Functional projections, markedness, and "root infinitives" in early child Greek[1]

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Abstract

The aim of this paper is to determine whether there is an equivalent Root Infinitive stage for children acquiring a language which does not have an infinitive construction, namely Modern Greek. We find that in the typical Root Infinitive contexts Greek children use a verb form involving the suffix -i, which corresponds to the 3rd person singular suffix, as well as to a participial form. We argue that the data are best explained by treating the -i form as the participle, thus suggesting that the putative congener of the Root Infinitive need not be an infinitive. Under Rizzi's (1994) approach, we would in fact expect various non-finite verb forms to be attested in the main clauses of the youngest speakers of various languages.

1. Background

It is well known that children acquiring Germanic and Romance languages go through an early stage at which they produce declarative sentences with a Root Infinitive (cf. [1]) which would be ungrammatical in the adult language (Stern

and Stern 1928, Weverink 1989, Pierce 1992, Wexler 1994). For languages outside of these language families, little work has been done on such Root Infinitives. In the present paper we investigate the status of Root Infinitives in Modern Greek, a language which lacks an infinitive form altogether.

(1)   a.   *Mina einer gucken.*   (German: Sabrina 1;11)
            Mina one   look-INF
            'Mina is looking at somebody.'(Clahsen, Penke and Parodi 1994)

      b.   *Gubbe   vara   där.*   (Swedish: Markus 1;10)
            old man be-INF there
            'The (or an) old man was there.'   (Platzack 1994)

      c.   *Moi dessiner   la   mer.*   (French: Daniel 1;10)
            me draw-INF the sea
            'I draw the sea.'   (Pierce 1992)

      d.   *Babbo vedere   la   moto.*   (Italian: Martina 1;11)
            daddy see-INF the motorbike
            'Daddy sees (or saw) the motorbike.'   (Guasti 1994)

Table 1 summarizes the rates of Root Infinitive use for some of the youngest children discussed in the literature (cf. also Guasti 1994, Table 4; Sano and Hyams 1994, Table 10). Root Infinitives are produced over 90 per cent of the time by the Dutch child Peter, the Swedish child Markus and the French child Nathalie, in their earliest recordings. Peter and Markus in their later files resemble the pattern of the presumably more advanced French children Gregoire and Philippe. The French child Daniel and the two German children fall in between these two groups in terms of their production of Root Infinitives.[2]

To account for the Root Infinitive phenomenon, Boser, Lust, Santelmann and Whitman (1992) made an early proposal that Root Infinitives are adult-like finite sentences apart from containing a null auxiliary or modal. Wexler (1994) showed, based on a survey of the phenomenon across languages, that very young children know that finite verbs raise and non-finite verbs do not raise (cf. also Pierce 1989; Poeppel and Wexler 1993; Rohrbacher and Vainikka 1994). What young children do not know is that a non-finite verb cannot occur as a main verb; Wexler suggested that this may be due to children's insensitivity to tense distinctions at the relevant point in development. Rizzi (1994), on the other hand, proposed that the option of non-raising is due to the possibility of positing a truncated tree lacking the TP (and the CP) projection. That is, the structure of the Root Infinitive construction involves a reduced tree.

Our goal in this paper is to determine whether there is an equivalent Root

Table 1. Proportion of Root Infinitives (RI)

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

Infinitive stage for children acquiring a language which does not have an infinitive construction, namely Modern Greek.[3] We find that in the typical Root Infinitive contexts, Greek children use a verb form involving the suffix *-i*, which corresponds to the 3rd person singular suffix, as well as the (active) participle. We argue that the data are best explained by treating the *-i* form as the participle, thus suggesting that the putative congener of the Root Infinitive need not be an infinitive. Under Rizzi's (1994) approach, we would in fact expect various non-finite verb forms to be attested in the main clauses of the youngest speakers of various languages.

2. Adult Greek

In this section we will review some aspects of adult Greek which will be relevant to the following discussion.

2.1.   *The* na-*construction*

In modal and other embedded contexts where languages such as English use an infinitive, Greek makes use of a verb form introduced by the particle *na* and inflected for subject-verb Agreement and Aspect, as exemplified in (2). This construction is traditionally referred to as the subjunctive, but throughout this paper we will refer to it as the *na*-clause. The particle *na* has typically been

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2.   Katrin's and Nicole's non-Root Infinitive sentences have a finite verb (typically with the suffix *-t*) in the second (or first) position. See Rohrbacher and Vainikka (1994) for more details.

3.   For an extended discussion on the loss of the Infinitive in Greek, see Joseph (1983).

analyzed as a modal element (Ingria 1981, Philippaki-Warburton and Veloudis 1984, Terzi 1992, Varlokosta and Hornstein 1992, among others); in fact, this view is supported by the acquisition data we discuss below. Alternatively, *na* has been treated as a complementizer in some traditional grammars (cf. Andriotis 1934), as well as in Agouraki (1991) and Tsoulas (1993).

(2)   a.   *Boro   na dhiavaso   to   vivlio.*
           can-1SG *na* read-SUBJ/PERF-1SG the book
           'I can read the book.'
      b.   *Thelo   na diavasi   i   Maria   to   vivlio.*
           want-1SG *na* read-PERF-3SG the Maria-NOM the book
           'I want Maria to read the book.'

In addition to the embedded context, the *na*-construction can also appear as a main clause in adult Greek (with an optative or polite imperative reading). Due to the fact that the *na*-construction appears in contexts where other languages use an infinitival form, it can be considered as an obvious candidate for the equivalent of the Root Infinitive in child Greek. However, we will show below that the distribution of *na*-clauses in child Greek clearly differs from the distribution of Root Infinitives in other languages.

