Eliciting relative clauses from specifically language impaired and normally developing Greek children*

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Abstract

In this paper, experimental data on the production of relatives, by both SLI children and their LA counterparts, are presented and discussed. The results show that SLI children have produced incorrect responses most of the times and, especially, simple active sentences with SVO word order, whereas LA controls have exhibited a high level of correct performance. It is suggested that SLI children have difficulties in producing relative clauses due to a deficit in the operation of A-bar movement.

Key words: Specific Language Impairment, relative clauses, A-bar movement, automatic/control led processes.

1. Introduction

Recently, there has been an increasing interest among psycholinguists in the language development of children with Specific Language Impairment (SLI) (Clahsen 1989, 1991, Gopinik and Crago 1991, Rice, Wexler and Cleave 1995,

* I would like to thank S. Avrutin, Ch. Calfoglou, S. Foster-Cohen, G. Jarema, A. Roussou and K. Tsapkini for their useful comments during the 14th International Symposium of Theoretical and Applied Linguistics (University of Thessaloniki) and the international conference “Linguistic Theory, Speech and Language Pathology, Speech Therapy” (University of Padova) where parts of this material were presented. Special thanks to the speech therapists M.A. Chrysomalli, E. Darii, A. Makridou-Timotheidou and M. Vlasopoulou, who made the data collection from SLI children possible. I am also grateful to the directors and teachers of the Korais, Lagudakia and Zoop infant schools in Thessaloniki. This work has been supported by the National State Scholarship Foundation of Greece (IKY).
van der Lely 1997, 1998). SLI has been defined as a disorder, in which a person's language does not develop at an expected and acceptable rate, despite the integrity of the individual's sensory and cognitive systems.\textsuperscript{1} Linguistic investigations reveal that inflectional and derivational morphology is severely impaired in SLI (Clahsen 1989, 1991, Gopink and Crago 1991, Gopnik and Goad 1997, Rice \textit{et al.} 1995, among others). The impairment also extends to syntactically complex utterances involving embedded structures, as shown by production and comprehension data (van der Lely 1998).\textsuperscript{2}

The present study was motivated by the following research questions. The first one is whether SLI children's ability to compute syntactic structures involving A-bar movement, such as relative clauses, differs from that of their Language Age peers and in what ways. The second one, which is theoretical in nature, concerns the status of underlying syntactic representations involving A-bar movement in both normal and SLI children's grammar. The final aim of this study is to contribute to the linguistic characterization of the deficit in SLI.

2. On the structure of Greek relatives

Greek relatives are introduced either with the complementizer \textit{ποιος}, 'that', or with the relative pronoun \textit{ο} στοίχειος, \textit{η} στοίχειος, \textit{το} στοίχειο, 'who'. \textit{Who}-relatives are not so frequent in Modern Greek (MG) (Βαρθοκωστα 1998:105). \textit{Ποιο}-relatives are taken to contain a null relative operator, which originates internally within the sentence and is, then, moved to the Spec-CP position, while in \textit{στοίχειος}-relatives there is movement of an overt operator into Spec-CP.\textsuperscript{3}

We should note that in Greek relatives clitics are available and there has been extensive and conflicting research on whether their presence renders restrictive relatives ungrammatical (Στωύρου 1984, Haberland and Auwera 1987,\textsuperscript{4} Alexiadou and Anagnostopoulou 1996, Tsimpli 1999, Βαρθοκωστα 1998). For the present discussion, I adopt the claim put forward by Στωύρου (1985), Haberland and Auwera (1987) and Βαρθοκωστα (1998:106), who contend that clitics do not necessarily have ungrammatical effects in restrictive relatives, provided that some conditions are met, i.e. that the head of the relative is further specified.

