On-line Processing of Articles and Clitic Pronouns by Greek Children with SLI

Vicky Chondrogianni, Theodoros Marinis, and Susan Edwards
University of Reading

1. Introduction

English children with Specific Language Impairment (SLI) have been shown to omit grammatical morphemes, such as tense morphemes in their production (Rice & Wexler, 1996) and do not seem to be sensitive to the omission of the same grammatical morphemes when they process sentences in real-time (Montgomery & Leonard, 1998, 2006). For example, Montgomery & Leonard (2006) using an on-line word-monitoring task investigated how 6-to-10 year old English children with SLI process sentences involving omission of progressive *–ing*, third person *–s*, and plural *–s*. This study showed that children with SLI were sensitive to the omission of *–ing*, a grammatical morpheme with high phonetic substance, but not to third person and plural *–s*, which are grammatical morphemes with low phonetic substance. Montgomery & Leonard account for these results in the context of the Surface Hypothesis (SH), a domain-general account, which predicts that children with SLI will have difficulties with non-salient, unstressed elements which carry a grammatical function due to general processing capacity limitations.

In Romance languages and in Greek, children with SLI have been shown to omit definite articles and clitic pronouns in their production (Jakubowicz, Nash, Rigaut, & Gerard, 1998; Tsimpli, 2001). However, comprehension of clitic pronouns in French seems to be less impaired than production (Grüter, 2006; Jakubowicz & Nash, 2006). To date there are no studies on the comprehension or on-line processing of articles and clitic pronouns in Greek. The present study aims to fill this gap by examining whether Greek children with SLI and a group of age-matched typically-developing (TD) children are sensitive to the omission of articles and clitic pronouns when they listen to sentences in real-time.

*This research is part of the grant 'Cross-linguistic study on the production and processing of grammatical morphemes in L2 children compared to children with Specific Language Impairment' funded by the Netherlands Organisation for Scientific Research (NWO) (254-70-121). We would like to thank the SLTs Argyro Eleftheriadou, Maria Vlassopoulou and the team of the University of Athens Children's Hospital 'Aghia Sofia' Dr Vlassios Tomaras, Sofia Giannopoulou, Marina Arabatzi, and Melina Griva for helping us with the recruitment of children with SLI. We would also like to thank Maliaras Primary School for participating in our research by allowing us to recruit and test TD children in the school.

2. Articles and pronouns in Greek

Greek has definite and indefinite articles, as shown in (1), and clitic pronouns, as shown in (2):

(1) **to/ena** pedhi
the/one child
'the/a child'

(2) **ton** idha
him saw
'I saw him'

The definite article and the third person clitic pronoun are morpho-phonologically similar and are marked for uninterpretable phi-features, i.e. gender, number, and case and the clitic pronoun is also marked for person. In terms of their phonetic properties, they are weak monosyllabic unstressed forms that cliticise on their host, i.e. definite articles cliticise on the noun and clitic pronouns on the verb, and therefore, in terms of the SH, they can be argued to have low phonetic substance. In contrast, the indefinite article is a strong bisyllabic stressed form and could be argued to have high phonetic substance.

Definite articles and clitic pronouns can have a fully referential use as in (1) and (2), but they can also be used with a purely grammatical function, i.e. they can be void of any semantic content, as in (3) and (4) (Tsimpli & Stavrakaki, 1999).

(3) **I** Maria klotsise ti mbala.
the Mary kicked the ball
'Mary kicked the ball.'

(4) **To** perimena oti *pro* tha perasi tis eksetaseis.
It expected that *pro* will pass the exams
'I expected him to pass the exams'.

The purely grammatical function of definite articles and clitic pronouns coupled with their morpho-phonological similarity has led to the proposal that the two elements belong to the same D-category in Greek. It has also been suggested that when they have an expletive (resumptive) use, they serve as a mere spell-out of uninterpretable features, and are not associated with semantic features, in contrast to indefinite articles, which denote [-definite] (Tsimpli and Stavrakaki 1999).

However, there are also some important differences between definite articles and clitic pronouns. Definite articles always subcategorize for a noun and are obligatory with singular (*to pedhi*, 'the child'), plural count nouns (*ta pedhia*, 'the children'), and proper names (*i Maria*, 'the Mary') in argument positions, and are thus very frequent. Bare nouns are disallowed in the subject

position and they are licit under certain circumstances in the object position (Marinis, 2003). Clitic pronouns, on the other hand, can be used only in the object position and can be omitted in the case of object-drop, rendering them less frequent. They constitute verbal arguments which are optional produced under specific discourse conditions, and they have a more complex derivation than definite articles (Mavrogiorgos, 2010).

