

Subject Distribution and Verb Classes in Child Catalan

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Abstract

In this paper we undertake the study of the acquisition of subjects, null and overt, in Catalan, a null subject language. Considering the longitudinal corpora of three Catalan-speaking children and the productions of the adults interacting with them, we observe that the proportion of null and overt subjects in child production is equivalent to that in adult Catalan after an initial period (up to MLU 2.5) with a higher rate of null subjects – against Grinstead (2004), there is no period in which subjects are banned. The early emergence of subjects witnesses not only the availability of mechanisms of the computational system, but also sensitivity to the pragmatic interface which dictates use of overt subjects. Concentrating on monoargumental classes, there is a sharp contrast with respect to subject placement: while unaccusative subjects are postverbal in 64% of cases, with unergative subjects are postverbal in only 33.3% of cases. Verb classes are distinguished from early on, but unaccusatives present a higher rate of postverbal subjects in children than in adults; the fact that unaccusatives single themselves out in an otherwise early target-like behaviour is reminiscent of the findings with passives and unaccusatives in the literature, which we discuss.

The null subject parameter is a well-studied phenomenon, but what is relatively unexplored is the *acquisition* of null subjects in the null subject languages, and their distribution with respect to different verb classes. In this paper we undertake the study of the acquisition of null subjects in child Catalan; our goals are two-fold: to establish whether there are systematic differences between child and adult Catalan regarding the occurrence of null subjects, and to find out whether verb class differences emerge in relation to subject distribution and, if they do, what they can be attributed to.

The paper is organised as follows. First, we present previous related findings in the acquisition literature. Second, we describe the source of our data and the methods used to analyse it and we present the results of the analysis. Third, we consider how our results fit in with what is known so far about the acquisition of unaccusatives and draw our conclusions.¹

1. Background

Child null subjects in the null subject languages are known to differ from those found in child non-null subject languages (Valian 1991). However, the distribution of null subjects in child null subject languages has seldom been studied. Bel's (2003) study was based on the productions of three Catalan-speaking children (Pep, Gisela, Júlia), and three Spanish speaking children (María, Emilio, Juan), with ages ranging from 1;6 to 2;8 for Catalan and from 1;7 to 2;8 for Spanish. The data are available on CHILDES, MacWhinney 1995, for all the Spanish speaking children and two of the Catalan speaking children. It was found that, taking the whole period together, the proportion of null and overt subjects was the following:

(1)	a.	Catalan	
		Null subjects	67.7 % (1168)
		Overt subjects	32.3 % (556)

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b.	Spanish	
	Null subjects	67.3 % (1630)
	Overt subjects	32.7 % (790)

This is to be compared to the proportion of null subjects in adult Catalan: according to Casanovas (1999), these represent 62% of subjects.

When the subject was overt, the distribution of the subject with respect to the verb was as follows, depending on whether the verb was unaccusative, unergative or transitive. The results were obtained from the corpora of Júlia and María:

(2) Overt Subject Position along Verb Classes

a.	Catalan		
		Preverbal	Postverbal
	Unaccusatives	46.43 % (13)	53.57 % (15)
	Unergatives	65.38 % (17)	34.62 % (9)
	Transitives	76.32 % (29)	23.68 % (9)
b.	Spanish		
		Preverbal	Postverbal
	Unaccusatives	37.21 % (16)	62.79 % (27)
	Unergatives	72.73 % (8)	27.27 % (3)
	Transitives	57.89 % (11)	42.11 % (8)

These results seem to indicate that the position of the subject varies along with the verb class, and with unaccusatives occurs in postverbal position more often than with other verb classes. As this result is based on a relatively small sample provided by one child only, we may wonder if it is representative of Catalan and Spanish speaking children in general; second, we need to know what the behaviour of adult speakers is in the same respects to determine at which age adult-like behaviour is attained; and thirdly, it would be interesting to know what is the course of development before that adult-like behaviour is reached. In this paper we will undertake these tasks for Catalan.

