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ON THE EARLY ACQUISITION OF (NULL) SUBJECTS IN CATALAN AS A HERITAGE LANGUAGE

ABSTRACT

Languages vary as to whether subjects must be overtly expressed. Much research has focused on how this phenomenon is acquired by monolingual and simultaneous bilingual children. For the latter, numerous studies have examined the acquisition of (null) subjects in Romance-English bilingual children. Just a few studies have considered the simultaneous acquisition of German and Spanish/Catalan, the former being recently described as a partial and the latter as consistent null subject languages. Our results with thirty Catalan-German children (Ø 5;8) living in Germany indicate that null subject rates, on average, are similar to the monolingual group and are independent of language dominance. Results on (a) subject type, position and (b) age, language dominance, HL-proficiency are examined.

KEYWORDS: Catalan as a heritage language, German, (null) subject property

1. INTRODUCTION

Languages differ as to whether subjects must be overtly expressed and, therefore, accompany the finite verb. According to the World Atlas of Language Structures (Dryer 2013) from 711 languages, 437 (61.5%) allow subject omissions, while only 82 do not (Roberts 2019: 193).¹ In this sense, null subject languages (NSLs) seem to be much more widespread than previously considered and less marked than non-null subject languages (NNSLs). In order to systematically distinguish NSLs from NNSLs, and ultimately give an account for parameter setting, a cluster of properties for Italian (e.g., postverbal subjects, no expletives with weather verbs) was identified that excludes NNSLs such as French

¹ The remaining languages are not included since they have different kinds of mixed categories as subjects.

(Chomsky 1981, Rizzi 1982). However, evidence suggests that various languages are characterized by some of these properties while not fulfilling others (Newmeyer 2005). This has led scholars to study (N)NSLs in greater detail, allowing them to account for the null subject property (NSP) with a greater degree of granularity (Biberauer et al. 2010; Roberts 2019; Müller 2024).

In terms of early language acquisition, the NSP has enjoyed a lot of attention in the last twenty years. In a nutshell, empirical studies have observed that monolingual children acquiring NSLs quickly align to adult rates of subject omissions, while children acquiring NNSLs take a long time to get to adult-like subject realizations. This result for the latter is rather surprising when we consider that children's input comprises (almost exclusively) finite verbs with subject realizations. Concerning the acquisition of the NSP in early bilingualism, much work has been done for the language combinations English-Romance (cf. e.g., Licerias and Fernández Fuertes 2016). In these studies, Romance languages show high rates of overt subject realizations, while English presents fewer omissions than the ones found in the productions of monolingual peers. For the combination of a consistent (Catalan) and a partial (German) NSL, there are only two empirical studies that seem to support the findings for the English-Romance combination (cf., section 3.2). Our study participates to this research field in two different ways. First, we provide new empirical data for the understudied language pair German-Catalan. Second, we explore the acquisition of the NSP in early multilingualism considering language-internal and language-external factors, such as age, language proficiency and language dominance.

2. ON (NULL) SUBJECTS IN CATALAN AND GERMAN

What makes a null subject possible in a language? Generativists assume that what licenses null subjects are person, number and gender information (ϕ features). Languages in the world vary to what extent ϕ features are relevant to drop subjects. Under this approach, parameters are emergent properties that result from the interaction between universal cognitive strategies and grammatical features that are language specific. For the NSP, the grammatical feature at stake is represented by ϕ features and their relevance to allow subject omissions in finite clauses. Considering the interlanguage variation regarding subject omission licensing, Roberts (2019) proposes a fined-grained hierarchy of null subjects reflecting on which elements (i.e., probes) license ϕ features in a particular language. Figure 1 adapted from Roberts (2019: 285) illustrates this approach.

In Japanese, subjects can be omitted in all cases, because ϕ features are completely absent in the system. By contrast, Basque allows null subjects and has ϕ features that are specified in all possible probes. Consistent (C)NSLs have been traditionally represented by Romance languages. At the bottom of this hierarchy, we find the NNSLs French and English since ϕ features are only found in some verb forms. For Müller (2024) and Trutkowski (2016), German should be considered a partial NSL (semi NSL of Type II, cf. Biberauer 2010).

