Object clitics, definite articles and genitive possessive clitics in Greek specific language impairment (SLI): deficits and explanations.

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Abstract
Nine Greek preschool children with Specific Language Impairment (SLI) were compared to age-matched (CA) and language-matched (LA) typically-developing children on their production of a) third person object clitic pronouns, b) definite articles and c) genitive possessive clitics, through novel picture-based elicitation tasks. The aims were to examine whether these structures are impaired in Greek SLI, and whether the findings can be explained by domain-general or domain-specific accounts of SLI (Surface Hypothesis (SH) Leonard 1989; Interpretability Hypothesis (IH), Tsimpli & Stavrakaki 1999; Representational Deficit for Dependent Relations (RDDR), van der Lely 1998). The findings revealed a particular impairment on object clitics in the SLI group, evidenced by a significantly lower rate of correct responses and higher omission rates compared to both control groups; a relatively higher performance on definite articles, on which the SLI group differed from only the CA group; and no impairment on genitive possessive clitics. The findings are partially consistent with those of previous studies in Greek SLI. None of the accounts reviewed could fully account for the pattern of deficits. An alternative proposal combining the notions of interpretability and movement is proposed instead.

1 Introduction

Specific Language Impairment (SLI) is a developmental disorder which affects the acquisition of language in individuals, in the presence of typical functioning in other areas of development (e.g. normal neurological development, hearing, socio-emotional development, non-verbal intelligence). Current investigations focus on pinpointing the clinical features of SLI across languages and on exploring its underlying causes. There is converging evidence that children with SLI have significant limitations in the acquisition of morphosyntax (Bishop 1997; Leonard 1998), the nature and extent of which appears to vary according to the language studied. A central theoretical debate revolves around what type of account can best explain these deficits. On one hand, domain-specific (linguistic) accounts posit that deficits in SLI stem from a selective limitation in the language system (e.g. van der Lely 2003). In contrast, domain-general (processing) proposals hold that the grammatical deficits are caused by impairments in general cognitive processing mechanisms, affecting other areas of cognition as well as language (Leonard 1998).
Crosslinguistic investigations in languages with different morphosyntactic properties are crucial for putting the predictions of these frameworks to the test.

In this paper we contribute to the ongoing investigation on the characteristics and etiology of SLI by identifying certain morphosyntactic structures that pose particularly difficulties to Greek preschool children with SLI, and, by exploring implications of the findings for theoretical accounts of SLI. The structures under investigation are: third person object clitic pronouns (accusative and genitive-case), definite articles and genitive possessive clitics. We will first review the properties of these in Greek and present findings from Greek SLI. We will then highlight accounts of SLI that make predictions about impairments on these structures, and present the current study.

Third person clitic pronouns in Greek are unstressed, weak forms derived from strong / full pronouns (‘afton’ (strong) → ‘ton’ (clitic; Holton, Mackridge & Philippaki-Warburton 1997). They are marked for case, number and gender, and are used frequently as direct (1a) or as indirect (1b) objects. They may also be used as genitive possessives on a noun phrase, with forms identical to the genitive object clitic forms (2). Definite articles precede nouns, and are also marked for case, gender and number. In Greek, definite articles and accusative object clitics share common features, the main one being that they are both prosodically unstressed elements and morphophonologically identical in accusative case (Tsimili & Stavrakaki 1999, 3):

(1a) ton pleni  
him, acc.masc.sg. washes  
(he/she) washes him
(1b) tu dini ena potiri  
him, gen.masc.sg. gives a glass  
(he/she) gives him a glass
(2) to vivlio tu  
the book his, gen.masc.sg.  
his book
(3) ton elefanda = (1a)  
the, acc.masc.sg. elephant

Object clitics and definite articles are reported to be significantly impaired and to constitute clinical markers of SLI in Romance languages (e.g. see Paradis, Crago, & Genesee 2005 for object clitics in French SLI; Bortolini, Caselli, Deevy, & Leonard, 2002 for definite articles in Italian). Similar claims have been made for Greek but the extent of impairment of the structures is unclear.

