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Asymmetries in Child Foreign Language Acquisition: Production and Interpretation of L2 English Subjects

Asimetrías en la adquisición infantil de una lengua extranjera: producción e interpretación de sujetos en inglés L2

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Child language acquisition in foreign language contexts with limited exposure is often a slow process where initial stages of development last longer than in L2 contexts or in adult learners. Exploring this context may provide insights into the nature of the acquisition process and how it is reflected in the data. This study explores young learners' subject pronoun interpretation and realization in their non-native English. Thirty-seven Catalan/Spanish foreign language learners of English, aged nine to ten were tested on their grammatical knowledge of subjects (interpretation and production tasks). Whereas children show null subjects transferred from their L1 in the interpretation task, rates of null subjects are lower in production. The asymmetries found appear to be linked to the nature of the production of pre-learned structures, which masks the null subject grammars of the learners in this task. Our data contribute to the characterization of foreign language development in an early learning context.

Keywords: *subjects; child foreign language acquisition; minimal input; English as a Foreign Language; asymmetry.*

La adquisición infantil del lenguaje en contextos de lengua extranjera con exposición limitada es un proceso lento, caracterizado por estadios iniciales más largos que en L2 o aprendices adultos. Este contexto de aprendizaje proporciona información sobre la naturaleza del proceso de adquisición y cómo se refleja en los datos. Este estudio investiga la interpretación y producción de sujetos pronominales en inglés no nativo por parte de aprendices jóvenes de inglés como lengua extranjera (37 aprendices de 9-10 años, bilingües catalán/castellano). Mientras los resultados muestran sujetos nulos transferidos de la L1 en la tarea de interpretación, éstos son menores en la tarea de producción. Las asimetrías encontradas parecen estar relacionadas con la naturaleza de la producción de estructuras pre-aprendidas, lo que enmascara la gramática de sujetos nulos de los aprendices en esta tarea. Nuestros datos contribuyen a la caracterización del desarrollo de una lengua extranjera en un contexto de aprendizaje temprano.

Palabras clave: *sujetos; adquisición infantil de una lengua extranjera; exposición mínima; inglés como lengua extranjera; asimetría.*

1. INTRODUCTION

The study of child second language acquisition (L2A) has been the focus of much research in the domain of language acquisition, particularly in relation to the role of universal mechanisms in non-native acquisition at different ages. Child L2 learners differ from the child L1 acquirers in that they are cognitively more mature at the onset of L2A and are affected by the presence of their L1 grammar. However, most studies have emphasized near-native-like ultimate attainment among child L2 learners (e.g., Guasti, 2002; Schwartz, 2004; Unsworth, 2005; Pladevall-Ballester, 2012, 2016; Chondrogianni, 2018; among others), as opposed to adult L2 learners, who are more prone to achieve non-native-like levels of acquisition as shown by decades of work on L2A in adulthood (e.g., Johnson & Newport, 1989; Hawkins & Chan, 1997; DeKeyser, 2000; Long, 2005; Clahsen & Felser, 2006; Tsimpli & Dimitrakopoulou, 2007; Hawkins & Casillas, 2008; Sorace, 2011; Granena & Long, 2013). Universal mechanisms seem to still constrain the acquisition patterns of child L2A. However, most of these studies were conducted in immersion contexts, where learners receive high quality and quantity of input, which favors native-like development within this age span.

Child L2 learners might face different learning realities, namely when the L2 is not truly a second language but a foreign language. Exposure is often limited to an instructed context of minimal input whose learning conditions do not tend to favor effective and native-like acquisition. Minimal input situations are defined as those language learning situations with 4 or less hours of in-class exposure to the target language per week (Larson-Hall, 2008). These learners do not resemble adult L2 learners either, as the cognitive mechanisms often employed by adults (e.g., Bloom, 1990; Grodzinsky & Reinhart, 1993; Philip, 1995) and the type of explicit teaching adults can benefit from are not available to children. This foreign language learning context has been studied extensively from pedagogical and cognitive perspectives (e.g., Enever, 2011; Collins & Muñoz, 2016; García-Mayo, 2017) but is rather unexplored from a more formal linguistic perspective, which has focused more on immersion or second language contexts. Examining such context can shed further light on learning contexts where acquisition is an extremely slow process and where initial stages of development seem to last longer. In order to do this, we explore foreign language acquisition through young Catalan/Spanish learners' subject interpretation and realization in their non-native English.

2. SUBJECT PRONOUN REALIZATION IN NON-NATIVE GRAMMARS

One of the distinctive features of null-subject language speakers learning English is their non-native realization of pronominal subjects in the target language. More specifically, these learners' non-native grammars exhibit omission of pronominal referential and non-referential subjects throughout their acquisition process to a greater or lesser extent according to the stage of acquisition and the syntactic environment where this omission occurs (White, 1985; Phinney, 1987; Hilles, 1991; Tsimpli & Roussou, 1991; Lakshmanan, 1994; Pladevall-Ballester, 2012, 2013; among others). The languages at hand in this particular study differ with respect to the traditionally called Null Subject parameter (Hyams, 1986; Rizzi, 1986; among others): while Spanish/Catalan allow both null and overt pronominal referential subjects and do not have overt non-referential subjects, English typically requires overt referential and non-referential pronominal subjects.

The syntactic possibility of allowing null subjects was initially linked to richness of verb inflection and identification properties (Rizzi, 1982, 1986; Jaeggli & Safir, 1989). More recently, this difference has been accounted for in the type of features that verbal morphology has in each language. Spanish verbal inflectional morphology has the same nominal [+person,

+interpretable] features as English pronouns, which leads to the subject being optionally realized. English verbal inflectional morphology has [-person, -interpretable] features and therefore requires an overt subject (Alexiadou & Anagnostopoulou, 1998; Ordóñez & Treviño, 1999; among others). The distribution of overt and null pronominal subjects in Catalan/Spanish obeys discourse/pragmatic concerns, where the overt use of a pronominal subject results from emphatic or contrastive reasons or disambiguation of the referent, whereas its omission indicates neutrality or lack of emphasis.