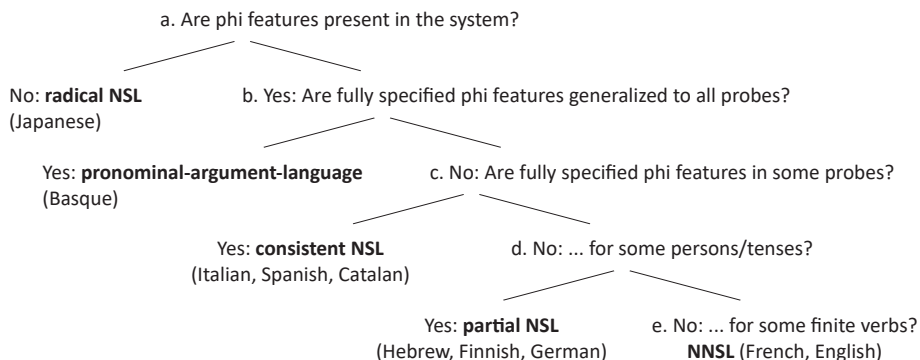


Figure 1. Null subject hierarchy (NSH, adapted from Roberts 2019: 285)

(C)NSLs are characterized by licensing null and overt subjects (cf. Catalan examples 1 and 2). Overt subjects can be lexical determiner phrases (2a), pronouns (2b) and embedded clauses (2c):

- (1) La Gemma ha acabat les classes i ___ està jugant al parc
'Gemma has finished school and \emptyset is playing at the park.'
- (2)
 - a. La nena estudia molt
 - b. Ella estudia molt
'The girl/She studies a lot.'
 - c. La que estudia molt és la meva cosina
'The one who studies a lot is my cousin.'

NSLs like Catalan are characterized by having a set of grammatical properties that distinguish them from NNSLs, such as rich verbal inflection, a lack of expletive pronouns, the possibility to extract wh-words from embedded clauses and the option to place subjects postverbally with transitive, unaccusative and unergative verbs (cf., Chomsky 1981; Rizzi 1982, Jaeggli and Safir 1989; Ordóñez 2007). For Spanish, another CNSL, Montrul (2004) argues that subject omission or realization can also be regulated by discourse-pragmatic principles. For example, when new information is presented, the speaker tends to use an overt subject while null subjects are preferred when there is topic continuity. This is also the case in Catalan, as example 1 has shown.

German is described as a V2- language and a NNSL due to the similar distribution of obligatorily overt subjects as in English, as well as for the presence of expletive pronouns for non-argument subject positions as in *es schneit* 'it snows'. According to Biberauer (2010), German should be considered a partial NSL since it allows null subjects, namely when they are not arguments and, most importantly, non-referential. Trutkowski (2016) observes that referential subjects from the first and second person can be omitted in out-of-the-blue-contexts (cf. example 3a). German is considered a topic-drop language and, thus, third-person but also first-person topics can be dropped (Trutkowski 2016; Schäfer 2021), as seen in example (3b).

- (3) a. __ Bin mal weg.
 ‘I’m off then.’ Trutkowski (2016: 1)
- b. Am Samstag gehe ich mit Julia schick essen. __ lade sie diesmal ein.
 ‘On Saturday I dine out well with Julia. I invite her this time.’ Schäfer (2021: 181)

The possibility to omit first- and second-person referential subjects is shared by German and the CNSLs at the surface level. They all allow for licensing and identification of null subjects via phi features for certain probes.

3. ON EARLY MULTILINGUALISM AND (NULL) SUBJECTS

3.1. THE MULTILINGUAL CHILD

Studies on first language acquisition in multilingual contexts tend to focus on the language that is acquired in the family (i.e., heritage language (HL), cf. e.g., Rothman 2009), because it may show different outcomes from those documented for monolingual peers. The reason for these differences may reside on input quantity: multilingual children are said to receive quantitatively less input in the HL (cf. e.g., de Houwer 2011). Other factors may also have an impact, such as input quality and language prestige (de Houwer 2007). The first empirical studies on early bilingualism showed that bilingual children can separate their two grammatical systems. Still, they may influence each other (cf., Stahnke et al. 2021 for a detailed description of French as an HL). Language acquisition may thus show evidence from crosslinguistic effects (CLE). Interestingly, empirical evidence has found that CLE and language dominance do not necessarily have to go hand in hand (Müller et al. 2002). That means that language-internal characteristics as well as the language combination at stake are responsible for CLE. Hulk and Müller (2000) and Jakubowicz (2002) proposed criteria to predict the direction of CLE based on syntactic differences and on syntactic complexity between the languages involved as well as on the general cognitive development (Serratrice 2007).

