

# Root Specifiers and Null Subjects Revisited

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## 1 Introduction: The null subject problem in child language

Despite many years of research into the occurrence of non-target null subjects in child language, no consensus has yet emerged as to their grammatical status. The debate today centres on two core hypotheses: (i) null subjects could be due to the absence or impoverishment of some inflectional projection(s) in the child grammar (e.g. Wexler, 1994; Hoekstra, Hyams, & Becker, 1999) and/or (ii) they result from the child's resort to (syntactic) mechanisms of discourse identification of the null element. This paper sheds new light on these debates with the aid of a corpus of child French.<sup>1</sup>

Given the high number of null subjects in our data appearing with finite verbs (596/811 cases appeared with a finite verb form) we focus exclusively on finite contexts and show that a variety of interacting factors affect the rate of subject omission in child French. Our analysis provides clear evidence against the Truncation Hypothesis (e.g. Rizzi, 1994), demonstrating, amongst other things, that the contrast in subject realisation between declaratives and *wh*-interrogatives is actually a reflection of a difference between copular clauses and clauses containing only lexical verbs.

## 2 Patterns of subject realisation in child French

Crisma (1992) found that the French child Philippe from the Leveillé corpus (Suppes, Smith, & Leveillé, 1973) available via CHILDES (MacWhinney, 2000) realised subjects at radically different rates in *wh*-questions and declaratives. Between 2;1.19 and 2;7.8 Philippe produced up to 42% null subjects in declaratives but virtually none in *wh*-questions.

Crisma took her findings to support Rizzi's (1994) Truncation Hypothesis, claiming that children could truncate the structure of declarative clauses, making the subject position initial, but could not truncate *wh*-questions in the same way, due to the requirement that CP be projected in such questions. According to Rizzi, null subjects are null constants which need to be in a root specifier to be identified from discourse. This Root Specifier Condition (RSC) is violated by some of our data. Example (1) is representative (see Plunkett, 2000a, for more details).

- (1) ok,, au milieu [?] Là, (je) vais met(tre) un bloc. (Max 2;5.19)  
 ok in-the middle there will put a block  
 ‘Ok. I’ll put a block in the middle.’

The data analysed here covers the first year of the recorded acquisition of two children: Max from Quebec from 1;9.19-2;9.12 and Anne from France from 1.10;12-2;10.18. As (2) exemplifies, null subjects occur throughout the period.

- (2) a. oh (il) fait des bêtises. (Anne 2;10.18)  
 oh does some stupidities  
 ‘Oh he’s being naughty.’  
 b. moi, (je) veux pas ranger. (Max 2;9.12)  
 me want not to-clear-up  
 ‘I don’t want to clear up’

As discussed in Plunkett (2000a), both children initially used root non-finite structures, and finiteness was the best predictor of subject realisation, but the majority of null subjects occurred in finite clauses. In non-imperative finite clauses, Max and Anne failed to realise 17% and 22% of their pronominal subjects respectively. In both children, the highest rate of subject omission was in Yes-No questions. Overall, Anne’s rate of subject use was no different in declaratives and *wh*-questions while Max’s omission of subjects in declaratives exceeded that in *wh*-questions by 7%. These figures mask some striking differences between the clause types which can be seen only when we break down the acquisition patterns into stages.

Before doing this, let us digress briefly on some methodological issues. Following Bromberg & Wexler (1995) and others, only pronominal contexts have been counted, but in fact the number of lexical subjects produced by both adults and children in our corpus are so small that the inclusion of lexical subjects would have little effect on percentages. In order to achieve conservative rates of subject omission we have excluded possible repetitions of adult utterances, even though in some of these the child failed to reproduce a pronominal subject. We have also excluded all null expletives since these continue for a long while after the period studied and are often licit in adult speech. Cases where transcription was uncertain or the status of a clause was unclear with respect to one of the factors considered have been left out of the counts.<sup>2</sup> Proto-syntactic elements in subject position, as in (3) were considered embryonic pronominals and in this analysis counted as overt subjects, except where they occupied a position in which they could potentially be filling the place of another item such as an object pronoun or auxiliary verb. Bohnacker (1998) demonstrated that in a bilingual child, such proto-syntactic elements filled different positions in the child’s two languages and had clearly identifiable syntactic functions. Furthermore, Ferdinand (1996) showed that the pronouns of French-speaking children regularly appeared initially in such undifferentiated forms.

