

Aspects of grammatical development in young French children with SLI

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Abstract

This paper presents an exploratory study of the spontaneous production of 11 French children clinically diagnosed as specific language impaired (SLI). In a cross-sectional study of the children under and over 5 years of age, we investigate the production of finite and non-finite verbal forms, of sentences with overt and null subjects, and of pronominal clitics. A comparison between younger and older children with SLI highlights developmental patterns which parallel normal syntactic development in important respects, though at a slower pace. An area of difficulty which clearly persists for the older group involves the domain of pronominal complement clitics.

Introduction

This paper focuses on some salient characteristics of the grammatical development observed in French Specific Language Impairment (SLI). We report on the preliminary results of a large research project on SLI undertaken at the University of Geneva (Programme plurifacultaire, 'Langage et Communication: acquisition, traitement et pathologie', 1998–2002). The present study is based on a quantitative analysis of the spontaneous productions of 11 French children who have been diagnosed with SLI (age range: 3;10–7;11). Our study differs from those generally found in the French literature in two ways. First, most French studies are based on experiments or on elicited production rather than on spontaneous production. Second, previous research has generally focused on older children (but see Le Normand, Truscelli, Barbot & Lasek, 1998).

Our central aim is to establish the presence and quantitative import in young children's natural production of the features identified as characteristic of the French SLI population in previous experimental studies. We also want to establish whether these properties are similar to those observed in SLI learners of other languages. We focus on the use of non-finite main verbs (root infinitives), subject omission and the omission and placement

of pronominal clitics. The comparative question is particularly relevant because the occurrence of root infinitives, singled out as a diagnostic criterion for English children with SLI (Rice & Wexler, 1995), has been considered to be uncharacteristic for French (Jakubowicz, Nash, Rigaut & Gérard, 1998). It has to be noted here that Rice and Wexler (1995) discuss children up to the age of 5;0, whereas Jakubowicz *et al.* (1998) investigate children from 5;7 to 13;1. We therefore want to find out whether the use of infinitives may be characteristic for French SLI children in the lower age range.

Our study draws from much current research on SLI which is based on sophisticated linguistic models: Jakubowicz *et al.* (1998), Leonard (1989, 1998), Rice and Wexler (1995), van der Lely (1998), Wexler (in press), among many other references. An important trend involves the transfer of models proposed for normal syntactic development (e.g. Radford, 1990; Rizzi, 1994; Wexler, 1994, 1998) to account for the grammar of SLI children; this trend predicts a fundamentally parallel but delayed development in SLI. The theoretical modeling of the deficit will remain in the background of the present study, but we will address the issue of whether the linguistic development of SLI children parallels normal development, though at a slower pace.

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Table 1 Description of corpora for 8 normal French children (name, age during sampling period, and number of recordings) and performance (maximum percentage of infinitive use, age and mean percentage infinitive use) in verbal clauses

Child	Age range	No. of rec.	Max. %	Age	Mean %
Augustin	2;0–2;10	10	40	2;1	15
Marie	1;8–2;3	12	30	2;1	18
Louis	1;9–2;4	12	40	1;10	13
Daniel	1;8–1;11	5	45	1;9	14
Nathalie	1;9–2;3	7	40	2;0	20
Philippe	2;1–2;7	12	30	2;2	14
Gregoire	1;8–2;3	6	35	1;8	26
Jean	1;7–2;0	4	10	1;7	3

Normal development in French

Cross-linguistic research has shown that normally developing children in their third year of life produce infinitives instead of finite verb forms in declarative main clauses. At the same time, the same children produce finite verbs so that such infinitives have been called optional or, because of their restriction to root clauses, root infinitives (RI). This phenomenon has been observed in languages such as Danish, Dutch, English, French, German or Swedish, but is practically non-existent in Italian, Catalan and Spanish. See Guasti (1994), Haegeman (1995), Hamann and Plunkett (1998), Phillips (1995), Rasetti (1996), Rizzi (1994) and Wexler (1994) for details.

For French, the data are not unequivocal as there appear to be children who do not evidence a strong phase of RIs, and the mean rate of infinitive use during the third year is generally not high. However, the data from Rasetti (1996, 2000) and Guerrero, Jaquet and Rochat (2000) concerning the children from the Geneva project, from the CHILDES and the Lightbown corpus show that with the exception of Jean (a child whose mastery of grammar is precocious in other respects as well: see Rasetti (2000) for discussion) there is a peak of 35–45% and a mean of 15%. For convenience we group these data in Table 1. Even if this phase may be shorter for children acquiring French than for English, German or Danish children (see Phillips, 1995), and may manifest more individual variability, we would therefore like to claim that normally developing children acquiring French undergo an RI phase.

