number of participants and the number of different L1s involving different alphabets would need increasing in order to see a deeper and wider scope of crosslinguistic influences there may be and how this methodology would work in such scenario.

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