2.2.   Subject–verb agreement

Greek regular verbs fall into two conjugation classes depending on whether the final syllable of the Present Tense is stressed or not. The agreement paradigm for the more common conjugation (the one mainly attested in the child Greek data), with an unstressed final syllable, is provided in Table 2.

Table 2. The Greek agreement paradigm (Present and Future Tense and *na*-clauses)

	singular	plural
1st	-*o*	-*ome/ume*
2nd	-*is*	-*ete*
3rd	-*i*	-*un*

2.3.   Aspect and Tense

Greek is a language that makes an aspectual distinction between Perfective and Imperfective Aspect. The aspectual distinction shows up in the Past Tense, in the Future Tense, and in the *na*-construction.

In the Present Tense there is no aspectual distinction, that is, the Present Tense always uses the Imperfective stem. Table 3 illustrates the interaction of Aspect and Tense in adult Greek.

Table 3. The interaction of Aspect and Tense in adult Greek (for the verb 'play' with the Imperfective stem *pez-* and the Perfective stem *peks-*)

	imperfective	perfective
Present	*pez-o* 'I play'	n.a.
Past	*e-pez-a* 'I was playing'	*e-peks-a* 'I played'
Future	*tha pez-o* 'I will be playing'	*tha peks-o* 'I will play'
na-clause	*na pez-o*	*na peks-o*

Thus, the Imperfective form *pezo* is used in the *na*-construction and in the future construction, as well as being the Present Tense Imperfective form. Similarly, the Perfective form *pekso* is used both in the *na*-construction and in the Future Tense. (In addition, the Perfective form is used in conditional and temporal adjunct contexts).

The compound tenses in Greek are formed using the verb *exo* 'have' and the active participle,[4] as shown in Table 4.

Table 4. The Perfect tenses in adult Greek

Present Perfect	*exo peks-i*	'I have played'
Past Perfect	*ixa peks-i*	'I had played'
Future Perfect	*tha exo peks-i*	'I will have played'

In the compound tense construction, the auxiliary agrees with the subject, while the participle always occurs with the non-agreeing suffix -*i*. The participle

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4.   In traditional grammars this form has been referred to as the infinitive. It differs from the Indo-European infinitive in failing to occur in the modal and other embedded (control) contexts. Thus, although this form developed from the Classical Greek infinitive, it no longer bears an infinitival function. 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 grama ine grameno stin agliki* "the letter is written in English", *o gramenos tichos* "the written wall").

is formed using the Perfective stem, and is homophonous with the 3rd singular perfective non-past form. This will turn out to be relevant for the analysis of Greek children's earliest verb forms.

3.   The *na*-construction in child Greek

The naturalistic data we have analyzed come from the Stephany Corpus of the CHILDES database (MacWhinney and Snow 1985; Stephany 1995). Stephany collected data from four children, three of which we have concentrated on, ranging from age 1;9 to 2;5. The recordings from the fourth child show that she is generally too advanced for our purposes, being the oldest of the four. For the remaining three children, two recordings were made with Spiros (age 1;9), four with Janna (starting at age 1;11), and 14 with Mairi (starting at age 1;9).

3.1.   *Distribution of* na *in child Greek*

Based on our inspection of the earliest recordings, it appears that the *na*-construction is acquired early, around age 2, thus making it at first glance a plausible candidate for the Root Infinitive. Furthermore, in the earliest child data *na*-clauses typically appear as main clauses, unlike in the adult language, again a pattern similar to Root Infinitives.

However, in the earliest files of the two youngest children (Spiros at 1;9 and Janna at 1;11) the particle *na* is *missing* in the majority of cases, as exemplified in (3); cf. also Katis (1984) and Stephany (1995), according to whom the earliest stage of child Greek contains no particles. Janna at age 1;11 produced just one instance of an overt *na* (out of a total of 88 sentences with verbs — excluding the copula), and Spiros produced 10 phonologically reduced *na*-particles (of a total of 127 sentences with verbs).

(3)   a.   *Adult*:   *to magnitofono.*
             the tape recorder
             'the tape recorder'

      Child: *valume mesa.*   (Janna 1;11 file 2)
             put-1PL inside
             'Let's put (it) inside.'

      b.   *Adult*:   *den ta   vlepis?*
             not them see
             'Don't you see them?'

Child: *aniki i ula*
           open ula (name) (na ta aniksi i Ula)
           'Let Ula open them.'

      c.   *Adult*:   *afti ine i   kardula*
             this is   the heart
             'This is a heart.'

      Child: *kepasi   gazula a fai   o   likos*
             cover-3SG heart   *na* eat-3SG the wolf
             (Na skepaso tin kardula na min tin fai o likos)
             'Let me cover the heart for the wolf not to eat it.'
             (Spiros 1;9 file 2)

In the later recordings of Janna (at age 2;5) and in Mairi's recordings from the beginning (from age 1;9 on), the *na*-construction with an overt particle is very frequent, as exemplified in (4) (later recordings are not available from Spiros). In her first file, Mairi (age 1;9) produced 23 instances of *na*, out of a total of 133 sentences with verbs — excluding the copula and modals — whereas Janna produced 42 instances of *na*-clauses (out of 178) in one recording (file 3, age 2;5), the majority of which were root clauses.

(4)   a.   *Adult*:   *ti   tha kanume?*
             what FUT do-1PL
             'What shall we do?'

      Child: *na su   litso   alo.*   (Janna 2;5 file 3)
             na you-GEN throw-PERF-1SG other
             '(Let me?) throw you another (one).'

      b.   *Adult*:   *i ˈ tħelis   na to pjis?*
             or want-2SG *na* it drink-2SG
             'Or would you like to drink it?'