\textsuperscript{1} For criteria setting see Stark and Tallal (1981), Clahsen (1989).
\textsuperscript{2} Greek SLI research has examined errors in production and comprehension at the level of morphosyntax in accordance with cross-linguistic observations (Dalalakis 1994, 1996, Kehayia 1997, Stavrakaki 1996, to appear (a), to appear (b), Tsimpli to appear, Varlokosta to appear).
\textsuperscript{3} See Alexiadou (1998) for a different approach.
\textsuperscript{4} The paper was brought to my attention by M. Stavrou.
3. Method

3.1 Subjects

Two groups of subjects participated in the experiment. The first group consisted of 8 SLI children. All SLI subjects had been diagnosed language impaired in the absence of non-language cognitive problems,\(^5\) motor-articulator impairment or psycho-emotional disorders. Each child in the SLI group was individually matched with two control children on the basis of individual raw scores from the Verbal IQ Test for Greek children (Stavrakaki and Tsimpli 1999). Therefore, the Language Age (LA) control group consisted of 16 normally developing children who were selected on the basis of raw scores in the Verbal IQ Test. The subject details are presented in Table 1.

<table>
<thead>
<tr>
<th>SUBJECT GROUP</th>
<th>Chronological age (CA)</th>
<th>Raw Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RANGE</td>
<td>MEAN</td>
</tr>
<tr>
<td>SLI group</td>
<td>5.4-9.4</td>
<td>7.38</td>
</tr>
<tr>
<td>N=8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LA controls</td>
<td>3.4-5.2</td>
<td>4.1</td>
</tr>
<tr>
<td>N=16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Statistical analysis revealed no significant difference in raw scores between SLI children and LA controls \([t(22)= .229\; p=.821]\).

3.2 Materials and procedure

A toy elicitation task was used according to the methodology suggested by Crain and Thornton (1998). The experimenter was the storyteller, who also manipulated the toy props, while a blindfolded puppet was 'trying to understand' what was going on in the story. The children were asked to tell the blindfolded puppet what was going on in the story. Two toy-figures were used for the head of the relative and thus the restrictive function of the relative, i.e. the function of restricting the reference of the head noun by selecting a subset of the set that it denotes, was met.

Five types of relatives were elicited as shown in examples (1a-e). The codes

\(^5\) Traditional intelligence test tools such as WISC-R showed normal performance IQ.
preceding each sentence refer to the relative clause's attachment in the matrix clause and to the gap within the relative itself. For example, the relative clause in (1a) modifies the noun in subject position (i.e., S) and contains a subject gap (i.e., S), and so it is referred to as SS relative:

(1) a. SS: Ἡ τίγρη που ἰπτυάει τὸν ἐλέφαντα σπρώχνει τὴν ζέβρα
   the-tiger-nom-that-hit-3s-the-elephant-acc-push-3s-the-zebra-acc
   'The tiger that is hitting the elephant is pushing the zebra'

   b. SO: ὁ σκύλος που διαλέει ἡ τίγρη ἰπτυάει τὸ ρινόκερος
   the-dog-nom-that-kiss-3s-the-tiger-hit-the-rhinoceros-acc
   "The dog that the tiger is kissing is hitting the rhino"

   c. OS: ἡ ἀλεποῦ σπρώχνει τὴ γάτα που κυηγάει τὸ σκύλο
   the-fox-nom-push-3s-the-cat-acc-that-chase-3s-the-dog-nom
   "The fox is pushing the cat that is chasing the dog"

   d. OO: ὁ ἐλέφαντας κυηγάει τὴν καμηλοπάρδαλη που ἰπτυάει ὁ ρινόκερος
   the-elephant-chase-3s-the-giraffe-acc-that-hit-3s-the-rhinoceros-nom
   'The elephant is chasing the giraffe that the rhino is hitting'

   e. OOclt: ὁ ἄλογο ἰπτυά τὸ πρόβατο που τὸ κυηγάει τὸ ελάφι
   the-horse-hit-3s-the-sheep-that-clt-chase-3s-the-deer
   'The horse is hitting the sheep that the deer is chasing'

Note that in OOclt relatives (example 1e), the arguments are morphologically underspecified and the presence of the clitic is somehow necessary. When it is omitted, the structure is not ambiguous as it is contextually defined.