- (3) oh e L' tienais [\$C] [%pho: tje~ni], moi. (Max 2;6.12)  
oh e it held me  
'Oh, I was holding it.'

Labelle & Valois (1996) demonstrated that post-verbal DPs interpreted as subjects (as in (4)) must be treated as Right-dislocated phrases resumed by null pronominals in child French.

- (4) (c') est quoi, ça Là? (Max 1;11.0)  
is what that there  
'What's that thing there?'

We thus treat all 'post-verbal subjects' as Right-dislocated. In parallel, we treat clauses with initial DPs followed by a subject clitic as Left-dislocations. Additionally, extrapolating from Labelle & Valois's arguments concerning the right periphery, where the prosody merits it, we treat initial DPs as dislocated even in some cases where no subject pronominal is present. The appearance of a comma in our transcription indicates syntactic juncture (usually with no pause in the phrasing, since such a pause would be indicated by the sign #). Cases like (5) are thus taken to be Left-dislocations with null pronominal subjects. Utterances were excluded if an initial DP was felt neither to be a clear lexical subject nor to be clearly dislocated.<sup>3</sup>

- (5) a. ça, (c') est 0 drapeau [%pho: kapo]. (Anne 2;2.0)  
that is flag  
'That's a flag'  
b. eh ben moi, (je) voulais pas. (Max 2;6.27)  
er well me wanted not  
'Well, I didn't want to'

We turn now to consideration of the developmental changes in the realisation of subjects in each child; we explicitly compare the use of subjects in only declaratives and *wh*-questions. Consider first the pattern found in Max.

MAX		Declaratives		<i>wh</i> -Qs	
		N	%	N	%
T1	Null	34	<b>62</b>	7	<b>88</b>
1;9.19-2;0.28	Overt	21	38	1	13
T2	Null	53	<b>36</b>	3	<b>6</b>
2;1.16-2;3.20	Overt	94	64	44	94
T3	Null	77	<b>10</b>	1	<b>2</b>
2;4.4-2;9.12	Overt	678	90	46	98

Table 1: Decline in Max's null subjects by period in finite clauses

In an initial stage, 65% of Max's pronominal subjects overall are null, but as shown by Table 1, the rate of subject realisation in the two clause types is significantly different. However, somewhat surprisingly, this difference does not favour the overt realisation of a subject in a *wh*-question, as Rizzi's Truncation Hypothesis would lead us to expect; rather, the opposite is found. This trend is, however, quickly reversed. In a second stage, once the child has begun to realise subjects in *wh*-questions, the number of null subjects in these rapidly declines. A parallel reduction in null subjects occurs in declaratives but not to anything like the same degree. The difference in realisation rate between the two clause types is again statistically significant. This pattern is strongly reminiscent of that which Crisma (1992) found in Phillippe. A final stage shows that null subjects in *wh*-questions have all but vanished and in declaratives they are also descending towards adult rates.

Consider now the same breakdown for Anne.

ANNE		Declaratives		<i>wh</i> -Qs	
		N	%	N	%
T1	Null	49	<b>47</b>	13	<b>93</b>
1;11.13-2;2.0	Overt	55	53	1	7
T2	Null	247	<b>29</b>	39	<b>20</b>
2;2.20-2;8.20	Overt	615	71	154	80
T3	Null	15	<b>3</b>	2	<b>5</b>
2;9.15-2;11.02	Overt	431	97	38	95