The L2 acquisition of subject pronoun realization in English has been traditionally accounted for in terms of whether and how L1 transfer affects this acquisition and whether a given parameter value can be reset and restructured to match the L2 grammar. Although some researchers have claimed that there is no clear proof of transfer (Orfitelli & Grüter, 2013), most authors assume its existence, at least in the initial stages. These L1 transferred feature values might then be restructured to the L2 values through different mechanisms (White, 1985; Tsimpli & Roussou, 1991; Judy & Rothman, 2010; Pladevall-Ballester, 2012, 2013).

One of the accounts for L2 feature restructuring is the ‘Interpretability Hypothesis’ (Hawkins & Hattori, 2006; Tsimpli & Dimitrakopoulou, 2007; Tsimpli & Mastropavlou, 2007; among others), by which uninterpretable features are hypothesized to be inaccessible for the L2 learner. In this way, if these uninterpretable features are not selected in the process of L1A they are persistently problematic for the L2 learner, which might account for adult L2 learners’ permanent variability or lack of convergence with respect to the native speaker. If the L2 grammar presents uninterpretable features which are not present in the learner’s L1, then these remain unavailable. However, L2 learners might make use of other mechanisms to identify, analyze and produce L2 structures which involve uninterpretable features and diverge from their L1. Tsimpli and Dimitrakopoulou (2007) suggest that L2 learners might make use of interpretable features to ‘compensate’ for the unavailability of uninterpretable features and they can then create structures which are superficially native-like. A few previous studies have used the ‘Interpretability Hypothesis’ to account for the acquisition of subjects in L2 English by learners with a null subject L1 (Pladevall-Ballester, 2013; Prentza & Tsimpli, 2013; Prentza, 2014a, 2014b; Mitkovska & Buzarovska, 2018). Mitkovska and Buzarovska (2018: 5) recently suggested that this process of compensation is “assisted by the semantic feature of [referentiality], which is interpretable for referential subjects, but remains uninterpretable for non-referential ones”. This would account for an eventual but not inevitable acquisition of overt pronominal subjects but a more persistent difficulty in relation to expletive and overt subjects in various types of learners (Phinney, 1987; Pladevall-Ballester, 2013; Prentza, 2014a; Mitkovska & Buzarovska, 2018; Contemori, Asiri & Perea Irigoyen, 2019; Mujcinovic, 2020; Quesada & Lozano, 2020; among others).

Previous research on child L2 English subjects is not abundant and has mainly dealt with longitudinal data from naturalistic acquisition settings (Hilles, 1991; Lakshmanan, 1991, 1994; Park, 2004; Mobaraki, Vainikka & Young-Scholten, 2008) or cross-sectional data from immersion settings (Pladevall-Ballester, 2012) but focusing on one single type of data. Hilles (1991) and Lakshmanan (1991, 1994) linked the presence of null subjects to the emergence of verb inflection and explained them on the basis of the Morphological Uniformity Principle (MUP) (Jaeggli & Safir, 1989), whereas Mobaraki et al. (2008) related the presence of null subjects to the absence of functional projections in early child grammars, as in child L1A. Park (2004) and Pladevall-Ballester (2012) used minimalist syntactic accounts to explain subject use and grammaticality judgements, respectively, and they both assumed and showed traces of both some L1 transfer and innate mechanisms, which are granted to learners by their age of onset and acquisition settings.

In instructed contexts of child foreign language acquisition, Mitkovska and Buzarovska (2018) examined subject pronoun realization in the English (writing) corpus and

grammaticality judgement data of Macedonian —a null subject language— learners aged 8 to 15 and at four proficiency levels, ranging from beginners to upper-intermediate. The authors found persistent occurrence of null subjects in the production of all level groups, although frequency of occurrence was greater at lower levels. Results of the grammaticality judgement task indicated lower recognition rates of null subjects even at high levels, and the data from both tasks displayed a contrast between pronominal referential and non-referential subjects, the latter being more difficult to acquire. Following the Interpretability Hypothesis, they concluded that L1 transfer was present and that full acquisition of the features involved in English pronominal subject realization was not attained. The different nature of the tasks was argued to account for the asymmetry of production and judgement results, the latter being less target-like due to processing limitations as well as L1 transfer. Work by Mujcinovic (2017) comparing English heritage speakers and English L2 learners aged 8-9 and 10-11 also showed that in written and oral production data, young learners of English did not produce as many null subjects as expected. She concluded that there was no transfer from the learners' L1 to English and that the longer the exposure had been the more target-like the subjects were.

3. RATIONALE AND RESEARCH QUESTIONS

The aim of this paper is to determine whether young learners of English in a limited input context have a null-subject mental representation for English (a by-product of transfer from either Catalan or Spanish). Additionally, we aim to investigate so by analyzing and comparing two types of data (i.e., production and interpretation data on subject omission). In order to explore this general goal, we entertain the following research questions:

- 1) To what extent are null subjects part of the learners' grammars in a child foreign language acquisition context (after 300 hours of in-class exposure over five years)?
- 2) If null subjects are present in their mental representations, are they present to the same extent in production and interpretation?

Considering the limited exposure our young learners receive and following the Interpretability Hypothesis (Hawkins & Hattori, 2006; Tsimpli & Dimitrakopoulou, 2007; Tsimpli & Mastropavlou, 2007; among others), we expect their pronominal subjects to still be affected by transfer of L1 subject properties and by feature interpretability difficulties. An imbalance between production and interpretation data is also expected, whereby production data will elicit lower rates of null subjects, as well as an imbalance between overt pronominal and expletive subjects, as similarly reported in previous research (Orfitelli & Grüter, 2013; Mitkovska & Buzarovska, 2018).

4. METHODOLOGY

4.1 The context

This study was conducted in Catalonia, a bilingual Catalan/Spanish region within Spain which offers English as a Foreign Language (EFL) education within school settings generally under low exposure programmes. The introduction of a foreign language (i.e., English) at school was officially lowered to the first grade of primary education in 2006, although most pre-school programmes offer introductory foreign language sessions on a weekly basis. Weekly exposure is generally reduced to a minimum of three hours per week and, students are expected to reach

a minimum of A1 level of English (Common European Framework of Reference for Languages (CEFR)) at the end of primary education and approximately a B1 at the end of obligatory secondary education. A level between B1 and B2 is expected at the end of upper secondary education, just before university (Generalitat de Catalunya, 2018).