For Spanish, Casielles et al. (2005) (in the corpus of a bilingual Spanish-English child) found that the proportion of overt and null subjects was the following:

(3)	Null subjects	67.8 % (446)
	Overt subjects	32.12 % (211)

These results are very similar to those for Catalan, and quite close to those for another null-subject language, namely Italian (Lorusso et al. 2004), in which again there is close similarity between children and adults in the overall percentage of overt subjects:

(4)		Null subjects	Overt subjects
	Diana	73%	27%
	Martina	67%	33%
	Raffaello	79%	21%
	Rosa	77%	23%
	Children, total	75%	25%
	Adults, total	74%	26%

A cross-sectional study showed that overt subject production increases over time, and reaches adult-like levels at the stage of MLU 2.0–3.0.

(5) Overt subject distribution, cross-sectional study

	#	%
MLU 1.0–1.5	14	9.3%
MLU 1.5–2.0	18	26.5%
MLU 2.0–3.1	25	24.5%

Lorusso et al. (2004) also considered the position of the subject with different verb classes in child Italian, with results similar to those of Bel:

(6) Overt Subject Position along Verb Classes

a. Children		Preverbal	Postverbal
Unaccusatives		34%	66%
Unergatives		79%	21%
Transitives		72%	28%
b. Adults		Preverbal	Postverbal
Unaccusatives		43%	57%
Unergatives		83%	17%
Transitives		63%	37%

The results for child Italian indicate that with unaccusative verbs, subjects tend to occur postverbally, and with unergative verbs preverbally, like in adult Italian. As further proof that verb classes are distinguished from very early on, the argument of unaccusatives was found to be omitted less often than the subject of unergatives and transitives, possibly due to the fact that it merges as object of V – and is assigned partitive case in that position (given that objects are known to drop less readily than subjects in child grammar in general).

The overall picture that these studies give is one where children converge to the adult pattern of subject distribution very early, and where subjects of different verb types pattern differently from early on.

2. Subject distribution in child Catalan

The data on which this study is based are the longitudinal corpora of three Catalan speaking children out of the Serra-Solé corpus available in CHILDES as well as the productions of the adults interacting with them. Exact repetitions of previous utterances by adults or by the child himself were excluded. All and only the verbal productions of declarative sentences were analysed, which included 1443 verbal productions for Pep, 481 for Àlvar and 1077 for Laura; from these only affirmative declarative sentences were analysed.

	Pep			Àlvar			Laura		
	File	Age	MLU	File	Age	MLU	File	Age	MLU
First file	0110	1;2.3	1.024	0300	1;2.28	1.064	0900	1;7.20	1.041
Last file	0131	3;0.27	3.405	0319	3;0.13	2.606	0912	3;0.2	2.528

Table 1. Child data source

In order to render comparison possible despite differences in development between the children, child productions were divided into two developmental periods, before and after MLU 2.5.

	Pep		Àlvar		Laura		Total	
	n	%	n	%	n	%	n	%
First stage								
Overt subjects	67	26.91%	14	28.57%	33	12.94%	114	20.61%
Second stage								
Overt subjects	193	39.39%	56	42.11%	48	33.33%	297	38.72%
Total								
Overt subjects	254	35.18%	70	38.46%	81	20.30%	405	31.08%

Table 2. Overt (vs. null) subjects

	Mare_08		Mare_05		Ros		Mare_03		Total	
	n	%	n	%	n	%	n	%	n	%
Overt subjects	67	46.53%	48	34.53%	40	20.73%	50	40.32%	205	34.17%

Table 3. Adults: Overt (vs. null) subjects

Taking all child productions together (table 2), and with a significance level of 0.1, no significant difference emerges between children and adults (table 3) (chi-square 0.15, p-value 0.69). Adult-like levels of overt vs. null subjects are reached by MLU 2.5, and there is no significant difference in the use of overt/null subjects between children at the second stage and adults. At a first stage, however, children produce a statistically significantly higher proportion of null subjects (chi-square 3.42, p-value 0.064).

