

# On the semantic properties of non-finite clauses in early child Greek\*

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*Abstract.* In this study, the modal, aspectual and temporal properties of verbal forms in early child Greek are examined in light of the view that there is a ‘non-finite’ stage in the acquisition of Greek, equivalent to the RI stage of the Germanic and Romance languages (Varlokosta, Vainikka & Rohrbacher 1996, 1998). It is argued that the interpretational properties of the early verbal forms with the suffix *-i* and no agreement in child Greek (i.e. their eventivity and modal reading) provide a further argument for their non-finite status. Based on the semantic analysis of the Perfective Non Past advocated in Giannakidou & Zwarts (to appear), it is claimed that the ‘participial’ analysis proposed in Varlokosta et al (1998) for the early *i*-forms in child Greek is compatible with their semantic properties, in particular with their modal or irrealis interpretation. Last, it is claimed that the evidence from early child Greek regarding the acquisition of the agreement paradigm supports the Full Clause Hypothesis and not the Maturation or Structure Building Hypothesis.

## 0. Introduction

Within the past decade a number of studies in the field of language acquisition have focused on the phenomenon of Root Infinitives (henceforth RIs) in child language. The issues raised in these studies concern mainly the structure underlying RIs and the crosslinguistic picture regarding this phenomenon (Boser, Lust, Santelmann & Whitman 1992, Guasti 1994, Hoekstra & Hyams 1995, Rizzi 1994, Wexler 1994, 1998, among others). More recently, research on RIs has paid attention to their interpretative properties, in particular their aspectual, modal and temporal characteristics (Ferdinand 1996, Hoekstra & Hyams 1998, Ingram & Thompson 1996, Wijnen 1997).

In this study we examine the modal, aspectual and temporal properties of verbal forms in early child Greek in light of the view that there is a ‘non-finite’ stage in the acquisition of Greek, equivalent to the RI

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stage of the Germanic and Romance languages (Varlokosta, Vainikka & Rohrbacher 1996, 1998). It will be argued that the interpretative properties of what are claimed to be early non-finite verbs in child Greek provide an additional argument for their non-finite nature, specifically for the analysis advocated in Varlokosta et al (1998). Furthermore, it will be claimed that the analysis of the verbal agreement paradigm in child Greek provides evidence that functional categories are present and therefore supports the Strong Continuity or Full Clause Hypothesis and not the Maturation or Structure Building Approach. The paper has 4 sections. In section 1, we provide an overview of the distributional and semantic properties of RIs in child language. In section 2, we discuss the distribution of early verbs in child Greek, we summarise the arguments of Varlokosta et al (1998) for the non-finite status of the verbal forms with the suffix *-i* and we provide two new potential arguments for their non-finite status. In section 3, we examine the interpretative properties of early verbal forms in child Greek and we discuss how these properties support the analysis of *i*-forms advocated in Varlokosta et al (1998). In section 4, we raise the issue of continuity and illustrate why the early child Greek data support the Strong Continuity or Full Clause Hypothesis.

## ***1. Root infinitives in child language: distribution and interpretation***

### *1.1 Distribution*

It has been well documented that children acquiring Germanic languages and at least one Romance language go through an early stage at which they produce declarative sentences with a RI, as in (1), which would be ungrammatical in the adult language (Stern & Stern 1928, Weverink 1989, Pierce 1992, Wexler 1994, among others):<sup>1</sup>

- (1a) Mina einer gucken            (German: Sabrina 1;11)  
 Mina one look-INF            (Clahsen, Penke & Parodi 1994)  
 ‘Mina is looking at somebody’
- (1b) Gubbe vara där            (Swedish: Markus 1;10)  
 old man be-INF there        (Platzack 1994)  
 ‘The (or an) old man was there’

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<sup>1</sup> The term *Optional Infinitives*, due to Wexler (1994), is also used for the same phenomenon.

- (1c) Mama radio aan doen (Dutch: Peter 2;0)  
 mommy radio on put-INF (Wijnen 1997)  
 ‘Mommy put on the radio’
- (1d) Moi dessiner la mer (French: Daniel 1;10)  
 me draw-INF the sea (Pierce 1992)  
 ‘I draw the sea’

RIs occur roughly around the age of 2;0 and their proportion varies from language to language as well as from child to child within a language. Table 1 summarizes the rates of RI use for some of the youngest children discussed in the literature.

Language	Child	Age	Proportion of RIs	Source
<i>German</i>	Katrin	1;5	58%	Rohrbacher & Vainikka (1994)
	Nicole	1;8	68%	
<i>Dutch</i>	Peter I	1;9-1;11	94%	Wijnen (1994)
	Peter II	2;0-2;2	34%	
<i>Swedish</i>	Markus I	1;7-1;9	100%	Rohrbacher & Vainikka (1994)
	Markus II	1;9-1;11	82%	
	Markus III	1;11	45%	
<i>French</i>	Daniel	1;8	60%	Pierce (1992)
	Gregoire	1;9	30%	
	Nathalie	1;9	96%	
	Philippe	2;1	21%	

Table 1 Proportion of RIs in child languages (from Varlokosta et al 1998)

There are two important properties regarding the ‘root infinitive’ stage. First, during this stage children produce both finite and non-finite verbs in root clauses. In fact, Wexler (1994) argues that children know the difference between finite and non-finite clauses, i.e., children know that finite verbs raise and non-finite verbs do not raise (see also Pierce 1992, Poeppel & Wexler 1993, Rohrbacher & Vainikka 1994). Evidence for this claim is drawn from the different distribution of finite and non-finite verbs with respect to negation in child French (Pierce 1992, Wexler 1994) as well as from the second position of finite verbs and the final clause position of RIs in child German (Boser et al 1992, Poeppel & Wexler 1993). Finite verbs in child French appear systematically before the negation *pas*, whereas non-finite forms occur after *pas* (Table 2). Finite verbs in child German appear systematically in the second position, whereas non-finite verbs occur clause finally (Table 3). Both of these facts indicate knowledge of the adult grammar despite the unproductive use of agreement at this stage.