3.2. PREVIOUS STUDIES ON THE EARLY ACQUISITION OF (NULL) SUBJECTS IN CONSISTENT NSLs

MONOLINGUAL ACQUISITION

Research on the early acquisition of subjects in CNSLs started with Bel’s (2003) and Grinstead’s (2004) empirical studies. They analyse spontaneous longitudinal data from Spanish and Catalan monolingual children from CHILDES (MacWhinney 2000). Bel (2003) observes that monolinguals produce around 80% of null subjects on average. These results mirror those of Grinstead (2004) and, later on, of Patuto (2012) and Biró (2017). With some interindividual variation, these studies show that Spanish and Catalan

monolingual children start producing high rates of null subjects (around 90%), but this percentage decreases and stabilizes by age 3 at around 80%. Overt subjects are thus produced in the children's very first recordings. Importantly, Bel (2003) argues that there is no relation between the production of overt subjects and MLU growth. Furthermore, Bel's (2003) and Biró's (2017) studies report that children use fewer subject pronouns than adults, which might be due to pragmatic conditions. Bel (2005) further observes that children produce subjects pre- and postverbally very early, yet the former appear twice as much as the latter. She argues that, if children produce VSO orderings in Catalan or Spanish, this has to do with: (i) the verb type (i.e., stative, transitive, intransitive and unaccusative), (ii) the possibility of subject dislocation, and (iii) whether the subject is considered new or old information.

MULTILINGUAL ACQUISITION

To the best of our knowledge, there are two empirical studies that explore the acquisition of (null) subjects in early bi-/trilingualism with German as a partial NSL together with a CNSL, namely Patuto (2012) and Daniel (2021).

Patuto (2012) analyses the spontaneous longitudinal data of two Spanish-German bilingual siblings (1;5–5;3) raised in Germany. Subject omissions in Spanish are around 60% for the whole period. The remaining 40% of overt subjects are composed by pronouns (30%) and DPs (10%). She observes that subject omissions even decrease to 50% by an MLU-phase of 2.0–2.49. Spanish-German bilingual children thus show fewer subject omissions in Spanish than their monolingual Spanish peers. Patuto (2012) further notes that language dominance cannot explain the differences between the bilingual and monolingual groups.

The cross-sectional study in Daniel (2021) consists of 14 German-Catalan(-X) bi- and trilinguals (age range 2;8–13;3). Preliminary data from the first data collection in Hamburg, which our current study is based on, was analysed (cf. section 4.2). Subject omissions are observed around 50%. If subjects are realized overtly, pronouns are more frequent than DPs. Daniel (2021) compares the age of the bi- and trilingual children due to the cross-sectional nature of the study and the limited number of participants. She finds a relation between null subjects and age: for the children aged between 2;8 and 4;3, subject omissions represent approx. 50%. By contrast, the group of children between 5;8 and 13;3 show adult-like omission rates (i.e., 70%). Daniel (2021) does not find any relation between null subjects and language dominance.

4. THE STUDY

4.1. RESEARCH QUESTIONS AND HYPOTHESES

As a follow-up to previous studies that examined the acquisition of the NSP in Spanish and Catalan, as well as the impact of language-internal factors (null vs. overt subjects, lexical vs. pronominal subjects, subject position) and language-external factors (age, language dominance), we aim to answer two research questions (RQ). The hypotheses formulated

are based on the linguistic description of (consistent and partial) NSLs in section 2 and the literature explored in section 3.²

RQ1: Do children acquiring Catalan as an HL align to previous studies with children simultaneously acquiring a consistent and a partial NSL?

Hypothesis 1: They show high rates of null subjects until age 3; this rate eventually lines up to adult rates of 60-80% the older the children are.

RQ2: Is there an interplay between language-internal and language-external factors in the production of overt subjects in the HL Catalan?

Hypothesis 2a: Language dominance should not influence the presence/absence of subjects. The same holds for the type of realized subjects.

Hypothesis 2b: Children might exhibit more cases of lexical subjects, decreasing and giving place to pronominal subjects with age.

4.2. PARTICIPANTS AND METHODOLOGY

The data was collected in Hamburg (2019) and in North Rhine-Westphalia (NRW, 2022).³ Children were acquiring simultaneously Catalan-German (and another L1 if trilingual). Table 1 shows the whole set of children participating in the cross-sectional study:

Table 1. Number of children across regions of residence, number of L1s and age range

Region	Children		Age range
	Bilinguals	Trilinguals	
Hamburg	12	4	2;8-13;3
NRW	9	5	1;11-13;8
Total	21	9	Median age 5;8

Children were video-taped in Catalan, German and Spanish. Spontaneous recordings were carried out in a game (for the youngest children) or an interview situation (for the oldest children) between the child and a native speaker for approximately 30 minutes. We

² Previous studies are limited to the early acquisition of (null) subjects for the language combination involved. The age range of the participants in our study goes beyond Patuto's (2012) longitudinal study. Due to the size of our sample, our hypotheses for the older children are explorative in nature.

