

# Root Infinitives in Child Language and the Structure of the Clause

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## **Introduction**

There exists a wide array of linguistically interesting, non-adult-like phenomena that could be thought of as rooted in the clause, which is to say, neither smaller than word nor concerned with the clause's interface with larger discourse. For convenience, I will organize my discussion of these phenomena around one of the more actively debated topics in developmental clausal syntax: the root infinitive (RI) phenomenon. As we will see, many other developmental linguistic debates interact with RIs, which makes them a good touchstone for this discussion.

## **Root Nonfinite Verbs - Empirical Generalizations**

The principal phenomenon to be addressed in this chapter is called variously the “Optional Infinitive Stage”, the “Root Infinitive” phenomenon and the “Root Nonfinite Verb” phenomenon. The cross-linguistic generalization at issue is the fact that children roughly between the ages of 1;6 and about 5;0, depending on the language and methodology used to measure it, pass through a stage during which they optionally mark finiteness on both main and auxiliary verbs.<sup>1</sup> By “finiteness”, tense and subject-verb

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<sup>1</sup> Possibly the best documentation of the end of this stage is found in Rice, Wexler and Hershberger (1998) and Rice, Wexler and Redmond (1999) for child English, who show, using elicited production, grammaticality judgment and spontaneous production techniques in a 2-3 year longitudinal study, that 30 typically-developing children (the younger control group in a study of specific language impairment) actively use root infinitives at 3;0 and do not fully stop using them until roughly 4;6. Because much of the

agreement marking is usually what is meant, though verbal inflectional marking for gender, aspect, mood, non-subject argument agreement marking or others may also be included, depending on the language. In some cases, the verbal finiteness marker is a free morpheme, as in the case of English auxiliary BE, and in other cases the verbal finiteness marker is a bound morpheme, as in the case of English third person singular –s. In English, where auxiliary BE is missing, children appear to produce a bare progressive participle (e.g. John walking.) and where third person singular –s is missing, children appear to produce a verbal bare stem (e.g. John walk.).

The optionality of the phenomenon, with respect to third singular –s marking in child English, is illustrated in the following examples from Harris & Wexler (1996, p. 11), taken from the Brown Corpus (Brown 1973) and the Bloom Corpus (Bloom, Hood and Lightbown 1974), in which we see both the bare stem and the inflected form being used in the same recording session (“file”):

1. Eve (2;0 – file 14)

It only write on the pad.

My finger hurts.

2. Peter (3;3 – file 8)

Patsy need a screw.

This goes in there.

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early work on root infinitives focused on the 2 and 3 year-old children in the CHILDES corpora, it is not widely recognized that the phenomenon persists as long as it does.

Utterances exemplifying the missing auxiliary BE include the following from Vainikka (1993, p. 268-272), taken from the Suppes Corpus (Suppes 1974) and the Sachs Corpus (Sachs 1983).

3. Naomi (2;1)  
Me wearing curtain.
4. Nina (2;0 – file 5)  
I popping balloons.

There is a great deal of cross-linguistic variation with regards to which verb form is used as an RI (cf. Hyams 2007 for a review).

The interest generated by the RI phenomenon appears to stem from the fact that it is not neatly accounted for by any of the current developmental linguistic or psychological approaches to child language and thus constitutes somewhat of an enigma. At bottom, developmental approaches that grow out of Generative Grammar (Chomsky 1957, 1981, 1995) have long based their poverty of the stimulus argument on the fact that children develop adult-like grammatical abilities as quickly as they do (e.g. Crain & Pietroski 2001) and argue, for example, that children are “Grammatically Conservative” (Snyder 2007) and consequently do not make many errors of commission. The Root Infinitive phenomenon simply does not fit with this characterization, because children have been well-documented to pass through an extended period during which finiteness marking is not adult-like. As a result, researchers are driven to propose theoretical accounts that sometimes diverge from the Continuity Hypothesis (cf. Macnamara 1982,

Pinker 1984) such as Wexler's (1998) Unique Checking Constraint, which argues that children have different morphosyntactic mechanisms than do adults.