Verb-Negation Order	+Finite	-Finite
<i>pas</i> verb	11	77
verb <i>pas</i>	185	2

Table 2 Finiteness and position of negation in child French  
(from Wexler 1994)

V position	+Finite	-Finite
V2	197	6
V final	11	37

Table 3 Finiteness and verb position in child German  
(from Poeppel & Wexler 1993)

A second important property related to the ‘root infinitive’ stage is that when finite forms are used, they are used correctly, i.e., despite the rather limited agreement paradigm, there are no agreement errors.<sup>2</sup> Poeppel & Wexler (1993) argue that German-speaking children do not make agreement errors; when they produce a verbal inflection, the subject agrees with it (see also Rohrbacher & Vainikka 1994). Similar results have been reported for English too (Harris & Wexler 1996). These facts have led a number of researchers to the conclusion that correct agreement features on verbal inflectional morphology are known to children very early in the course of acquisition. The idea of early knowledge of inflectional morphology is formalised by Wexler (1998) as the hypothesis of *Very Early Knowledge of Inflection* (VEKI) and by Hoekstra & Hyams (1995) as the hypothesis of *Early Morphosyntactic Convergence* (EMC).

The RI phenomenon appears to show some variability crosslinguistically. In particular, it has been proposed that languages like Italian, Spanish and Catalan do not undergo a ‘root infinitive’ stage (Wexler 1994, Guasti 1994, Hoekstra & Hyams 1995). The proportion of RIs in these languages is very low compared to the proportion of RIs in the Germanic languages and in French (Guasti 1994, Hoekstra & Hyams 1998). This finding has led many researchers to the hypothesis that the ‘root infinitive’ stage is not a universal property in child language and that RIs do not occur in INFL-licensed null subject languages (Wexler 1998, Sano & Hyams 1994, Hoekstra & Hyams 1995).

Nonetheless, it should be pointed out that although Italian- or Spanish- and Catalan-speaking children do not produce RIs with the rate

<sup>2</sup> This is only true for regular forms but false for suppletive *be* (Ingham 1998).

observed in non-null subject languages, they do produce bare participles, as well as other non-finite forms:<sup>3</sup>

- |      |   |   |
|------|---|---|
| (2a) | quetto qui mangiare chellini (inf.)<br>this her eat-INF piglets | (Italian: Martina 1;11)<br>(From Guasti 1994) |
| (2b) | andato via (participle)<br>gone-MASC/SG away                    |   |
| (2c) | caduto (participle)<br>fallen-MASC/SG down                      | (Teresa Guasti (p.c.))                        |
| (3a) | dormir (infinitive)<br>sleep-INF                                | (Catalan: Laura 1;7)                          |
| (3b) | caigut (participle)<br>fallen                                   | (Catalan: Laura 1;10)                         |
| (3c) | xx dormint (gerund)<br>(unintelligible) sleeping                | (Catalan: Pep 1;8)<br>(From Grinstead 2000)   |

Therefore, it is not unreasonable to assume that the low frequency of RIs per se in null-subject languages like Italian and Catalan is related to the use of other non-finite structures. Furthermore, the overall lower rate of root infinitival forms usually observed in null-subject languages might be linked to the fact that the ‘root infinitive’ stage in these languages is much shorter than in the Germanic languages.<sup>4</sup>

Moreover, there is robust evidence that even in null-subject languages, children go through a stage where they make use of non-finite forms. Children in (Modern) Greek, a null subject language albeit one with no infinitival forms, produce a construction that strongly resembles RIs in other languages (Varlokosta et al 1996, 1998). Therefore, the distinction between null vs. non-null subject languages regarding the existence of a

<sup>3</sup> According to Guasti (1994: 12), the proportion of RIs for the Italian-speaking child Martina is 22% at 1;9 and 16% at 1;11. However, if one adds in the proportion of past participles missing from the early Italian grammars, then the overall rate of missing non-finite root structures in early Italian becomes relatively high (for example, 22% for Martina at 1;11), in fact comparable to the proportion of RIs in some other languages, as Guasti (1994) herself points out. In Catalan, the rate of RIs and other non-finite root structures seems to vary from child to child. For example, the frequency of root non-finite forms in the early stages is 20% for Laura at 1;7-2;2, 64% for Pep at 1;0-1;8 but 10% for Guillem at 1;0-1;9 (calculated on the basis of Table 4 from Grinstead 2000).

<sup>4</sup> Guasti (1994) reports that Italian-speaking children cease to use RIs before the age of 2;0, whereas the RI stage extends beyond the second year in non-null subject languages.

‘root infinitive’ or rather a ‘root non-finite’ stage deserves further investigation. But before we discuss the child Greek facts in detail, we will examine the interpretative properties of RIs crosslinguistically.

### *1.2 Interpretation*

The co-occurrence of finite forms and non-finite/infinitival forms in child language has raised the question whether these two have the same interpretative properties or not. There is some evidence in the literature suggesting that the temporal reference of RIs is similar to that of finite forms. For example, according to Pierce (1992), RIs in child French describe ongoing activities along with finite verbs. Similarly, Poeppel & Wexler (1993) argue that the temporal reference of finite and RI structures was identical for their German-speaking child. However, evidence from other studies suggests that RIs and finite forms differ regarding their interpretative properties in two respects. First, it has been argued that RIs receive most often a modal interpretation, which entails reference to a likely future event (Ferdinand 1996, Wijnen 1997, Ingram & Thompson 1996, Lasser 1997). Second, there appears to be a constraint on the aspectual properties of the verbs occurring in RI constructions: the majority of these verbs are eventive predicates. Finite constructions, on the other hand, allow both eventive and stative predicates (Jordens 1990, Ferdinand 1996, Wijnen 1997).

More specifically, Wijnen (1997) observes that the majority (93% or more) of RIs in the Dutch corpus he examined consisted of eventive predicates. Furthermore, the majority of these forms (86.3%) had a modal interpretation. Nonetheless, a significant proportion of the eventive RIs referred to ongoing or past eventualities.<sup>5</sup> Wijnen (1997) interprets this fact as an indication that temporal reference in these constructions is essentially free. More importantly, Wijnen (1997) points out that the temporal reference of non-eventive RIs (which constituted approximately 7% of RIs), is restricted to future (i.e. modal). Finite sentences, on the other hand, show a completely different picture. Wijnen (1997) reports that eventive and non-eventive predicates are equally represented (on average 51% non-eventive verbs) and temporal reference corresponds to the pattern in the adult language, with present/ongoing eventualities being the most predominant (on average 94%). Similar observations regarding eventivity have been made by Jordens (1990) for Dutch too and by Ferdinand (1996)

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<sup>5</sup> This is further supported by experimental data reported in Schönenberger, Pierce, Wexler & Wijnen (1995).

for French. Ferdinand (1996) observes that during the RI stage in French, stative verbs are exclusively finite, while eventive verbs occur both in finite and non-finite forms.