³ The first project stage in 2019 was financed by the University of Hamburg (program of excellence *Ideen- und Risikofonds*), while data collection in NRW was funded by the German Catalan Foundation (program Andreas Wesch) and the University of Wuppertal (ZEFFT-Program).

further administered a parental questionnaire about current and cumulative input based on the work by Torregrossa and Bongartz (2018).⁴

To assess language proficiency in the children's L1s, research on early language acquisition has widely used MLU (Mean Length of Utterance, in words),⁵ due to its objective and independent character (cf. Müller et al. 2023 for an overview). MLU could be assumed to be a quantitative measurement that tries to capture the child's linguistic development qualitatively. To calculate the MLU values of the child's L1s, some well-known strategies to balance cross-linguistic differences were considered (Müller et al. 2023). MLU as a measure of language proficiency was chosen based on the type of exploratory study conducted with Catalan as an HL in Germany. In figure 2, we present the children⁶ participating in the cross-sectional study ranked on the x-axis according to age and on the y-axis based on language proficiency (measured via MLU) for German (black) and Catalan (grey).

Language proficiency in German and Catalan increase the older the children are. We observe that some children show a similar language proficiency for both L1s, while others are more proficient in one of their L1s, irrespective of the age. The MLU-difference (MLUD) between the child's L1s can contribute to determine language dominance (cf. e.g., Arencibia Guerra 2008). We determined the MLUD cut-off-point by 1.5: $0-1.5 =$ balanced; $> \pm 1.51 =$ dominant (negative value: Catalan dominant; positive value: German dominant). Balanced bilingualism could be attested by sixteen children, followed by ten German dominant children and four with a dominance towards the HL Catalan (cf., table 2). The mean MLUD from the sixteen balanced children is very close to zero and their mean age is before 6. For both dominant groups, a tendency towards a mean MLUD of 3 is noticeable (negative for the Catalan dominant, positive for the German dominant children). The German dominant group has a mean age of 6;1, while the Catalan dominant children present the oldest mean age of all three groups.⁷

Table 2. Children's language dominance according to MLU

	N (%)	Mean MLUD	Mean age
Balanced	16 (53.33%)	0.25	5;4
German dominant	10 (33.33%)	2.89	6;1
Catalan dominant	4 (13.33%)	-2.71	12;1

⁴ For more information, cf. Arnaus Gil and Jiménez-Gaspar (2022).

⁵ However, its use has been controversial, when sentence length, measured in terms of MLU, is linked to syntactic complexity and, thus, to language competence (cf. Döpke 1992 for contrary views on this topic and Arencibia Guerra 2008 for a critical discussion).

⁶ The children's identification codes (ID) should be read as follows: (G)ermany; T(rilingual)/B(ilingual); Age in years; (M)asculine/(F)eminine; Name+Surname.

⁷ The four Catalan dominant children are the oldest of the data sample. Their parents follow the language policy 'one person, one language'. This means that, from birth, they receive Catalan input from one or from both parents who try to consistently use the HL throughout different daily activities.