Similarly, from the Constructivist (e.g. Bates & MacWhinney 1987; Bates & Goodman 1997) or Usage-Based perspective (Tomasello 2003), the input is the primary driving force behind language acquisition and "cultural imitative learning" of what is heard in the child-directed input is theoretically critical to how children learn language. Because children do not hear nonfinite verbs used in root or main clauses in the adult input, it is not straightforwardly clear why they should ever produce them on a Constructivist account. But because imitation of adults is critical to their model, Constructivists are driven to propose non-obvious learning mechanisms, such as the idea that children memorize or imitate certain parts of what is at the end of the utterance, e.g. the last half of a compound finite utterances such as *Can he go?*, which becomes the root nonfinite utterance *He go*. (Freudenthal, Pine & Gobet 2006; Freudenthal, Pine, Aguado-Orea & Gobet 2007).<sup>2</sup>

In summary, the Root Infinitive phenomenon is interesting because it defies a straightforward account in the main approaches to child language development. It has been extensively studied from the generative perspective, because the child error involves verb finiteness and verb finiteness plays an important role in many constructions in adult

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<sup>2</sup> This is particularly non-obvious given child Spanish speakers' production and acceptance of forms like "Yo quiere." in which a third singular present verb form occurs with a first person singular pronoun (cf. Pratt & Grinstead 2007, 2008; Grinstead, De la Mora, Pratt & Flores 2009). These plausibly bare stem forms do not form part of any compound finite utterance. More on this below.

syntactic theory. As a result, adult theory can be interpreted to make predictions regarding the consequences of verbal finiteness marking for these constructions. Viewed this way, the stages of child language development offer new opportunities – akin to the discovery of new languages – for investigating the theoretical proposals of generative grammar.

### *Syntactic Consequences of Verbal Nonfiniteness*

On the basis of what has been stated so far, one could conclude that the phenomenon in question is either phonological – possibly an issue of phonological processing limitations – or morphophonological, in the sense that children’s nonfinite utterances have some or all of the semantic and syntactic properties of adult finite utterance, but simply lack the adult-like means of specifying the phonetic representation of the relevant finiteness marking morphemes. However, the study of multiple aspects of the syntax of constructions related to root nonfinite verbs has shown that these finiteness-sensitive constructions vary their syntactic properties in tandem with finite or nonfinite morphological marking of the verbs that occur with them in child language, at least to some degree. This has been argued to be true of an array of constructions, including pronominal case marking, null subject occurrence, subject-auxiliary inversion, verb-second (V2) verb position in Germanic languages and the position of verbs relative to negation in French.

### Null Subjects

One of the more well-known debates regarding clausal syntax addresses the existence of null subjects in the speech of children learning non-null subject languages, such as English, French or German (cf. Hyams, to appear, for a review). This debate is

relevant to the Root Infinitive phenomenon in that there appears to be a contingency between the occurrence of nonfinite verbs and null subjects in overt subject languages. In the following table, adapted from Hoekstra & Hyams (1998, Table 11, p. 16), we see summarized results of spontaneous production studies of Flemish, German, French, Dutch and English, which show that null subjects in the child versions of these languages tend to occur in root clauses with verbs that are morphologically marked as infinitive. Overt subjects, in contrast, tend to occur with finite verbs. English, here is an obvious exception.<sup>3</sup>

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<sup>3</sup> Note that none of these languages, with the exception of English, uses a bare stem as a nonfinite form, but rather a form with an infinitive morpheme attached, as in “geven” or “to give” in Dutch, which is usually also homophonous with a plural form of the indicative.

Language	Child	Finite Verbs			Nonfinite Verbs			Source
		Overt	Null	Total	Overt	Null	Total	
Flemish	Maarten 1;11	75%	25%	92	11%	89%	100	Krämer 1993
German	Simone 1;8-4;1	80%	20%	3636	11%	89%	2477	Behrens 1993
German	Andreas 2;1	92%	8%	220	32%	68%	68	Krämer 1993
French*	Nathalie 1;9-2;3	70%	30%	299	27%	73%	180	Krämer 1993
French*	Philippe 2;1-2;6	74%	26%	705	7%	93%	164	Krämer 1993
Dutch	Hein 2;3-3;1	68%	32%	3768	15%	85%	721	Haegeman 1995
English	Eve 1;6-2;3	90%	10%	86	89%	11%	155	Phillips 1995
English	Adam 2;3-3;0	69%	31%	113	80%	20%	242	Phillips 1995

\*For French, only preverbal subjects were counted.

Table 1 – Overt and Null Subject Occurrence in Finite and Nonfinite Clauses - Adapted from Hoekstra & Hyams (1998, Table 11, p. 16)

Notice in Table 1 that the proportions of overt vs. null subjects in the finite and nonfinite verb sections are inverted, except for English. Taking the tendency found in the non-English cases to be the phenomenon of interest, and setting English aside for the moment, we can ask why finite verbs should occur with overt subjects and nonfinite verbs should occur with null subjects.