Specifically, Tsimili & Stavrakaki (1999) observed high rates of omission of accusative object clitics and definite articles in the spontaneous speech of a 5;5 year-old girl who had been diagnosed with SLI. In contrast, no difficulties were noted on genitive possessive clitics. These findings were confirmed by other single case-studies (Diamanti 2000; Varlokosta 2000), and a study of seven children aged 3;5 - 7;0 years by Tsimili (2001) - all looking at spontaneous speech. The findings of a relatively lower performance on accusative object clitics than genitive possessive clitics were also confirmed by Mastropavlou (2006), who studied 10 preschool children with SLI aged 4;2 - 5;9 years employing age- and language-matched control

1An extended version of this paper has also been submitted to the Supplement Proceedings of the 32nd Annual Boston University Conference of Child Language Development (Smith, Edwards, Stojanovik & Varlokosta submitted). Both papers are part of a larger study (Smith submitted) which also examined S-V agreement, past tense, and phonological short-term memory (nonword repetition).
groups, and elicitation tasks. However, the rate of omissions in this study was not as high as that reported in Tsimpli & Stavrakaki’s (1999) study (30% compared to 95%) and substitutions of the forms were also noted. Furthermore, Tsimpli (2001) observed a higher performance on definite articles than on accusative object clitics in some of her participants. Finally, Stavrakaki (2001) did not observe difficulties with these structures in eight older children with SLI (mean age 7;3 years).

The existing findings do not allow us to draw conclusions on the status of the target structures in Greek SLI. Most of the studies, have not employed appropriate control groups and are based on single cases. There is a need to study all the structures in the same group of participants, using control groups to assess the degree of impairment, and elicitation procedures, to enable the examination of structures which have not been previously examined (e.g. genitive object clitics).

If confirmed, the reported deficits can be explained by both domain-specific and domain-general proposals. A domain-specific account, the *Interpretability Hypothesis* (*IH*), put forth by Tsimpli & Stavrakaki (1999), attributes the high levels of omission of clitics and articles to their grammatical, uninterpretable determiner (*D*)-features, which are considered to render them inaccessible to young children with SLI. In contrast, genitive possessive clitics carry interpretable features / semantic information (theta role of possessor) and so are not predicted to be impaired. Conversely, a domain-general account such as the *Surface Hypothesis* (*SH*), put forth by Leonard (1989; 1998), would predict similar impairment on object clitic pronouns and definite articles but for different reasons: according to the SH, children with SLI have difficulties perceiving and processing unstressed, non-salient morphemes that have a grammatical function. Both pre-verbal object clitic pronouns and definite articles in Greek satisfy these criteria and should thus be more difficult than genitive possessive clitics which are post-stress, and thus more salient elements. Differences between object clitics and definite articles would be predicted by a domain-specific account, the *Representational Deficit for Dependent Relations* (*RDDR*) by van der Lely (1994; 1998). According to this proposal, structures that involve long-distance movement pose difficulties and may be omitted, substituted or sometimes used correctly by children with SLI, due to the optional use of movement in their underlying grammar. If a movement-based syntactic account is posited for the generation of clitic pronouns (Kayne 1975; Philippaki-Warburton, Varlokosta, Georgafentis, Kotzoglou 2004, 4), then the RDDR account would predict that object clitic pronouns should be more impaired than definite articles and genitive possessive clitics, which do not move in the constructions tested in this study (Alexiadou & Stavrou 2000; Alexiadou 2005).

(4) ton pleni (him washes)
\[
\text{[Spec}_{\text{ton}} \text{TP [AGR} [VP_{\text{pleni}} [DP_{\text{ton}} (\text{Philippaki-Warburton et al. 2004})]
\]

The specific aims of this paper are: (a) To investigate whether object clitics (accusative-case and genitive-case), definite articles and genitive possessive clitics are difficult for Greek-speaking preschool children with SLI, and (b) to explore whether the domain-general account (SH) or domain-specific accounts of SLI (*IH, RDDR*) reviewed here can explain the pattern of deficits observed. A three-way group design was employed to look at (a), comparing the SLI group’s performance with that of age- (CA) and language-matched (LA) typically-developing children. A difference