      Child: *na to zo*
             na it see-1SG
             'To see it' ('I want to see it')

      Adult: *ti   thelis?*
             what want-2SG
             'What do you want?'

      Child: *na pai   nelo*   (Mairi 1;9 file 1)
             na get-3SG water (na paro nero)
             'To get water.'

Thus, two stages are observable in the usage of *na*: an early stage (represented by Spiros' data and Janna's early data at age 1;11) where the *na* particle is

apparently not productively used, and a later stage (Janna's later data at age 2;5 and Mairi's data) where *na* is productively used in (non-adult) matrix clause constructions.

Interestingly, these two stages appear to correlate with the general development of IP-related elements. Given that the *na*-construction has been treated as a modal construction, this is not surprising. Thus, as we shall see in more detail below, Spiros and Janna, in her early recordings, do not reveal any evidence of having acquired tense marking, modals, or the agreement paradigm. On the other hand, Janna in her later recording (age 2;5) produces some modals and has a clearly productive Future Tense (with 19 instances) and Past Tense (with over 20 instances), as well as productive Agreement. Mairi's earliest collected data represent a similar stage, given that she produces *na*-clauses, the Future Tense, productive Agreement, and modals from her first recording on.

3.2.   *Arguments against the* na-*construction as Root Infinitive*

Although the *na*-construction at first glance appeared to be a good candidate for the Root Infinitive, more detailed examination reveals a number of differences between Root Infinitives in other languages and the *na*-construction in early child Greek.

First of all, the *na*-clause does not mark the earliest attested sentence type, unlike Root Infinitives, as suggested by the presence of an early stage where *na* is not yet productively used. Furthermore, given the relatively late emergence of the *na* particle, the proportion of *na*-clauses (with an overt *na*) in the early data is much lower than the proportion of Root Infinitives in the early stages of the languages described in Table 1. Spiros and Janna (at 1;11) produce *na*-clauses in less than 10 per cent of the cases, and even Mairi at 1;9 (whose data we take to represent a later stage) only produces the *na*-construction in 15 per cent of the cases. In contrast, the Germanic children of the same age represented in Table 1, produce Root Infinitives more than half of the time.

Finally, the emergence of the *na* particle at the same time as the Future Tense, Agreement, and modals suggests that *na*-clauses reflect a more advanced stage than the Root Infinitive stage.

Thus, we propose that the status of *na* is the same in child Greek as in adult Greek, namely it is a modal-like Infl-element. The *na*-construction is acquired along with Infl-related elements, whereas the reverse situation holds for Root Infinitives, which tend to be *reduced* in connection with the mastery of Infl-elements (cf. Clahsen 1991, Clahsen and Penke 1992, Duffield 1993). An

intriguing question remains as to why Greek children at our second stage use the *na*-construction as a matrix clause, contrary to the adult language.[5]

4.   The distribution of the *i*-suffix in child Greek

4.1.   *The overuse of the* i-*form*

Inspection of the early data reveals that there is a verb form that is overused, namely the one marked with the suffix *-i*. The overuse of this form has also been observed in Katis (1981; 1984; 1985), Stephany (1981; 1995), and Tsimpli (1992).[6] In the literature the *-i* form has been referred to as the 3rd singular person. Recall, however, that this form is ambiguous between the 3SG form of the verb in the most common conjugation (cf. Table 2) and the (active) participle (cf. Table 4).

In the earliest recordings, the three children we have examined use the *-i* form even in sentences where the subject is clearly not 3SG, as witnessed in the examples in (5):

(5)   a.   *Child*:   *tuto seli*
this want-IMPERF-3SG
'I want this.' (lit. 'He wants this')

  Adult: *afto thelis?*
this want-IMPERF-2SG
'Do you want this?'

  Child: *afto — ̆seli.*
this   want-IMPERF-3SG
'I want this.' (lit. 'He wants this')   (Spiros 1;9 file 1)

  b.   *Adult*:   *ti   tha fas,   aghapi mu?*
what will eat-PERF-2SG   love   my
'What will you eat, my love?'

  Child: *fai.*
eat-PERF-3SG
'I (will) eat.' (lit. 'She eats')

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5.   Under Rizzi's (1994) truncated tree approach which we adopt in this paper, the matrix *na*-clauses can be analyzed as truncated IPs with a lacking or underspecified CP, consistent with the general lack of embedded structures at this stage in the acquisition data.

6.   Stephany's corpus is the same one we are using, whereas Katis's observation is based on data from different children. Some of Tsimpli's data come from the Stephany corpus.

Adult:	ti	tha fai?
	what will eat-PERF-3SG	
	'What will she eat?'	
Child:	karabe.	
	(type of pastry; kurabje)	
	'Pastry'	(Mairi 1;9 file 1)
c. Adult:	etsi?	
	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')	
Adult:	nitsi?	
	open-PERF-3SG	
	'Open (it)?' (lit. 'She opens?')	
Child:	ne.	
	'Yes.'	(Janna 1;11 file 2)

Examples (5a, b) show use of the 3SG instead of a 1SG subject and (5c) shows use of the 3SG instead of 2SG. Example (5c) is comparable to the adult Greek usage of the subjunctive as an imperative. However, in the adult language a 2SG verb form would be required, rather than Janna's 3SG.

Such overuse makes the i-form a plausible candidate for the role of Root Infinitive. In fact, we will argue in this paper that Greek children's earliest verb forms with the suffix -i correspond to the participle.

4.2.   The two stages of the i-form

The developmental data from the three children reveals that there are two distinct stages in the use of the -i form in early child Greek. The characteristics of these two stages are summarized in tables 5, 6, and 7.