In the context where the study was carried out and as seen in classroom observations, classes were often textbook-based, did not really foster interaction and mainly included memorization of vocabulary, fill-in the blanks exercises, sentence completion exercises and dialogue practice. The kind of input these children received was often limited and non-native-like, and students tended to use their L1 in class unless explicitly prompted not to and very rarely did they use it outside the class. These EFL lessons were accompanied by Content and Language Integrated Learning (CLIL) lessons, with less than an hour of exposure per week. Yet CLIL lessons were taught by the same teachers and rarely integrated language and content in an effective way.

This minimal input instructed context, together with the fact that English is a foreign language in the Catalan community, generally makes EFL learning extend all through pre-school, primary and onto secondary education leading just to a B1/B2 level of English well after 12-15 years of low exposure. Linguistic progress is necessarily slow but might be indicative of acquisition stages that might pattern with more intensive types of acquisition.

4.2 *Participants*

Thirty-seven Catalan/Spanish bilingual children (18 male and 19 female) aged nine to ten participated in the study¹ as a convenience sample. The children's families together with the school administration signed informed consent forms. All the participants had acquired Catalan and Spanish as their native languages during early childhood. They were attending primary school at the time of testing in a local state school in Catalonia, Spain and they were receiving 2 hours per week of instructed EFL and a 45-minute session of Science CLIL per week. They had accumulated 300 hours of in-school exposure over five years, thus being a clear example of limited exposure to the target language within a prolonged, non-intensive EFL program. A placement test could not be conducted, as permission was not given by the school administration, but the children's proficiency level ranged between elementary and A1, according to the national curriculum, their textbooks and the teachers' perceptions and impressions. The age of onset for the acquisition of English was at around 5 years old, paralleling those studies that find native-like attainment in child L2 acquisition in immersion contexts (e.g., Schwartz, 2004; Unsworth, 2005, 2013; Pladevall-Ballester, 2012; Roesch & Chondrogianni, 2016; see also Chondrogianni, 2018 for an updated review).

4.3 *Tasks*

4.3.1 *Interpretation*

The Truth-Value Judgement Task (TVJT) (Crain & McKee, 1985) employed in this study was adapted from Orfitelli and Grüter (2013)'s study on null subjects by adult Spanish learners of English. Their study used a task adapted from Orfitelli and Hyams (2012) who investigated

¹A control group of native speakers was not added as the goal of the study was not to describe the potential (and obvious) differences between foreign language learners and native speakers. We would expect to see stark differences, especially so if we consider the context of acquisition. However, we did obtain data from two age-matched native speakers living in the same area as the participants. The data from these participants was not included in the study and not specifically reported in the manuscript, but they performed as expected by the theoretical descriptions of English.

whether L1 English-speaking children had null subjects at the early stages of acquisition.

The participants were individually taken to a meeting room and the researcher provided them with initial instructions in Catalan/Spanish to make sure it was properly understood and then switched to English to reinforce the instructions. In this TVJT, the learners saw a picture and heard an audio-recorded sentence of a male British native speaker. They were then asked to say out loud whether the sentence described the picture well and why they thought that was or was not the case. In order to provide the participants with some context they could use to evaluate the truth-value of the situation, the researchers presented a story whereby two sets of children came into play. The first set of children consisted of two younger children (a boy and a girl) who never do what they are supposed to be doing. The other set of children consisted of two older children who, in fact, always do what they are supposed to do. After making sure that the context was understood by the children, the researcher told the participants that they would then see a picture of either the older or the younger pair of children and hear a sentence uttered by the children’s parents. We devised four different contexts for the lists not to be repetitive and each scenario was presented with each pair of children (Context A: Doing homework, Context B: Setting the table, Context C: Eating fish, Context D: Flushing the toilet). We made sure the vocabulary of the scenarios was accessible to the children by consulting their teachers and the textbooks used up to that moment, and before the test was conducted, we checked whether the participants knew the vocabulary of the four scenarios by asking questions and providing them with translations if necessary. The following figure illustrates the two pictures used for context A.



Figure 1: Set of pictures for context A

As for the sentences uttered by “the parents”, there were four conditions used to determine whether the participants interpreted sentences with null subjects or without. Each condition had 8 items. The four conditions and examples are shown in Table 1:

Table 1: *Experimental conditions and example items*

Condition	Examples from Context A	N.
A Declarative	They always do the homework	8
B Please_Imperative	Please do the homework!	8
C Imperative	Do the homework! [+appropriate imperative intonation]	8
D Critical	Do the homework [-appropriate declarative intonation]	8

Condition A and B (Declarative and Please_Imperative) were used as control conditions to establish whether participants could do the task appropriately. When one of the sentences in condition A was presented with a picture of the older pair of children, the participants were

supposed to say that the sentence matched the picture. If the same sentences in condition A were presented with a picture of the younger children, then the participants were supposed to say that the sentence was out of context. Conversely, in relation to sentences in condition B, the opposite pattern was expected. Condition C and D consisted of the same lexical items, but condition C had the appropriate intonation of an imperative utterance and condition D lacked the intonation of an imperative answer (i.e., sentences in this condition had the appropriate intonation of a declarative utterance). A difference between the responses in condition C and D would mean that learners are sensitive to the cues provided by intonation. Crucially, when sentences in condition C and D were uttered with pictures of the older pair of children, two possible responses were expected:

- i. participants could say that the sentences **MATCHED** the context, which would show that they assign a null subject to sentences like ‘Do the homework’ and thus they are interpreting them as ‘They do the homework’ and
- ii. participants could say that the sentence **DID NOT MATCH** the context, which would show that they are interpreting both C and D as imperative sentences, thus, not assigning null-subject interpretations to the sentences in these conditions.