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2 Definite articles may involve a certain degree of movement (Alexiadou & Stavrou 2000) but a) they do not obtain their main features (case and agreement) through movement, and b) this movement is local as opposed to that in object clitics (see Smith submitted).
from the CA group would indicate performance that is below age-appropriate levels. A difference from both the CA and the LA group would show a difficulty beyond what would be expected given the children’s language level, thus pointing to an area of exceptional difficulty. The predictions of the accounts for (b) are summarised below:

IH, SH: object clitics = definite articles < genitive possessive clitics
RDDR: object clitics < definite articles = genitive possessive clitics.

2 Method

2.1 Participants

SLI group: Nine children with SLI aged 4;9 to 6;9 years were selected from centres of speech therapy in Greece. All participants were enrolled in language intervention programmes for a period of eight months to three years and had received a diagnosis of SLI through exclusion of neurological impairment, autistic-spectrum difficulties, hearing impairment, and low non-verbal IQ. In addition, they scored 1.5 standard deviations or more below the mean scores of the CA group on the Greek language test, ‘Diagnostic Test of Verbal Intelligence’, preschool version DVIQ, Stavrakaki & Tsimpli (2000).3

Control groups: The participants in the SLI group were carefully matched one-to-one to two groups of typically-developing children (table 1): to nine children aged 4;11 to 5;11 years, according to chronological age (CA group); and to nine children, aged 2;10 to 4;3 years, according to language / morphosyntactic level (LA group), on the basis of raw scores on the DVIQ morphosyntactic subtests. Independent samples t-tests were carried out to ensure that the groups were matched appropriately. The following relationships were confirmed: Age: SLI=CA (t(8)=-.1, p>0.05), SLI > LA (t(8)=9.01, p<0.001), DVIQ: SLI=LA (t(8)=-0.2, p>0.05), SLI < CA (t(8)=5.1, p<0.001).

<table>
<thead>
<tr>
<th>Group (N=9)</th>
<th>Mean Age</th>
<th>Mean DVIQ score*</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLI</td>
<td>71 months (5.11 years)</td>
<td>47.4 (SD: 23.5)</td>
</tr>
<tr>
<td>CA</td>
<td>70.2 months (5.10 years)</td>
<td>88.2 (SD: 4.9)</td>
</tr>
<tr>
<td>LA</td>
<td>42.3 months (3.6 years)</td>
<td>51.1 (SD: 23.9)</td>
</tr>
</tbody>
</table>

*Composite score on three morphosyntactic subtests: sentence recall, production and comprehension of morphosyntax.

The children in all groups were also matched for gender and socioeconomic level and their non-verbal skills were found to fall within appropriate levels on the Ravens Coloured Progressive Matrices (Raven 1997) and the Mullen’s Scales (Mullen 1995) (≥ 25th percentile).

2.2 Materials and Procedures

All the structures were tested through novel picture-based elicitation tasks.

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3 The DVIQ test is in the process of standardisation; preliminary norms from 291 children exist for ages 3.5 - 6.5 years. Three of the five subtests (production / comprehension of morphosyntax and sentence repetition were used in the present study for matching and assessment of the children’s skills).
2.2.1 Object Clitic pronouns

Procedure: The task aiming to elicit accusative and genitive object clitics was based on a procedure used widely for the elicitation of object clitics (Shaefffer 1997). The participants were shown pictures of animal characters engaging in transitive actions and were asked a question of the type “what is X doing to Y”? The target answer was: (he/she) Xs him/her. In this context, the use of the clitic is required by discourse and is preferred over a strong pronoun or noun phrase (5):

(5) Accusative object clitic
   Question: Ti kani o likos sti helona? (What is the wolf doing to the turtle?)
   Target answer: Tin pleni (her,acc.fem.sg washes, he washes her)

Items: Both accusative and genitive-case object clitics were assessed, in feminine and masculine gender and singular and plural number. Each type of clitic was tested using five different verbs, transitive and di-transitive (for assessing both direct and indirect object clitics) in a total of 5x4=20 items/pictures per structure.