Our results are consistent with those found by Lorusso et al. (2004) for Italian and those of Bel (2003) and Casanovas (1999) for Catalan. Furthermore, we observe that adult-like levels of overt and null subjects are achieved by MLU 2.5.

First subject production is illustrated in (7):

- (7) a. [The child is playing with a pencil in a bucket of water and the pencil falls into the bucket]
 Apis perdut a [Llapis perdut, ah] Pep (1;6,23)
 Pencil lost
- b. Què és això?
 What is this? Àlvar (2;2.6)

Contra Grinstead (2004), although there is an initial period with a higher rate of null subjects, there does not seem to be any period in which subjects are banned. Grinstead adduces that a contrast emerges between the null subject languages and the non-null subject languages in this respect; however, by his own record, no difference can be substantiated between the two language groups- (8) reflects Grinstead's recounts (only the Catalan data are reworked: he only records the files prior to the one with the first overt subject; notice that his recount does not fully coincide with ours: cf. (7)).

- (8) First occurrence of overt subjects (data taken from Grinstead 2004)
- | | language/child | age | MLU | |
|----|----------------|--------|------|----------------------|
| a. | Dutch | | | |
| | Peter | 1;9,20 | 1.68 | |
| b. | English | | | |
| | Nina | 1;11 | 1.78 | |
| | Eve | 1;6 | 1.52 | |
| c. | French | | | |
| | Grégoire | 1;9,18 | 2.11 | (earliest recording) |
| d. | German | | | |
| | Katrina | 1;5,15 | 2.01 | (earliest recording) |

e.	Catalan		
	Gisela	2;1,23	1.45
	Guillem	1;11,13	1.86
	Laura	2;4,11	1.49
	Pep	1;10,6	1.54
f.	Spanish		
	Eduardo	1;10,12	1.60
	Graciela	2;1,1	1.66
	Carlos	1;10,10	1.35

Grinstead argues, along with Ordóñez (1997), that subjects are left-peripheral in Catalan and Spanish and that, furthermore, a subset of the functional categories in the left periphery of those languages are not available to the child in the early period, due to a general lag in the development of the discourse/pragmatic interface. Admittedly, we find differences between Catalan and Spanish and the non-null subject languages, in that overt subjects are more consistently produced by children speaking a non-null subject language – and we assume this difference stems from the correct and early setting of the null subject parameter. What the empirical evidence does not seem to support is the absolute absence of subjects in early Catalan and Spanish. (See also Aguado Orea and Pine 2002 for a criticism of Grinstead’s claims for Spanish.) Without disputing at this point the analysis of subjects in Catalan or Spanish, on conceptual grounds it would seem preferable not to stipulate a limited access to the pragmatic interface, all the more when the predictions that then follow are not fulfilled by the data.

Thus, we will assume that the left periphery of the sentence is fully available in early child Catalan; the early emergence of subjects necessitates not only the mechanisms of the computational system, but also sensitivity to the pragmatic interface which dictates use of overt subjects. That the null/overt contrast respects pragmatic constraints in child production was also found by Casielles et al. 2005 for Spanish, and is also consistent with previous findings by Grinstead 1998, Serratrice 2005 for null subject languages, Müller & Hulk 2001 for object-drop languages, etc.²

Let us now turn to the position of subjects with respect to different verb classes. We compare the overall results for children (table 4) and the results for adults (table 5):

	Pep		Àlvar		Laura		Total	
	n	%	n	%	n	%	n	%
Unaccusatives								
Preverbal	26	29.9%	13	41.9%	13	48.1%	52	35.9%
Postverbal	61	70.1%	18	58.1%	14	51.8%	93	64.1%
Unergatives								
Preverbal	18	66.6%	5	71.4%	3	60%	26	66.6%
Postverbal	9	33.3%	2	28.6%	2	40%	13	33.3%
Transitives								
Preverbal	46	68.7%	18	94.7%	18	62.1%	82	71.3%
Postverbal	21	31.3%	1	5.3%	11	37.9%	33	28.7%

Table 4. Total for children: Preverbal and postverbal subjects and verb class

² For Catalan and Spanish, Wexler et al. (2004) show sensitivity to pragmatic constraints, in particular to the dichotomy clitic/full DP, which relates to old/new information, in an elicitation task.