There were 3 stories for each sentence type, giving a total of 15 answers per child. The example protocol for the elicitation of SS relatives was as follows:

One tiger is hitting the elephant and pushing the zebra. Another identical tiger is playing with a doll. The child is asked to tell the blindfolded puppet which tiger is pushing the zebra. TARGET RESPONSE: the one that is hitting the elephant

4. Results

4.1 Coding

Correct responses were considered to be those that occur in adult Greek. Detailed error analysis attested the following error types:
Simple active sentences

(2) ο ελέφαντας κυνηγάει τον ρινόκερο
the-elephant-nom-chase-3s-the-rhino-acc
'The elephant is chasing the rhino'

Coordinated structures

(3) το πρόβατο κυνηγάει το άλογο και
to the-sheep-chase-3s-the-horse
to λιοντάρι κυνηγάει το πρόβατο
and-the-lion-hit-3s-the-sheep
'The sheep is chasing the horse
and the lion is hitting the sheep'

Obviously, the first two error types (2, 3) do not involve null operator movement.

Relatives with missing heads

(4) *που κυνηγάει τον ελέφαντα
*that-chase-3s-the-elephant-acc

Target Response

autόs pou kynηgai to eλeftαnta
The-one-nom-that-chase-3s-the-elephant-acc
'This one that is chasing the elephant'

This error was also taken to show absence of wh-operator movement. It was attested only in SLI data.

Relatives with wrong heads

(5) o σκύλος που κλωτσάει τη γάτα
the-dog-that- kick-3s-the-cat-acc
'The dog is kicking the cat'

Target Response

autή pou klytosai o skýlos
The-one-nom-that-chase-3s-the-dog-nom
'The one that the dog is kicking'

This error in (5) may indicate developmental differences in the acquisition of relatives, in the sense that the relativization of the wrong head gives rise to a different kind of a relative instead of the target one.

Case errors on the head of the relative

(6) *αυτός που πιάνει τον ελέφαντα
*the-one-nom-that-touch-3s-the-elephant-acc

Target Response

autόn pou píanai to eλeftαnta
the-one-acc-that-touch-3s-the-elephant
“The one that is chasing the elephant”

Gender errors on the head of the relative

(7) αυτός που χτυπάει το σκύλο
   the-one-nom-masc-that hit-3s-the-
   dog-acc
   “The one that is hitting the dog”

TARGET RESPONSE

αυτή που χτυπάει το σκύλο
the-one-nom-fem-that hit-3s-the-

dog-acc
“The one that is hitting the dog”

Resumptive NPs (RNs)

(8) αυτός που κυνηγάει ο σκύλος
    the-one-nom-that-chase-3s-the-dog-
    τον ελέφαντα
t-nom-the-elephant-acc
    “The one that the dog is chasing
    the elephant”

TARGET RESPONSE

αυτός που κυνηγάει ο σκύλος
the-one-nom-that-chase-3s-

dog-nom
“The one that the dog is chasing”

Recall that RNPs were analyzed as indicative of a non-movement grammar.

Ambiguous responses: Although the target relative was produced, the child’s response was not identical to the adult one.

Ambiguous responses

(9) αυτή η τίγρη που κυνηγάει
    this-tigger-nom-that-hit-3s-the-
    τον ελέφαντα και στρέφει τη ξέβρα
    elephant and-push-3s-the-zebra
   “This tiger that is hitting the elephant
    and pushing the zebra”

TARGET RESPONSE

αυτή που χτυπάει τον ελέφαντα
this-tigger-nom-that-hit-3s-the-
elephant-acc
“The one that is hitting the elephant”

A classification of responses according to whether they indicate a relativization or a non-relativization strategy is presented in Table 2.

Table 2. Relativization vs. non relativization strategy

<table>
<thead>
<tr>
<th>RELATIVIZATION STRATEGY</th>
<th>NON RELATIVIZATION STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Correct responses</td>
<td>• Simple active sentences</td>
</tr>
<tr>
<td>• Relatives with wrong head</td>
<td>• Coordinated structures</td>
</tr>
<tr>
<td>• Wrong case on the head of the relative</td>
<td>• Missing head relatives</td>
</tr>
<tr>
<td>• Relatives with RNPs</td>
<td></td>
</tr>
<tr>
<td>• Gender error on the head of the relative</td>
<td></td>
</tr>
<tr>
<td>• Ambiguous structure</td>
<td></td>
</tr>
</tbody>
</table>
4.2 The groups’ performance

The performance of LA controls, who achieved 70.83% correct responses, was significantly better \[ t(16.638) = -9.27 \, p < .001 \] than that of SLI children, who achieved only 4.16%.