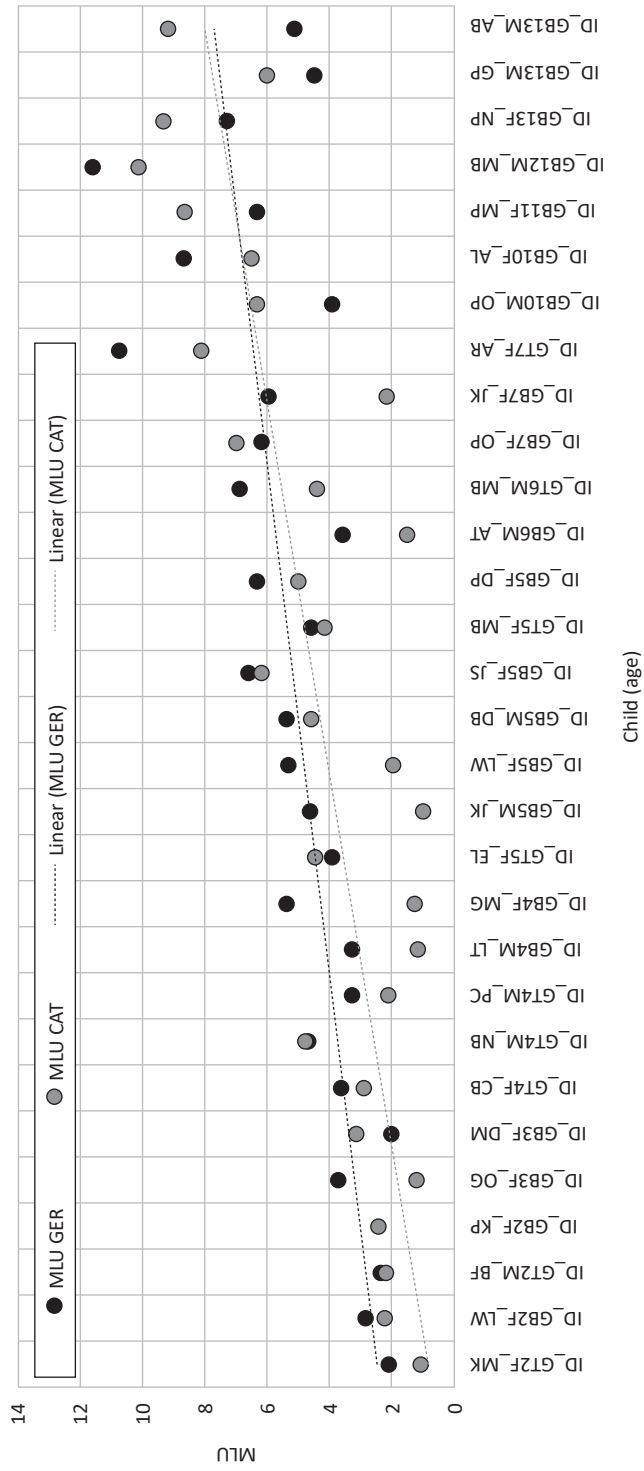


Figure 2. Children's language proficiency in German and Catalan

5. RESULTS

The results are presented following language-external factors for the appearance of subjects in the HL Catalan, namely age, language dominance and language proficiency. First, we explore the extent to which children acquiring Catalan as an HL produce similar rates of null / overt subjects as Catalan monolinguals (cf. section 3.2). Second, overt subjects are classified according to type (i.e., pronominal or lexical). Finally, section 3.3 presents the data considering the children's HL proficiency.

Generally speaking, twenty-five out of thirty⁸ children produced 2,746 sentences with a finite verb, out of which 69% (1,889) are instances of null subjects, while 31% (857) were produced with an overt subject. These general findings go in line with previous studies with monolingual and bilingual children acquiring a CNSL. Table 3 presents the type and the position of overtly realized subjects.

Table 3. General results according to subject type and position in HL Catalan

Subject type		Subject position	
Pronominal	Lexical	Preverbal	Postverbal
448/857 (52%)	409/857 (48%)	649/857 (76%)	208/857 (24%)

The distribution of pronominal and lexical subjects is balanced. Regarding subject position, children essentially produced more preverbal than postverbal subjects. This observation is valid across bi- and trilingual children, i.e., irrespective of age, language proficiency in Catalan and language dominance. Bel's (2003) and Biró's (2017) studies found similar distributions of pre- and postverbal subjects (70–30%, respectively) among the youngest participants as in our sample.

The following sections offer a more detailed analysis on the comparison between null and overt subjects (5.1) and subject type (5.2) considering children's age and language dominance. Proficiency in the HL Catalan will be explored in section 3.2.

5.1. NULL AND OVERT SUBJECTS

When considering children's age and the production of (null) subjects, figure 3 shows a slight preference for null over overt subjects for the youngest age groups. For the older groups, we observe a clear preference for null subjects from age 10 with rates between 70–80%.

⁸ Five (four German-dominant and one balanced) children did not produce any finite verb in Catalan since they interacted with the Catalan-speaking adult mainly in German. For this reason, they were excluded from the results.