In light of the grammatical properties of articles and clitic pronouns in Greek, Tsimpli & Stavrakaki (1999) proposed the Interpretability Hypothesis (IH), a domain-specific account. According to the IH, the uninterpretable features carried by the definite article and the clitic pronoun should constitute a vulnerable acquisition domain for children with SLI, at least at the initial stages of acquisition, leading to incomplete underlying representations and impaired access to these representations. Conversely, the indefinite article which carries semantic information and interpretable features associated with [-definite] is not predicted to be impaired.

3. Acquisition of articles and clitic pronouns by Greek TD children and children with SLI

In typical acquisition, definite articles emerge in the speech of Greek children at around the age of 1;9 when their MLU is below 2; they are felicitously produced in more than 90% of the time in obligatory contexts when their MLU is above 2.5 and their age is around 2;5 to 2;9 (Marinis, 2003). Clitic pronouns appear shortly after definite articles, around the age of 2;1. After a short period of clitic omission which coincides with object omission, children reach target-like production (Marinis, 2000). The early acquisition of clitics in Greek has also been highlighted in the experimental study by Tsakali & Wexler (2003) which investigated 25 older TD children (2;4-3;6) and found clitic omission of less than 1% in obligatory contexts. This is in contrast with results from Romance languages, in which clitics emerge quite late in both typical and atypical acquisition and TD children show an extended period of clitic omission even until the age of 4 years (Jakubowicz & Nash, 2006).

Turning now to the acquisition of articles and clitics by Greek children with SLI, there is evidence that definite articles and clitic pronouns show a high rate of omission in pre-school children with SLI, whereas indefinite articles and strong pronouns seem to be intact (Diamanti, 2000; Tsimpli & Stavrakaki, 1999; Varlokosta, 2000). However, the rate of omission of both definite articles and clitic pronouns varies considerably from study to study. For example, Tsimpli & Stavrakaki (1999) reported 95% omission of definite articles and 97% omission of clitic pronouns in a 5;5 year old child with SLI, whereas Mastropavlou (2006) reported 40% omission of clitic pronouns in ten preschool children aged 4;2-5;9.

In addition, several studies have shown age and therapy effects in the acquisition of definite articles and clitic pronouns. For example, Stavrakaki (2001) showed that a group of eight older children with SLI with a mean age of

7;3 had mastered the acquisition of definite articles and clitics. Tsimpli & Mastropavlou (2007) compared a group of 4;0-4;6 year old to a group of 5;6-6;2 children with SLI. The two groups showed ceiling performance in the use of the indefinite article (younger group: 95%-100%, older group: 90%-100%), but they differed from each other in the omission of definite articles and clitic pronouns. The younger group which had also received less treatment than the older group had a higher rate of definite article omission (range: 38%-72%) and clitic pronoun omission (23%-68%) than the older group which had a much lower rate of definite article omission (5%-7%) and clitic pronoun omission (4%-15%).

Finally, some studies have shown that clitic pronouns are more vulnerable than definite articles in children with SLI. In a group study with seven children with SLI aged 3;5-7;0, Tsimpli (2001) found a dissociation between the production of definite articles and clitic pronouns, with the latter being more vulnerable than the former. Similarly, Smith (2008) reported higher production rates of definite articles (mean: 88%) than clitics (mean: 64%) in a group of nine 4;9-6;8 year old children with SLI, but there was considerable individual variation within the group.

4. Present study

The present study is the first to examine how Greek TD children and children with SLI process definite and indefinite articles and clitic pronouns in real-time by examining whether they are sensitive to the ungrammaticality induced by article and object clitic omission. The IH and the SH predict that children with SLI will be sensitive to the ungrammaticality induced by the omission of indefinite articles, but should be insensitive to the omission of definite articles and clitic pronouns, either due to feature interpretability (IH) or to low auditory/perceptual salience (SH).