2.2.2 Definite Article

Procedure: For the elicitation of the definite article, a method similar to that of Jakubowicz, Nash, Rigaut & Gérard (1998) was followed. Pictures like those in the object clitics task were used but a different question was asked, aimed at eliciting nominative and accusative-case articles: ‘Who is Xing Y?’ (6) or for accusative-case articles: ‘Whom is Y Xing’? (7):

(6) Question: Pios pleni ti helona? (Who is washing the turtle?)
   Target answer: O likos (The, nom.masc.sg wolf)

(7) Question: Pion pleni i helona? (Whom is the turtle washing?)
   Target answer: To liko (The, acc.masc.sg wolf)

The elicitation of a definite article instead of an indefinite article in this task was ensured by retaining the same five characters throughout the clitics and article task.

Items: 10 accusative-case and 10 genitive-case articles were assessed, in feminine and masculine gender, and singular and plural number in a total of 20 items for definite articles. The definite article and object clitics items were all tested in the same test, so that each structure acted as a distracter for the other.

Pre-tests and training items for clitics / article task: Before starting the task, the knowledge of the animal characters and verbs in the clitics / article task was checked. Two training items for each structure were also carried out.

2.2.3 Genitive possessive clitics

Procedure: In the genitive possessive clitics task, the child saw a picture and was asked a question of the type ‘What is X pointing to?’. The pictures involved animals pointing to body parts, to prompt the elicitation of the genitive possessive (see 8).

(8) Question: Ti dihni o likos? (What is the wolf pointing to?)
   Target answer: To podi tu (The foot his, gen.masc.sg, his foot)
Items: As the previous findings on genitive possessive clitics are uncontroversial, it was decided to only use 9 items in this study. No training items were used.

Before starting the main study, the clitics pictures were shown to 14 children and adults to check for imageability and clarity. All elicitation tasks were tried out in a pilot study. The participants were tested in a quiet room, in five sessions in total.

3 Results

The participants responded well to all tasks. Statistical analyses were conducted using non-parametric procedures, due to the non-normal distribution of some of the data. Between-groups comparisons for each measure are presented first.

3.1 Between-groups comparisons: Object clitics

Correct answers in object clitics involved ones with the correct clitic form, whereas incorrect responses consisted of: a) grammatical substitutions of the clitic form (e.g. gender: tin pleni - washes her: ton pleni - washes him), b) omissions of the clitic (ton pleni - washes him: ø pleni - washes), c) verb omissions (ton pleni - washes him: banio - bath), d) use of other structures not involving a clitic form (e.g. a noun phrase, pleni to liko – washes the wolf), or e) no answers. The rates of c,d, e were very low (< 5%) so only rates of total productions, correct answers, omissions and substitutions are reported (table 2).

Table 2. Object clitics: total productions, omissions, substitutions, and correct forms (N=sums, SD=standard deviations, M%=mean percentages)

<table>
<thead>
<tr>
<th>Group (N=9)</th>
<th>Total object clitics (/360)</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Produced</td>
<td>Omitted*</td>
</tr>
<tr>
<td></td>
<td>N  M %</td>
<td>N  M %</td>
</tr>
<tr>
<td>Accusative</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>SLI</td>
<td>232  64</td>
<td>97  27</td>
</tr>
<tr>
<td>LA</td>
<td>340  94</td>
<td>78  22</td>
</tr>
<tr>
<td>CA</td>
<td>346  96</td>
<td>24  6.6</td>
</tr>
</tbody>
</table>

*This category only refers to clitic omissions, not verb omissions, use of other structures or no answers.

As it can be seen in table 2, the SLI group followed the pattern of the typically-developing groups to an extent - e.g. in all groups, correct forms of genitive object clitics were produced at lower rates than accusative clitics. However, the SLI group produced fewer object clitics than either control group, fewer correct responses, and omitted and substituted clitics more frequently. A Kruskall-Wallis test, followed by Mann-Whitney U comparisons showed a significant difference between the SLI group and both groups for total clitic production and clitic omission (a Bonferroni correction was applied for the number of comparisons, adjusting the significance level at 0.05/4=0.012): Total Production: H(2)= 9.5, p<0.01, SLI < CA, U=9, p<0.01, SLI < LA, U=15, p<0.012, Total Omission: H(2)=9.1, p<0.01, SLI < CA, LA, U=11.5, p<0.01.