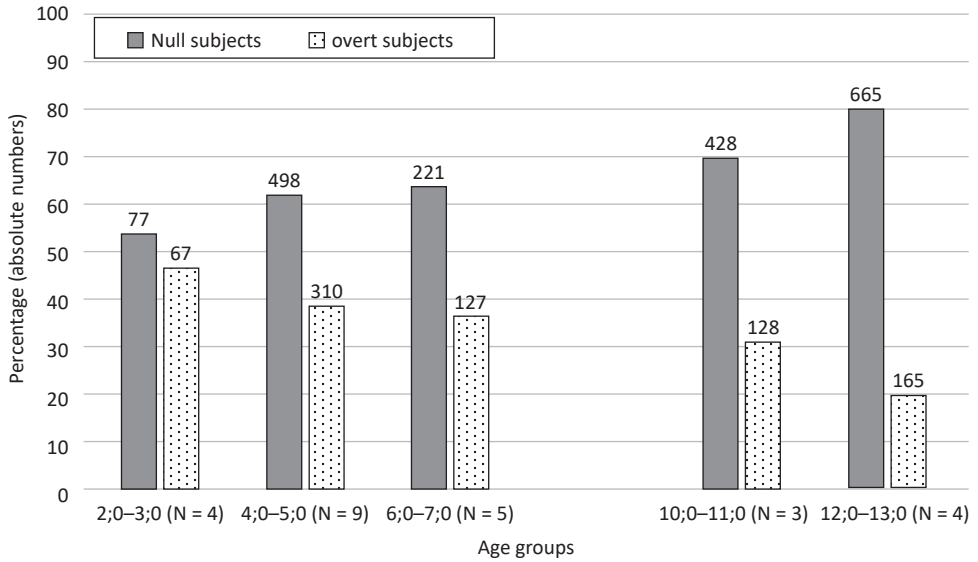


Figure 3. Comparison between null and overt subjects rates across age

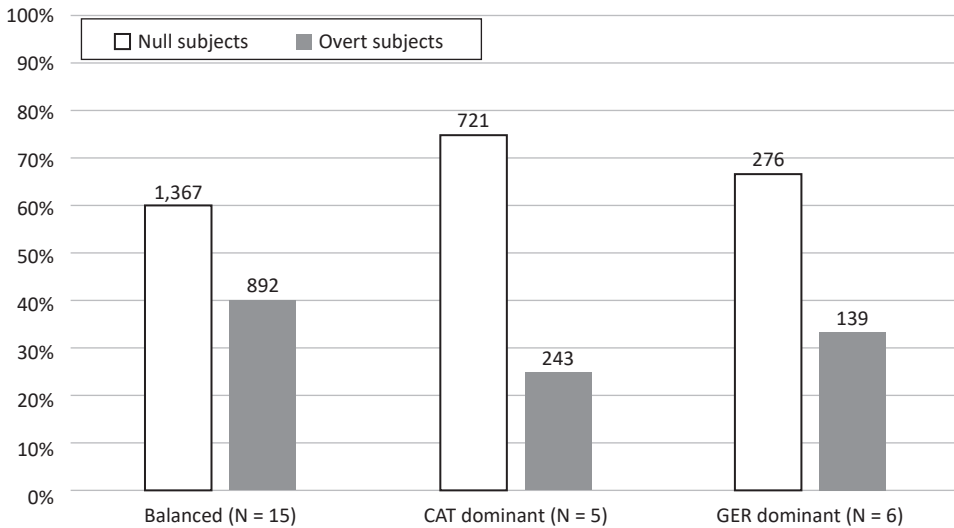


Figure 4. Comparison between null and overt subjects' rates across language dominance

Figure 4 displays the distribution of children's language dominance (cf. table 2, section 4.2) with respect to (null) subject productions. As was the case for age, we observe higher rates of null than overt subjects, irrespective of whether Catalan, German or both are controlled to a similar degree. Interestingly, the results from the Catalan dominant children point at a higher difference between null (75%) and overt subjects (25%), but no statistically significant differences were found.

5.2. SUBJECT TYPE

Concerning the production of lexical or pronominal subjects, we can observe from figure 5 that older children use lexical subjects more frequently than younger children. We decided to group the children in age ranges of two years since the number of children for each age was unbalanced across the participants' sample.