During Stage I, 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 5). Compare this with the use of Root Infinitives by children acquiring other languages, as shown in Table 1. Moreover, a large proportion — about 40 per cent — of i-forms is used in non-3SG contexts, as shown in Table 6. Contrast this pattern with German or Italian where the 3SG is *not* overused, although it is the first finite

form acquired by children (Clahsen and Penke 1992, Meisel 1994, Pizzuto and Caselli 1994). Furthermore, non-3SG verb forms are very rare and not overgeneralized (Table 7). For example, Spiros only produced 4 instances of a 1SG verb form (all of them in 1SG contexts). Rather similarly, Janna — for whom we have longitudinal data — produced 1SG verb forms only 9 per cent of the time at Stage I, as opposed to 33 per cent of the time at Stage II (calculated on the basis of Tables 5 and 7). Given the low proportion of non-3SG, forms, there is little evidence for the agreement paradigm at this stage. Finally, there is no evidence for Tense or modals.

During Stage II, on the other hand, which corresponds to the speech of Janna at 2;5 and Mairi at 1;9, we observe a completely different pattern with respect to the distribution of the i-form. Thus, i-forms are used much less than at Stage I, as shown in Table 5, and most of them are used appropriately in 3SG contexts (Table 6). Moreover, the agreement paradigm is used productively as indicated by the high proportion of the 1SG, 2SG, and 1PL verb forms in Table 7. In addition, the Future Tense has clearly been acquired and some modals are attested.

Table 5. Distribution of the i-form in sentences with verbs (excluding the copula and modals)

	Spiros 1;9 Stage I	Janna 1;11 Stage I	Janna 2;5 Stage II	Mairi 1;9 Stage II
i-form	96 (76%)	45 (51%)	62 (35%)	50 (38%)
other	31 (24%)	43 (49%)	116 (65%)	83 (62%)
Total	127	88	178	133

Table 6. Proportion of correct vs. incorrect uses of the i-form (excluding the copula and modals)

	Spiros 1;9 Stage I	Janna 1;11 Stage I	Janna 2;5 Stage II	Mairi 1;9 Stage II
i-f. in 3SG context	58 (60%)	28 (62%)	62 (100%)	35 (70%)
i-f. in other contexts	38 (40%)	17 (38%)	0 (0%)	15 (30%)
Total	96	45	62	50

The following summarize the two stages:

Stage I (Spiros 1;9, Janna 1;11):

1. The i-form used over half the time (Table 5).
2. A large proportion of i-forms used in non-3SG contexts (Table 6).

3. Non-3SG verb forms very rare and not overgeneralized (Table 7); thus there is little evidence for the agreement paradigm.
4. No evidence for Tense or modals.

Table 7. The distribution of the non-3SG verb forms (excluding the copula, modals and imperatives)

	1SG		2SG		1PL		2PL		3PL	
	cor	inc	cor	inc	cor	inc	cor	inc	cor	inc
Spi, St. I	4	0	2	1	5	1	0	0	4	1
Jan, St. I	7	1	0	0	11	0	0	0	3	1
Jan, St. II	58	0	20	0	19	0	2	0	6	1
Mai, St. II	29	0	8	0	19	0	0	0	1	0

Stage II (Janna 2;5, Mairi 1;9):

1. *i*-forms used much less than at Stage I (Table 5).
2. Most *i*-forms used appropriately in 3SG contexts (Table 6).
3. The agreement paradigm used productively (Table 7).
4. Future Tense and modals have been acquired.

5.   Arguments for the *i*-form as the *Early Non-finite* form

5.1.   *Evidence for non-finiteness*

5.1.1. *Incompatibility with finiteness.* As we have just seen, at Stage II the *i*-form is rarely overgeneralized to non-3SG contexts; rather, it appears to be appropriately used as the 3SG agreement marker. We take this to indicate that Stage I — where the *i*-form is frequently overgeneralized — represents the *Early Non-finite Stage* (i.e., the "Root Infinitive" Stage), whereas Stage II corresponds to a stage where Infl-related functional projections are typically realized.

On the other hand, if the overgeneralized *i*-form were a *finite* form, we would expect it to emerge along with other finite forms such as modals and verbs with productive tense and agreement morphology. In fact, the distribution of the overgeneralized *i*-form is in a sense the *reverse* of the finite verb forms: it is used at Stage I and practically disappears at Stage II.[7] The frequency of the

7.   In the acquisition of German and Dutch there are two factors that determine whether a verb is finite: verb position and verb inflection. In SVO languages, on the other hand, verb position is not a very reliable criterion unless the sentence happens to contain an adverbial (something rare

i-form at the earliest observed stage and its decline at later stages is comparable to the pattern of Root Infinitives observed in other languages.

5.1.2. *Null subjects.* Another piece of evidence in favor of the non-finiteness of the *i*-forms comes from the distribution of empty and overt subjects in child Greek. The emergence of overt subjects in child languages has been claimed to be associated with the acquisition of Agreement, even in Null Subject languages such as Spanish or Modern Greek (Grinstead 1994 for Spanish and Catalan; cf. also Krämer 1993 for Flemish, Dutch, and German). This suggests that overt subjects are licensed by a functional projection.

In Spiros's data the overgeneralized *i*-form mostly occurs with an empty subject (cf. example [6]) (cf. also Tsimpli 1992 on null subjects with agreement errors). Overt subjects are predominantly used with correct Agreement (cf. example [7]), as shown in Table 8 (20 out of 25, i.e., 80 per cent).

(6)   Adult: pu   to vazoune?
                 where it put
                 'Where do they put it?'
       Child: seli
                 want-3SG (*to thelo*-1SG')
                 'I want it.'

(7)   Adult: ke meta tha bi mesa
                 and then will get inside
                 'And then it will get inside.'
       Child: liposi   i mama
                 fold-3SG mother (tha to diplosi i mama)
                 'Mom will fold it.'