4.1 Participants

Thirteen monolingual Greek children with SLI and twenty seven TD monolingual Greek children matched on age participated in an on-line self-paced listening task examining the processing of articles and pronouns. The children had no history of frank neurological impairment, motor speech disorders, hearing impairment or psychological/emotional disturbance. Their non-verbal abilities were within norms and all children were diagnosed as having persistent difficulties with language development by speech and language therapists on the basis of clinical assessment using standardized and non-standardized tests. The children with SLI were recruited from speech and language therapists in Athens and from the Athens University Children's hospital. At the time of testing they had been receiving 1 to 3 years of treatment. The children with SLI had a mean age of 6;9 (range: 5;6 – 8;4, SD: 11 months) and the TD children had a mean age of 7;0 (range: 6;0 – 8;3, SD: 11 months). The two groups were matched on age ($t(38) = 1.475$, $p > .1$).

4.2 Materials and procedure

Two baseline assessments were used to evaluate the verbal and non-verbal abilities of the children with SLI. The comprehension of morphosyntax from the preschool version of the Diagnostic Test of Verbal Intelligence (DVIQ, Stavrakaki & Tsimpli (2000)) was used to assess the children's linguistic abilities. Raven's Coloured Progressive Matrices (Raven, 1998) was administered to evaluate the children's non-verbal abilities. To assess TD and impaired children's ability to process articles and pronouns in real-time, we used an on-line self-paced listening task in which half of the sentences were grammatical and included definite, indefinite articles, and clitic pronouns and the other half of the sentences contained omissions of these elements. The material of the self-paced listening task involved stories about animals engaging in imaginary activities. At the beginning of each trial, children saw a picture on a computer screen and at the same time they listened to a lead-in sentence introducing the participants (animals) or objects in the picture. The lead-in sentence was followed by the critical sentence which was segmented into phrases. To hear the critical sentence, children were instructed to press a response button as fast as they can in the E-prime box. The experiment was programmed and controlled by the software E-prime (Schneider, Eschmann, & Zuccolotto, 2002). Examples (5)-(8) illustrate the grammatical and ungrammatical sentences in the experimental conditions.

(5) Definite article – subject position
Xthes ena delfini epeze sti thalasa me ta ala zoa. Arga / to apogevma / **(to)** delfini / kinighise / ta psaria.
'Yesterday a dolphin was playing in the sea with the other animals. Late / in the afternoon / (the) dolphin / chased / the fish.'

(6) Definite article – object position
Xthes ena kanguro epeze me mia prasini mbala. To kanguro / klotsise / **(ti)** mbala / sto ghipedo / xthes to apogevma.
'Yesterday a kangaroo was playing with a green ball. The kangaroo / kicked / (the) ball / on the pitch / yesterday afternoon.'

(7) Indefinite article – object position
Xthes mia atakti alepou kinighise kapio alo zoo. H alepou / kinighise / **(enan)** ghaidaro / sto dhasos/ xhtes to mesimeri.
'Yesterday a naughty fox chased some other animal. The fox / chased / (a) donkey / in the woods / yesterday at midday.'

(8) Accusative direct object clitic pronoun
To liontari ithele na fai to elafi. To elafi / tromakse poli / otan / to liontari / **(to)** dagkose / sti zougla / pano stous vrahus.
'The lion wanted to eat the deer. The deer / got very scared / when / the lion / (it) bit / in the jungle / on the rocks.'

To ensure no acoustic difference between the segment with and without the article/clitic pronoun, we recorded the grammatical version of each sentence and then spliced out the article or clitic pronoun to create the ungrammatical version. If TD children and children with SLI are sensitive to the ungrammaticality induced by the omission of articles and pronouns, then their Reaction Times (RTs) are predicted to be longer in the critical segment of the ungrammatical compared to the grammatical sentences.

The nouns used in the experiment were both animate and inanimate. There were 8 critical nouns per sentence type which appeared only once across sentence types giving rise to 24 critical nouns in total, 16 animate and 8 inanimate. The overall number of animate and inanimate nouns was controlled for in the whole experiment, as was the number of noun phrases containing an article and bare nouns (licit or illicit). The nouns in the critical conditions were matched for frequency, length, and age of acquisition (below 6 years of age). The critical sentences in the article conditions comprised five segments and the critical segment was segment three. The conditions with clitics involved accusative clitic pronouns that were direct objects of transitive verbs. Seven transitive verbs were used (*kiss, kick, chase, hug, bite, push, throw*) and ten animal characters as arguments of the verbs. All verbs appeared in the perfective aspect, which has been found to elicit a higher production rate of overt arguments compared to the imperfective aspect (Chondrogianni, 2008; Tsimpli & Papadopoulou, 2006) The critical sentences in the clitic pronoun conditions had seven segments and the critical segment was segment five.