When the sentences in condition C and D were presented with the younger pair of children, then different responses albeit same implications were expected:

- iii. participants could say that the sentences **DID NOT MATCH** the context, which would show that they assign a null subject to sentences like ‘Do the homework’ and thus they are interpreting them as ‘They do the homework’ and
- iv. participants could say that the sentence **MATCHED** the context, which would show that they are interpreting both C and D as imperative sentences, thus, not assigning null-subject interpretations to the sentences in these conditions

Regarding the procedure, each picture was presented to the participant four times, one with each sentence for each condition. In total, the participants saw 32 pictures with 32 uttered sentences. The pictures had been pseudo-randomized in two separate lists and participants were assigned either one list or the other one. The children’s responses were audiorecorded and the coding was done in a binary manner to capture whether the participants were accurate or not accurate in giving their responses.

4.3.2 *Production*

The production data were obtained through an oral, two-way spot-the-differences task. This task was designed as an open and unfocused task (Mackey, 2012) in which the learners, in pairs, were given 6-7 minutes to find as many differences as they could between their two different pictures by asking each other questions and providing descriptions of the pictures. After these 6-7 minutes, they were asked to uncover their pictures and were given 3-4 more minutes to confirm the differences and find some more. The two pictures (see Figure 2) displayed a beach with different weather conditions and children and adults doing different activities or wearing different clothes. The researchers made sure the participants were generally familiar with the vocabulary to be used by consulting their teachers and the textbooks used in class.



Figure 2: Set of pictures for the Production task (adapted from http://community.fansshare.com/pic25/w/spot-the-difference/1200/23108_spot_the_difference.jpg)

The learners were taken to the meeting room next to their classroom in pairs and instructions were given in Catalan/Spanish to make sure they were properly understood. Before starting the task, the researchers would ask some brief personal questions in English. The pairs were mixed proficiency dyads selected by the teacher. The children's production was audiorecorded and then transcribed using the CHAT conventions within the CHILDES project (MacWhinney, 2000). The transcriptions were analyzed in terms of frequency of null and overt expletive and pronominal subjects as well as nominal phrases (NP) as pre and postverbal subjects. The coding and the analysis were carried out by two researchers and the intraclass correlation coefficient (ICC) was .996 with a 95% confidence interval from .994 to .997 ($F(198)=227.444, p<.001$).

5. RESULTS

5.1 Interpretation Task

The responses of the TVJT were coded as 1 for accurate responses and 0 for inaccurate responses. Accurate responses in condition A and B capture whether a participant can do the task without problems. Accurate responses in condition C and D capture a target-like grammar for English (i.e., the lack of null subjects in their grammars) and inaccurate responses in these conditions capture a non-target-like representation for subjects in English (i.e., the presence of null subjects in their grammars). The descriptive results are shown in Table 2:

Table 2: Percentages of accuracy (Means and Standard Deviations) in the four conditions.

Condition	Mean	SD
A Declarative	93.42	24.83
B Please_Imperative	97.36	16.03
C Imperative	56.57	49.64
D Critical	51.97	50.01

In order to further explore these results we performed a generalized linear mixed effects logistic regression analysis of the data, employing the lme4 package (Bates, Maechler, Bokler, & Walker, 2015) in the R environment (R Core Team, 2016). The model tested the effect of Sentence Condition (Declarative, Please_Imperative, Imperative, Critical) on the participants' responses in the task. Random by-participant and by-item intercepts were included. For the omnibus model, we set the Declarative condition as the reference level. See Table 3 for the results of the model.

Table 3: Generalized mixed effects model for the interpretation data

Condition	Estimate (SE)	SE	z-value	p
A Intercept ^a	3.83	.44	8.58	< .001
B Please_Imperative	1.02	.45	2.26	= .101
C Imperative	-3.23	.33	-9.58	<. 001
D Critical	-3.54	.45	-10.38	<. 001

^aReference level = Declarative

A first look at the model and the data already shows that the learners have very similar percentages of accuracy in the two control conditions. Notice that the percentage of accuracy for the “Declarative” condition is 93.42% and for the “PleaseImperative” condition is 97.36%. This is of no surprise especially if we consider the fact that the learners in Orfitelli and Hyams (2012) were much younger aged between 2½ and 4 years old and could do the task successfully. Thus, we see that our participants understand and do what they are supposed in the task. The analysis of the two first conditions show that (a) they can interpret declarative sentences with overt subjects effortlessly and (b) that they are sensitive to imperative sentences when a lexical marker such as “please” is used, which indicates that their grammars have a representation for imperatives.

If we now turn to the two remaining conditions where an imperative sentence was presented with appropriate intonation (C) and where the lexical items were the same as the ones in an imperative condition but with declarative intonation (D), we see that learners have significantly lower scores of accuracy in these two conditions than their scores for the Declarative condition. A further exploration of the other comparisons between the other sentence conditions was done using the multcomp package (see Appendix 1 for the results). Such comparisons showed that learners are significantly less accurate in these two conditions than in declarative and the imperative with *please* conditions, which can be taken as evidence that they do not interpret such sentences as imperatives but as declarative sentences with null subjects². Most learners show evidence of null subjects in their English in this task, interpreting imperative sentences (with and without targetlike intonation) as declarative sentences, thus, containing a null subject.

5.2 Production Task

The transcriptions of each learner were examined and coded for the use of subjects. Regarding the coding scheme, we first coded for all possible contexts where a subject would be required irrespective of syntactic position and the language of the utterance. In a second pass, we coded for the type of subject and its position within the utterance. First, subjects were coded as either overt or null. If overt, we further coded for whether it was an expletive, personal pronoun or a full NP and whether it was in pre-verbal or post-verbal position. If it was a null subject, we coded for whether the context would require an expletive subject or not (i.e., subjects other than expletives). Post-verbal subjects (both NPs and pronouns) were excluded from the final analysis because there were barely any instances of them produced by the learners. Ultimately,

² High SDs in the two critical conditions show that there is some variation in the responses of the participants. Closer inspection of the individual data suggests there are some participants that have target-like interpretation, which might be explained through the fact that a number of children attended after-school English classes. Due to the nature of the study and the small sample size, this cannot be analysed further. However, future research will explore the nature of this individual variation.

we excluded utterances where the verb in the main clause was uttered in the L1 of the participants from the analysis, as this often indicated that the sentence was uttered in the L1 almost in its entirety and only sentences where the main verb was uttered in the L2 were included.