Thus an overt subject implies correct Agreement while incorrect Agreement implies an empty subject. Since subject distribution depends on the presence vs. absence of correct Agreement, this argues for two different sentence types. Given the Romance data, there is reason to treat the predominantly null subject sentence type as an earlier developmental structure, associated with non-overt realization (or non-realization) of functional projections. On the other hand, the sentences with correct Agreement and an overt subject would involve the overt realization of functional projections (cf. also Drachman 1998, in another framework).

The idea that the earliest stage correlates with the absence of overt subjects (and no Agreement) is further supported by Janna's data, as shown in Table 9.

in early acquisition data). As will be evident throughout this section, our criterion for finiteness in the Greek data is verb morphology, that is, the presence of productive Agreement.

We see that 42 out of Janna's 46 subjects are null, i.e., 91 per cent.

Table 8. The distribution of subjects with 3sG verbs (the *i*-form) (Spiros 1;9)

	Null subjects	Overt subjects	Total
Correct	38 (66%)	20 (34%)	58
Incorrect	32 (86%)	5 (14%)	37
Total	70 (74%)	25 (26%)	95

Table 9. The distribution of Janna's subjects with 3sG verbs (the *i*-form)

	Null subjects	Overt subjects	Total
Stage I (1;11)	42 (91%)	4 (9%)	46
Stage II (2;5)	43 (73%)	16 (27%)	59

Since the overgeneralized *i*-form rarely occurs with an overt subject, contrary to the situation with finite verbs, this provides another argument for treating the *i*-form as an Early Non-finite form comparable to the Root Infinitive in other languages.

5.1.3. *Verb raising.* More evidence for treating the *i*-form as an Early Non-finite form in child Greek could potentially come from various diagnostics for Verb Raising, such as adverb placement, position of Negation, and word order.

In the early child Greek data there are few temporal adverbs. Moreover, they occur either preverbally or postverbally and thus do not provide conclusive evidence on Verb Raising. Furthermore, given that there are several options for temporal adverb placement in adult Greek (Alexiadou 1994: 130–133), the adverb data are not obviously relevant for determining Verb Raising in Greek. Similarly, Negation in adult Greek is not a diagnostic for Verb Raising because Negation precedes all verbal forms in the sentence.

The position of the Subject is potentially revealing: the majority of children's early overt subjects are postverbal (about 75 per cent; Tsimpli 1992). However, since postverbal subjects might be generated postverbally, the strongest evidence for Verb Raising would come from VSO orders. In fact, it turns out that at Stage I this order is not attested (cf. also Tsimpli 1992); all postverbal subjects occur in VS sentences. However, if the subject is generated in a *preverbal* SPEC VP position, as it is reasonable to assume, the VS orders do provide evidence for raising to some functional projection at Stage I. Given the evidence from null subjects and incompatibility with finiteness, we assume that this projection is low in the tree, presumably Aspect Phrase (see Section 6).

5.2.   *Evidence for the Participle analysis: The Perfective stem*

Up to this point, we have seen arguments for the overgeneralized *i*-form being a non-finite form (i.e., it does not raise as high as finite verbs). We will now turn to evidence favoring the *participial* nature of this non-finite verb.

An unexpected pattern is attested in our data: the overuse of the *i*-form is more prominent with the Perfective stem than with the Imperfective stem, as shown in Table 10. Thus, more than half of the Perfective *i*-forms involve incorrect uses of the *i*-suffix. Interestingly, although there are some incorrect uses of the *i*-form with the Imperfective stem as well (about 1/5 of the relevant sentences), it turns out that almost all of them (14 out of 16) involve verbs that *lack* a Perfective stem (i.e., verbs like *kani* 'do' for which the stem *kan-* is used everywhere).

Table 10. The distribution of the *i*-form with different stems (Spiros and Janna, Stage I).

	Imperfective		Perfective	
	correct agr.	incorrect agr.	correct agr.	incorrect agr.
Spiros	35 (78%)	10 (22%)	24 (47%)	27 (53%)
Janna	29 (83%)	6 (17%)	6 (35%)	11 (65%)

The usage of the Perfective stem is especially surprising given that the *Imperfective* stem is considered to be the unmarked stem in adult Greek (cf. Philippaki-Warburton 1973) due to the fact that it is the only stem possible in the Present Tense (cf. Table 3).[8] A straightforward explanation for the usage of the Perfective stem is that the relevant non-finite form is in fact the *active participle*, which in adult Greek requires the Perfective stem and moreover does not agree with the subject.

An analysis of the *i*-suffix as the participle has advantages over the traditional analysis of the *i*-form as a finite 3rd singular form. Under the traditional analysis, the correlation between the Perfective stem and the overgeneralized *i*-form would remain unaccounted for, along with the non-finite properties of this form. If this form were a finite 3rd singular form, we would not expect it to co-occur more with the Perfective stem than the Imperfective form.

8.   The frequency of the *i*-form with Perfective and Imperfective stems in the adult input data supports our thesis since the proportion of Perfective stems is very low compared to the child data. For example, in the first file of Spiros's data, only 14 out of the 59 instances of adult *i*-forms involve the Perfective stem.

Furthermore, the analysis of the *i*-form as the active participle is attractive because it makes the child Greek data more comparable to the Root Infinitives in other languages, which also involve a non-finite verb form (cf. Sano and Hyams 1994 for English) (However, see Drachman 1997, 1998 for a different analysis and interpretation of the early child Greek data).

6. Discussion

Let us now consider the ramifications of our findings for the various analyses proposed in the literature for the "Root Infinitive" phenomenon.