Case Theory, as proposed by Chomsky (1981) was proposed to account for the occurrence of noun phrases in natural language. The idea is that in order to occur, a noun phrase must receive abstract Case (capitalized to distinguish it from morphological case). In subject position in English, French and German, nominative Case is presumed to be structurally assigned to the noun phrase occupying that position, by virtue of its

relationship with the finite verb that it co-occurs with. Overt subjects do not occur in infinitive clauses, as illustrated in (5) and (6), unless there is an external Case assigner, such as the preposition “for”, as in (7), but overt subjects do occur in finite sentences, as in (8).

5. John wondered [how  $\emptyset$  to leave].
6. \*John wondered [how Bill to leave].
7. [For Bill to leave] would be a good idea.
8. Bill left.

Chomsky (1981) proposes that since we interpret the subject of both the verb “wondered” and the verb “leave” in 5 to be “John”, there must be a pronominal element playing the role of the subject in the “leave” clause that takes its reference from the subject of the “wondered” clause. He called this pronominal element PRO and proposed that it would occur in environments in which it could not be associated with verb finiteness. This distinguishes it from the pronominal element that occurs in finite clauses in languages such as Spanish, which Chomsky refers to as *pro*. Chomsky & Lasnik (1993) propose that null subjects, such as the nonfinite PRO, may receive a kind of null Case. Krämer (1993) observes the contingency between nonfiniteness and null subjects in child Dutch, Flemish and German, displayed in Table 2, and proposes that the subjects of these clauses must logically be PRO, following earlier similar proposals by Guilfoyle (1984), Guilfoyle & Noonan (1989) and Radford (1990).



How does English fit into this picture? As illustrated in Table 2, Phillips (1995) shows that Adam and Eve from the Brown corpus fail to fit the trend found for most other overt subject languages because they produce both finite and nonfinite verbs that allow a very high percentage of overt subjects. Sano & Hyams (1994), however, note that while verbs ending in –s and –ed, in the files of Adam and Eve, seem to allow null subjects, copula and auxiliary *be* almost never do (15/404, cf. Table 1, p. 6). They propose that forms ending in –s and –ed are not initially finite, but rather are misanalyzed as participles, and consequently allow more null PRO subjects than would be expected, if they were adult-like finite verbs. This still does not explain the high percentages of overt subjects with nonfinite verbs, however. Phillips (1995) proposes that the difference between English and the other overt subject lies in the fact that verbs in the overt subject languages other than English, following the verb movement proposal (cf. Pollock 1989, Baker 1988), move from V to I to acquire finiteness marking, while only auxiliaries do so in English. Verb movement itself, in his view, blocks null subjects, while the absence of verb movement allows them.

Whatever the final answer to the puzzle turns out to be, it is clear that there is a syntactic contingency between finiteness marking and overt subjects and nonfiniteness and null subjects in an array of overt subjects languages. A more definitive formulation of this answer awaits future research.

### Pronominal Case Marking

The fundamental idea behind investigating pronominal Case in English is that children are known to make errors using non-nominative case pronouns in subject

position, such as those illustrated in the following b. examples from Gruber (1967, p. 53) made by a child named Mackie, between the ages of 2;2 and 2;5.

9. a. I wanna.  
b. Me wanna truck.
10. a. He take the wheel, fire engine.  
b. Me take the wheel.
11. a. I show you?  
b. Me show you?

Mackie's examples illustrate an optionality, which is reminiscent of the optionality of verb finiteness marking in the Optional Infinitive stage. These errors, however, do not seem to have a random distribution, as illustrated by the tabulation of errors from 8 typically-developing children studied by Loeb & Leonard (1991), given in the following table. The pattern illustrated in this data is that finite verbs require nominative case pronouns, while nonfinite verbs allow both nominative and accusative case pronouns, with a preference for nominatives.

<b>Finiteness versus case for Loeb &amp; Leonard's (1991) typically-developing children</b>				
All 8 children			7 children	
<i>Verb form</i>			<i>Verb form</i>	
<i>Subject</i>	<i>Finite</i>	<i>Nonfinite</i>	<i>Finite</i>	<i>Nonfinite</i>
<i>he + she</i>	503	95	436	75
<i>him + her</i>	26	58	4	28
<i>% non-NOM</i>	5%	38%	0.9%	27%

Table 2 Finiteness versus case for Loeb & Leonard's (1991) normal children, from Schutze & Wexler (1996, p. 672) and Schutze (1997, p. 222).

As we saw in the previous section, Case Theory was proposed to account for the licensing or occurrence of noun phrases. More recent proposals, however, such as Marantz (1991) and Schütze (1997) have proposed that licensing of an NP and the determination of its Case, are independently calculated. With this distinction in mind, the kind of error pattern just considered is consistent with the hypothesis that independently of whether licensing of subjects is adult-like in a child's grammar, Case marking is not.