Hoekstra & Hyams (1998) draw upon the predominant future interpretation of RIs observed in the above studies and argue that the temporal reference of RIs is fixed to a modal (irrealis) interpretation: RIs convey deontic and boulemaic modalities, expressing necessities and desires. Furthermore, Hoekstra & Hyams (1998) claim that the modal interpretation of RIs is a result of the infinitival morpheme itself. In particular, based on Giorgi & Pianesi (1997), they propose that infinitives in the Germanic and Romance languages are not inherently perfective but may refer to the processual part of an event. In that sense, infinitives differ from past/perfect participles, which refer to the completion of an eventuality. It is this aspectual value of [-realized] that is the basis for their modal interpretation. According to Hoekstra & Hyams (1998), children's RIs contrast with finite clauses in that while the latter describe actual states of affairs, RIs do not refer to actual eventualities but eventualities that are not realized and are therefore interpreted as statements of desire with respect to these eventualities.<sup>6</sup> Furthermore, they propose that the constraint on the eventivity of the predicates follows from the modal nature of RIs. Deontic modality is typically found with event-denoting predicates and tends to exclude stative predicates, while epistemic modality is typically found with state-denoting predicates. Since children's RIs express deontic modality, the fact that only event-denoting predicates are found in these environments follows as a rather natural consequence.

Building on Hoekstra & Hyams (1998), Hyams (2001) proposes that the children's use of non-finite forms is not an optional process in the early grammars but results from their attempt to map different meanings onto specific inflectional elements according to a semantic hierarchy (The Semantic Opposition Hierarchy) in which the category of Mood and in particular the realis-irrealis opposition is the most primitive one (RIs are irrealis forms whereas finite forms are realis).

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<sup>6</sup> Hoekstra & Hyams (1998) claim that this is not true for English bare forms. A significant proportion of bare forms in English (25%) do not consist of eventive predicates. Moreover, bare forms do not have a modal interpretation but a deictic temporal interpretation (present or past) (in 87% of the cases), with present tense being the most frequent. In that sense, bare and finite forms in English are quite similar. Hoekstra & Hyams (1998) attribute these properties of English bare forms to the claim that they are not instances of genuine infinitives and as such they can only refer to actualised eventualities.

To sum up, it appears that the majority of RI forms are eventive predicates that denote a modal interpretation. Although we adopt this thesis in the present paper, given that the evidence regarding the temporal reference of RIs is not uncontroversial (see Pierce 1992, Poeppel & Wexler 1993, Schönenberger, Pierce, Wexler & Wijnen 1995, Winjen 1997), we cannot but agree that this issue certainly deserves further investigation.

## 2. *Root non-finite forms in child Greek*

It has been observed by Katis (1984), Stephany (1981, 1997) and Tsimpli (1992/1996) that in the early stages of child Greek, children overuse a verb form that involves the suffix *-i*, referred to as the 3<sup>rd</sup> singular person. Varlokosta et al (1996, 1998) point out that the overused forms with the suffix *-i* involve predominantly the perfective stem. Thus, (4a,b) are observed in the context of a 1sg. subject and (4c) in the context of 2sg.<sup>7</sup>

- (4a) *Adult*: ke to peðaki (Spiros 1;9 file 1)  
and the child-diminutive  
'And the little child'  
*Child*: opaki vali aopaki  
person-diminutive put-PERF-\*3SG person-diminutive  
'I want to place/put the little person'  
(lit. 'He places/puts the little person')
- (4b) *Adult*: afti ine i karðula (Spiros 1;9 file 2)  
this is the heart-diminutive  
'This is the little heart'  
*Child*: kepassi i gazula a fai o likos  
cover-PERF-\*3SG the-\*NOM-heart-diminutive [a =  
NA(?)] eat-PERF-3SG the-wolf-NOM  
'I (will/should) cover the little heart for the wolf not to  
eat it'  
(lit. 'He covers the little heart for the wolf not to eat  
it')
- (4c) *Adult*: etsi? (Janna 1;11 file 2)  
like-this  
'Like this?'

<sup>7</sup> The asterisk indicates erratic use of person or case.

- Child:* nitsi tola!  
 open-PERF-\*3SG now  
 ‘(You) open (it) now!’ (lit. ‘She opens it now’)
- Child:* anitsi!  
 open-PERF-\*3SG  
 ‘Open (it)!’ (lit. ‘She opens’)
- Adult:* nitsi?  
 open-PERF-\*3SG  
 ‘Open (it)?’ (lit. ‘She opens?’)
- Child:* ne.  
 ‘Yes.’

The data analyzed in Varlokosta et al (1996, 1998) and reported in this paper too are from the Stephany Corpus of the CHILDES database (MacWhinney & Snow 1985). In the present paper, we report data only from two of the four Greek-speaking children, Spiros at 1;9 and Janna at 1;11 and 2;5.

Varlokosta et al (1996, 1998) identify two distinct stages in the use of the *-i* form in early child Greek. During the first stage, which corresponds to the speech of Spiros at 1;9 and Janna at 1;11, the *i*-form is used over half the time (Table 4) and approximately 40% of the time ‘incorrectly’ in non-3sg. contexts (Table 5). During the second stage, on the other hand, which corresponds to the speech of Janna at 2;5, *i*-forms are used much less (Table 4) and moreover appropriately in 3sg. contexts (Table 5).