At first glance, the null auxiliary analysis of Boser et al. (1992) seems to explain the occurrence of the participle form, since children's non-finite clauses are similar in form to the adult compound tense construction apart from the lacking auxiliary (*exo* 'have'). However, this analysis predicts that the participle is used in similar *contexts* as in adult Greek, namely in the Perfect Tense (cf. Table 4). This prediction clearly does not hold, since the non-finite form is used by children in a wide variety of contexts, most of them incompatible with the adult Perfect context.

A further problem with the null auxiliary analysis is that it fails to unify the various non-finite forms attested in early child languages. Under this approach one would be forced to assume that there is parametric variation between child languages in terms of whether an auxiliary or a modal is omitted. Note that a null modal analysis is not possible for child Greek, since modals do not select a participle.[9] In addition, given the Greek data, the theory would be considerably weakened by the fact that the semantics of the child construction need not be related to the corresponding adult construction.

According to a recent proposal by Hoekstra and Hyams (1995), the underspecification of Number Phrase is responsible for several phenomena in child grammars, including Root Infinitives, the distribution of null subjects, and the omission of determiners. Under this approach, Root Infinitives are only found in languages with impoverished person agreement. In a language with rich

agreement, such as Italian, Root Infinitives are not expected.[10] Modern Greek also has rich agreement according to their definition, and — rather than Root Infinitives — child Greek is expected to demonstrate rich person agreement from the earliest stages on. Although it is technically true that Root Infinitives are not found in child Greek (since the language has no infinitive form), we did not find evidence in the production data for the expected early person agreement; rather, the ungrammatical *i*-form is used in various contexts. If anything, number agreement may emerge *earlier* than person agreement, given that the second agreement affix (after the 3rd singular) acquired appears to be the 1st plural affix (cf. Table 7). On the other hand, if the participle in child Greek corresponds to the Root Infinitive attested in other languages -as we claim — then child Greek *does* have "Root Infinitives", contra Hoekstra and Hyams's prediction. Thus, the underspecification of Number Phrase does not seem to be able to explain the Early Non-finite Clauses in Greek.

A more promising approach crosslinguistically is that of Rizzi (1994), according to whom the relevant form is "a root construction exhibiting whatever unmarked non-finite form the language possesses" (p. 379). As suggested in this passage, children in the Root Infinitive stage do not produce non-words, and the same seems to be true for agrammatic adults (cf. Grodzinsky 1990). Instead, they use the least marked well-formed item of the verbal paradigm. In languages like English or French, this item is the infinitive, not marked for Agreement, Tense, Mood or Aspect. In languages such as Greek, this item is the Perfective participle, marked only for Aspect but not for Agreement, Tense or Mood. Likewise, agrammatic adults omit inflection only when the bare stem is a well-formed word of their language and substitute inflection when it is not.

Let us now further investigate the notion of markedness needed in this connection. Evidently, this notion does not refer to the overt complexity of the morphological markers, since the perfective participle and the 3rd singular perfective subjunctive form (of the *na*-clause) are homophonous, yet children acquiring Greek use only the former but not the latter as the least marked ("Root Infinitive") form.[11] Nor does this notion refer in any obvious way to the number of marked values for abstract morphological features, since the perfective participle contains one marked feature value (i.e., perfective) whereas

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9. A further potential diagnostic for distinguishing the participle analysis from the null modal analysis comes from the distribution of the two sentential negators, *mi(n)* which is used in modal contexts, and *dhen* which is used elsewhere. The early acquisition data contain too few examples to be able to determine the form of the Negation conclusively. However, Tsimpli (1992) reports an example which seems to support the participial analysis over the modal analysis (Alexia 1;11): *ze fiji, mama* [NEG (*dhen*) leave-PERF-3SG, mommy] 'Don't leave, mommy'. The use of the negator *dhen* in this example favors the participial analysis since a modal interpretation of the verbal form would require use of the negator *mi(n)*.

10. Guasti (1994) has reported that the rate of Root Infinitives in early Italian is lower than in the languages represented in Table 1. However, as Guasti points out (footnote 7), this may be due to the omission of participles from her calculations. Given the Greek data and the analysis proposed here, if the use of participial forms in early languages represents the "Root Infinitive Stage" as well, then the Italian pattern reported by Guasti may be only an epiphenomenon.

11. Although it can be difficult to determine in the acquisition data which of the two homophonous forms the Greek children are using, recall that only the participle option explains the distribution of the Perfective stem (cf. Section 5.2).

the 3SG present indicative imperfective arguably contains no marked feature values at all (cf. Section 5.2), yet children again use only the former but not the latter as the least marked form. Instead, the notion of markedness needed in connection with young children's early non-finite root clauses is one that appeals to *syntactic complexity*. Consider the by now standard tree in (8) proposed in Belletti (1990) and adopted for Greek in Alexiadou and Anagnostopoulou (1996). Under the equally standard assumption that a functional feature marked on the verb must be checked against the corresponding functional head after overt or covert (LF) movement of the verb to the relevant head (cf. Chomsky 1995), infinitivals may not have to move out of the VP at all, whereas perfective participles must move to Asp (but no further) and, for example, 3SG present indicative imperfective forms must move all the way up to AgrS. It thus appears *that young children prefer that well-formed item of the verbal paradigm that allows them to use (or project) as little of the functional hierarchy as possible.* This state of affairs is compatible both with the view that young children project the whole tree but avoid verb movement (cf. Wexler 1994) and with the view that young children produce truncated structures such as root VPs or AspPs (cf. Rizzi 1994, see also Grimshaw 1994 and Weissenborn 1994). Either way, young children initially make use of the smallest tree that is compatible with a well-formed item of the verbal paradigm. It is in this sense that non-finite root clauses are (syntactically) unmarked.