In the production of normal children another salient property is subject omission, which remains a substantive phenomenon throughout the third year of life. It is striking that such subject omissions not only occur in clauses in which the child uses an infinitive, but also in

finite clauses. Subject omission occurs in over one-quarter of the finite clauses examined for the normally developing children acquiring French between 1;8 and 2;10. The relation between subject omission in finite clauses and the use of RIs is less clear, but could be established for several languages. Haegeman (1995) and Rasetti (2000) observe a rough temporal coincidence for the two phenomena in the acquisition of Dutch and French, respectively, and Hamann and Plunkett (1998) show a correlation for Danish.

The third property of normal language acquisition which is immediately relevant in the present context has to do with the development of clitic pronominal systems. The development of pronouns in French is particularly interesting in that a clear delay in the use of complement clitics as compared to subject clitics has been observed. Hamann, Rizzi and Frauenfelder (1996) showed that subject clitics occur in about a quarter of the relevant verbal utterances already in the first recordings of Augustin's speech (2;0–2;3) with a subsequent increase to 63% at the age of 2;10. On the other hand, by the age of 2;5 Augustin has produced only two complement clitics, corresponding to just 5% of contexts requiring obligatory complements, and the 20% mark is reached only at the age of 2;10. Moreover, the ratio of subject and complement clitics starts getting closer to the adult ratio of 1:3 only in the last recording at the age of 2;10, whereas the first 9 recordings (2;0–2;9) show a very low ratio of less than 1:12. These results find corroboration in Jakubowicz *et al.*'s (Jakubowicz, Müller, Riemer & Rigaut, 1997; Jakubowicz, Nash, Rigaut & Gérard, 1998) cross-sectional studies of elicited production. These studies show a similar delay of complement clitics and indicate that subject clitics are produced correctly to 97.8% between 5;6 and 5;11.

These properties have emerged as salient features of the natural productions of normally developing children acquiring French. It is now possible to study in detail the presence and significance of such properties in the SLI population.

Cross-linguistic observations on SLI

In recent studies on SLI the search for clinical markers and for models explaining the observed grammatical phenomena has been a main research focus. Models for English SLI have to account for problems with the past tense morphology, the overuse of infinitives or stem forms, and the omission of articles (see Leonard, 1998).

In French and Italian, frequent omission of object pronominals has been noted. Jakubowicz *et al.* (1998) report a mean of only 25.2% correct use of the object

clitic 'le' for 13 French children with SLI with an age range of 5;7 to 13;1 in an elicited production experiment. From their tables it is possible to reconstruct that complements are omitted to a mean percentage of about 20%. Bottari, Chilosi and Pfanner (1998) show that the mean of object omission is 41.1% in 11 Italian children with SLI with an age range of 4;2 to 10;7. The figures for Italian may be higher for language specific reasons or because younger children were included and spontaneous production, not elicited production, was analysed.

A study of the spontaneous production of pronominal clitics will therefore give additional information on French SLI relevant also for cross-linguistic comparison. As to the use of infinitives in French, Jakubowicz *et al.* (1998) do not consider the occurrence of non-finite verb forms to be characteristic for French SLI. The analysis of younger children's spontaneous speech as reported by Le Normand (2000) seems to show an important percentage of such infinitive use, however. The age factor therefore seems to play a decisive role and warrants a detailed investigation for spontaneous production.

Method

Participants

Eleven monolingual French-speaking children with a clinical diagnosis of SLI were selected for the study. The clinical diagnosis was based on a battery of non-verbal and verbal tests including the ECOSSE, the French equivalent of the TROG, a test of receptive grammar.

The children were recorded every 3 months for a period of 2 years in the framework of the Geneva Project, 'Langage et Communication'. At the first recording, their ages ranged from 3;10 to 7;11. We created two subgroups of children according to age, those under and including 5 ($N = 6$) and those over 5 years ($N = 5$).