As regards the analysis, we calculated the percentages (by-type) of subjects of all subjects uttered by a single participant. In Table 4, the grand averages are presented:

Table 4: Mean percentage (Standard Deviation) of subjects in the production task.

Type of subject	Mean (SD)	Frequencies
Overt NP	18.25 (26.91)	80
Overt Pronouns (excluding expletives)	64.83 (30.31)	519
Overt Expletives	4.88 (12.01)	60
Total Overt Subjects	87.97 (14.08)	659
Null subjects other than expletives	5.82 (8.57)	41
Null expletive	6.21 (12.98)	40
Total Null subjects	12.03 (14.09)	91
Total		745

Focusing on the total percentages of overt and null subjects uttered by participants, percentages show that they mostly produced overt subjects: 87.97% as opposed to 12.03% of null subjects. Further inspection of the data shows that there is a high percentage of pronouns produced when the subject is overtly realized, namely 64.83% of pronouns, 4.88% of expletives and 18.25% of full NPs. We conducted another generalized linear mixed effects logistic regression on the proportional data (0-to-1) to test for the effect of type of subject on the participants' proportional production of subjects. Random by-participant intercepts were included. Table 5 displays the omnibus model.

Table 5: Generalized mixed effects model for the production data

	Estimate	SE	z value	p
Intercept ^a	-1.89	4.80	-3.93	<. 001
Overt Pronoun	2.79	5.99	4.65	<. 001
Overt Expletive	-1.72	1.12	-1.53	.124
Null Expletive	-1.73	1.11	-1.51	.113
Null Subject	-2.86	6.76	-1.89	.987

^aReference level = Overt NP

The results of the omnibus model show that that the only significant effect was found in the Overt Pronoun condition, which indicated that participants significantly produced more overt pronouns than Overt NPs (the reference level of the model). We further compared the results to see whether there were significant differences with respect to the combination of other types of subjects. Three additional significant comparisons came up: (i) Overt pronouns vs. Overt NPs, (ii) Null Expletives vs. Overt pronouns, and (iii) Overt Expletives vs. Overt pronouns (see Appendix B for the multiple comparisons).

Overall, the results show that the learners prefer the use of overt pronouns when they produce English utterances even though the use of full NPs could have been much more beneficial to perform the task successfully. The task consisted of a paired spot-the-difference task where the dyads had to find the differences in the pictures without seeing each other's picture. And so, the use of a full NP (e.g., the kite) should be more informative than an overt pronoun (e.g., it) in terms of task completion. However, as seen in the results, we see that only 18.25% of the times do the learners produce such NPs. We discuss the implications of such findings in the next section.

6. DISCUSSION

To explore the mental representation of subjects in the English grammar of Catalan/Spanish bilingual children, we investigated the extent to which null subjects are part of these learners' grammars in a child foreign language acquisition context and whether null subjects are present to the same extent in interpretation and production data. Following the Interpretability Hypothesis (Hawkins & Hattori, 2006; Tsimpli & Dimitrakopoulou, 2007; Tsimpli & Mastropavlou, 2007; among others) and taking into account that the children under study had only received limited input over an extended period of time, L1 transfer of null subject properties was predicted. An asymmetry between interpretation and production data was also expected as well as between overt pronominal and expletive subjects, as similar patterns have been reported for production and judgement data (Orfitelli & Grüter, 2013; Mitkovska & Buzarovska, 2018).

The analysis of results showed mixed results with respect to determining whether learners had a null subject grammar or not. While learners showed clear instances of null subject grammars in the TVJT, these same learners showed relatively low rates of null subjects in the production task, which could *a priori* be interpreted as them having a target-like non-null subject for English. In the TVJT, children tended to interpret imperative sentences (e.g., Flush the toilet) as declarative sentences. As shown in the results, participants did not show significant differences in the sentences with and without appropriate imperative intonation (Condition C and D respectively). This suggests that participants at this stage were not sensitive to intonation cues to interpret imperative sentences and were interpreting imperative sentences as declarative sentences with null subjects. These data seem to suggest that children could not access the uninterpretable features of English verbal inflectional morphology that require overt subjects in English, and they transferred the null option of their L1 grammars. The learners did not show evidence yet of using any process of compensation by which they might make use of available interpretable features (e.g., the semantic feature of [referentiality] in pronominal subjects) to compensate for the uninterpretable ones that remain inaccessible (Mitkovska & Buzarovska, 2018).

Results obtained through the production task seem to contradict the findings in the TVJT, as our learners produced significantly more overt than null pronominal and expletive subjects. Lack of null subjects in production data has also been found in previous similar research conducted with children (Mujcinovic, 2017; Mitkovska & Bužarovska, 2018) and with adult learners of English (Alibabae, Youhanaee & Tavakoli, 2012). As research has shown in other instances of language acquisition, asymmetries stemming from methodological choices are not rare (see for example Hendriks, 2014, for child L1 acquisition; Unsworth, 2007, for child L2; Villegas, 2014, for Heritage Speakers; Puig-Mayenco, Miller, Bayram, Cunnings, Tubau & Rothman, 2018, for early bilinguals; and Gershkoff-Stowe & Hahn, 2013, for adult L2 acquisition).