The experiment consisted of 68 experimental trials (8 per condition in the case of articles and 10 per condition in the case of clitic pronouns, half grammatical and half ungrammatical) and 8 fillers, which consisted of sentences with licit bare objects in the form of mass nouns. We used a single-case design, i.e. each participant encountered the grammatical and ungrammatical version of each sentence. The two versions were presented in two different sessions with a weekly interval. The presentation of the lists was randomized across participants in order to control for order of presentation effects.

TD children were tested in a quiet room in their school and children with SLI were tested at their homes or at the SLTs private practices. The baseline tests were administered first followed by a practice session for the self-paced listening task and then the experimental session. To proceed to the experimental session, children had to successfully complete the practice session, which could be repeated twice. None of the children failed to complete the practice session. If needed, a break was administered halfway through the experiment.

5. Results

5.1 Baseline tasks

Table 1 presents the raw and standardized scores of the children with SLI and the TD children on the DVIQ and Raven's coloured matrices. An independent samples t-test showed that the children with SLI had a significantly

lower raw score on the DVIQ than the TD children (t (38) = 5.523), p <.001), but the two groups did not differ from each other on the standard scores of the Raven's coloured matrices (t (38) = 2.135, p >.1).

Table 1. Scores of TD children and children with SLI on the baseline tests

Task		Children with SLI	TD children
DVIQ	Mean	21.1	27.7
	Range	14-28	25-30
	SD	4.2	1.4
Raven's	Mean	105	109
	Range	90-125	85-125
	SD	11.2	12

5.2 On-line sentence processing task

Raw RTs were transformed into residual RTs in order to control for the difference in length between the critical segments in the grammatical and ungrammatical conditions.

All residual RTs above 2000ms were excluded from the final calculation as extreme values. Outliers were defined as RTs of 2 standard deviations above or below the means per condition per subject and item. The total number of extreme values and outliers was 4% for the children with SLI and 3% for the TD children.

To examine whether the TD children and the children with SLI were sensitive to the omission of definite, indefinite articles, and clitic pronouns, residual RTs for each segment were entered into repeated-measures ANOVAs for each structure separately with Grammaticality (grammatical, ungrammatical) as the within subjects factor in a per participants (F_1) and a per items (F_2) analysis.

The analyses in the segments prior and after the critical segments did not show any significant main effects. Therefore, we report only the results of the critical segments.

RTs for the definite article in the subject position are presented in Figure 1. Both groups showed a main effect of Grammaticality (TD children: F_1 (1, 26) = 58.074, p < .001; F_2 (1,7) = 26.375, p = .001; children with SLI: F_1 (1, 12) = 5.626, p < .05; F_2 (1,7) = 5.397, p = .053).

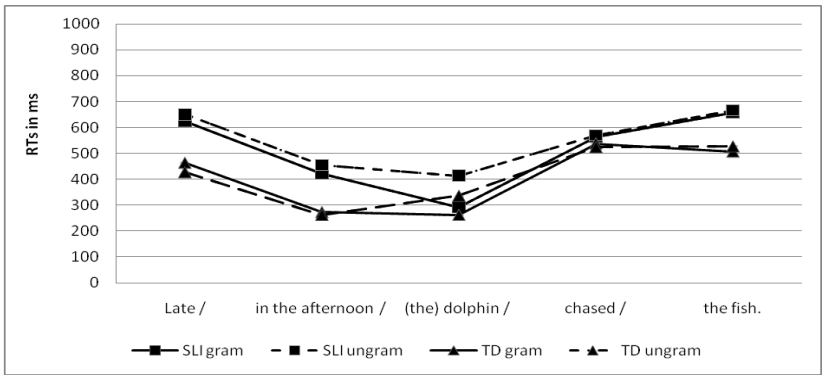

Figure 1. Reaction-times (in ms) for the definite article in the subject position

Figure 2 shows the RTs for the definite article in the object position. TD children showed a main effect of Grammaticality in both analyses per subjects and per items ($F_1(1,26) = 247.376$, $p < .001$; $F_2(1,7) = 21.804$, $p < .01$). Children with SLI showed a main effect of Grammaticality only in the analysis per participants ($F_1(1,12) = 6.423$, $p < .05$; $F_2(1,7) = 2.292$, $p > .1$).