	Spiros 1;9	Janna 1;11	Janna 2;5
	Stage I	Stage I	Stage II
<i>i</i> -form	96 (76%)	45 (51%)	62 (35%)
other	31 (24%)	43 (49%)	116 (65%)
TOTAL	127	88	178

Table 4 Distribution of the *i*-form in sentences with verbs (excluding the copula *be*) (from Varlokosta et al 1998)

	Spiros 1;9	Janna 1;11	Janna 2;5
	Stage I	Stage I	Stage II
<i>i</i> -f. in 3sg. context	58 (60%)	28 (62%)	62 (100%)
<i>i</i> -f. in other contexts	38 (40%)	17 (38%)	0 (0%)
TOTAL	96	45	62

Table 5 Proportion of correct vs. incorrect uses of the *i*-form (excluding the copula *be*) (from Varlokosta et al 1998)

One significant observation regarding early child Greek is that there are essentially no agreement errors even in the first stage (Stage I), a pattern observed in other child languages too (see section 1). Although the agreement paradigm is more limited in the first stage of development (Stage I) compared to the second (Stage II), it is used most of the time correctly, as shown in Table 6.<sup>8</sup> This observation provides further support for the hypothesis that correct agreement features on verbal inflectional morphology are known to children very early in the course of acquisition (Wexler 1998, Hoekstra & Hyams 1995).<sup>9</sup>

	1SG		2SG		1PL		2PL		3PL		%
	C	I	C	I	C	I	C	I	C	I	C
Spi. 1;9 (Stage I)	4	0	2	1	5	1	0	0	4	1	83%
Jan. 1;11 (Stage I)	7	1	0	0	11	0	0	0	3	1	91%
Jan. 2;5 (Stage II)	58	0	20	0	19	0	2	0	6	1	99%

Table 6 The distribution of the non-3sg. verb forms (excluding the copula *be* and imperatives) (C = correct, I = incorrect agreement)

A further observation regarding early child Greek is that during stage I, which is characterised by the overuse of the *i*-form, tense distinctions tend to be absent. Although Janna (1;11) produces 7 instances of [+past] forms, all of them are instances of the same verb, the verb 'to make' (*ekane*-3SG 'it made'). Spiros (1;9) produces 5 instances of [+past] forms (with the verbs *tavale*-3SG 's/he put it', *epese*-3SG 'it fell', *bike*-3SG 'it got in', *fonakse*-3SG 's/he screamed'). However, given the fact that the predicates involved are eventive, it is not obvious whether the past tense indicates temporal order or rather the completion/culmination of an event, i.e. perfective aspect (Varlokosta 1997). On the other hand, Janna at Stage II (2;5) produces 22 instances of [+past] forms with a variety of predicates (eventive and non-eventive).

	Spiros1;9	Janna 1;11	Janna 2;5
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<sup>8</sup> The only person missing from this stage is the 2<sup>nd</sup> plural which is the last to be acquired. Also there are only 2 instances of the 2<sup>nd</sup> singular in Janna's (1;11) speech compared to the 20 in the latter stage (2;5).

<sup>9</sup> It should be pointed out here that the Greek verbal paradigm distinguishes six person inflections, as illustrated in (i) for the present tense. The same agreement paradigm is observed in the future tense and in the *na*-construction (subjunctive):

- |                                     |                                   |
|-------------------------------------|-----------------------------------|
| (i) (eyo) pez-o 'I play'            | (emis) pez-ume/pez-ome 'we play'  |
| (esi) pez-is 'you play'             | (esis) pez-ete 'you play'         |
| (aftos/i/o) pez-i 'he/she/it plays' | (afti/es/a) pez-un(e) 'they play' |

	Stage I	Stage I	Stage II
+past	6 (5%)	7 (8%)	22 (12,5%)
TOTAL	127	88	178

Table 7 The distribution of past tense in early child Greek

Varlokosta et al (1998) analyze the verbal forms with the suffix *-i* in child Greek as non-finite forms albeit ones that correspond to the non-finite form used to compose the complex tenses in Greek.<sup>10</sup> The main arguments for the non-finite status of *i*-forms are two. First, they occur with ‘incorrect’ agreement or more precisely with *no* agreement, i.e., they do not refer only to 3<sup>rd</sup> person subjects although the suffix *-i* is the suffix for the 3<sup>rd</sup> singular. Second, they occur mostly with null subjects contrary to the situation with finite verbs, where both null and overt subjects are observed.<sup>11</sup> Varlokosta et al (1998) take the argument one step further and propose that the *i*-form in child Greek corresponds to the non-finite form used to compose the complex tenses in the adult language, which is formed exclusively by the perfective aspect and the suffix *-i* (e.g. [*eχo*] *diavas-i* ‘I have read’ but \*[*eχo*] *diavaz-i*). Crucial evidence for this proposal constitutes the fact that the overuse of the *i*-form is more prominent with the perfective than with the imperfective stem. If this form were not a non-finite form but a finite 3<sup>rd</sup> singular form (i.e., the perfective form used with the subjunctive particle *na* and the future particle *θα*), we would not expect it to co-occur more with the perfective than with the imperfective aspect, given that the subjunctive and the future have both a perfective and an imperfective 3<sup>rd</sup> singular person (*na/θα diavas-i* ‘to/will read’, *na/θα diavaz-i* ‘to/will be reading’).

In the remaining of this section, we will consider whether there is any further evidence to substantiate the claim that the verb forms with perfective aspect and the suffix *-i* in child Greek are non-finite forms.

<sup>10</sup> This form is referred to as ‘the infinitive’ by traditional grammars (Triantafillides 1941). Varlokosta et al (1998) refer to it as the ‘active participle’, given that it no longer bears an infinitival function (i.e. it does not occur in modal and other embedded contexts). Here, we will refer to it as ‘the non-finite’ form, following Holton, Mackridge & Philippaki-Warburton (1997). It should also be noted that this form does not bear nominal features, thus it is not used in contexts where the passive participle with the suffix *-menos* appears, (e.g. *to γrama ine γrameno stin agliki* ‘the letter is written in English’, *o γramenos tixos* ‘the written wall’).

<sup>11</sup> Of course, one needs to be cautious about this argument given that Greek is a null subject language. Although null subjects are licensed in both finite and non-finite contexts, Varlokosta et al (1998) show that the proportion of null subjects in non-finite contexts (i.e. sentences with the *i*-form and no agreement) is significantly higher than in finite contexts.

There are two possible sources of evidence, derived from the omission of clitics and articles in child language. Let us consider them in turn.