The children's more target-like results in the production task might result from the formulaic nature of language which they are exposed to in class and which they use in their interactions. Early instances of foreign language communication are supported by fixed expressions which are later reanalyzed for more creative language use (Myles, Hooper & Mitchell, 1998; Myles, Mitchell & Hooper, 1999). These pre-learned sequences in our data mainly contain overt pronominal and expletive subjects and they might not be evidence of target-like subjects in their mental representations (e.g., There is a flag in your picture?/ I have umbrella/I don't have a boat). If they were part of their mental representations, one would expect to see higher percentages of target-like responses in the TVJT. This high occurrence of pronominal subjects in the production task might also explain why the occurrence of overt NPs is also low in comparison to what would have been desirable in terms of task achievement,

whereby description of the differences would have been more effective with a higher use of NPs. However, it is also true that while children had to describe their pictures, they ended up asking each other questions about what they had in their pictures. What is crucial is that they did not use proper questions but fixed expressions often with first person pronouns with a rising intonation to refer to their interlocutor (e.g., I have a green *bandera* [= flag]? No. I don't have a green *bandera* [= flag]), which might be taken to suggest that in fact, they are not creating language but using chunks to communicate. As much as a quantitative analysis of these fixed structures would be desirable to draw any conclusions from this interpretation, it clearly falls beyond the scope of the present study and has only been hinted at as a potential explanation for the remarkable use of overt pronominal subjects in the production task. Overall, we would like to suggest that L1 transfer is still present in the children's grammars even after several years of exposure. This indicates that these learners are still in the early stages of acquisition, which seems to be a much longer period for these learners in this lower exposure context than other learners in other more intensive contexts (see Puig-Mayenco and Rothman, 2020).

7. CONCLUSIONS AND FURTHER RESEARCH

Our study has attempted to investigate the English subject realization of Catalan/Spanish child EFL learners in a learning context of minimal input and through two different experimental tasks tapping on interpretation and production data. As previous research had already made evident, testing learners on only one type of data might overlook important insights into the nature of the children's language knowledge. While the learners produced a high rate of target-like overt subjects, they also interpreted imperative sentences as declarative sentences with null subjects. The target-like results were argued to be due to the formulaic nature of the language these children use, which makes their production consist mainly of formulaic chunks of language with overt subjects. After five years of exposure but only 300 hours of exposure, these children are yet to overcome the initial stages of acquisition and this might be due to the type and amount of input received. The combination of low quantity of input and the low metalinguistic abilities these young learners have might explain why it is that in this specific context of learning (i.e., minimal exposure) the actual initial stages of acquisition are much longer than, for example, in adult foreign language acquisition.

In order to speed up the acquisition process, these learners would benefit from more intensity and more productive use of language in interaction to develop fluency to go beyond the use of formulaic language. Crucially, however, if we follow the argumentation that these learners have a transferred null subject grammar which does not surface in the production task as they seem to be at a formulaic stage of language production, we then should see that (a) their rate of null subject production increases as they move away from the formulaic stage of language production and (b) their rates of null subject interpretation decrease as they start to restructure their grammars towards a target-like non-null subject grammars. Further research should indeed test the same group of learners as they continue to learn English across time to contribute new data and help characterize this learner profile.

A number of limitations should be acknowledged. First, a larger number of participants would have probably yielded more robust results. Our study is solely based on one single grammatical structure, and therefore conclusions about the learning context should be taken only as tentative.

Even if first exposure to the foreign language was relatively early for these children, this, in fact, did not mean quick development of the foreign language as has been shown for immersion contexts. Learners need more meaningful and intensive exposure (i.e., larger

quantity and higher quality of input) in order for the grammars of their foreign languages to fully develop.

REFERENCES

Alexiadou, A. & Anagnostopoulou, E. (1998). Parametrizing AGR: word order, V-movement and EPP-checking. *Natural Language & Linguistic Theory*, 16, 491-539. doi: 10.1023/A:1006090432389

Alibabae A., Youhanaee M. & Tavakoli, M. (2012). Referential, quasi, and expletive subjects in L2 English of Persian speakers. *The Journal of Teaching Language Skills*, 31, 1-25.

Bates, D., Maechler, M., Bokler, B. & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, 67(1), 1-48. doi: 10.18637/jss.v067.i01

Bloom, P. (1990). Subjectless sentences in child language. *Linguistic Inquiry*, 21(4), 491-504.

Chondrogianni, V. (2018). Child L2 acquisition. In D. Miller, F. Bayram, J. Rothman & L. Serratrice (Eds.), *Bilingual Cognition and Language: The State of the Science across its Subfields* (pp. 103-126). Amsterdam and Philadelphia: John Benjamins.

Clahsen, H. & Felser, C. (2006). Grammatical processing in language learners. *Applied Psycholinguistics*, 27(1), 3-42. doi:10.1017/S0142716406060024

Collins, L. & Muñoz, C. (2016). The foreign language classroom: current perspectives and future considerations. *The Modern Language Journal*, 100(1), 133-147. doi: 10.1111/modl.12305

Contemori, C., Asiri, O. & Perea Irigoyen, E. (2019). Anaphora resolution in L2 English. *Studies in Second Language Acquisition*, 41, 971-998. doi: 10.1017/S0272263119000111

Crain, S. & McKee, D. (1985). The acquisition of structural restrictions on anaphora. In S. Berman, J. Choe & J. McDonough (Eds.), *Proceedings of the NELS 15* (pp. 37-56). Amherst, MA: GLSA, UMass.

DeKeyser, R. (2000). The robustness of critical period effects in second language acquisition. *Studies in Second Language Acquisition*, 22(4), 499-533. doi: 10.1017/S0272263100004022

Enever, J. (2011). *ELLiE. Early language learning in Europe*. British Council.

García Mayo, M. P. (2017). *Learning Foreign Languages in Primary School: Research Insights*. Clevedon: Multilingual Matters.

Generalitat de Catalunya (2018). El model lingüístic del sistema educatiu de Catalunya. Departament d'Ensenyament. Retrieved from <https://educacio.gencat.cat/web/.content/home/departament/publicacions/monografies/model-linguistic/model-linguistic-Catalunya-CAT.pdf>