	Mare_08		Mare_05		Ros		Mare_03		Total	
	n	%	n	%	n	%	n	%	n	%
Unaccusatives										
Preverbal	3	23.08%	8	53.33%	6	50%	13	68.42%	30	50.85%
Postverbal	10	76.92%	7	46.67%	6	50%	6	31.58%	29	49.15%
Unergatives										
Preverbal	3	75%	5	83.33%	2	66.67%	0	0%	10	71.43%
Postverbal	1	25%	1	16.67%	1	33.33%	1	100%	4	28.57%
Transitives										
Preverbal	19	52.78%	15	71.43%	5	50%	7	46.67%	46	56.10%
Postverbal	17	47.22%	6	28.57%	5	50%	8	53.33%	36	43.90%

Table 5. Adults: Preverbal and postverbal subjects and verb class

Considering first the overall results for children, we observe that there is a significant difference between the proportion of preverbal subjects with unaccusatives: this verb class presents preverbal subjects in a significantly lower percentage than unergatives (chi-square 31.97, p-value <.0001) and a significantly higher proportion than transitives (chi-square 37.21, p-value <.0001). For adults, there is only a difference between the rate of preverbal subjects with transitives and unergatives (chi-square 8.52, p-value 0.0035). Thus one of our main results is that the position of subjects is a function of verb class.

Concentrating on the unaccusative/unergative classes, disparities emerge between children and adults: while for adults unaccusatives and unergatives pattern alike, for children there is a statistically significant difference between unaccusatives and unergatives (chi-square 8.52, p-value .0035), with a higher proportion of preverbal subjects with unergatives. This is one of the findings that calls for an explanation. One may ask at which point in the development of subject distribution it becomes a function of verb class, if that is visible at all. Let us compare, then, the first and second stages:

	Pep		Àlvar		Laura		Total	
	n	%	n	%	n	%	n	%
Unaccusatives								
Preverbal	3	15.79%	4	44.44%	9	64.29%	16	38.10%
Postverbal	16	84.21%	5	55.56%	5	35.71%	26	61.90%
Unergatives								
Preverbal	1	25.00%	1	50.00%	0	0%	2	28.57%
Postverbal	3	75.00%	1	50.00%	1	100%	5	71.43%
Transitives								
Preverbal	2	14.29%	3	100%	2	25%	7	28%
Postverbal	12	85.71%	0	0%	6	75%	18	72%

Table 6. First stage: Preverbal and postverbal subjects and verb class

	Pep		Àlvar		Laura		Total	
	n	%	n	%	n	%	n	%
Unaccusatives								
Preverbal	23	33.82%	9	40.91%	4	30.77%	36	34.95%
Postverbal	45	66.18%	13	59.09%	9	69.23%	67	65.05%
Unergatives								
Preverbal	17	73.91%	4	80%	3	75%	24	75%
Postverbal	6	26.09%	1	20%	1	25%	8	25%
Transitives								
Preverbal	44	83.02%	15	93.75%	16	76.19%	75	83.33%
Postverbal	9	16.98%	1	6.25%	5	23.81%	15	16.67%

Table 7. Second stage: Preverbal and postverbal subjects and verb class

At the first stage there is no significant difference between verb classes; this appears at the second stage, when there is a higher rate of preverbal subjects with transitives than with unergatives and unaccusatives (chi-square 11.05, p-value 0.0009 and chi-square 316.33, p-value <.0001, respectively), and there are fewer preverbal subjects with unaccusatives than with unergatives (chi-square 3593, p-value <.0001). In the first stage, the proportion of preverbal subjects is significantly higher for adults than it is for children with unergatives (chi-square 12.44, p-value 0.0004) and transitives (chi-square 3.87, p-value 0.049), while with unaccusatives children are adult-like. At the second stage, taking only unaccusatives and unergatives into consideration, no difference remains between children and adults.