In this more recent framework, subject licensing has been proposed to occur for a variety of reasons, some of which are syntactic, i.e. agreement or tense is responsible for licensing subjects, and some of which are semantic, i.e. predication is responsible for licensing subjects (cf. Rothstein 1983) or are "situations" are responsible for them (cf. Zucchi 1990). In Schütze (1997), it is assumed that Case assignment and NP licensing are independent, and the proposal presented is to account for the non-adult-like Case marking that surfaces on NPs in child language and the extent to which this child-particular

behavior is a function of verb finiteness. English noun phrases do not inflect for morphological case, except for pronouns, as illustrated in 12-14, while all noun phrases are marked for case in many languages, including German which marks them on the determiner (German examples from Eisenbeiss, Bartke & Clahsen 2005/2006, p 7).

12. Mary saw Bill.

13. She saw Bill.

14. \*Her saw Bill.

15. Der Affe beißt den Clown.

The monkey bites the<sub>ACC</sub> clown.

16. Der Clown wird gebissen.

The<sub>NOM</sub> clown gets bitten.

17. Der Affe winkt dem Clown.

The monkey waves at-the<sub>DAT</sub> clown.

Schütze & Wexler (1996a, 1996b) and Schütze (1997) propose a developmental model of the interaction of tense, agreement and case known as the Agreement Tense Omission Model (or “ATOM”), which attempts to account for the pattern of agreement errors they find studying spontaneous production transcripts and which is cast as a theoretical model integrating Minimalist syntax (Chomsky 1995) and Distributed Morphology (Halle & Marantz 1993). ATOM consists of three primary assumptions. First, finiteness drives case, following Chomsky (1981); second, some finiteness markers represent tense (past tense -ed), while others represent agreement (third singular -s);

lastly, the presence of third person, singular –s prevents the appearance of non-nominative pronoun subjects.

Responses to the ATOM proposal have come from Constructivists (e.g. Pine, Joseph & Conti-Ramsden 2004; Pine, Rowland, Lieven & Theakston 2005; Pine, Conti-Ramsden, Joseph, Lieven & Serratrice 2008), who have fundamentally sought to dispute the third assumption of ATOM, namely that third person, singular –s prevents nominative case pronominal subjects. Wexler, Schütze, and Rice (1998), for example, contend that “Agreeing verbs should show the fewest non-Nom subjects, in principle none at all. Ambiguous verbs should show some non-Nom subjects, more than the agreeing verbs, and uninflected verbs should show the highest proportion of non-Nom subjects.” Pine and colleagues are relatively successful at showing that third person singular –s inflected verbs may co-occur with non-nominative subjects in spontaneous production. Similarly, Charest & Leonard (2004) are able to show that this particular dimension of the ATOM theory does not hold in the spontaneous production data they consider. Notice, however, that ATOM makes very specific – and possibly unwarranted – assumptions about the particular way that verbal finiteness is manifested morphologically. For example, third person singular –s could represent agreement, as Schütze and Wexler assume, or it could represent tense and agreement, or tense, aspect and agreement, or possibly some other configuration of finiteness-related properties. It is very difficult to find clear adult-language evidence for making this determination. In any event, while it seems to have been shown that 3<sup>rd</sup> person singular –s may co-occur with non-nominative case pronominal subjects in child English, contra Schütze & Wexler, it remains to be shown that children’s knowledge of pronominal case is not driven by verb finiteness in subject

position. Again, arguments both for and against have been empirically limited to spontaneous production data.

Arguments against the first tenet of ATOM, that children's case errors are driven by incomplete knowledge of finiteness, have been largely promoted by Matthew Rispoli (cf. Rispoli 1994, 1997, 1998a, 1998b, 1999, 2000, 2002 and 2005), who argues, particularly in earlier work, that the development of pronoun case and verb finiteness should be viewed as independent, though in later work he allows that case and finiteness are related. In his earlier work, he argues that the non-nominative uses of pronouns in subject position is not a function of verbal finiteness and default case, but rather of children's word retrieval abilities with respect to pronominal paradigms.