- Gershkoff-Stowe, L. & Hahn, E. (2013). Word comprehension and production asymmetries in children and adults. *Journal of Experimental Child Psychology*, 114, 489-509. doi: 10.1016/j.jecp.2012.11.005
- Granena, G. & Long, M. H. (2013). Age of onset, length of residence, language aptitude, and ultimate L2 attainment in three linguistic domains. *Second Language Research*, 29(3), 311-343. doi: 10.1177/0267658312461497
- Grodzinsky, Y. & Reinhart, T. (1993). The innateness of binding and coreference. *Linguistic Inquiry*, 24, 69-102.
- Guasti, M. T. (2002). *Language Acquisition: The Growth of Grammar*. Cambridge, MA: MIT Press.
- Hawkins, R. & Chan, C. (1997). The partial availability of Universal Grammar in second language acquisition: the 'failed functional features hypothesis'. *Second Language Research*, 13(3), 187-226. doi: 10.1191/026765897671476153
- Hawkins, R. & Casillas, G. (2008). Explaining frequency of verb morphology in early L2 speech. *Lingua*, 118(4), 595-612. doi: 10.1016/j.lingua.2007.01.009
- Hawkins, R. & Hattori, H. (2006). Interpretation of English multiple wh-questions by Japanese speakers: a missing uninterpretable feature account. *Second Language Research*, 22(3), 269-301. doi: 10.1191/0267658306sr269oa
- Hendriks, P. (2014). *Asymmetries between Language Production and Comprehension*. Dordrecht: Springer.
- Hilles, S. (1991). Access to Universal Grammar in second language acquisition. In L. Eubank, (Ed.), *Point Counterpoint. Universal Grammar in the Second Language* (pp. 305-338). Amsterdam: John Benjamins.
- Hyams, N. (1986) *Language Acquisition and the Theory of Parameters*. Dordrecht: Reidel Publishing Company.
- Jaeggli, O. & Safir, K. (1989). The null subject parameter and parametric theory. In O. A. Jaeggli & K. J. Safir (Eds.), *The Null Subject Parameter. Studies in Natural Language and Linguistic Theory 15* (pp. 1-44). Dordrecht: Kluwer.
- Johnson, J. S. & Newport, E. L. (1989). Critical period effects in second language learning: The influence of maturational state on the acquisition of English as a second language. *Cognitive Psychology*, 21(1), 60-99. doi: 10.1016/0010-0285(89)90003-0
- Judy, T. & Rothman, J. (2010). From a superset to a subset grammar and the semantic compensation hypothesis: subject pronoun and anaphora resolution evidence in L2 English. In *BUCLD 34: Proceedings of the 34th annual Boston University Conference on Language Development* (197-208). Somerville, MA: Cascadilla Press.

Lakshmanan, U. (1991). Morphological uniformity and null subjects in child second language acquisition. In L. Eubank (Ed.) *Point Counterpoint: Universal Grammar in the Second Language* (pp. 389-410). Amsterdam: John Benjamins.

Lakshmanan, U. (1994). *Universal Grammar in Child Second Language Acquisition*. Amsterdam: John Benjamins.

Larson-Hall, J. (2008). Weighing the benefits of studying a foreign language at a younger starting age in a minimal input situation. *Second Language Research*, 24(1), 35-63. doi: 10.1177/0267658307082981

Long, M. (2005). Problems with supposed counter-evidence to the Critical Period Hypothesis. *IRAL. International Review of Applied Linguistics in Language Teaching*, 43(4), 287-317. doi: 10.1515/iral.2005.43.4.287

Mackey, A. (2012). *Input, Interaction, and Corrective Feedback in L2 Learning*. Oxford: Oxford University Press.

MacWhinney, B. (2000). *The CHILDES Project: Tools for Analyzing Talk*. Mahwah, NJ: Lawrence Erlbaum.

Mitkovska, L. & Bužarovska, E. (2018). Subject pronoun (non)realization in the English learner language of Macedonian speakers. *Second Language Research*, 34(4), 463-485. doi: 10.1177/0267658317747925

Mobaraki, M., Vainikka, A. & Young-Scholten, M. (2008). The status of subjects in child L2 English. In B. Haznedar & H. Gavrusseva (Eds.), *Current Trends in Child Second Language Acquisition: A Generative Perspective* (pp. 55-80). Amsterdam: John Benjamins.

Mujcinovic, S. (2017). *Comparing sentential subject production: English heritage vs. English L2 learners*. Paper presented at GALA 13, Palma de Mallorca, Spain.

Mujcinovic, S. (2020). *English subjects in the linguistic production of L1 Spanish, L1 Bosnian and L1 Danish speakers: typological similarity and transfer*. (Doctoral dissertation). Universidad de Valladolid.

Myles, F., Hooper, J. & Mitchell, R. (1998). Rote or rule? Exploring the role of formulaic language in classroom foreign language learning. *Language Learning*, 48, 323-362. doi: 10.1111/0023-8333.00045

Myles, F., Mitchell, R. & Hooper, J. (1999). Interrogative chunks in French L2: a basis for creative construction? *Studies in Second Language Acquisition*, 21, 49-80. doi: 10.1017/S0272263199001023

Ordóñez, F. & Treviño, E. (1999). Left dislocated subjects and the pro-drop parameter: A case study of Spanish. *Lingua*, 107, 39-68. doi: 10.1016/S0024-3841(98)00020-5

Orfitelli, R. & Grüter, T. (2013). Do null subjects really transfer? In J. Cabrelli Amaro, T. Judy D. & Pascual y Cabo (Eds.), *Proceedings of the 12th Generative Approaches to Second Language Acquisition (GASLA 2013)* (pp. 145-154), Somerville, MA: Cascadilla

Proceedings Project.

Orfitelli, R. & Hyams, N. (2012). Children's grammar of null subjects. *Journal of Memory and Language*, 55, 381-401. doi: 10.1162/ling_a_00106

Park, H. (2004). A minimalist approach to null subjects and objects in second language acquisition. *Second Language Research*, 20, 1-32. doi: 10.1191/0267658304sr228oa

Philip, W. (1995). *Event quantification in the acquisition of universal quantification*. (Doctoral dissertation). University of Massachusetts at Amherst.

Phinney, M. (1987). The pro-drop parameter in second language acquisition. In T. Roeper & E. Williams (Eds.), *Parameter Setting* (pp. 221-238). Dordrecht: Reidel Publishing Company.