Procedure

The spontaneous speech data obtained from the recordings were transcribed in CHAT format (MacWhinney & Snow, 1985) and were verified by at least three independent transcribers. The analysis we report was conducted manually supplemented in some cases by analyses using the CLAN tools. For the purposes of this study we will limit our analysis to the first recording of each child. This cross-sectional analysis will, in some instances, be complemented by the longitudinal data which are still being collected and analysed. Future reports will present a full longitudinal analysis over the whole recording period.

Results

The production of non-finite verb forms by French SLI children

Group results

For these analyses, all simple clauses containing an imperative, a finite verb form, an infinitive or a participle were counted as verbal clauses. We also counted the truly non-adult infinitives listed as root infinitives (RI). The decision whether a verbal form is an infinitive or a (bare) past participle is particularly difficult in French for verbs ending with an -er infinitive. These decisions were made according to context. The label of 'non-adult non-finite' verb form includes both root infinitives and participial clauses. It was judged expedient to keep the information on pure infinitives available as it may be decisive for theoretical analyses that differentiate participles and infinitives.

Figure 1 shows the average number of productions of verbal clauses and non-finite verb forms in the two SLI groups. In the younger group, the average number of non-adult non-finite forms produced is about 13.7 (SD = 7.9) which corresponds to around 15% of the verbal clauses. Figure 1 shows that the older group produce very few non-adult non-finite forms which can plausibly be attributed to performance errors.

Individual results

Table 2 gives the results for the individual SLI children. It shows that all children in the younger age group

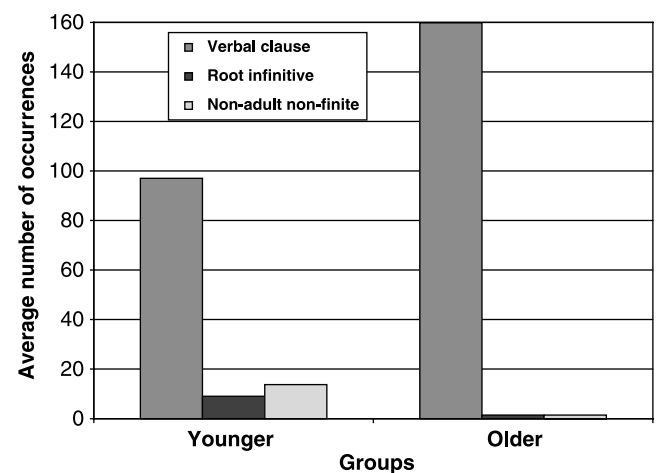


Figure 1 Average number of occurrences of root clauses, root infinitives and non-adult non-finite forms for younger and older group of SLI children.

Table 2 Age at first sample, total number of verbal clauses produced, and number and percentage of infinitive use (root infinitives, and non-adult non-finite clauses) for the 11 SLI children

	Raf	Aur	Lor	Cor	Did	Mar	Fab	Noe	Lea	Can	Noa
Age	3;10	4;2	4;7	4;9	4;9	5;0	5;7	6;9	7;7	7;10	7;11
Verbal clause	20	122	60	32	154	194	126	262	112	171	128
Root infinitive	10	4	5	18	3	14	3	1	2	0	1
Non-adult non-finite	50%	3.2%	8.3%	56.2%	1.9%	7.2%	2.3%	0.3%	1.8%	0%	0.7%
Non-adult non-finite	14	7	5	22	10	24	3	1	2	0	1
non-finite	70%	5.7%	8.3%	68.6%	6.4%	12.4%	2.3%	0.3%	1.8%	0%	0.7%

produce more than 5% non-adult non-finite forms and that two of the children have much higher rates of 68.6% and 70% respectively, whereas the older children are all under the 2.5% mark.

It could be added here that Rafaëlle, Corentin and Martin, the three children with highest rates of non-adult non-finite forms in the first recording, are losing these forms in subsequent recordings. At the age of 4;8 Rafaëlle produces only 3% such forms, Corentin is down to 20% at 5;1, and at 5;7 Martin produces no such forms (see Cronel-Ohayon (in preparation) for more on longitudinal data).

The production of subjects and pronominal subject clitics

Group results

A count was made of the occurrence of different subject types, specifically the occurrence of subject omissions (null subjects), clitic subjects and bare lexical subjects unaccompanied by a clitic subject. Strong pronouns were counted as lexical subjects because of their similar syntactic status. The frequent construction 'lexical subject + clitic subject' was counted as a clitic occurrence. The relevant clauses that were used in the counts are the verbal clauses without imperatives, subject questions or subject relatives.