Studies in Romance and Germanic languages have shown a correlation between the use of infinitival forms and the omission of clitics (Hamann, Rizzi & Frauenfelder 1996, Haegeman 1996). Therefore, a correlation between the use of verb forms with perfective aspect and the suffix *-i* and clitic omission might be expected in Greek too, given the hypothesis that these verb forms are non-finite. According to Stephany (1997) and Marinis (1999), clitic objects are omitted in the early stages of Greek, as shown in (5):<sup>12</sup>

- (5a) *Adult*: afti ine i karðula (Spiros 1;9 file 2)  
 this is the heart-diminutive  
 ‘This is the little heart’  
*Child*: kepasi i gazula a fai o likos  
 cover-PERF-\*3SG the-\*NOM-heart-diminutive [a =  
 NA(?)] eat-PERF-3SG the-wolf-NOM  
 ‘I (will/should) cover the little heart for the wolf not to  
 eat it’  
 (lit. ‘He covers the little heart for the wolf not to eat  
 it’)
- (5b) *Adult*: etsi? (Janna 1;11 file 2)  
 like-this  
 ‘Like this?’  
*Child*: nitsi tola!  
 open-PERF-\*3SG now  
 ‘(You) open (it) now!’ (lit. ‘She opens it now’)  
*Child*: anitsi!  
 open-PERF-\*3SG  
 ‘Open (it)!’ (lit. ‘She opens’)

Indeed, based on the coding in the Stephany corpus, we found 31 cases of clitic or (maybe more accurately) object omission in the speech of Spiros (out of 33 contexts with an obligatory object or clitic) and only 6 in the speech of Janna (out of 7 contexts with an obligatory object or clitic). The relation between the use of *i*-forms (with no agreement) vs. other

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<sup>12</sup> However, Vina Tsakali and Ken Wexler (personal communication) share the view that there is no clitic omission in child Greek compared to child Italian.

forms (which show agreement) and clitic object omission is illustrated in Table 8.<sup>13</sup>

<i>Child</i>	<i>i-forms/no agr</i>	<i>other forms</i>
Spiros 1;9 (Stage I)	13/31 (42%)	18/31 (58%)
Janna 1;11 (Stage I)	5/6 (83%)	1/6 (17%)

Table 8 *i-forms with no agreement vs. other forms and clitic/object omission*

We observe that in the speech of Spiros (1;9), the percentage of *i*-forms with no agreement in utterances involving object omission is relatively high (42%). In the speech of Janna (1;11), the percentage becomes even higher (83%). Note that the category ‘other forms’ in Table 8 involves also *i*-forms with (correct) agreement. Thus, there is always the possibility that the agreement shown in a proportion of *-i* forms that refer ‘correctly’ to a 3<sup>rd</sup> singular person is not true but accidental, i.e., it is due to the fact that *i*-forms are morphologically identical to the 3<sup>rd</sup> person. Therefore, the proportion of clitic/object omission with non-finite/*i*-forms in child Greek might be higher than assumed here, if one takes into account this parameter. A more appropriate measure thus might be to compare the proportion of object omission in *i*-forms vs. non-*i*-forms (i.e. all verbs excluding those with the suffix *-i*). Table 8’ shows that indeed the proportion of object/clitic omission is higher in contexts involving verb forms with the suffix *-i* (and no agreement) than in contexts that do not involve this suffix (the point becomes relevant only for Spiros).

<i>Child</i>	<i>i-forms/no agr</i>	<i>non-i-forms</i>
Spiros 1;9 (Stage I)	13/23 (57%)	10/23 (43%)
Janna 1;11 (Stage I)	5/6 (83%)	1/6 (17%)

Table 8’ *i-forms with no agreement vs. non-i-forms and clitic/object omission*

However, given the fact that the number of object/clitic omissions is relatively low in both children and the fact that some of their utterances involve the same predicate, i.e. the predicate *aniyo* ‘open’ (all utterances in Janna’s speech involve this predicate), we cannot reach any firm conclusions about a correlation between the use of early *i*-forms and object omission in child Greek despite the higher percentage of object/clitic omission in the relevant environment.

<sup>13</sup> Marinis (1999) reports his own results, but there are some differences between our calculations and his.

Recent research has also observed a correlation between determiner drop and the use of RIs in child language. In particular, Baauw, de Roo & Avrutin (2002) show that Dutch children exhibit more determiner drop in infinitival than in finite sentences (see also Hoekstra & Hyams 1998). It is therefore valid to pose the question whether there is any such correlation between determiner drop and the use of *i*-forms (with no agreement) in child Greek. Table 9 presents the proportion of definite articles missing in obligatory contexts in child Greek based on Marinis's (1997) investigation of the use of definite articles in the acquisition of Greek.

<i>Child</i>	<i>Determiner-drop</i>
Spiros 1;9 (Stage I)	122/159 (77%)
Janna 1;11 (Stage I)	50/60 (83%)
Janna 2;5 (Stage II)	5/72 (7%)

*Table 9 Proportion of definite articles missing in obligatory contexts during Stage I and II (calculated on the basis of Marinis's (1997) results)*

The proportion of determiner drop is very high during Stage I, the stage characterized by the use of non-finite forms, but drops dramatically during Stage II, when non-finite forms are not found anymore in the data. However, this observation does not confirm whether there is indeed a correlation between the two, i.e., whether the proportion of article omission is higher in non-finite contexts than in finite ones. Table 10 illustrates the relation between the use of *i*-forms (with no agreement) vs. other contexts and determiner drop for Spiros.<sup>14</sup>

<i>i</i> -forms/no agr	other forms
11/36 (31%)	25/36 (69%)

*Table 10 Early i-forms (with no agreement) vs. other forms and determiner drop in the speech of Spiros 1;9*

We observe that the proportion of determiner drop is lower in contexts with *i*-forms and no agreement than in other contexts. However, all the verb forms under the category 'other' are *i*-forms with (correct) agreement. In other words, there are no instances of non-*i*-forms that involve determiner drop; all instances of determiner drop occur in contexts with *i*-forms and no agreement.

<sup>14</sup> Janna's data is not illuminating because the number of noun phrases contained in sentences that involve a verb is very low. There were only three instances, all of them involving determiner omission in finite contexts.

To sum up, the evidence for a correlation between the use of *i*-forms (with no agreement) and clitic or determiner omission in child Greek is not very firm. However, this cannot be taken as counter evidence for the non-finite status of *i*-forms given that such correlation has been established only for infinitival forms in child language and not for other non-finite forms. This issue remains open for further investigation.

### ***3. The aspectual, modal and temporal properties of root non-finite forms in early Greek***

In this section, it will be argued that there is a further argument for the non-finite status of *i*-forms in child Greek. In particular, it will be shown that *i*-forms parallel RI constructions in other languages in terms of their semantic properties.