As shown in Figures 1 and 2, the relativization strategy was used in most of the cases (219/240: 91.25%) by LA controls but in very few (23/120: 19.6%) by SLI children.

Let’s move to the error analysis now. The errors are presented by sentence type because different error types were attested across different types of relatives. Table 3 shows LA controls’ erroneous performance.

As regards SS relatives, the following errors were attested: ambiguous structures, one gender error, and one coordinated structure error. Few errors were also attested in OO relatives. Ambiguous structures (4/7: 57%), simple active sentences (2/7: 28.57%) and coordinated structures (1/7: 14.28%) were produced

![Figure 1](image1.png)  
*Figure 1. The use of relativization vs. non-relativization strategy by LA controls.*  

![Figure 2](image2.png)  
*Figure 2. Relativization vs. non-relativization strategy in SLI children.*
Table 3. LA controls: Error analysis.

<table>
<thead>
<tr>
<th></th>
<th>Simple coordination</th>
<th>wrong head</th>
<th>RNP</th>
<th>case error</th>
<th>gender error</th>
<th>ambiguous</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>SO</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>OS</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>OO</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>OO-clt</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>17</td>
</tr>
</tbody>
</table>

instead of the target structure. More errors were found in SO, OS and OOclt sentences: N=20, N=18 and N=17 respectively.

In SO relatives, the main error type is the relativization of the wrong head (N=10.50%). This error type was also attested in OOclt relatives. Moreover, RNPs were found in 20% (N=4); 2 coordinated and 2 ambiguous structures were also produced (10% each) as well as 1 simple active sentence (5%). In OS relatives, the main error type is the production of RNPs in 44.44% (N=8). Additionally, case errors were also attested as the nominative case was produced instead of the accusative. Also, coordinated structures were produced (N=5:27.7%). In the obligatory contexts of OOclt relatives, the following errors were found: simple active sentences (N=6:35.25%), relatives with wrong head (N=4:23.5%), RNPs (N=2:11.76%), and ambiguous structures (N=4:23.5%).

Consider now the SLI group data. Only 5 (5/120:4.16%) correct responses were produced; 4 out of those 5 were SS relatives with SVO word order.

The overwhelming majority of errors belong to the category simple active sentences (76/120 responses; 63.33%). Note that missing head relatives were attested only in SLI data (11/120:9.16%). Besides, SLI children produced significantly more simple active sentences than coordinated structures [t(7)=3.389 p=.012].

However, some errors were similar to those produced by LA controls: First, relatives with wrong head were also found in this group, that were mainly produced by 1 SLI child in all types of relatives except for SS relatives (15/120). All of them were SS relatives with SVO word order. Second, relatives whose head was incorrectly marked with respect to case were also attested (3/120). In all of them, the head was marked for nominative case instead of the accusative one. The target relatives were O-S and O-O respectively. Finally, just 1 RNP was produced.

An interesting finding with respect to SLI data is the predominance of SVO word order. SLI children produce significantly more structures with SVO word
order than their LA counterparts \([t(22)=14.699 \ p<.001]\). In Figure 3 the percentages of responses with SVO and non-SVO word order are presented for both SLI children (SVO: 67.5%) and LA controls (SVO: 30.4%).

5. Discussion

In sum, the data indicates quite a distinct pattern of performance by each group. On one hand, LA controls were able to produce the target in very high percentages; there were few incorrect instances distributed across sentence types, but different error types were attested for each sentence type. On the other hand, SLI children produced few correct instances of relatives. Interestingly, most of them were SS relatives with SVO word order, and so the predominant error type attested in SLI data was the production of simple active sentences with SVO word order.