The corpus analysis has revealed no ill-formed VSO sentences (postverbal subjects with transitives cannot appear before the object in Catalan), in fact no ill-formed word order sequences at all. Also, postverbal subjects systematically agree with the verb as in the target (contra Bel and Rosado 2006). This holds for all developmental stages.

To summarise, the first stage is characterised by a higher percentage of postverbal subjects with all verb classes. Judging by the facts of subject distribution, verb classes are distinguished from early on (at MLU 2.5), as found for Italian (Lorusso, Caprin & Guasti 2004). However, while adults present no disparity between unaccusatives and unergatives, the children's behaviour coincides with the adults' only for unergatives. With unaccusatives, Catalan speaking children produce a notably higher percentage of postverbal subjects (at all stages) than adults: 65% for children, and 49.2% for adults (although the difference is only statistically significant at the first stage).

3. Discussion

The fact that unaccusatives single themselves out in an otherwise early target-like behaviour would seem reminiscent of the findings of Borer & Wexler (1987) and Babyonyshev et al. (2001) who found problems with passives and unaccusatives in child grammar; difficulties with passives in child grammar are indeed attested in many languages. Catalan makes sparse use of passives, and the only result in that field is that of Prat-Sala & Hahn (2006), who showed experimentally the late comprehension of passives (see also Pierce 1992 for Spanish).

Wexler (2004) reformulates the earlier proposals of Borer and Wexler (1987) and Babyonyshev et al. (2001) under the Universal Phase Requirement.

- (9) Universal Phase Requirement (UPR, Wexler 2004)
(holds of pre-mature children, until around age 5)
v defines a phase, whether v is defective or not.

(v is assumed to be defective with unaccusative verbs.) The UPR acts in conjunction with the Phase Impenetrability Condition of Chomsky 1999 to grant the desired predictions with respect to passives, raising constructions and unaccusatives.

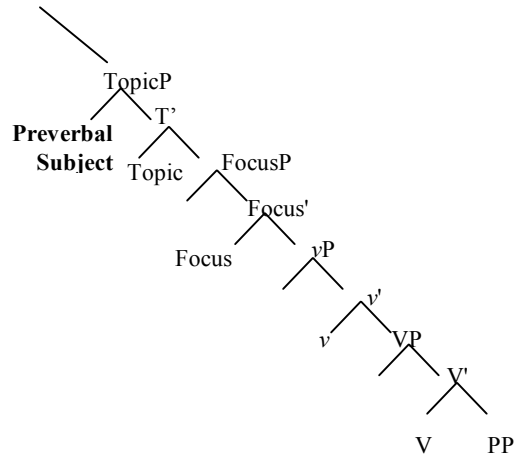
- (10) Phase Impenetrability Condition
When working at a phase, only the edge (the head and spec(s)) of the next lower phase are available for analysis, and nothing lower than the edge. In particular the complement isn't available.
(quoted from Wexler 2004)

If the UPR is correct, unaccusatives project non-defective vPs; since the argument of an unaccusative verb is merged as complement to the verb, raising from inside vP can then only occur in special circumstances, when it has an interpretative effect on the outcome (11).

- (11) Optional operations can apply only if they have an effect on outcome; in the present case, v* may be assigned an EPP-feature to permit successive-cyclic A'-movement or INT[erpretation] (under O[bject] S[hift]).
(Chomsky 1999: 28)

That is, unless the argument of an unaccusative is raised as a result of A' movement, raising would be blocked. Let us assume that the left-periphery of the sentence includes a series of functional projections as under the cartographic approach of Rizzi (1997) and others. In particular, we assume that there are TopicP and FocusP, which can act as landing sites for (preverbal) subjects. To the extent that those functional projections carry some semantic/pragmatic value, raising of the argument of an unaccusative will have an interpretative effect on the outcome. Therefore, raising will be possible and not confounded by the UPR.