Possibly the most interesting outcome of the debate between Rispoli and Schütze (cf. responses in Schütze 1999, 2001) is the potential for complementarity. While a syntactic answer to the puzzle seems likely, based on adult data as well as on child data, there is no a priori reason why the answer should be exclusively syntactic. The fact that ATOM assumes that a component of the answer stems from some kind of structured morphological representation (those of the Distributed Morphology model) is an acknowledgment of this fact. Studies of morphological processing in other frameworks, which, like Distributed Morphology, assume an independent morphological component of grammar, have shown, for example, that adults treat nominative vs. non-nominative pronouns differently, in both English and German (Lukatela, Carello, and Turvey 1987; Feldman and Fowler 1987; Kostic 1995). Specifically, nominatives are processed more quickly than non-nominatives. Though this particular conclusion may not actually help resolve the question of why non-nominatives are used early on, it confirms the traditional

assumption that morphological entries are likely structured in paradigms (Aronoff 1994; Zwicky 1985; Stump 1993), as Rispoli assumes.

In summary, there is good evidence that the variability in finiteness marking in child English corresponds to variability in nominative case marking on pronouns in subject position. This picture is clouded somewhat by the question of what role is played by independent learning of what morphologists argue are structured morphological representations, including the various case forms. Greater contact between work on morphological processing and developmental syntax could lead to more clarity in this area.

### Subject-Auxiliary Inversion

A long recognized phenomenon in child English is children's tendency to fail to invert subjects and verbs in questions (e.g. Bellugi 1965, 1971, Brown 1968, Erreich 1984, Ingram & Tyack 1979, Klima and Bellugi-Klima 1966, Rowland, Pine, Lieven & Theakston 2005, Stromswold 1992, Valian, Lasser & Mandelbaum 1992, Tornyova & Valian 2008). The relevance of this construction to verb finiteness is that subject-auxiliary inversion and verb finiteness, in child English, are associated with one another.

Uninverted Wh- Questions From Klima & Bellugi-Klima (1966):

18. Where the other Joe will drive?
19. Where I should put it when I make it up?
20. What he can ride in?
21. Why he don't know how to pretend?
22. Why Kitty can't stand up?

23. Which way they should go?
24. How he can be a doctor?
25. How they can't talk?

Making an argument that the grammar of subject-auxiliary inversion is in effect from the beginning of two-word speech, Santelmann, Berk, Austin, Somashekar and Lust (2002) show, using an elicited imitation task, that children who repeated yes-no questions and their associated declaratives (e.g. Is Kermit eating a cookie? Kermit is eating a cookie.) principally made inversion errors with verbs that had inflection, such as *do* support and copula *be*, and much less so with those that lack inflection, such as modals. While the authors conclude that inversion is in effect very early, and is only interfered with by immature inflection, an implication of this finding is that inflection does interact with the inversion of verbs that carry inflection in English.

Grinstead, Warren, Ricci and Sanderson (2009a) argue that there should be a connection between subject-auxiliary inversion and verb finiteness, following standard assumptions in mainstream generative grammar. First, it is assumed that verbs move from V to I to be marked for finiteness, following Pollock (1989), Baker (1988) and others. Second, it is assumed that verbs make a second movement from I to C in questions, among other constructions that include subject-auxiliary inversion, following den Besten (1983). Finally, it is assumed that verbs may not “skip” a projection and move directly from V to C, following the Head Movement Constraint of Chomsky (1981). Under these assumptions, any verb that is not finite, and consequently has not checked its finiteness features in I, cannot move on to C. Consequently, all uninverted verbs in questions



should be nonfinite. If it is true that finiteness is a crucial part of inversion, then children’s judgments of subject-auxiliary inversion constructions should correlate with their judgments of verb finiteness.

To investigate this question, Grinstead, Warren, Ricci & Sanderson (2009a) tested children grammaticality judgments of verb finiteness in declarative sentences on one test and their judgments of subject-auxiliary inversion on another. The results of the test showed an overall positive correlation of finiteness and inversion judgments ( $r^2 = .275$ ,  $p < .001$ ). More recent work (Grinstead, Warren, Ricci & Sanderson 2009b) has shown that the connections between verb finiteness and subject-auxiliary inversion are somewhat more specific. In particular, of the 4 finiteness elements used on the finiteness test (see column 1 of Table 3), third singular –s predicts 2 of the inversion structures from the inversion test (see column 2 of Table 3), namely, *do* and *did*.

<b>Finiteness Elements</b>	<b>Inversion Elements</b>
-s	do
-ed	did
Auxiliary BE	Auxiliary BE
Copula BE	Copula BE
	Modals

Table 3 – Elements of the Finiteness Test and the Inversion Test

The results of this linear regression are given in Table 4.