Let us now discuss the performance of each group in more detail. As shown by their correct performance, the ability of LA controls to represent the syntactic structure of relatives must be on target, although the data revealed some dissociation among the different types of relatives. SS and OO relatives seem to be easier to acquire than the other testing types, as indicated by the higher correct performance of LA controls on these sentence types. Therefore, the extraction site (object or subject) does not seem to have any effect on the sequence of acquisition.

A close examination of SO, OS and OO-clt relatives reveals different error types. The main error type in the production of SO relatives was the relativization of a wrong head. In other words, an SS relative with SVO word order was produced instead of the target, which was a different type of relative. This error type was also attested in OO-cl relatives when the clitic was not produced.
With respect to SO relatives, the first NP marked for nominative case and bearing the agent theta-role in the main clause, is associated with the empty category with the feature of accusative case and the patient theta-role in the relative clause. It could be said, then, that the relativization of the wrong head might be due to the strong parsing preference for the first NP marked for nominative to be associated with agent and not patient theta-role, as it would be the case if the right head were relativized.

Consider now the OO-clt relatives where the same error was attested. Recall that the arguments in this type of relatives are morphologically unmarked. The default interpretation of a simple active sentence in Greek when morphological and intonational cues are absent is SVO. The relativization of the wrong head, that is, of subject instead of object, may be related to the use of the first noun processing strategy, due to the absence of overt morphological marking and not to the extraction site of the head of the relative. The morphological markedness is the only difference between OO and OO-clt relatives. The lower performance of LA controls on OO-clt relatives than on OO relatives could be attributed to the morphologically unmarked arguments in the former.

A slight preference for the first NP to be marked for nominative case is, also, shown by the incorrect case marking of the head of the relative in OS relatives, that is, the head is marked for nominative case and not for accusative. But the main error type in OS was the RNP type, which was also produced in SO relatives and, to less extent, in OO-clt relatives. In both SO and OS relatives case conflict phenomena occur, in the sense that the empty category is associated with a head NP, which is morphologically marked for different case than that of the empty category:

\[(10)\]

a. \textit{αυτός που κυνηγάει ο σκύλος}
   \textit{the-one-nom that chase-3s-the-dog-nom}
   \textit{The one that the dog is chasing'}

b. \textit{αυτόν που κυνηγάει τον σκύλο}
   \textit{the-one-acc that chase-3s-the-dog-acc}
   \textit{The one that is chasing the dog'}

The production of RNPs in both SO and OS relatives cannot be interpreted

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6 This preference is clearly indicated by psycholinguistic experiments in Greek sentence processing (Kail and Diakogiorgi 1994).

7 When morphological contrast cues are absent, then the first noun strategy is used, as shown by psycholinguistic experiments (Kail and Diakogiorgi 1994).
as absence of A’ movement as suggested by Labelle (1990, 1996). Apart from the independent evidence for the operator movement in our data, as most of the child relatives are identical to the adult ones, we should notice that the production of RNPs is totally compatible with the options determined by the grammar. According to the copy theory of movement that holds reconstruction effects, the constituent of which copies form the chain, is pronounced at the top of the chain with PF deletion of the material (copy) at the tail of the chain, but exists both at its source location and at the top of the chain. In some chains in child grammar, the copy is overtly realized provided that its case is different from that of the head of the relative. RNPs were also attested in OOclt relatives. The spell-out of the lower copy when no cliticization strategy was applied is rather related to the morphological underspecification of the arguments.

As mentioned before, when the arguments are morphologically unmarked in a NVN structure and the intonation is neutral, the SVO interpretation is preferred over other ones. However, the appearance of the clitic after the first N, that is, NcltVN, marks the structure as OVS. Although a NVN structure can be contextually defined as OVS, as is the case in our experiment, the resumption of the first NP, i.e. the head of the relative, seems to further guarantee that the head of the relative is the patient, as the RNP occupies the position after the subject. Consider the example (11) below:

(11) Researcher: Πώς ἀλόγο κλωτσά το πρόβατο;  
Which-horse-neut-kick-3s-the-sheep-neut  
‘Which horse is the sheep kicking?’