Significant differences were also found in the correct responses on accusative and genitive object clitics (significance level 0.05/4=0.012): Accusative clitics: H(2)=13.3, p=0.001, SLI < CA: U=7.5, p<0.01, SLI < LA, U=13, p<0.01. Genitive clitics: H (2) =14.5, p=0.001, SLI < CA: U= 3.7, p<0.001, SLI < LA, U=15, p<0.012.
3.2 Definite Articles

Table 3. Definite article: total productions, omissions, substitutions and correct forms

<table>
<thead>
<tr>
<th>Group (N=9)</th>
<th>Total produced (/180)</th>
<th>Omissions</th>
<th>Substitutions</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M%</td>
<td>N</td>
<td>M%</td>
</tr>
<tr>
<td>SLI</td>
<td>159</td>
<td>88.3</td>
<td>17</td>
<td>9.4</td>
</tr>
<tr>
<td>LA</td>
<td>179</td>
<td>99.4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CA</td>
<td>180</td>
<td>200</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 3 shows that the SLI group produced fewer correct definite articles than the control groups but their overall rates were higher than on clitics. Incorrect responses involved some omissions but mostly substitutions, as well as a very low rate of no answers (only 2.2%, not shown in the table). The control groups did not omit articles. Kruskall-Wallis tests followed by Mann-Whitney U comparisons (significance level adjusted at 0.05/4=0.012) showed that the SLI group differed significantly from the CA group on correct productions, but did not differ significantly from the LA group on any of the measures: Total production: $H(2)=6.5$, $p<0.05$, SLI - CA: $U=22.5$, $p=0.04$, SLI-LA: $U=25.5$, $p=0.093$, Omission: $H(2)= 8.9$, $p<0.05$, SLI - CA: $U=22.5$, $p=0.04$, SLI-LA: $U=22.5$, $p=0.029$, Correct production: $H(2)=9.3$, $p<0.01$, SLI < CA: $U=13.5$, $p<0.01$, SLI - LA: $U=23.5$, $p=1.15$.

3.3 Genitive possessive clitics

Table 4. Genitive possessives: total productions, omissions, and correct forms

<table>
<thead>
<tr>
<th>Group (N=9)</th>
<th>Total produced (/81)</th>
<th>Omitted</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M%</td>
<td>N</td>
</tr>
<tr>
<td>SLI</td>
<td>65</td>
<td>80.2</td>
<td>14</td>
</tr>
<tr>
<td>LA</td>
<td>80</td>
<td>98.3</td>
<td>1</td>
</tr>
<tr>
<td>CA</td>
<td>78</td>
<td>96.3</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4 shows that the SLI group scored lower than the control groups on genitive possessives but this difference was not big. There were some omissions, but these were mainly made by one participant. The other incorrect responses consisted of only one substitution in the LA group and are not reported. A Kruskall-Wallis test revealed that there were no significant differences between the groups ($H(2)=2.4$, $p>0.05$).

3.4 Within-groups comparisons

As it was seen in the previous sections, all groups showed a higher performance on definite articles and genitive possessive clitics than on object clitics. These differences were further explored through pairwise comparisons (Wilcoxon signed ranks) within each group. The following statistically significant differences were noted (using an adjusted level of significance of 0.05/3=0.016):

Object clitics - definite articles: all groups produced more definite articles overall than genitive object clitics (SLI: $Z=-2.7$, $p<0.01$, CA: $Z=-2.2$, $p<0.016$, LA: $Z=-2.7$, $p<0.01$). The SLI group additionally omitted more genitive object clitics than definite articles ($Z=-2.5$, $p <0.01$), and produced more correct articles than both types of
object clitics (AccClitics < Def Articles, Z=-2.5, \( p<0.01 \), GenCl < Def. Art, Z=-2.6, \( p<0.01 \)).