<b>Finiteness &amp; Inversion Elements</b>	<b>Unstandardized Slope (B)</b>	<b>Standard Error</b>	<b>p Value</b>
-s and Copula <i>be</i>	.170	.256	.509
-s and do	.420	.155	*.009
-s and did	.486	.167	*.005

Table 4 – Third Singular –s Judgments Significantly Predict do and did Inversion Judgments, but Not Copula Be Inversion Judgments

In summary, there exist preliminary results to suggest that the grammars of subject-auxiliary inversion and verb finiteness are linked in development and that variation in inversion judgments can be explained by variation in finiteness judgments. While there is surely more to a complete understanding of the factors that connect finiteness and inversion, some of which are likely performance factors, the link is nonetheless worth further exploration.

Verb Second

The observation of interest here relates to the construction, common to many Germanic languages, known as Verb Second or V2, in which finite verbs occur in second position, after a wide array of possible constituents that can occur in first position. In contrast, nonfinite verbs, the participial or infinitive component of a compound tense, for example, occur at the end of the sentence, as in the following German example from Vikner (1995).

26. Die Kinder haben diesen Film gesehen.

the children have this film seen

“The children have seen this film.”

Given this adult-language phenomenon, the question is whether children will correctly distribute morphologically finite verb forms in second position and morphologically nonfinite forms in sentence-final position. Boser, Lust, Santelmann and Whitman (1992) report that of a sample of 30 German-speaking children (1;9 – 2;10), even the youngest of them (n=6) showed evidence of V2 80-100% of the time. In a different sample of 40 German-speaking children, also reported by Boser et al, 16 of the children showed evidence on an elicited imitation task of V2 movement in 99-100% of their utterances. This shows that at the level of large samples of children, there is good, methodologically diverse evidence that the V2 construction is active in early child German. At a more detailed level, Poeppel & Wexler (1993) report the results of studying the transcripts of Andreas (2;1), of the Wagner Corpus (Wagner 1985), whose data was collected for 3 hours and 33 minutes on a single day. The results for Andreas show that of 251 verb-containing utterances, with three or more words (three or more so that Verb Second and Verb Final position can be more clearly determined), the overwhelming majority are placed in an adult-like way, as illustrated in Table 5.

	+ Finite	- Finite
V2/Not Final	197	6
Vfinal/not V2	11	37
Total = 251, $X^2 = 145.08$ , $p < .001$		

Table 5 – Finiteness versus verb position: three or more constituents (adapted from Poeppel & Wexler 1993, Table 2, p. 7)

In Table 5, we see that only a small number of verb forms do not fall into the adult-like form by position correspondence ( $17/251 = .068$ ). Similar results are reported for child Swedish (Santelmann 1995), child Dutch (Jordens 1990) and child Norwegian (Westergaard 2003).

#### Negation in French and Icelandic

More evidence that the finite and nonfinite verbs that occur in children's early language actually have the syntactic properties associated with finiteness and nonfiniteness in the adult languages come from child French and Icelandic. In adult French and Icelandic, as alluded to above, finite verbs occur to the left of the sentential negator *pas* in French and *ekki* in Icelandic, while nonfinite verbs occur to their right. This distinction motivated Pollock (1989) to propose that verbs move from VP across negation, which is assumed to be positionally stable, to IP, to acquire or check finiteness features, as illustrated in Figure 1.<sup>4</sup>

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<sup>4</sup> A similar proposal with different motivation is made for Icelandic by Johnson (1989).