As mentioned in section 1, one major observation regarding the interpretative properties of RIs is that the majority of these forms involve eventive predicates. One of the questions addressed in this section is whether there is a difference between non-finite forms (*i*-forms with no agreement) and finite forms in early Greek regarding the type of predicate involved.

The distinction between eventive vs. non-eventive predicates corresponds to Vendler's (1957) distinction between activity, accomplishment and achievement predicates vs. state predicates. Eventive predicates denote a dynamic change that takes place within a clearly confined period of time, i.e., they refer to eventualities with a specific onset and/or a definite end point. Verbs like *eat*, *kiss*, *hit*, etc. are some typical examples. Non-eventive predicates, on the other hand, denote situations without a clearly defined beginning or end point. Verbs like *know*, *want* or *love* are considered to be typical representatives of this category.

Giannakidou (2002) argues that Greek verb forms, unlike English, are unambiguously eventive or stative, depending on whether they have perfective or imperfective aspect. According to Giannakidou (2002), perfective aspect in Greek takes a 'bare' verb (i.e. a lexical entry with its argument slots) and gives back a predicate of events with a culmination point for the event. Thus, perfective verb forms are true eventives, i.e. they end up denoting events which culminate. This proposal is further

supported by the fact that when statives undergo perfectivization, they are coerced into an eventive meaning (achievement or accomplishment).<sup>15</sup>

Assuming Giannakidou's (2002) claim is on the right track and assuming that the perfective form has been acquired as in adult Greek, we expect that verb forms that involve the perfective aspect in child Greek will be unambiguously eventive. Thus, it is expected that since the majority of the *i*-forms (with no agreement) involve the perfective aspect (Varlokosta et al 1998), they will denote eventualities with a culmination point. Indeed, a great proportion (87%) of *i*-forms with no agreement involve eventive predicates. This is not true, however, for other forms, which are spread more equally between eventive (64%) and stative verbs (36%), as shown in Table 11 (see also Varlokosta 1997).<sup>16</sup>

	<i>eventive</i>	<i>non-eventive</i>
<i>i</i> -forms/no agr	48 (87%)	7 (13%)
<i>other</i>	102 (64%)	58 (36%)

Table 11 Proportion of eventive vs. non-eventive predicates in early non-finite and finite clauses during Stage I (Spiros 1;9 and Janna 1;11)

Some examples of eventive and non-eventive predicates in child Greek are shown in (6):

- (6a) *Child*: aniki akua (eventive) (Spiros 1;9 file 2)  
 open-PERF/\*3SG bear  
 'Open the book with the bear' (lit. 'She opens the bear')
- (6b) *Child*: seli o pios (non-eventive) (Spiros 1;9 file 2)  
 wants-IMPERF/3sg the Spiros  
 'Spiros wants [this]'

<sup>15</sup> For example, when a stative verb like *ayapo* 'to love' is modified by the perfective, it results in an achievement reading of stative (the 'inchoative' reading) (Giannakidou 2002):

- (i) I Maria ayapise to Yani  
 the-Mary loved-PERF. the-John  
 'Mary fell in love with John'

<sup>16</sup> This conclusion is compatible with Stephany's (1981) claim that the category 'Modal Perfective' (*na/tha yrapso* 'to/I will write') includes dynamic, i.e. eventive predicates. However, it is important to note that our calculations include only the category '*i*-forms with no agreement', that is, only those verb forms which we claim correspond to the non-finite verb form.

Another crucial property associated with RIs, as mentioned in section 1, is their modal or irrealis interpretation (Ingram & Thompson 1996, Ferdinand 1996, Lasser 1997 among others). However, this property is not uncontroversial. Pierce (1992) reports that RIs in child French can be used to describe ongoing activities along with finite forms and Poeppel & Wexler (1993) report that there is no difference in the temporal reference of non-finite and finite verbs in child German. Moreover, Wijnen (1997) points out that some of the RI constructions in the Dutch database he considered did not have future interpretation; present and past reference was also possible. Schönenberger, Pierce, Wexler & Wijnen (1995) tested the temporal reference of RIs in 13 Dutch children ranging between 1;11 and 3;4 and showed that simple finite sentences were interpreted as referring to ongoing eventualities (present tense) 92% of the time, whereas for RIs the percentage was 61%. Based on these results, they conclude that the temporal interpretation of RIs is essentially free.

Thus, the second question addressed in this section concerns the temporal interpretation of *i*-forms in child Greek. Stephany (1981) argues that the category ‘Modal Perfective’ -which includes *i*-forms among other forms- has clearly a modal interpretation. Indeed, it appears that there is a future or modal interpretation involved in the majority of *i*-forms, as illustrated in (7), although there are some cases with past and not future/modal interpretation, as shown in (8) (see also Varlokosta 1997):<sup>17</sup>

(7) *Child*: aniki akua (Spiros 1;9, file 2)  
 open-PERF/\*3SG bear  
 ‘Open the book with the bear’ (lit. ‘She opens the bear’)  
 [Context: book on bear is still in the researcher’s shopping net]

(8a) *Child*: mbesi (Spiros 1;9 file 1)  
 pesi-PERF-3SG (instead of *epese*)  
 ‘It fell’  
 [Context: after object has fallen]

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<sup>17</sup> Our judgements regarding the interpretation of verbs in child Greek are based on the information provided in the Stephany Corpus. However, it is not that trivial to figure out the intended interpretation at least in some cases because contextual cues are not always sufficient.

- (8b) *Grandmother*: ti ekane mana mu?  
 what did my dear  
 ‘What happened my dear?’

*Janna*: etesi  
 pesi-PERF/3SG (instead of *epese*)  
 ‘it fell’  
 [Context: referring to monkey falling down]

However, given the small number of *i*-forms with interpretation other than modal/future represent, we conclude that there is a restriction regarding their temporal reference, namely the modal interpretation (see also Hyams 2001).