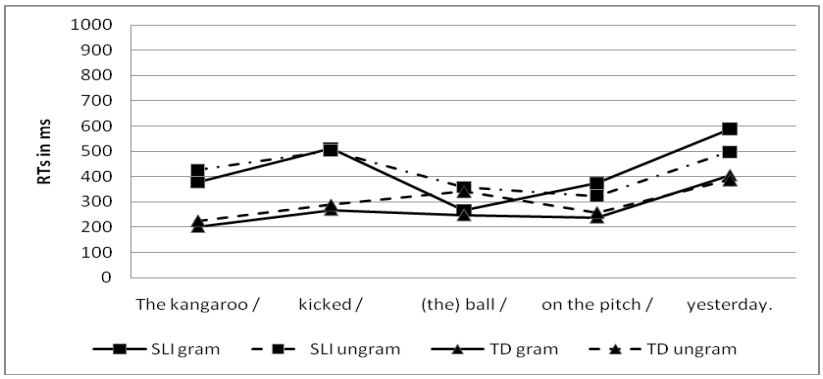

Figure 2. Reaction-times (in ms) for the definite article in the object position

Figure 3 shows the RTs for the indefinite article in the object position. Both groups showed a main effect of Grammaticality (TD group: $F_1(1,26) = 105.969$, $p < .001$; $F_2(1,7) = 47.920$, $p < .001$; SLI group: $F_1(1,12) = 62.471$, $p < .001$; $F_2(1,7) = 81.401$, $p < .001$).

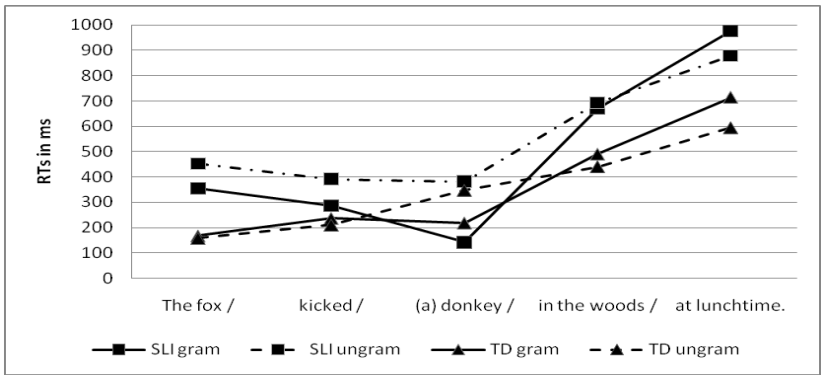

Figure 3. Reaction-times (in ms) for the indefinite article in the object position

In the clitic pronoun condition (Figure 4) TD children showed a significant main effect of Grammaticality (F_1 (1,26) = 12.189, p <.01; F_2 (1,9) = 8.627, p <.01). In contrast, children with SLI showed no main effect of Grammaticality for either the participant or item the analysis (F_1 (1,12) = 1.402, p > .1; F_2 (1,9) = 1.243, p > .1).

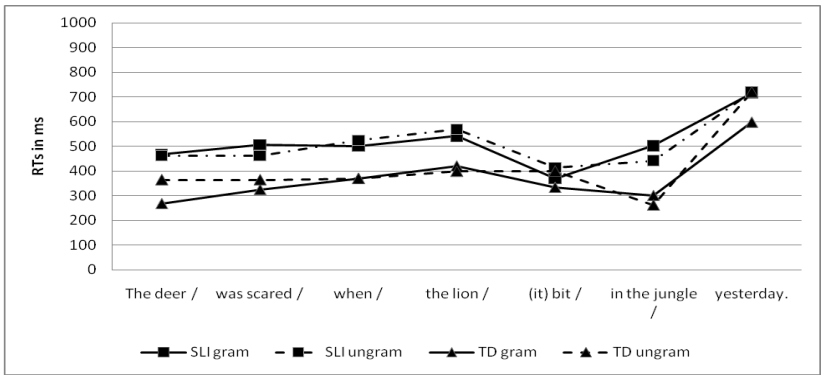

Figure 4. Reaction-times (in ms) for the clitic pronoun

6. Discussion

The present study is the first to investigate how children with SLI and age-matched TD children process articles and clitic pronouns in real-time with the aim to examine whether they are sensitive to the ungrammaticality induced by the omission of articles and clitic pronouns.