Table 2: Decline in Anne's null subjects by period in finite clauses

The initial period in Anne's development shows the same surprising preference for null subjects in *wh*-questions found in Max. In Table 2, the first two files have been omitted, since these contained no *wh*-questions and an unusually high rate of subject realisation in the declaratives. Inclusion of these does not affect significance but produces an even more striking difference between the two clause types. The second stage in Anne's development, beginning once again with the file after the first realisation of a subject in a *wh*-question, looks strangely different from that seen in Max. Although, again, we see a sharp decline in the use of null subjects in *wh*-questions paralleled by a much shallower decline in declaratives, in this stage the two clause types do not look as different as they do in either Max or Philippe. The differences are nonetheless significant ( $\chi^2 = 5.694$ ,  $p < 0.02$ ) and, as in the other two children, *wh*-questions now favour the realisation of a subject. Finally we see a stage in which the rate of null subject use has again dropped to near adult levels, though, as (6) shows, null subjects still occasionally occur in *wh*-questions.

- (6) 0 adore [=? adores] quoi # aussi? (Anne 2;10.18)  
 adore what also  
 ‘What else do you/ does he/she love?’

We have mentioned a number of problems with the RSC: some null subjects are clearly not in the predicted position and initially, trends are in the opposite direction from those anticipated. Although there is a stage for each child (T2) where the trends in subject realisation are in the direction we might expect given the Truncation Hypothesis, the rates of subject omission in Anne’s *wh*-questions during that stage are far above those predicted to be possible. If the derivation of such questions requires the projection of a CP in whose specifier *wh*-features are checked, then null subjects should be completely impossible in such cases.

All of Philippe’s *wh*-questions involved overt *wh*-movement during the period investigated by Crisma. The possibility that the predictions should be different for *in situ* questions has been mentioned by several researchers (Crisma, 1992; Bromberg & Wexler, 1995). Indeed Hamann (2000), finding clear evidence of null subjects in French *wh*-questions in her data, claims explicitly that these are licensed only in the *in situ* case. How could any difference between the two question types be captured, if we assume that null subjects are essentially like Germanic null topics in necessarily occupying the root specifier? We could say that *in situ* questions do not require LF *wh*-movement at all. However, as argued in Plunkett (2000a), Hamann’s figures do not show any reliable difference between moved and *in situ* questions.<sup>4</sup> More importantly, both children examined here exhibit the same asymmetry as Philippe and yet neither has acquired productive overt *wh*-Movement by the end of T2. Clearly, any difference between declaratives and *wh*-questions is not specific to the moved variety of questions. Given this, it was decided to investigate whether any further factors either grammatical or discourse-based could be at work in the unexplained asymmetry, factors which could additionally explain why the trends do not appear identical in both children.

### 3 Analysis

We undertook two types of analysis of the developmental patterns (quantitative and qualitative). We deal with these in turn.

#### 3.1 Variable Rule Analysis

In order to uncover any other factors at work, all non-imperative finite clauses were coded for numerous factors in addition to those of clausal type. The coded data was then subject to multivariate analysis using the Goldvarb programme. Each child’s data was examined separately; clauses were coded for which recording they had come from as well as which period we thought they should be attributed to.<sup>5</sup> Any significant differences between files within a period would indicate a possibly incorrect period boundary. The proposed boundaries

were confirmed as viable.<sup>6</sup> Clauses were coded for the following factors: negative vs affirmative,<sup>7</sup> lexical verb vs copula vs auxiliary,<sup>8</sup> as both of these had been considered potentially relevant in earlier literature (see in particular Levow, 1995; Phillips, 1995; Rasetti, 1995) and had been found to be so in Plunkett (2000a). Additionally, with the RSC in mind, clauses were coded for whether they were matrix vs embedded. Since this would not capture the status of non-initial matrix subjects, initial vs non-initial subject positions were also coded as distinct. Finally, the clauses were coded for declarative vs *wh*-type.

The multivariate analysis works by considering each factor in isolation initially, and then combinations of factors, in pairs and then triplets working upwards until all have been considered together. A factor weighting is assigned to each factor in the presence or absence of other factors and then certain combinations of factors are selected as significant in explaining the variation under examination. Due to limitations in space we report here only on the results for T2 in each of the children i.e. the period in which their performance most closely matches that of Philippe. When all factors are examined together, in Max's data, copula/lexical is the only factor selected as significant in explaining the variation.<sup>9</sup> As seen in Table 3, a far higher proportion of *wh*-questions contained the copula than did declaratives. Since copular verbs are more likely to occur with overt subjects, much of the declarative/*wh*-question distinction is explained by the type of verb an utterance contains. Given that only one *wh*-question contains a lexical verb, we cannot interpret the higher rate of null subjects in 'lexical' declaratives as significant.