(12)



In fact, some of the literature on the null-subject parameter has argued that all preverbal subjects in the Romance null-subject languages appear in preverbal position as a result of A' displacement (see Solà 1992, Alexiadou & Anagnostopoulou 1998, Ordóñez & Treviño 1999, amongst others). We argue here that the attested preverbal subjects with unaccusatives have raised through A' movement to a discourse-driven position, and are not problematic for an analysis which assumes the UPR.

There is an additional argument to claim that the distribution of subjects with unaccusatives in Catalan is not in conflict with the UPR: the UPR holds of children until maturation around the age of five and the extended period for which passives are known to be problematic is consistent with that. Yet, we have shown that the rate of preverbal subjects is low for unaccusatives only at stage 1, i.e. before MLU 2.5. This is considerably before the effects of the UPR are supposed to cease. Needless to say, our analysis implies that the fact that at stage 1 the subjects of unaccusatives are postverbal more often than in the target language receives no explanation. That discrepancies between adults and children with respect to the position of the subjects of unaccusatives should be so short-lived is a new result, not yet verified for other Romance languages such as Italian and Spanish.³

Thus we are arguing that the child is sensitive to the pragmatic nuances of subject distribution in Romance. If this is so, we would expect to find examples in which the pragmatic adequacy of the subject's position was transparent. Overall, there is no case in the corpora considered in which we judged the position of the subject inappropriate. In adult Catalan preverbal subjects are interpreted as topics and postverbal subjects are generally interpreted as focus (13) – from Solà 1992. The children's productions follow the same pattern, as far as that can be judged from the transcripts: in (14) the subject is interpreted as focus, in (15) we have various examples of topics.

- (13) Avui farà el dinar *en Joan*.
 Today will-cook the lunch the Joan 'Today Joan will cook lunch.'

³ We assume that postverbal subjects of unaccusatives may be assigned partitive or nominative case, depending on the interpretation. A pending issue is how nominative case can be assigned in child grammar to a VP internal subject without conflict with the UPR – since the UPR constrains overt and covert movement (or long distance Agree) alike. Another topic for future research has to do with the consequences of our analysis for passives in the child null-subject languages; some of the results by Pierce (1992) on passives in Spanish indicate that postverbal subjects in passive sentences may be more difficult to process by children than their preverbal counterparts.

- (14) Se l'ha deixat l'*Emma*. (Àlvar, 2;7,20)
 CL it has forgotten the Emma 'Emma has forgotten it.'
- (15) a. *Jo me'n vaig* . (Pep, 2;5.4)
 I go 'I am going.'
 (Pep, 2;10.15)
- b. *EXA: tu vas molt depressa .
 you are going very quickly
 *EXA: me n' ensenyas un altre?
 Will you show me another one?
 *CHI: 0 .
 %act: the child plays with the car
 *CHI: té [= he gives the car to e].
 here
 *EXA: gràcies .
 thanks
 *CHI: *aquest* ja s' ha acabat .
 this-one already has finished 'This one is over.'
- c. *FER: vaig a sortir . (Àlvar, 2;11.13)
 'I'm going out.'
 *EXA: ja t' has cansat ?
 'Are you tired already?'
 *FER: sí.
 'Yes.'
 *CHI: *jo* també m' he cansat
 I too have gone tired 'I got tired too.'
- d. %act: she goes to the sofa (Laura, 3;0.2)
 *MAR: oh, vas molt depressa em sembla, eh?
 oh you are going ery quickly I think eh
 *CHI: no.
 no
 *MAR: què, trec el devantal?
 what, do I take off the apron
 *CHI: no!
 no
 *MAR: per què no?
 why not
 *CHI: que no, meu.
 no, mine
 *CHI: que *jo* marxaré eh?
 that I will-go eh 'I will go, eh?'
- e. *I aquest, veus, aquest* va bé així. (Laura, 3;0.2)
 and this-one you-see this-one goes well like-this
 'And that one, see, that one goes like this.'

Under this analysis, the effects of the UPR are hardly visible with null subject Romance unaccusatives, due to the parroquial properties of subjects in those grammars (in contrast with subjects in other languages, e.g. English).

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