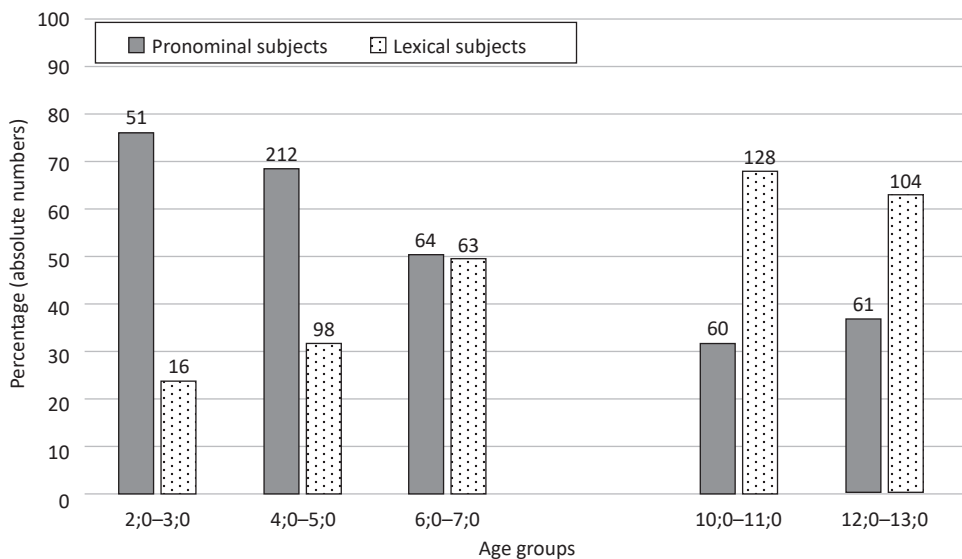


Figure 5. Pronominal and lexical overt subjects according to age

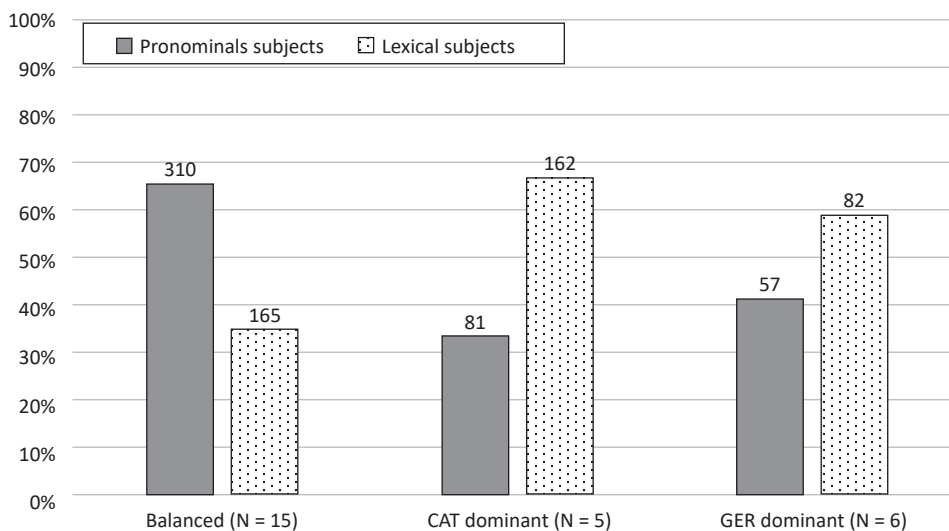


Figure 6. Pronominal and lexical overt subjects according to language dominance

If children's language dominance is examined, there is a clear difference between balanced and unbalanced children. Specifically, the former produced 65% of pronominal subjects, while the Catalan and German dominant children presented 33% and 41% pronominal subjects, respectively. The statistical analysis comparing the balanced and dominant groups regarding subject type yielded no significant results ($t(2) = 0.52, p > .05$).^{9,10}

5-3. (NULL) SUBJECTS, SUBJECT TYPE AND LANGUAGE PROFICIENCY IN THE HL CATALAN

Previously, we have presented the results on the acquisition of (null) subjects considering age and language dominance. In what follows, we present the results on subject type across children's proficiency in the HL Catalan, together with their null subjects rates. Children were grouped according to the Catalan MLU values in ranges of 0.99, starting by an MLU of 1.0.