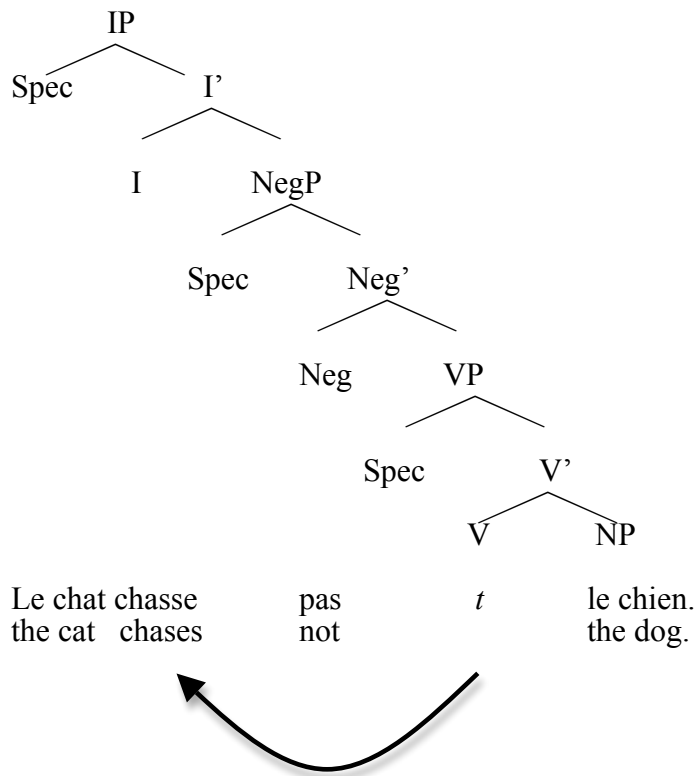


Figure 1 – Movement of a finite verb over negation in French

Pierce (1989, 1992) and Déprez & Pierce (1993, 1994) examine the longitudinally collected spontaneous production data of four monolingual French-speaking children from France: Daniel and Nathalie – from the Lightbown (1977) corpus, Grégoire – from the Champaud Corpus (from the CHILDES Data Base, MacWhinney 2000) and Phillippe – from the Suppes et al (1973) corpus. The results of these studies show that these children consistently placed finite verbs to the left of negation and nonfinite verbs to the right of negation, as illustrated in Table 6, compiled from Pierce (1992, p. 66).

	Finite	Nonfinite
Verb+Negation	216	2
Negation+Verb	9	122

Table 6 – Child French - the distribution of morphologically finite and nonfinite verbs with respect to sentential negation in the speech of Phillipe, Grégoire, Nathalie and Daniel (from Pierce 1992, p. 66).

As can be seen in Table 6, the children were almost exceptionless in their adult-like placement of the finite verb to the left of negation and of the nonfinite verb to the right of the verb.

Similarly in Icelandic, Sigurjónsdóttir (2005) shows that Eva, an Icelandic-speaking child, between the ages of 1;5 and 2;4 uses a number of sentences with adverbs and negation, to the left of which finite verbs must occur in adult Icelandic. As illustrated in Table 7, children overwhelmingly place verbs in their correct, adult-like position vis-à-vis negation and sentence adverbs.

	Finite	Nonfinite
Verb+Negation/Adverb	226	9
Negation/Adverb+Verb	4	62

Table 7– Child Icelandic - the distribution of morphologically finite and nonfinite verbs with respect to sentential negation and sentence adverbs in the speech of Eva (from Sigurjónsdóttir 2005, p. 550).

Of course adults do not produce root nonfinite verbs, so it is indeed surprising that children who do not yet produce adult-like finiteness marking nonetheless respect the syntactic position of verbs, as a function of their morphological finiteness marking.

### Semantic Restrictions

Hoekstra & Hyams (1998) note two important semantic properties of root infinitive verbs. First, they almost exclusively occur in event-denoting predicates. Stative verbs, in contrast, are almost always finite. This “Eventivity Constraint” is argued to hold of French child language, on the basis of observations in Ferdinand (1996), of child Dutch, based on the observations of Wijnen (1997), and of child Russian, on the basis of the observations of Van Gelderen & Van der Meulen (1998). Hoekstra & Hyams further observe that the referential properties of root infinitive verbs seem to be restricted to modal, irrealis interpretations of intention, volition or obligation. They refer to this as the “Modal Reference Effect” and argue that it holds for child Dutch, following Hoekstra & Jordens (1994) and Wijnen (1997), for child Swedish, following Plunkett & Strömquist (1990), for child German, following Ingram and Thompson (1996), and for child French, following Meisel (1990) and Ferdinand (1996). Hoekstra & Hyams then note that neither of these properties holds of child English root infinitives. An example of a Dutch root infinitive, apparently with a volitional modal interpretation is given in the following exchange (from Wijnen 1997, cited in Hyams 2007).

27. a. Child: Papa bouwen  
                  daddy-build-INF  
          Father: Geef jij de blokjes maar aan dan  
                  ‘well, hand me the blocks then’

- b. Child:       Drike(n)!  
                   Drink-INF
- Father:        Wil je de kamer drinken?  
                   Want you in that room drink  
                   ‘Do you want to have a drink in that room?’

According to Hyams (2007), there is substantial evidence that child English speakers allow their root infinitive forms to have a non-modal, past or present tense interpretation, as illustrated in the following exchange, from Hyams (2007, p. 6).

28.    a. Child:       He fall down.  
           Mother:     He did?
- b. Mother:    What’s she doing with the tiger now?  
           Child:     Play # play ball with him.

Hyams (2007) further argues that these verbs have an ongoing interpretation, in contrast to adult English, in which the present tense is restricted to a habitual or property reading.