**Genitive possessive clitics – genitive object clitics:** A lower performance was noted on correct forms of genitive object clitics than on genitive possessives in the SLI and LA groups (SLI group: \( Z=-2.5, \ p<0.05 \), LA group: \( Z=-2.6, \ p<0.05 \)). These differences were present but not as pronounced in the control groups.

The above differences are especially important given that some of the structures (genitive object clitics - genitive possessives, accusative object clitics - accusative definite articles) were identical in form. The performance of the groups on all measures is summarised in figure 1:

Figure 1. Correct responses (M %) on accusative /genitive object clitics, definite articles and genitive possessive clitics in all groups

![Figure 1](image)

<table>
<thead>
<tr>
<th>Measure</th>
<th>SLI</th>
<th>CA</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc Obj cli</td>
<td>42.7</td>
<td>85.5</td>
<td>96.2</td>
</tr>
<tr>
<td>Gen Obj cli</td>
<td>78.8</td>
<td>66.6</td>
<td>95.6</td>
</tr>
<tr>
<td>Def Article</td>
<td>70</td>
<td>92.2</td>
<td>80.2</td>
</tr>
<tr>
<td>Gen poss</td>
<td>95.6</td>
<td>95.2</td>
<td>95.6</td>
</tr>
</tbody>
</table>

4 Discussion

The aims of this paper were first, to investigate whether accusative and genitive-case object clitic pronouns, definite articles and genitive possessive clitics are difficult for Greek-speaking preschool children with SLI, and second, to examine whether any of the accounts of SLI reviewed here could predict and explain the pattern of deficits. The findings presented in section 3 showed that object clitics (accusative and genitive) were an area of exceptional difficulty for the SLI group; the SLI participants produced significantly fewer clitics overall - with clitic omissions distinguishing them from the controls - and produced fewer correct forms than both control groups. They did not have as many difficulties with definite articles, on which they differed significantly from only the CA group. In addition, they did not differ from either control group on genitive possessives. A significantly higher performance was noted on definite articles and genitive possessives than on object clitics within the SLI group.

The findings of impaired performance on object clitics and the dissociation with the genitive possessive clitics agree with previous findings in Greek SLI (Tsimpi & Stavrakaki 1999; Variokosta 2000; Tsimpi 2001; Mastropavlou 2006). Genitive object clitics have not been studied before but the relatively lower performance on these which was observed in all groups can be attributed to the later acquisition of genitive case compared to accusative case in typical development (Stephany 1997). Moreover, although the rate of clitic omissions (24%) distinguished the SLI group

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4 It should be noted that individual performance largely confirmed the findings at a group level (see Smith submitted, and Smith et al. submitted for more details).
from the control groups, it was not as high as that reported in Tsimpli & Stavrakaki (1999) and Tsimpli’s (2001) studies (approximately 96%) but was closer to that reported by Mastropavlou (2006 - 30%)\(^5\). This could be due to individual variability or to methodological differences between the studies. Additionally, the dissociation between object clitics and definite articles has been noted in the study of Tsimpli (2001) but is in contrast with the theoretical claims put forth by Tsimpli & Stavrakaki (1999) and Tsimpli (2001).

We now move to an evaluation of the predictions of the theoretical accounts, starting from the domain-general account, the Surface Hypothesis (SH). The main prediction of the SH (Leonard 1998) is that all object clitic forms and definite articles should be equally impaired and particularly difficult for children with SLI, due to their lack of saliency. On the contrary, genitive possessive clitics may be expected to be easier, as they are found in a lengthened, more salient position. Although better performance on genitive possessives was indeed found in the present study, the predictions of a homogenous impairment on object clitics and definite articles was not upheld, as all participants performed better on the latter. A similar pattern of performance was noted in the control groups, especially the LA group. Additionally, this pattern was observed despite the fact that some of the forms of definite articles and object clitics are morphologically identical.