(8)   AgrSP
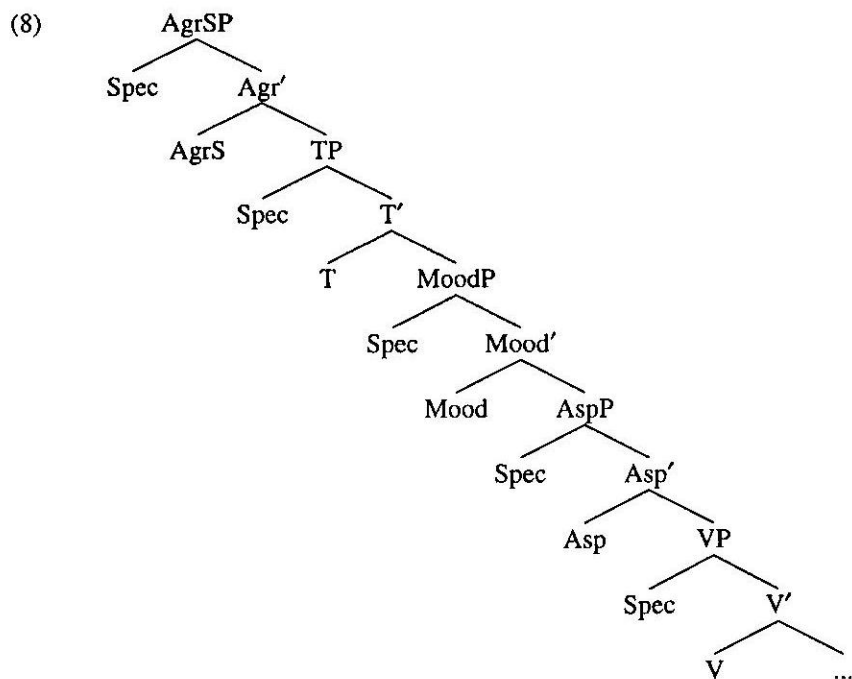
In conclusion: regardless of the fact that adult Greek has no infinitival forms, Greek children at the earliest stages nevertheless use a participial form which has the distribution of Root Infinitives in other languages. This means that the notion of "Root Infinitive" is too narrow, while a broader term such as *Early Non-finite Form* is more appropriate.

The child Greek data support the idea that children at an early stage construct sentences with an unmarked non-finite verb form. Under the participial analysis of the child Greek *i*-form it is possible to state such a crosslinguistic generalization (cf. Rizzi 1994). The evidence for the non-finite participial analysis of the *i*-form comes from the incompatibility of this form with finite elements in the developmental sequence, from the distribution of null subjects, and from the prominent use of the Perfective stem in the relevant construction.

References

Agouraki, Yiorgia (1991). A Modern Greek complementizer and its significance for Universal Grammar. *UCL Working Papers in Linguistics* 3: 1–24.

Alexiadou, Artemis (1994). *Issues in the Syntax of Adverbs.* Unpublished Ph.D. dissertation, University of Potsdam.

Alexiadou, Artemis and Elena Anagnostopoulou (1996). Symmetries, asymmetries and the role of agreement. *GLOW Newsletter* 36: 12–13.

Andriotis, Nikolaos (1934). Iparchi Ipotaktiki sti Nea Elliniki (Does Modern Greek have a Subjunctive Mood?). *Nea Estia* 15: 445–450.

Belletti, Adriana (1990). *Generalized Verb Movement: Aspects of Verb Syntax.* Rosenberg and Sellier, Turin.

Boser, Katharina, Barbara Lust, Lynn Santelmann and John Whitman (1992). The syntax of CP and V-2 in Early Child German (ECG) — The Strong Continuity Hypothesis. *Proceedings of the North Eastern Linguistic Society* 22: 51–65. University of Massachusetts, Amherst: GLSA.

Chomsky, Noam (1995). *The Minimalist Program.* Cambridge, Mass.: MIT Press.

Clahsen, Harald (1991). Constraints on parameter setting: A grammatical analysis of some acquisition stages in German child language. *Language Acquisition* 1: 361–391.

Clahsen, Harald and Martina Penke (1992). The acquisition of agreement morphology and its syntactic consequences. In *The Acquisition of Verb Placement*, J. Meisel (ed.), 181–224. Dordrecht: Kluwer.

Clahsen Harald, Martina Penke and Teresa Parodi (1994). Functional categories in Early Child German. *Language Acquisition* 3: 395–429.

Drachman, Gaberell (1997). Optimality and the acquisition of syntax. In *Greek Linguistics '95* Vol. 1, G. Drachman, A. Malikouti-Drachman, J. Fykias and C. Klidi (eds.), 1–10. Graz: Neugebauer.

Drachman, Gaberell (1998). Soft constraints in the acquisition of Greek syntax. Paper presented at the 17th GLOW Conference: Workshop on Current Trends in Modern Greek Syntax. *The Linguistic Review*, this issue.

Duffield, Nigel (1993). Roots and rogues: Null subjects in German child language. Unpublished manuscript, University of Düsseldorf.

Grimshaw, Jane (1994). Minimal projection and clause structure. In *Syntactic Theory and First Language Acquisition: Cross-Linguistic Perspectives* Vol. 1, B. Lust, M. Suñer and J. Whitman (eds.), 75–83. Hillsdale, N.J.: Lawrence Erlbaum.

Grinstead, John (1994). Tense, number and nominative Case assignment in Child Catalan and Spanish. Unpublished manuscript, UCLA.

Grodzinsky, Yosef (1990). *Theoretical Perspectives on Language Deficits*. Cambridge, Mass.: MIT Press.