Verb type	Subjects	Declaratives		<i>wh</i> -questions	
		N	%	N	%
Copular N = 96	<b>null</b>	4	<b>7</b>	2	<b>5</b>
	overt	52	93	38	95
Lexical N = 97	<b>null</b>	48	<b>53</b>	1	<b>14</b>
	overt	42	47	6	86

Table 3: Max's pronominal subjects with finite copular and lexical verbs at T2

We find similar results from Anne's data in the second period. When all factors are examined together, the Declarative/Wh distinction is not selected as significant; the lexical/copular and negative/affirmative factors are selected as together best able to explain the variation. We can see from Table 4 that *wh*-questions were far more likely to be formed with a copular verb than were declaratives. With lexical verbs, where the differences are greatest, the number of moved *wh*-questions is too small to be able to tell whether they really favour subject realisation more than *in situ* questions, but it should be noted that when both question types are considered together, there are no significant differences between these and declaratives with either copular or lexical verbs. Even the 47%

null in ‘lexical’ *in situ wh*-questions is not significantly different from the 31% null in ‘lexical’ declaratives ( $\chi^2 = 3.526$ ,  $p < 0.10$ )

Verb type	Subjects	Declaratives		Moved <i>Whs</i>		In situ <i>Whs</i>	
		N	%	N	%	N	%
Copular N = 96	<b>null</b>	70	<b>22</b>	5	<b>19</b>	18	<b>14</b>
	overt	247	78	22	81	111	86
Lexical N = 97	<b>null</b>	159	<b>31</b>	1	<b>25</b>	15	<b>47</b>
	overt	355	69	3	75	17	53

Table 4: Anne’s pronominal subjects with finite copular and lexical verbs at T2

Although the results were not identical for the two children, it is clearly an important result that the lexical/copular distinction is significant for both children.<sup>10</sup> Equally important is that when all factors are taken into account, neither the position of the subject nor the root/embedded nature of the clause is significant in explaining the realisation of pronominal subjects. The contrast between the two children at T2 can partly be explained by the fact that negation significantly disfavours the use of an overt subject in Anne’s data but appears to have no significant effect for Max. However, the multivariate analysis provides no hint as to why negation should be of varying significance in the two children. We turn now from quantitative to qualitative analysis and, in particular, to issues of the ease with which a subject can be identified from the discourse; this analysis may help explain the differences between the two children.

### 3.2 Subject identification

Based on the conceptual idea behind a null topic approach to children’s null subjects, we hypothesised that null subjects might be licensed in contexts which facilitated subject identification. This led us to investigate several matters. For this analysis we included all questions and the previously excluded repetitions of adult utterances. Only data from T2 was examined.

In spoken French, topics can be overtly realised by the use of Left- or Right-dislocations. In most cases, such dislocated elements are coreferential with the subject of the clause (henceforth “subject dislocation”. See De Cat, in progress, for a detailed analysis). At T2, 27% of the children’s matrix clauses contained a subject dislocation, while only 16% of coded adult matrix clauses contained one.<sup>11</sup> If that hypothesis was correct we might expect that null constants could be identified by dislocated elements. We might then predict a higher occurrence of null subjects in clauses with a subject dislocation like (7) than in those without.

- (7) (elle) est partie, la dame. (Anne 1;11.29)  
       is gone the lady  
       ‘The lady’s gone.’

However, this is not what we find. The presence of an overt subject topic, whether to the left or to the right of the clause, only coincides with a significantly higher rate of subject omission in a very small portion of the data at T2: Max's non-copular declaratives, in which we find 69% null subjects in the presence of a syntactic subject topic, vs. 47% when there is no such topic. In other contexts, the overt presence of a topic has no apparent effect on subject omission. Subject identification via the presence of a syntactic topic does thus not appear to promote subject omission in child French, at this stage.