Turning to the domain-specific accounts, the same argument holds for the Interpretability Hypothesis (Tsimpli & Stavrakaki 1999; Tsimpli 2001). According to this proposal, a similarly low performance on object clitics and definite articles would be predicted on the grounds of their common uninterpretable, morphosyntactic features, whereas genitive possessive clitics are assumed to be easier, on the basis of their interpretable features. The difficulty with object clitics and a certain degree of difficulty with definite articles, as opposed to genitive possessive clitics was thus upheld by the present findings. However, what cannot be easily explained is the observed dissociation between object clitics and definite articles, present in even the youngest participants. Moreover, the pattern of errors (omissions / substitutions) does not agree with the claim that the structures are inaccessible to SLI children.

The Representational Deficit for Dependent Relations hypothesis (van der Lely 1998) predicts that grammatical elements involving movement should be more difficult than ones that do not. In this sense, if a movement-based approach is adopted for the generation of object clitics, the RDDR may explain the observed dissociation between object clitics and definite articles. The pattern of errors observed here is consistent with the claims of the RDDR; the children produced a range of omissions, substitutions, but also correct productions of the forms, which can be explained by the assumption of optionality in the use of movement (van der Lely 1998). However, the RDDR does not explain a certain extent of difficulty observed with definite articles, and the trend for a difference between definite articles and genitive possessives in the SLI group. In other words, if only moved elements are problematic for children with SLI, then it is not directly explicable why definite articles are not at age-appropriate levels, while genitive possessives are better than the other measures in children with SLI.

\(^5\) The pattern observed in the control groups in this study agrees largely with that reported in studies of typical development in Greek; omissions of clitics and articles have only been reported in very early stages of development, before the age of 2:0 years (Stephany 1997). After 2:0 years, object clitics appear to be produced at normal rates by typically-developing children (Tsakali & Wexler 2003). Similarly, definite articles are reported to be omitted even more frequently than clitics before 2:0 years but are subsequently produced at high rates (Stephany 1997; Marinis 2000). Genitive possessives and post-verbal clitics are acquired earlier than other clitic forms (Stephany 1997; Tzakosta 2004).
An alternative explanation which has not been explored would involve a combination of the IH and RDDR hypothesis. It is possible that the common morphosyntactic properties ([+D, -interpretable]) of object clitics and definite articles in Greek result in a certain extent of difficulty with these structures for children with SLI. However, object clitics may additionally have other characteristics that may render them more difficult. Thus, the additive effect of movement combined with uninterpretability could result in object clitics being even more difficult to acquire in SLI than definite articles, which involve uninterpretable features but no movement. Conversely, elements such as the genitive possessive, which do not involve either of these factors, may be easier. In this sense, it would be possible to think of movement and uninterpretability as difficulty factors. This would result in the following hierarchy:

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High difficulty  [+movement, +uninterpretability]  object clitics
                      [-movement, +uninterpretability]  definite articles
Low  difficulty  [-movement, -uninterpretability]  genitive possessive clitics
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The above model could be used for combining other linguistic or even processing factors. Finally, other possible explanations for the impairment observed in object clitics should not be overlooked. We outline three of these: a) the complex / controversial categorical status of object clitics (see Jakubowicz et al. 1998), b) discourse factors (e.g. clitic omission may be due to object drop, Marinis 2000), and c) their interface status (see Smith et al. submitted for discussion of b, c).

5 Conclusion

This paper looked at accusative and genitive object clitics, definite articles and genitive possessive clitics, to examine whether they were problematic for Greek preschool children with SLI, and by doing this to also put to the test certain theoretical proposals of SLI. By means of assessing all the structures on the same group of participants, through careful matching with control groups and controlled elicitation procedures, it was found that object clitics were the structure with the poorest performance for all groups but especially for the SLI group, clitic omissions distinguishing the SLI group from both control groups. In contrast, definite articles were not as difficult, and genitive possessive clitics yielded an even higher performance. None of the accounts reviewed here appeared to fully explain the deficits observed, so a new combinatorial approach was proposed, whereby movement and interpretability / morphosyntactic deficiency may act as difficulty factors, rendering object clitics more problematic than definite articles and genitive possessive clitics.

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