Figure 2 shows the results for the two age groups of children with SLI. We note that the use of clitic subjects is quite high with 55 occurrences on average (corresponding to 63% of the relevant clauses) for the younger group, and even higher (136 occurrences corresponding to 91%) for the older group. Lexical subjects or strong pronouns without a clitic are not frequently used in the sample for either group.

Individual results

Table 3 gives a breakdown per child. We observe that the younger children omit subjects at the same rates as normally developing 2-year-olds. However, subject omission

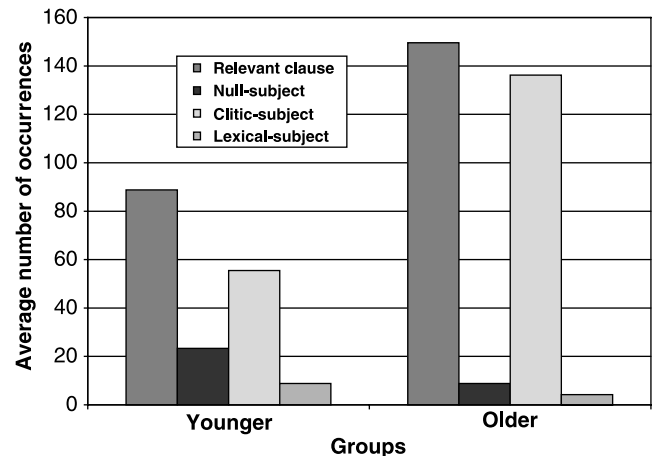


Figure 2 Average number of occurrences of relevant clauses, null subjects, clitic subjects and lexical subjects for younger and older group of SLI children.

still occurs in the older children's speech to about 5% which is higher than adult subject omission in French (0.5%). The use of subject clitics is quite high in general, between 58.9% and 96.0%, with the exception of Corentin with 6.2% and Rafaëlle with 15.8%.

We also calculated the occurrence of subject omission in finite clauses (hence a subset of the relevant clauses of Table 3). The younger group showed a mean percentage of 21% which is comparable to what was found for normals in their third year of age, whereas the older group has a mean percentage of 4%.

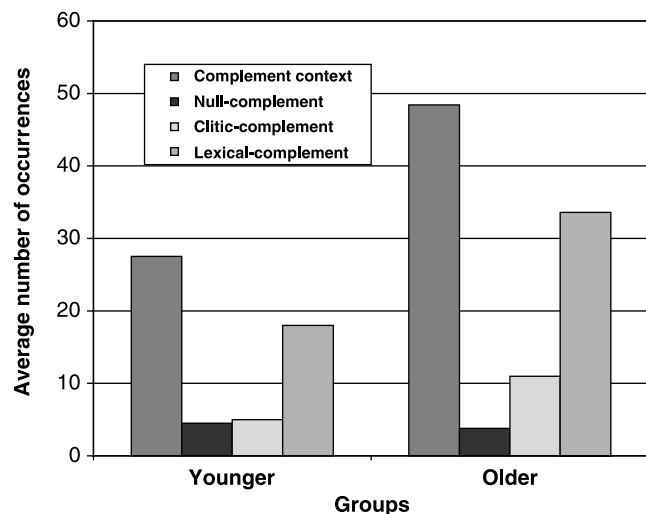
The production of complements and pronominal complement clitics

Group results

The results of our investigation of the production of complements – specifying the omissions of (direct or indirect) complements, overt clitic complements and lexical complements – are summarized in Figure 3. Note that the total number of relevant clauses for the counts of subjects in Figure 2 and Table 3 does not correspond

Table 3 Age at first sample, total number of relevant clauses produced, and number and percentage of subject types (subject omission, clitic subjects and lexical subjects) for the 11 SLI children

	Raf	Aur	Lor	Cor	Did	Mar	Fab	Noe	Lea	Can	Noa
Age	3;10	4;2	4;7	4;9	4;9	5;0	5;7	6;9	7;7	7;10	7;11
Relevant clause	19	105	56	32	137	184	106	251	106	168	116
Null subject	13	13	17	24	22	51	7	9	8	9	11
	68.4%	12.4%	30.3%	75%	16.1%	27.7%	6.6%	3.6%	7.5%	5.4%	9.5%
Clitic subject	3	82	33	2	109	104	93	241	94	157	96
	15.8%	78.1%	58.9%	6.2%	79.7%	56.5%	87.7%	96.0%	88.7%	93.4%	82.7%
Lexical subject	3	10	6	6	6	29	6	1	4	2	9
	15.8%	9.5%	10.7%	18.7%	4.4%	15.7%	5.7%	0.4%	3.8%	1.2%	7.6%