The eventivity constraint associated with *i*-forms as well as their modal interpretation indicates that these forms have parallel semantics to RIs in other child languages. Therefore, this evidence provides further support for the non-finite status of these forms (Varlokosta 1997). The question arising then, is how are these semantic properties compatible with the specific analysis proposed in Varlokosta et al (1998), according to which these forms correspond to the non-finite form that composes the complex tenses in adult Greek. This issue is addressed by Hyams (2001), who takes literally the term ‘participle’ that Varlokosta et al (1998) use for the non-finite form of the complex tenses and thus attributes to them the claim that early *i*-forms in child Greek are analogous to bare participles in child Italian, such as those in (2a, b), repeated here as (9a, b):

- (9a) *andato via*  
 gone-MASC/SG away  
 (9b) *caduto*  
 fallen-MASC/SG down

Based on this misunderstanding, Hyams (2001) argues that the early *i*-forms in child Greek cannot correspond to the ‘active participle’ of the complex tenses because the semantics of participles are not compatible with the modal interpretation of *i*-forms. Indeed, the semantics of true participles describe perfective or closed events, as first pointed out by Antinucci & Miller (1976) and adopted by Hyams (2001) as well. Thus, the bare participles used by Italian-speaking children, such as the ones in (9a, b), refer to past or closed events. Therefore, Hyams (2001) concludes that the modal interpretation of the *i*-form in child Greek is an argument against treating it as a participle. However, we will argue that the non-finite form used in complex tenses in Greek is not a true participle and

therefore the interpretative facts do not constitute counter evidence for the ‘participial’ analysis of *i*-forms in child Greek. We will claim that the participial form that is used in Greek to compose complex tenses does not share the same semantic properties with participles in other languages. Therefore, the interpretation of *i*-forms in early Greek is not incompatible with the analysis that treats them as instances of the non-finite form that composes the complex tenses in Greek.

First, historically, the non-finite form that composes the complex tenses in Greek is the residue of the Ancient Greek infinitive and is not related to true participial forms in Ancient Greek. Second, it does not share a number of properties with participial forms in other languages as well as with true participles in Greek. Although participial forms that are used to compose complex tenses in English, Italian, Spanish and Catalan (10a, b, c, d) can be used adjectively (11a, b, c, d), the non-finite form that is used to compose the complex tense in Greek (10e) cannot be used adjectively (11e). On the other hand, the passive participle in Greek can be used adjectively, as illustrated in (11f):

(10a) I have written (English)

(10b) l’ho scritta, la lettera (Italian)  
it-FEM/SG have written the letter  
‘I have written the letter’

(10c) he escrito (Spanish)  
have-3SG written  
‘I have written’

(10d) he escrit (Catalan)  
have-3SG written  
‘I have written’

(10e) εχο γραψι (Greek)  
have-3SG written  
‘I have written’

(11a) the written letter (English)

(11b) la lettera scritta (Italian)  
the letter written-FEM/SG  
‘The written letter’

(11c) la carta escrita por Juan (Spanish)  
the letter written by Juan  
‘The letter written by Juan’

- (11d) la carta escrita per Joan (Catalan)  
 the letter written by Juan  
 ‘The letter written by Juan’
- (11e) \*to γrapsi γrama (Greek)  
 the written letter
- (11f) to γrameno γrama  
 the written letter  
 ‘The written letter’

These properties presumably derive from the different morphological properties of the forms involved to compose complex tenses in the aforementioned languages. In particular, the non-finite form that is used to compose perfect tenses in Greek is the Perfective Non Past form. According to Giannakidou & Zwarts (to appear), Perfective Non Past does not convey past information, so it cannot locate in time events that have taken place. Perfective Non Past conveys aspectual information, in particular, it refers to non-actualized events. So this form can be used to refer to events but these events cannot be located in the past (or in the present for that matter).<sup>18</sup> When the Perfective Non Past is combined with directive particles like *na*, *as* or *tha*, a future (irrealis) orientation arises, but this is because of the semantics associated with the particles.<sup>19</sup> We suggest, therefore, that the modal/irrealis interpretation that early non-finite forms (*i*-forms) have in child Greek is due to the Perfective Non Past morphology of these forms, which essentially denotes episodic forms that cannot be used factually, i.e. that are [-realized]. And it is this aspectual value of [-realized] that is the basis for their modal interpretation. Thus, we conclude that the modal interpretation of *i*-forms in child Greek is not incompatible with an analysis that treats them as non-finite forms, albeit the ones used to form the complex tenses in the adult language.<sup>20, 21</sup>

<sup>18</sup> Perfective Past (e.g. *epese* ‘fell-PERF/3SG’), on the other hand, is episodic and thus factual (i.e., an event has taken place in a time prior to the utterance time) (Giannakidou & Zwarts to appear).

<sup>19</sup> If the particle does not allow it, no future orientation arises, as shown in (i), where the particle *choris* is involved (Giannakidou & Zwarts to appear):

- (i) *Kaθise choris na milisi se kanenan*  
 sat down-3SG without talk-PERF/3SG to anyone  
 ‘He sat down without talking to anyone’

<sup>20</sup> The alternative analysis, which assumes that the early forms with the perfective aspect in child Greek correspond to the perfective subjunctive or future without the modal particles *na* and *tha* respectively must explain why it is that this form is used without agreement, i.e. only with the suffix *-i*. Hyams (2001) puts forward an analysis along these lines and argues that in the absence of a tense chain in these forms,

#### 4. *A note on functional architecture*

Having shown that the early forms with perfective aspect and the suffix *-i* in child Greek resemble RIs in terms also of their interpretational properties, the last issue we will address in this paper, is what do the early child Greek data contribute to the continuity issue, i.e. to the theories of early functional architecture.

The status of functional projections in child language has been quite controversial. The controversy arises from an apparent paradox: the recurrent absence of morpholexical material associated with functional projections in the early language, on the one hand, and the early presence of syntactic operations, such as movement, on the other hand. There are two prevalent views to the issue of early functional architecture. According to the Strong Continuity or Full Clause Hypothesis (FCH), all functional categories are present from the beginning. There are two flavours of this hypothesis. According to one of them, functional projections are not only present from the beginning but also fully specified (Boser et al 1992, Poeppel & Wexler 1993). Despite the absence of functional material, the presence of syntactic movement in early language (e.g. V to C movement in early German) is taken as an argument for the presence and full specification of functional categories (e.g. CP in early German). A second variant of the FCH claims that functional categories are present but underspecified for their features (Hyams 1992, Hoekstra & Hyams 1995, Schütze & Wexler 1996). The underspecification approach explains thus the absence of the full range of a paradigm in the early language. Within this view, RIs are the result of the underspecification of some functional category: Number Phrase for Hoekstra & Hyams (1995), Tense and/or Agreement Phrase for Wexler (1994) and Schütze & Wexler (1996).