The results showed that the TD children were sensitive to the omission of definite and indefinite articles and clitic pronouns and confirm findings from the typical acquisition literature according to which these functional elements are mastered early in Greek.

Turning to the children with SLI, our study showed three findings. Firstly, children with SLI were sensitive to the omission of indefinite articles, as exhibited by the significantly longer RTs in ungrammatical compared to grammatical conditions. Secondly, they were not sensitive to the omission of clitic pronouns, as indicated by the lack of a grammaticality effect in this condition. Thirdly, they were sensitive to the omission of definite articles and the effect was stronger in definite articles in the subject compared to the object position. The first two findings are in line with the IH (Tsimpli & Stavrakaki, 1999) and the SH (Montgomery & Leonard, 2006) both of which predict that indefinite articles should be intact, whereas clitic pronouns should be vulnerable in Greek children with SLI. The third finding is unpredicted from both accounts. According to the IH, definite articles and clitic pronouns should be vulnerable in children with SLI because they serve as a mere spell-out of uninterpretable features and are morpho-phonologically similar. According to the SH, the two elements should be vulnerable because they have low phonetic substance, i.e., they are weak, monosyllabic unstressed forms that cliticise to their host. This raises the question of why children with SLI showed an asymmetry between definite articles and clitic pronouns.

The asymmetry between definite articles and clitic pronouns has been reported in production studies with 3 to 7-year-old children with SLI (Smith, 2008; Tsimpli 2001) and has been independently found in 6-12 year old TD L2 Greek children (Chondrogianni, 2008). Moreover, Stavrakaki (2001) and Tsimpli & Mastropavlou (2007) have demonstrated that age and amount of therapy may affect the children's production of definite articles and clitic pronouns. The children with SLI in our study were school-aged children and had received up to three years of treatment. Could age and treatment account for the asymmetry between definite articles and clitic pronouns? And why should age and therapy be more beneficial for definite articles than for clitic pronouns?

As mentioned in Section 2, there are some important differences between definite articles and clitic pronouns. Definite articles are very frequent because they are obligatory with proper names, singular and plural count nouns in argument positions. Bare nouns are licit only under specific circumstances in the object position, but are disallowed in the subject position. Clitic pronouns, on the other hand, are less frequent because they constitute verbal arguments which are optionally produced under specific discourse conditions. In addition, they have a more complex derivation than definite articles. These differences could account for the asymmetry between definite articles and clitic pronouns found in some previous production studies and also in our sentence processing study. Children with SLI may benefit from the high frequency and consistency of use of definite articles which could trigger a relatively fast recovery during and after treatment. In contrast, the low frequency and high complexity of clitic pronouns may provide a disadvantage for children with SLI, which could account for the long-lasting omission of clitic pronouns and the children's lack of sensitivity to omission errors.

A final point we would like make regards the nature of the underlying grammatical rules that underpin the children's performance in production and on-line comprehension. Tsimpli & Mastropavlou (2007) following Paradis & Gopnik (1997) argue that school-aged children with SLI may be capable of adhering to the target grammar via learning due to greater and more intensive exposure rather than acquisition. This raises the question of what impact this has on the underlying representation and the automaticity during processing or formulation of underlying grammatical rules.

In order to address this question, research is needed that will compare production to on-line processing from the same population of children with SLI in comparison not only to age-matched, but also to younger TD language-matched controls, and a larger sample of children with SLI which will render the comparisons between groups more robust.

References

Chondrogianni, V. (2008). *The Acquisition of Determiners and Clitic Pronouns by Child and Adult L2 learners of Greek.* University of Cambridge, Cambridge.

Diamanti, M. (2000). *Aples morphosyntaktikes domes sto logo pediou me eidiki glwssiki diataraxi.* Paper presented at the Proceedings of the 8th Symposium of the Panhellenic Association of Logopedists, Athens.

Grüter, T. (2006). *Object Clitics and Null Objects in the Acquisition of French.* McGill University, Montreal.