**Figure 3** Average number of occurrences of complement contexts, null complements, clitic complements and lexical complements for younger and older group of SLI children.

to the complement contexts indicated here. The latter only gives the total number of structures with complements (overt or omitted), so for instance a declarative clause with an intransitive verb would be included in Figure 2 and Table 3 but not in Figure 3. Reciprocally, certain constructions with obligatorily overt subjects (subject questions or subject relatives) and obligatory

null subjects (imperatives) appear in Figure 3 but not in Figure 2 and Table 3.

The results of the analyses of the two groups showed that the younger children omit complements at a mean frequency of 4.5 occurrences out of a mean frequency of 27.5 obligatory contexts and produce clitic complements at a mean of 5 occurrences. Calculated over the total of 165 obligatory contexts produced by the children as a group, we find 27 complement omissions (about 16%) and 30 complement clitics (18%). The older children have fewer omissions (mean occurrences 3.8), but still produce complement clitics only at a mean of 11 occurrences in obligatory contexts. Although the omissions have become less frequent, older SLI children still seem to avoid using complement clitics: omissions are now replaced in part by the use of full nominal complements which occur at a mean of 18 occurrences in the younger group and at a mean of 33.6 occurrences in the older group.

Individual results

The same observations can be made with respect to individual children as shown in Table 4.

A comparison of clitic subjects and clitic complements

To assess the relative importance of the tendency not to use object clitics in our SLI population, it is necessary to

Table 4 Age at first sample, total number of complement contexts produced, and number and percentage of complement types (null complements, clitic complements and lexical complements) for the 11 SLI children

	Raf	Aur	Lor	Cor	Did	Mar	Fab	Noe	Lea	Can	Noa
Age	3;10	4;2	4;7	4;9	4;9	5;0	5;7	6;9	7;7	7;10	7;11
Compl. context	17	23	19	9	56	41	25	71	30	83	33
Null	8	2	4	1	6	6	2	16	0	0	1
compl.	47.1%	8.7%	21.1%	11.1%	10.7%	14.6%	8.0%	22.5%	0%	0%	3.0%
Clitic	0	5	3	0	14	8	5	8	9	25	8
compl.	0%	21.7%	15.7%	0%	25.0%	19.5%	20.0%	11.3%	30%	30.1%	24.2%
Lexical	9	16	12	8	36	27	18	47	21	58	24
compl.	52.9%	69.5%	63.1%	88.8%	64.3%	65.8%	72.0%	66.2%	70%	69.8%	72.7%

Table 5 A comparison of the use of subject and complement clitics in the adult speech from the Augustin corpus, in Augustin's productions and in the younger and older group of SLI children

	Aug 2.0–2.9	%	Aug 2.10	%	Adults	%	SLI 3.10–5.0	%	SLI 5.7–7.11	%
S-clitics	179	92.7	99	81.8	2,332	76.4	333	91.7	681	92.5
O-clitics	14	7.3	22	18.2	719	23.6	30	8.3	55	7.5
Total	193		121		3051		363		736	

find an appropriate base-line measure of comparison. In Hamann *et al.* (1996) it was noticed that the mastery of complement clitics is delayed with respect to the acquisition of subject clitics in a normally developing child acquiring French, and that the delay of complement clitics could be highlighted by the ratio between the total number of complement clitics and subject clitics produced at different points of development and in comparison with the adult performance. We can now compare such ratios with what is found with our two SLI groups.

Table 5 shows that the ratio is about 1:3 in adult performance. The first nine recordings of Augustin (2;0–2;9) show a very low ratio of less than 1:12, and only the last recording at 2;10 gets closer to the adult ratio, with about 1:4. If we now compare these results with the two SLI groups, we see that both groups have a very low ratio, around 1:12, close to Augustin 2;0–2;9, well below Augustin at 2;10, and very far from the adult ratio. So, even the older SLI group (5;7–7;11) shows a strong tendency not to use complement clitics, comparable to what we find in a normally developing child well before his third birthday. The tendency to avoid complement clitics thus appears to be a robust and persistent property of French SLI children.