Child: αυτό που κυνηγά το ελάφι το ἀλόγο  
The-one-that-chase-3s-the-deer-the-horse

In sum, it could be said that the spell out of the lower copy is either associated with case conflict phenomena or with the morphological underspecification of the head of the relative with respect to case. In this respect, it cannot be interpreted as indicating lack of A’-movement. Therefore, on the basis of the discussion so far it can be suggested that child relatives in Greek involve A’ movement.

Consider now the SLI data. As far as the simple active sentences and the coordinated structures are concerned, obviously they do not fall into the category of structures involving A’-movement. In this respect, SLI children exhibited a qualitatively different pattern of performance from that of LA controls, as most of the responses of the former are simple active sentences, while the latter systematically produce adult relatives most of the times. The question, which is of great importance, is whether the few correct responses, as well as the errors,
which have been attested in both SLI and normally developing children, reflect the same status of grammatical representations in both groups or not.

As mentioned before all-correct and incorrect relatives produced by SLI children but 2 were SS relatives where the SVO word order was used. On the other hand, LA controls performed equally well on OO and SS relatives. If SLI children had the same status of grammatical representations, they would be able to produce OO relatives as well and produce relatives with wrong heads only where LA controls did so, that is, in SO and OOclt relatives. It seems, therefore, that the relatives produced by SLI children are not formed by null operator movement but by conjunction of the head NP to the rest of the phrase. In this respect, relativization in SLI grammar is considered to be a kind of modification to the NP, but does not involve A’-movement. In sum, SLI children’s responses are characterized by the predominance of simple active sentences with SVO word order and the absence of structures involving A’-movement.

Based on the data from this study a formal description of SLI grammar can be provided. Following minimalist assumptions, the computational system is based on two operations, Merge and Move. The former is an economical operation. The latter can be overt or covert. Overt movement is a more costly operation than covert movement and, thus, for reasons of economy covert movement is preferred (Chomsky 1995). Under the above assumptions, the Formal Principles (FP) guiding the SLI grammar can be formulated as (i) apply the operation of Merge as less as you can (ii) avoid A’ movement in any case. The first one does not necessarily imply impairment in the operation Merge itself; it just denotes that SLI children prefer to merge as less syntactic objects as they can. This preference may be due to the fact that SLI children have also difficulties in accessing words and especially verbs. As argued in Stavrakaki (to appear (b)), these difficulties may arise from impairment at the morphological part of the lexical entries. The second one indicates that SLI children cannot use the operation of A’-movement due to the lack of knowledge of it. The above principles, which are descriptive in nature, can be taken to indicate extreme economy in SLI grammar.

Consider now the implications of this data for the theories of SLI. Most theories of SLI are based on spontaneous speech data from an early stage of SLI children’s linguistic development, when most of the SLI children who participate in the research projects are at the preschool age (Rice et al. 1995, Clahsen 1989, 1990, among others). What all these theories share in common is the as-

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8 I. Tsimpli (personal communication) drew my attention to the SLI children’s problems with lexical access at this point.
sumption that part of SLI grammar is severely impaired. Along the same line, Tsimpli and Stavrakaki (1999) and Tsimpli (to appear) suggest that SLI children are expected to have problems mainly with non-interpretable features, that is features irrelevant for semantic representation (Chomsky 1995). Based on the hypothesis that non-interpretable features are severely impaired, problems in A' movement are predicted. Note that overt movement in Minimalism is associated with the strength of a feature, in the sense that it takes place in order to check some strong feature of the attractor. In other words, the above hypothesis predicts that all non-interpretable features are invariably affected, that is phi-features of V and A, case of DP and strength of categorial features.

Let us check now the validity of the above hypothesis against our data. Recall that all SLI children of this study but one are school age children (see Table 1) who have received language therapy services for about 3 to 4 years and, thus, they are beyond a stage at which they omit or incorrectly use some functional categories, such as Agr, D, etc., as shown by our data. At the same time they do not produce complex syntactic structures involving movement either as indicated by the data of this study as well as from their spontaneous speech (Stavrakaki 2001). Therefore, although the problems that SLI children have with producing complex syntactic structures can be predicted by the Missing Non-Interpretable Feature Hypothesis (Tsimpli and Stavrakaki 1999, Tsimpli to appear), the extent of the problem that SLI children meet in structures involving A' movement cannot be accounted for.