Guasti, Maria Teresa (1994). Verb syntax in Italian child grammar: Finite and non-finite verbs. *Language Acquisition* 3: 1–40.

Hoekstra, Teun and Nina Hyams (1995). The syntax and interpretation of dropped categories in child language: A unified account. *Proceedings of the West Coast Conference on Formal Linguistics* 14: 123–136.

Joseph, Brian (1983). *The Synchrony and Diachrony of the Balkan Infinitive*. Cambridge Studies in Linguistics, supplementary volume. Cambridge: Cambridge University Press.

Ingria, Robert (1981). *Sentential Complementation in Modern Greek*. Unpublished Ph.D. dissertation, MIT.

Katis, Dimitra (1981). I kataktisi tu neo-elliniku rimatos apo to pedhi (The acquisition of the Modern Greek Verb). *Studies in Greek Linguistics* 2: 269–289.

—— (1984). The acquisition of the Modern Greek verb. Unpublished Ph.D. dissertation, University of Reading.

—— (1985). I morphologiki gramatiki sta proima stadia tis pedhikis glosas (Morphology in the early stages of child language). *Studies in Greek Linguistics* 6:115–129.

Krämer, Irene (1993). The licensing of subjects in early child language. *MIT Working Papers in Linguistics* 19: 197–212.

MacWhinney, Brian and Katherine Snow (1985). The child language data exchange system. *Journal of Child Language* 12: 271–296.

Meisel, Jürgen (1994). Getting FAT: Finiteness, Agreement and Tense in early grammars. In *Bilingual First Language Acquisition, French and German Grammatical Development*, J. Meisel (ed.), 89–129. Amsterdam: John Benjamins.

Philippaki-Warburton, Irene (1973). Modern Greek verb conjugation: Inflectional morphology in a transformational grammar. *Lingua* 32: 193–226.

Philippaki-Warburton, Irene and Yiannis Veloudis (1984). I Ipotaktiki stis simpliromatikes protasis (Subjunctive Mood in complement clauses). *Studies in Greek Linguistics* 5: 149–167.

Pierce, Amy (1989). On the emergence of syntax: A crosslinguistic study. Unpublished Ph.D. dissertation, MIT.

—— (1992). *Language Acquisition and Syntactic Theory: A Comparative Analysis of French and English Child Grammars*. Dordrecht: Kluwer.

Pizzuto, Elena and Maria Cristina Caselli (1994). The acquisition of Italian verb morphology in a cross-linguistic perspective. In *Other Children, Other Languages. Issues in the Theory of Language Acquisition*, Y. Levy (eds.), 137–187. Hillsdale, N.J.: Lawrence Erlbaum.

Platzack, Christer (1994). The initial hypothesis of syntax: A minimalist perspective on language acquisition and attrition. *WPSS* 54: 59–88.

Poeppel, David and Kenneth Wexler (1993). The full competence hypothesis of clause structure in Early German. *Language* 69: 1–33.

Rizzi, Luigi (1994). Some notes on linguistic theory and language development: The case of root infinitives. *Language Acquisition* 3: 371–393.

Rohrbacher, Bernhard and Anne Vainikka (1994). Verbs and subjects before age 2: The earliest stages in Germanic L1 acquisition. *Proceedings of the North Eastern Linguistics Society, Papers from the Workshop on Language Acquisition and Language Change*, 25: 55–69.

Sano, Tetsuya and Nina Hyams (1994). Agreement, finiteness, and the development of null arguments. Unpublished manuscript, UCLA.

Stephany, Ursula. (1981). Verbal grammar in early Modern Greek child language. In *Child Language: An International Perspective*, P.S. Dale and D. Ingram (eds.), 45–57. Baltimore: University Park Press.

—— (1995). The acquisition of Greek. To appear in *The Crosslinguistic Study of Language Acquisition*, Volume 4, D.I. Slobin (ed.). Hillsdale, NJ: Erlbaum.

Stern, Clara and William Stern (1928). *Die Kindersprache: Eine psychologische und sprachtheoretische Untersuchung*. Wissenschaftliche Buchgesellschaft (4th edition, 1975). Darmstadt.

Terzi, Arhonto (1992). PRO in finite clauses: A study of the inflectional heads of the Balkan languages. Unpublished Ph.D. dissertation, CUNY.

Tsimpli, Ianthi-Maria (1992). The acquisition of functional categories. Ph.D. dissertation, UCL. Published as *The Prefunctional Stage of First Language Acquisition: A Crosslinguistic Study*. New York and London: Garland (1996).

Tsoulas, George (1993). Remarks on the structure and interpretation of na-clauses. *Studies in Greek Linguistics* 14:191–206.

Varlokosta, Spyridoula and Norbert Hornstein (1992). Control in Modern Greek. *Proceedings of the North Eastern Linguistics Society* 23: 507–521.

Weverink, Meike (1989). The subject in relation to inflection in child language. Unpublished MA Thesis, University of Utrecht.

Weissenborn, Jürgen (1994). Constraining the child's grammar: Local well-formedness in the development of verb movement in German and French. In *Syntactic Theory and First Language Acquisition: Cross-Linguistic Perspectives*, vol. 1, B. Lust, M. Suñer and J. Whitman (eds.), 215–247. Hillsdale, N.J.: Lawrence Erlbaum.

Wexler, Kenneth (1994). Optional infinitives, head movement and the economy of derivations. In *Verb Movement*, N. Hornstein and D. Lightfoot (eds.), 305–350. Cambridge: Cambridge University Press.

Wijnen, Frank (1994). Incremental acquisition of phrase structure: A longitudinal analysis of verb placement in Dutch child language. *Proceedings of the North Eastern Linguistics Society, Papers from the Workshop on Language Acquisition and Language Change* 25: 105–118.