But other discourse factors aiding subject identification may be at play. Following Allen (in press), we investigated whether first and second person referents favoured subject omission at T2. The hypothesis underlying Allen's work is that the search space for first and second person referents is much smaller than for third person referents, as it includes only the speaker and the hearer. First or second person pronouns are thus not very informative and can be omitted at a lesser cost than third person pronouns.

We found that, regardless of the presence of a dislocation, first and second person pronouns were indeed more often omitted, as in (8).

- (8) Maman, (je) veut ça. (Max 2;1.16)  
 mum want that [= sweets]  
 'Mum, I want that.'

The effect was particularly strong in Max's non-*wh* clauses; where it was possible to identify the person features of the null subject, 50/60 null cases were first or second person.

Following this result, the data belonging to T2 was coded for person features to permit the addition of this factor in the multivariate analysis for that stage. This factor too was found to have a significant effect on subject omission. However, the addition of this factor had other effects; although copular vs lexical verb remained significant for both children, negation now became a significant factor for both children, showing a complex interaction between factors. Surprisingly, negation disfavors subject omission in Max, while continuing to favour it in Anne. This apparent puzzle can, however, probably be explained by other discourse factors: Anne's use of negation is particular in that most of her negative utterances echo part of a preceding adult utterance as in (9). These contexts are always ones in which a clear referent for the missing subject is available.

- (9) \*SAR: elle doit être chaude puisque tu l'as mise avant Anne.  
 she must be warm as you her-have put before Anne  
 'It must be warm, as you put it (on the stove) before Anne.'
- \*ANN: 0 est pas chaud.<sup>12</sup>  
 is not warm  
 'It isn't warm.'



We conclude that discourse factors alone cannot account for subject omission, but that the ease of recoverability of a subject referent may have an influence. Given the complex interaction of person features with other factors considered, we cannot yet say whether the effect of this factor is due to a genuine discourse effect or to syntactic factors affecting the acquisition of individual pronouns.<sup>13</sup> We leave this issue for future research.

#### 4 Discussion and conclusions

We believe that we have found clear confirmation of a grammatical basis to the null subject phenomenon in child French in the continued use of null subjects with lexical verbs at T2 when they have largely disappeared in the presence of a copular verb. However, despite the prevalence of null subjects in finite clauses in our data, the Root Specifier Condition is clearly violated. Furthermore, null subjects are statistically as likely to occur in embedded clauses as in main clauses. We thus reject the Truncation account of null subjects. Notwithstanding the importance of a grammatical account, the pattern of subject realisation found at T1 may indicate the presence of performance effects in the early stages, since both negatives and *wh*-questions initially favour the use of a null subject to a significant degree. This pattern may thus be susceptible to an account invoking syntactic complexity (along the lines of Valian, 1991).

We have been able to provide robust quantitative evidence that the sharp decline in null subjects in *wh*-questions before their decline in declaratives is not due to the requirement that more clause structure is projected in *wh*-questions than in declaratives but is due principally to the lexical or copular nature of the verb involved. This confirms the findings of Rasetti (1995) that copular verbs are special with respect to subject realisation in French. It is likely that this difference also largely accounts for the low rate of overt subject realisation in Yes-No questions since a cursory examination showed that these were even less likely than declaratives to be formed with a copular verb.

There are too few auxiliary verbs at T2 to confirm a general lexical vs functional distinction with respect to subject realisation. Further investigation of this issue could be undertaken by comparing these with the semi-auxiliaries *aller* 'to go' and *vouloir* 'to want' which De Cat (2000) shows behave like *avoir* 'to have' and *être* 'to be' in their licensing of floating quantifiers, despite behaving like other (lexical) matrix verbs with respect to the positioning of object clitics.

Our qualitative analysis of the data provides somewhat more tentative results, which require confirmation by subsequent further quantitative analysis but, in so far as the data show a clear effect of person, we can provide some support for the view that children expect their interlocutors to rely on the discourse identification of null subjects.