The Representational Deficit Model for Dependent Relations (RDDR) (van der Lely and Stollwerck 1997, van der Lely 1997) is relevant here. According to it, local syntactic relations are likely to be handled correctly, because they can be represented in simple phrase structures, but more distant relationships involving operations such as movement, agreement and case assignment will not be adequately specified. This model is descriptive in nature, like the Formal Principles (FPs) of SLI grammar mentioned above. In other words, nor the RDDR model neither the FPs of SLI grammar can adequately account for the fact that the SLI children of this study were able to produce correct simple structures with mainly SVO word order, but not complex syntactic structures.

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9 The strength of the feature is non-interpretable itself.

10 In a more recent version of this model (van der Lely 1998) an attempt to investigate the possible reasons contributing to the deficit in SLI is made, which is based on the notion of optional movement.

11 Notice that Tense, Agreement, and Case are correctly marked by the SLI children of this study in most of the times.
involving A'-movement.

An alternative explanation of our data will be attempted, in which developmental matters are taken into consideration. Two main hypotheses for the development of SLI grammars have been formulated. First, Rice et al. (1995) postulate a maturational process of SLI children’s language development, that is, the normal developmental path is followed in SLI but with some delay. Second, Paradis and Gopnik (1997) suggest that SLI children do not seem to acquire the implicit competence for some parts of their grammar and must make use of non-grammatical communicative cues and metalinguistic knowledge.

If the second hypothesis is on the right track (Stavrakaki 2001), then it is expected that individuals with SLI resemble speakers who express themselves in a second language and construct their utterances laboriously with long pauses between phrases. Further support to this view is given by findings which show that individuals with SLI speak significantly slower than controls (Tomblin, Freese and Records 1992). In this respect, individuals with SLI use controlled processes to construct an utterance, that is, they do it by the deliberate application of explicit knowledge.

Paradis (1994) makes a distinction between automatic and controlled processes used by the speakers. If SLI children use controlled processes while native speakers use automatic processes, it is then to be expected that SLI children will tend to produce simple structures instead of complex ones, since the production of simple structures requires less effort and time that that of complex ones. This is, in fact what our data reveal, as SLI children produce simple active sentences with SVO word order in most of the times.

In psycholinguistic terms, SVO word order is argued to be the least complex structure on the grounds that it permits direct mapping of semantic structure onto syntactic forms (Bever 1970). Based on this assumption, Clahsen (1984) accounts for the development of word order in L2 learners of German, by postulating that each word order stage reflects the learner’s use of varying combination of three speech-processing strategies. Learners at the first stage (stage X) use the canonical order strategy (SVO), that is, they simply sequence words and phrases not on the basis of any grammatical knowledge, but according to the underlying semantic relations within the clause.

SLI children seem to follow exactly the same path. When they have to produce syntactic structures that require use of grammatical knowledge at the computational level, they resort to the SVO word order strategy, which is the less costly speech processing strategy. Interestingly, the predominance of SVO
word order was also attested in Greek data from aphasia\textsuperscript{12} (Kehayia and Jaremka, 1991) and second language acquisition (Mangana 2002). It, therefore, seems that when speakers do not use automatic processes for whatever reason, they resort to the safe harbor\textsuperscript{13} of the SVO word order strategy.

6. Conclusion

In this paper, an attempt to account for the performance of both normally developing and SLI children was made. It was argued that the differences in the performance of the two groups are the result of the presence/absence of the A-bar movement operation in their grammar. The predominance of simple structures with SVO word order in SLI data was attributed to the non-automated use of language by SLI children.

References


\textsuperscript{12} Pointed out to me by E. Kehayia.

\textsuperscript{13} This term is used by Bates, Friederici, Wulfeck and Juarez (1988).


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