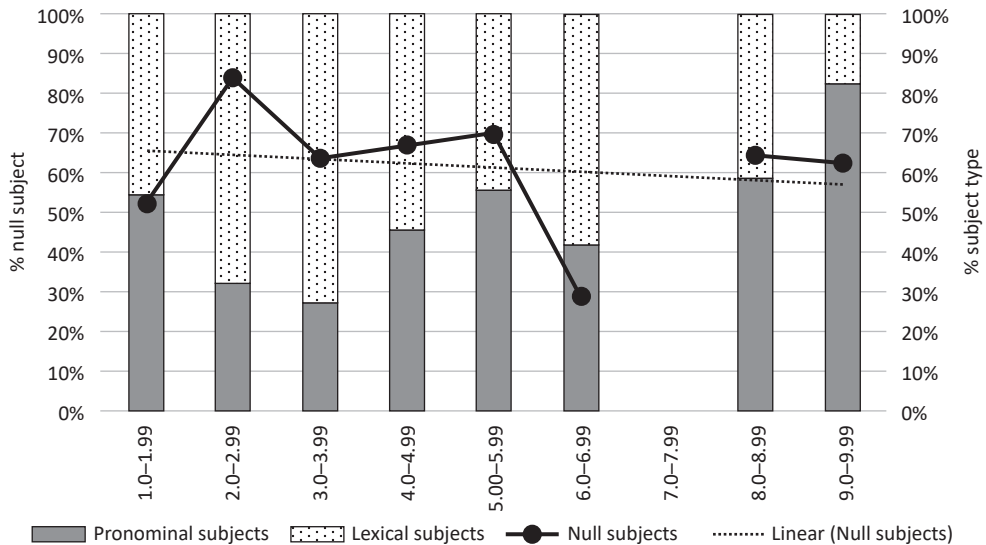


Figure 7. Null subjects, pronominal and lexical overt subjects according to children's language proficiency in the HL Catalan

⁹ Yet, when taking into consideration group homogeneity, the balanced group, consisting of three times more participants than the other two, displays between 92-44% of pronominal subjects (SD: 16.99). The balanced children showing high MLU values in the HL Catalan (and, at the same time, in German) are the ones producing significantly more pronominal subjects. This relationship between HL proficiency and type of overt subject will be further explored in section 5.3 for all participants.

¹⁰ As a reviewer notes, it is very interesting to observe that the two dominant groups behave similarly when it comes to a higher rate of lexical over pronominal subjects. This fact is even more surprising when taking the mean age of each group (cf. table 2). Since these groups of dominant children are relatively small, more data is needed in order to draw some conclusions.

The null subject rate slightly decreases, the higher the proficiency in the HL Catalan. This is represented by the black and the dotted lines. The opposite tendency is attested for pronominal subjects: if an overt subject was used, those children showing a higher proficiency in Catalan frequently opted for pronominal, rather than lexical subjects, in their productions.

6. DISCUSSION AND CONCLUSION

The results presented on the overall production and omission of subjects in the HL Catalan confirm our first hypothesis since the null subject rates are similar (around 70%) as previously reported for this group of CNSLs for monolingual and early bilingual acquisition. However, by paying attention to the acquisitional path in section 5.1, we observe that, up to age 5, null subjects appear at around 50%, while from age 6, their production steadily increases reaching monolingual adult-like percentages of 70%. A similar observation has been put forward in the literature on early bilingual acquisition of a consistent and a partial NSL (e.g., Patuto 2012; Daniel 2021).

Concerning the interplay between language-internal and child-internal factors, the main findings are related to the type of subject the children chose. Children below age 5 and those showing similar language competence in their L1s (i.e., balanced children) showed high rates of pronominal subjects. The results contradict Biró's (2017) study on Spanish and Catalan monolinguals, since she observes an early preference for lexical subjects which shifts to higher rates of pronominal subjects, once children get older. Consequently, we cannot confirm hypothesis 2b, given that language dominance *per se* does not explain our results on subject type. It is the balanced group who show higher rates of pronominal subjects as opposed to the Catalan and German dominant groups. Finally, in terms of proficiency in the HL Catalan, the higher the MLU in the HL, the higher the rate of pronominal subjects.

Some questions concerning the early acquisition of (null) subjects in consistent and partial NSLs remain open for future research. Concerning overt subjects in Catalan, we found a predominant preverbal position (cf. table 3). In other studies, preverbal subjects are also more frequent; however, our sample of postverbal subjects is very scarce, so that a more detailed analysis of language-internal factors, such as verb type and information structure, will require a larger data set for future research. Our study has also contributed to the understanding of the relationship between (null) subjects and language dominance and confirms previous studies. More importantly, we have observed that when considering HL proficiency, measured via MLU, pronominal subjects are more frequent for those children showing a higher proficiency in the HL Catalan. Future research should further explore the acquisition of subjects in the children's other L1 (i.e., German), since previous studies on early bilinguals with a language further down in the null subject hierarchy, such as English (NNSL) (cf. figure 1), have shown that the acquisition of subject production is accelerated (Liceras and Fernández Fuertes 2016).

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