Jakubowicz, C., & Nash, L. (2006). Why accusative clitics are avoided in normal and impaired language development. In C. Jakubowicz, L. Nash & K. Wexler (Eds.), *Essays in Syntax, Morphology and Phonology in SLI*. Cambridge, MA: MIT Press.

Jakubowicz, C., Nash, L., Rigaut, C., & Gerard, C.-L. (1998). Determiners and Clitic Pronouns in French-Speaking Children With SLI. *Language Acquisition, 7*(2), 113 - 160.

Marinis, T. (2000). The acquisition of clitic objects in Modern Greek: Single clitics, clitic doubling, clitic left dislocation. In A. Alexiadou, N. Fuhrop, U. Kleinhenz & P. Law (Eds.), *ZAS Working Papers 15* (pp. 260-283). Berlin: Humboldt University.

Marinis, T. (2003). *The Acquisition of DP in Modern Greek*. Amsterdam: John Benjamins.

Mastropavlou, M. (2006). *The effect of phonological saliency and LF-interpretability in the grammar of Greek normally developing and language impaired children.* Aristotelion Uni, Thesaloniki.

Mavrogiorgos, M. (2010). *Enclisis and Proclisis in Modern Greek.* University of Cambridge, Cambridge.

Montgomery, J. W., & Leonard, L. B. (1998). Real-Time Inflectional Processing by Children With Specific Language Impairment: Effects of Phonetic Substance. *J Speech Lang Hear Res, 41*(6), 1432-1443.

Montgomery, J. W., & Leonard, L. B. (2006). Effects of Acoustic Manipulation on the Real-Time Inflectional Processing of Children With Specific Language Impairment. *J Speech Lang Hear Res, 49*(6), 1238-1256.

Paradis, M., & Gopnik, M. (1997). Compensatory strategies in genetic dysphasia: Declarative memory. *Journal of Neurolinguistics, 173-185*, 173-185.

Raven, J. C. (1998). *The Coloured Progressive Matrices*. Oxford: OUP.

Rice, M. L., & Wexler, K. (1996). Toward tense as a clinical marker of Specific Language Impairment in English-speaking children. *Journal of Speech and Hearing Research, 39*, 1239-1257.

Schneider, W., Eschmann, A., & Zuccolotto, A. (2002). *E-Prime user's guide*. Pittsburgh: PA: Psychology Software Tools, Inc.

Smith, N. (2008). *Morphosyntactic and Phonological Short-term memory skills of Greek pre-school children with Specific Language Impairment.* University of Reading, Reading.

Stavrakaki, S. (2001). *SLI in Greek: Aspects of Syntactic Production and Comprehension.* Aristotle University of Thessaloniki, Thessaloniki.

Stavrakaki, S., & Tsimpli, I. M. (2000). *Diagnostic Verbal IQ Test for Greek preschool and school age children: standardization, statistical analysis, psychometric properties.* Paper presented at the The Proceedings of the 8th Symposium of the Panhellenic Association of Logopedists, Athens.

Tsakali, V., & Wexler, K. (2003). Why do children omit clitics in some languages but not in others? In J. v. Kampen & S.Baauw (Eds.), *Proceedings of the Generative Approaches to Language Acquisition 2003* (pp. 493-504). Utrecht LOT Publications.

Tsimpli, I. M. (2001). LF-interpretability and Language Development: a study of verbal and nominal features in normally developing and SLI Greek children. *Brain & Language 77*, 432-448.

Tsimpli, I. M., & Mastropavlou, M. (2007). Feature Interpretability in L2 Acquisition and SLI: Greek Clitics and Determiners. In H. Goodluck, J. Liceras & H. Zobl (Eds.), *The Role of Formal Features in Second Language Acquisition* (pp. 143-183). London: Routledge.

Tsimpli, I. M., & Papadopoulou, D. (2006). Aspect and argument realization: A study on antecedentless null objects in Greek. *Lingua, 116*(10), 1595-1615.

Tsimpli, I. M., & Stavrakaki, S. (1999). The effects of a morphosyntactic deficit in the determiner system: The case of a Greek SLI child. *Lingua, 108*(1), 31-85.

Varlokosta, S. (2000). *I glossiki anaptiksi enos ellinopoulou me idiki glossiki diatarahi. (The linguistic development of a child with SLI)*. Paper presented at the The Proceedings of the 8th Symposium of the Panhellenic Association of Logopedists.