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agreement is not licensed and the verb appears in the ‘default’ 3<sup>rd</sup> person. Although we have no objection to such a solution, there is another problem with Hyams’ (2001) analysis. An analysis which treats *i*-forms as the precursor of *na*-clauses or the future, predicts that as soon as the modal particles are acquired, they should occur with both perfective and imperfective aspect. However, this prediction is not borne out by the data. An inspection of the Janna’s later recordings at the age of 2;5, when both particles have been acquired, shows that they occur almost exclusively with perfective aspect (there is only 1 instance of an imperfective form out of a total of 37 *na*-clauses and another one out of a total of 18 future forms). Moreover, the perfective aspect is still used erratically, i.e. it is used instead of imperfective.

<sup>21</sup> Of course, this position raises the issue of how the meaning of the complex tenses (present, past and future perfect) is derived in Greek. The meaning of perfect tenses is derived compositionally from the meaning of the items involved but since we are not aware of any specific proposal, we leave this issue open.

Rizzi's (1994) view is also a version of the underspecification hypothesis. According to his analysis, RIs are the result of truncation of the syntactic tree below the TP.

According to the second view, the Maturation or Structure Building Hypothesis (SBH), functional categories are not available in the early grammar but mature according to a program prescribed by UG (Radford 1990, Tsimpli 1992/1996). There are weaker versions of this hypothesis. Clahsen (1991) and Clahsen & Penke (1992) claim that the functional architecture is built up gradually based on the acquisition of the agreement and case paradigms in the target language. The absence of morphological material associated with functional projections is taken as a strong argument for the Maturation or SBH. However, it is not the case that morphological material is totally absent from the early language. Thus, it is claimed by the proponents of this approach that the occurrence of morphemes in the early stages does not necessarily imply the instantiation of a functional projection. It is argued instead that the presence of some functional morphemes does not imply knowledge of the full range of a paradigm unless one can establish correct use of the paradigm over 90% of the time (Clahsen, Penke & Parodi 1994). Alternatively, it is also claimed that the particular morpheme occupies in the child language a position different from the one it does in the target language (e.g. *wh*-phrases are assumed to be adjoined to VP for Radford 1990). Under the Maturation or SBH, RIs are taken as evidence for the lack of a functional category, namely the Inflection Phrase.

Regarding early functional architecture, Tsimpli (1990, 1992/1996) makes the claim that despite the appearance of agreement morphemes in early child Greek, it cannot be argued that functional categories are present. What she takes to be crucial evidence for her position is precisely the cases where the agreement morpheme on the verb does not agree with the subject, i.e. *i*-forms, as in example (4). This shows, according to Tsimpli (1992/1996), that the two elements are not in the proper configurational relation of Spec-Head agreement. The appearance of functional morphemes in the early stages of Greek is due to the fact that in order for a verb in Greek to be well-formed it has to have an agreement morpheme attached to it.

However, we saw in section 2 that whenever Greek children use agreement, they use it correctly. Thus, even during Stage I, the proportion of agreement mistakes observed is on average only 12% (17% in Spiros (1;9) and 9% in Janna (1;11), as illustrated in Table 12). This, in fact, is in agreement with findings from other language that children do not make agreement mistakes (Guasti 1994, Harris & Wexler 1996, Poeppel &

Wexler 1993, Vainikka & Rohrbacher 1994) and in accordance with Wexler's (1998) Very Early Knowledge of Inflection (VEKI) and Hoekstra & Hyams's (1995) Early Morphosyntactic Convergence (EMC).

Spiros 1;9 Stage I	15/18 (83%)
Janna 1;11 Stage I	21/23 (91%)
Janna 2;5 Stage II	105/106 (99%)

*Table 12 Proportion of correct agreement during Stages I and II*

The apparent agreement errors observed in child Greek are not in fact agreement errors but instances of non-agreement (see also Borer & Rohrbacher 1997). Children do not make agreement errors; they either use agreement correctly or avoid it altogether. The Maturation or Prefunctional Stage Hypothesis, such as the one advocated, for example, in Tsimpli (1990, 1992/1996), depends crucially on the existence of agreement mistakes in the early stages. However, if there were indeed a stage where agreement mistakes are made, it would be expected that these mistakes would affect the whole agreement paradigm. In other words, children should make agreement errors regarding the 1<sup>st</sup> or 2<sup>nd</sup> singular person as well as the 1<sup>st</sup> or 3<sup>rd</sup> plural person. However, the only 'agreement mistakes' observed are in reference to 'the 3<sup>rd</sup> singular person'. Thus, we conclude that *i*-forms are instances of 'non-agreement' and not 'wrong agreement'.

Thus, we take the fact that when agreement is used it is used mostly correctly as a strong indication that children project the full functional structure and thus as evidence for the FCH.<sup>22</sup> The existence of the non-agreeing non-finite forms in early child Greek represent presumably a strategy on the part of the child to avoid agreement errors by using "that well-formed item of the verbal paradigm that allows him/her to use as little of the functional hierarchy as possible" or "to do as little checking as possible" (Varlokosta et al 1998).

### **5. Concluding remarks**

In the present paper, we argued that the interpretational properties of the early verbal forms with the suffix *-i* and no agreement in child Greek (i.e. their eventivity and modal reading) provide a further argument for their

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<sup>22</sup> Varlokosta et al (1996, 1998) remain essentially agnostic to the question of functional architecture although their adoption of Rizzi's (1994) approach implies a continuity approach.

non-finite status. Based on the semantic analysis of the Perfective Non Past advocated in Giannakidou & Zwarts (to appear), it was claimed that the 'participial' analysis proposed in Varlokosta et al (1998) for the early *i*-forms in child Greek is compatible with their semantic properties, in particular with their modal or irrealis interpretation. Last, it was claimed that the evidence from early child Greek regarding the acquisition of the agreement paradigm supports the FCH and not the Maturation or SBH.

Before we close, it should be noted that the claims made in this paper (as well as in Varlokosta et al 1996, 1998) are based on specific data, that available in the Stephany Corpus. The data we used in this paper are not developmental but come from 2 recordings that took place for 2 children (2 recordings of Spiros at the age of 1;9 and 2 recordings of Janna at the age 1;11). Thus, it could always turn out that the specific analysis and claims proposed were the result of sampling. However, we hope that the issues raised and discussed in this paper show that further investigation as well as data is necessary before we reach any firm conclusions regarding the status of early grammars.

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