A comparison of clitic complements and root infinitives

It is now interesting to examine the relation between clitic complements and root infinitives. Some theoretical models of SLI (see in particular the Unique Checking Constraint (UCC) of Wexler (1998)) predict a relation between the absence of clitic complements and the presence of root infinitives. Partial confirmation of this prediction is found in the data from Tables 2 and 4. At the first recording, Rafaëlle has 47.1% complement omission and 70% non-adult non-finite verbal forms, Corentin has 11.1% complement omission and 68.6% non-adult non-finite forms, and Martin has 14.6% complement omission and 12.4% such non-finite forms. However, there is also the case of Noëlle who has a relatively large proportion of complement omissions (22.5%), but no root infinitives (0.3%), suggesting that the two phenomena are not so closely linked. Moreover, from a longitudinal perspective, Rafaëlle, Corentin and Martin come out of the RI phase with time, but still do not use many

complement clitics. Rafaëlle has only 10% such clitics at the age of 4;8 when her RIs have dropped to 3%, and Martin still produces only 9% overt complement clitics when he no longer uses non-adult non-finite verb forms at all. This evidence suggests that in the SLI population a marked tendency not to use complement clitics persists well beyond the RI phase.

Discussion and conclusion

In this study we have compared the spontaneous speech productions of younger and older SLI children with each other and with that of young normal children. SLI children from the younger group (3;10–5;0) still produce non-adult root infinitives to an extent comparable to what is found in normally developing children in their third year of life. The quantitative import of this phenomenon varies considerably in the group, ranging from about 70% of verbal utterances in Rafaëlle's and Corentin's productions, to smaller proportions in the other children, a situation not too dissimilar from what is found with younger normal children. The phenomenon has virtually disappeared in the older group.

We have also observed subject omission in the younger group (25% on average) which is fully comparable to the control group of normally developing children between 2 and 3. Subject omission is still found in the older SLI group, but in much smaller proportions. In sum, we observe in the young SLI group two typical phenomena of child language, root infinitives and subject omission, in proportions comparable to those observed in normal development in the third year of life. Interestingly, the longitudinal observations we have made (to be systematized in future work) suggest that these SLI children come out of this early phase of grammar with time. Indeed, the pattern of results for the older SLI group shows that they have basically lost these features of child language, and their performance is virtually adult like with respect to the obligatory finiteness of main clauses and the obligatoriness of overt subjects. Thus, these data seem to point to a parallel but delayed development for these structures.

However, this conclusion does not apply to all of the grammatical phenomena that we have examined. The

pattern observed for certain pronominal properties seems to be less clearly in line with normal development. In our SLI corpus there are indications of modest quantitative import, but which stick out in a qualitative analysis, that certain distributional constraints on clitics or strong pronouns are violated. Because form-position correlations constraining the occurrence of pronominal elements are virtually error free in normal development (Hamann *et al.*, 1996), examples like 'i(l) courir' (correct form: 'il court' – 'he is running'), 'i(l) dehors' ('il est dehors' – 'he is outside') or 'moi vois voiture' ('je vois la voiture' – 'I see the car') from Martin are striking enough to warrant further investigation. Some children (Aurélie, Martin and Corentin) show non-adult uses of strong pronouns, and other children (Didier and Martin) present a number of violations of positional constraints involving clitics. Although the percentages of such violations in spontaneous speech are relatively low, they may be revealing of genuine, if circumscribed, points of deviance. In order to probe for just such cases and to confirm the persistence of the difficulties in this area, an elicited production experiment targeting utterances like 'il le lave' – 'he washes him' – has been designed and administered. The preliminary results confirm the trends described above especially with respect to omissions of complement clitics.

Going back to the quantitative results of the present study, as shown above, clitic complements remain problematic also for the older group. Thus, the use of overt complement clitics does not increase dramatically for the children of the older group, who are clearly out of the root infinitive phase. It should be noted in this connection that the temporal dissociation between this persistent problem with complement clitics and the RI phase is problematic for approaches (Wexler, 1998, in press) which try to establish a close link between the two phenomena. Minimally, such approaches should postulate an additional element of grammatical complexity with complement clitic constructions, over and above the factors determining the root infinitive phase.

The persistent problem with the complement clitic system is especially striking when considering the ratio of subject and complement clitics, which remains much lower than that of a normal 3-year-old child and is very far from the adult ratio. As an area of grammatical difficulty, the omission and avoidance of object pronouns may thus be a genuine and persistent characteristic for French SLI.

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