We believe that results such as these are possible only if researchers have access to carefully collected and transcribed longitudinal data which covers a

sufficient period of time to see the full pattern of acquisition. Clearly, our results would be more robust if such data were available for a larger number of French-speaking children. Given our results, it is crucial that in further research, potential influencing factors in this and other variable syntactic acquisition patterns not be examined in isolation.

## Endnotes

\*. Thanks to audiences at Geneva, the Peripheral Positions conference (York) and the Linguistics department at York as well as those at BU for comments on this and earlier/related versions of this research.

1. The corpus resulted from a project directed by the first author “The acquisition of *wh*-questions in French: a cross-dialectal comparison” (R000 22 1972) for which funding from the Economic & Social Research Council is gratefully acknowledged. An older child in the project was not considered here since from the beginning of the project her only null subjects were expletives. Transcription largely follows standard CHAT conventions with omitted elements in parentheses (MacWhinney, 2000) except for the additional use of capitals for disambiguation (as explained in Plunkett, 2000b).

2. Because a smaller number of factors were considered in Plunkett (2000a) fewer examples were excluded, resulting in slightly different figures from those presented here. These differences do not affect the results.

3. Our data supports Côté’s (1999) claim that only quantified DPs of a very particular kind can occur on the left periphery in conjunction with a subject clitic; we thus see no reason to treat such clitics as agreement markers rather than subject pronouns (see De Cat, in progress, for discussion). Our approach to subject clitics is neutral on the question of whether they are in [spec,IP] or in I.

4. It might also be claimed that if checking involves only feature movement at LF (as in Chomsky, 1995) then a root specifier position might remain available to the subject. However, if *wh*-features are checked on C, then the null constant in [spec,IP] after EPP checking would have to raise to [Spec,CP] for no reason other than to get to a position in which it could be licensed from discourse, forcing us to adopt an approach to movement triggered by Greed rather than Attract.

5. This was necessary because the Goldvarb programme does not permit the use of time as a continuous variable.

6. Sometimes rates of subject production in the files at the boundaries of the proposed stages were quite different from those both in the file immediately preceding and in the following one.

7. All negative clauses included in the counts contained a finite verb which preceded the negative marker (usually *pas*). We found no cases of erroneous placement of verbs in Max’s negative clauses; finite verbs consistently preceded

*pas* and non-finite verbs followed. In Anne, two non-finite negative clauses contained verbs preceding *pas* but in both cases the *pas* could be interpreted as negating the following constituent. However, we also found two utterances in which an apparently finite verb form follows the negative marker.

- (i) ah 0 *pas* tombent. [= ? *pas* 0 tombent] (Anne 1;11.29)  
ah not fall
- (ii) e *pas* i(ls) dorment. (Anne 2;1.19)  
not they sleep

These two anomalous cases contrast with the 354 finite cases in which the verb was correctly placed with respect to negation.

8. In this analysis, only the verbs which are followed by past-participles were counted as auxiliaries.

9. As Max had only one auxiliary verb at T2, only lexical vs copular was used.

10. Phillips (1995) counted copulas as ‘auxiliaries’. Although our children were not yet using real auxiliaries, this result confirms his claim that ‘the Crisma effect’ could be due to the preponderance of auxiliaries in French children’s questions.

11. At this stage, children do not have any dislocations in embedded clauses, so we excluded such clauses from both the child and the adult data. Overall counts including embedded clauses yield almost identical results: 26% of the children’s and 15% of the adults’ clauses contained a subject dislocation.

12. This is one of the examples clearly suggesting an interaction of the null subject phenomenon with the acquisition of agreement: the intended sentence may be either the adult-like *elle est pas chaude* (‘it (= the soup) is not warm’), with missing agreement on the adjective, or it may be an attempt to produce *c’est pas chaud*, but an adult could not use *ce* in this context.

13. To tease these apart it will be necessary to compare the omission of first and second person pronouns and to investigate other (morpho-)syntactic factors which might facilitate identification, e.g. distinctive person features on the verb or the presence of a reflexive clitic.

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