Pladevall-Ballester, E. (2012) Child L2 English acquisition of subject properties in an immersion bilingual context. *Second Language Research*, 28(2), 217-241. doi: 10.1177/0267658312438534

Pladevall-Ballester, E. (2013). Adult instructed SLA of English subject properties. *Canadian Journal of Linguistics*, 58(3), 465-486. doi: 10.1017/S0008413100002668

Puig-Mayenco, E., Miller, D., Bayram, F., Cunnings, I., Tubau, S. & Rothman, J. (2018). Language dominance affects bilingual competence and processing: evidence from a bidirectional study of unbalanced Catalan/Spanish bilinguals. *Frontiers in Psychology*, 9, 19-99. doi: 10.3389/fpsyg.2018.01199

Puig-Mayenco, E. & Rothman, J. (2020). Low proficiency does not mean ab initio: a methodological footnote for linguistic transfer studies. *Language Acquisition*, 27(2), 217-226. doi: 10.1080/10489223.2019.1677668

Prentza, A. I. (2014a). Can Greek learners acquire the overt subject property of English? A pilot study. *Theory and Practice in Language Studies*, 4(9), 1770-1777. doi:10.4304/tpls.4.9.1770-1777

Prentza, A. I. (2014b). Pronominal subjects in English L2 acquisition and in L1 Greek: Issues of interpretation, use and L1 transfer. In N. Lavidas, T. Alexiou & A. M. Sougari (Eds.), *Major Trends in Theoretical and Applied Linguistics 2: Selected Papers from the 20th ISTAL* (pp. 369-386). De Gruyter Open.

Prentza, A. & Tsimpli, I. M. (2013). The interpretability of features in second language acquisition: evidence from null and postverbal subjects in the Greek/English interlanguage. *Journal of Greek Linguistics*, 13(2), 323-365. doi: 10.1163/15699846-13130204

Quesada, T. & Lozano, C. (2020). Which factors determine the choice of referential expressions in L2 English discourse?: New evidence from the COREFL corpus. *Studies in Second Language Acquisition* 42(5), 959-986. doi: 10.1017/S0272263120000224

R Core Team. (2016). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing. Vienna, Austria: Available at: <http://www.R-project.org>.

- Rizzi, L. (1982). *Issues in Italian Syntax*. Dordrecht: Foris.
- Rizzi, L. (1986). Null objects in Italian and the theory of pro. *Linguistic Inquiry*, 17(3), 501-557.
- Roesch, A. D. & Chondrogianni, V. (2016). “Which mouse kissed the frog?” Effects of age of onset, length of exposure, and knowledge of case marking on the comprehension of wh-questions in German-speaking simultaneous and early sequential bilingual children. *Journal of Child Language*, 43(3), 635-661. doi: 10.1017/S0305000916000015
- Schwartz, B. (2004). Why child L2 acquisition. In J. van Kampen & S. Baauw, (Eds.), *Proceedings of GALA 2003* (pp. 47-66). Utrecht: Netherlands Graduate School of Linguistics (LOT).
- Sorace, A. (2011). Pinning down the concept of “interface” in bilingualism. *Linguistic Approaches to Bilingualism*, 1, 1-33. doi: 10.1075/lab.1.1.01sor
- Tsimpli, I. M. & Dimitrakopoulou, M. (2007). The Interpretability Hypothesis: Evidence from wh-interrogatives in second language acquisition. *Second Language Research*, 23(2), 215–242. doi: 10.1177/0267658307076546
- Tsimpli, I. M. & Mastropavlou, M. (2007). Feature interpretability in L2 acquisition and SLI: Greek clitics and determiners. In J. Liceras, H. Zobl & H. Goodluck (Eds.), *The Role of Formal Features in Second Language Acquisition* (pp. 143-169). Mahwah, NJ: Lawrence Erlbaum.
- Tsimpli, I. M. & Roussou, A. (1991). Parameter-resetting in L2? *UCL Working Papers in Linguistics*, 3(1), 149-169.
- Unsworth, S. (2005). *Child L2, adult L2, child L1: differences and similarities. A study on the acquisition of direct object scrambling in Dutch* (Doctoral dissertation). Utrecht University.
- Unsworth, S. (2007). L1 and L2 acquisition between sentence and discourse: comparing production and comprehension. *Lingua*, 117, 1930-1958. doi: 10.1016/j.lingua.2006.11.009
- Unsworth, S. (2013). Current issues in multilingual first language acquisition. *Annual Review of Applied Linguistics*, 33, 21-50. doi: 10.1017/S0267190513000044
- Unsworth, S. (2016). Early child L2 acquisition: Age or input effects? Neither, or both? *Journal of Child Language*, 43, 603-634. doi: 10.1017/S030500091500080X
- Villegas, A. (2014). *The role of L2 English immersion in the processing of L1 Spanish sentence complement/relative clause ambiguities*. State College, PA: Pennsylvania State University.
- White, L. (1985). The “pro-drop” parameter in adult second language learning. *Language Learning*, 25(1), 47-62.

APPENDIX 1: MULTIPLE COMPARISONS OF MEANS (COMPREHENSION TASK)

Comparison	Estimate	SE	z-value	p
Critical - Imperative	1.02	0.45	2.26	0.11
Imperative - Declarative	-3.23	0.33	-9.58	<0.001
Critical - Declarative	-3.54	0.34	-1.03	<0.001
Imperative - PleaseImperative	-4.25	0.43	-9.83	<0.001
Critical - PleaseImperative	-4.56	0.43	-1.04	<0.001
Critical - Imperative	-0.31	0.23	-1.33	0.52

APPENDIX 2: MULTIPLE COMPARISONS OF MEANS (PRODUCTION TASK)

Comparison	Estimate	SE	z-value	p
Overt pronouns – Overt NPs	2.79	5.99	4.65	< .001
Null Expletives - Overt NPs	-1.72	1.12	-1.53	.47
Null Subjects - Overt NPs	-2.86	6.76	1.89	.98
Overt Expletives – Overt NPs	-1.72	1.12	-1.53	.124
Null Expletives – Overt pronouns	-4.51	1.08	-4.19	<.001
Null Subjects - Overt pronouns	-3.14	6.76	1.12	.46
Overt Expletives – Overt pronouns	-4.51	1.08	-4.19	<.001
Null Subjects - Null Expletives	-2.69	6.76	1.88	.67
Overt Expletives – Null Expletives	1.79	1.43	1.02	.97
Overt Expletives - Null Subjects	2.69	6.76	1.41	.41