It should be noted that virtually all of these observations are the result of inferences drawn by researchers reading transcripts of children’s spontaneous production data. While it is possible to make some reasonable claims about what the child probably has in mind, this methodology is only very indirectly capable of saying anything about what children’s actual interpretations are. Further research into children’s interpretations have shown mixed results. Blom, Krikhaar & Wijnen (2001) used a movie comprehension task to corroborate that child Dutch speakers appear to have modal interpretations of root infinitive verbs. However, Blom (2007) comes to slightly different



conclusions. Namely, she argues that when only 3<sup>rd</sup> person Dutch infinitives (infinitive verbs used with 3<sup>rd</sup> singular subjects), they seem much less modal than do 1<sup>st</sup> and 2<sup>nd</sup> person infinitives. The relevance of looking at 3<sup>rd</sup> singular infinitives in Dutch is that only 3<sup>rd</sup> singular bare stem verbs were looked at in English by, for example, Hoekstra & Hyams (1998) because only in 3<sup>rd</sup> singular can one determine that a bare stem is a root infinitive in English. To make the comparison symmetrical between English and Dutch, and factor out whatever referential properties might inherently distinguish 1<sup>st</sup> and 2<sup>nd</sup> person reference from 3<sup>rd</sup> person reference, Blom looks at only 3<sup>rd</sup> singular infinitives in her comprehension task and finds that only 61% of them are given a modal interpretation, which is not above chance. However, in the English version, only 36% of bare stems were given a modal interpretation – significantly less than chance, and significantly less than in Dutch. Thus, although the grammatical person of the subject associated with the infinitive appears to matter, the difference between English and Dutch appears to persist.

Drawing on the traditional observation that children seem to associate telicity with past tense (cf. Antinucci & Miller 1976; Bloom, Lifter & Hafitz 1980), Hyams' (2007) explanation of the difference between English and Dutch is called the Closed Event Hypothesis. She hypothesizes that children use the property of event closure to assign temporal reference to nonfinite clauses. If an event is open (atelic), the event time and utterance time are simultaneous and thus the temporal interpretation is the present tense. If an event is closed (telic), the speaker may either insert a telos-inducing second event that coincides with the utterance time or the speaker may insert a null modal and link that null modal to utterance time. In this framework, her explanation of the English facts is that English uses telicity and only telicity to indicate event closure. Dutch

infinitives, in contrast, are not marked for perfectivity and are so often modal that event closure is less salient. As a result, the null modal is an equal option.

### Summary

In sum, though there is a great deal of cross-linguistic variation, the occurrence of root infinitive verbs appear to correlate with non-adult-like pronominal case marking in child English, the occurrence of null subjects in child overt subject languages, a lack of inversion in subject-auxiliary inversion constructions in child English, sentence-final position in V2 languages, post-negation syntactic position in child French and child Icelandic and in an event-denoting predicate with a modal interpretation in child Dutch, French and German.

Though there is more, these main properties of root infinitives in child languages constitute the empirical burden that must be met by developmental linguistic theories that attempt to explain the phenomenon.

### **Theoretical Accounts**

The majority of theoretical accounts of the root infinitive phenomenon have been formulated within the framework of Mainstream Generative Grammar, though recently there have been Constructivist accounts as well as more learning-theoretic models.

### Mainstream Generative Grammar

Withing Mainstream Generative Grammar, there have been three broad approaches to the problem. The first essentially assumes that children are syntactically adult-like and that the apparent morphosyntactic differences between adults and children stem from children's undeveloped or unavailable discourse-pragmatic knowledge to tell them when a root infinitive is legitimate. This approach highlights the fact that root

infinitives are grammatical in adult languages, under the appropriate discourse conditions. The following question-answer pairs illustrate how root nonfinite forms can be grammatical in adult English.

29. What is Wallace doing, Gromit?
30. Eating cheese!
31. What does Wallace do every day after work, Gromit?
32. Eat cheese!
33. What has Wallace done since he got home, Gromit?
34. Eaten cheese!

Notice in 29, 31 and 33 that the absolute temporal value associated with the verb (past, present, future) is not given by the verb morphology, as are its lexical and grammatical aspect. Rather, the temporal value is established in discourse (in the Conversational Common Ground – cf. Stalnaker 1978) by the verb of the preceding question. In spite of this lack of tense marking, adults correctly interpret the tense value of these verbs, plausibly, because they share the speaker's presuppositions regarding the salience of the relationship among speech-time, event-time and reference-time, in the sense of Reichenbach (1947) in the Conversational Common Ground. Grinstead, De la Mora, Pratt & Flores (2009) argue that children, in contrast, frequently assume that these temporal relationships are salient when they are not. Mistakenly assuming this familiarity, they use nonfinite forms where adults would not. Earlier, related versions of this hypothesis are found in Avrutin (1994) and Lasser (1998, 2002).

The second main approach to the phenomenon assumes that the syntax of tense marking in child grammars is fundamentally distinct from that of adults and that this aspect of grammar matures in children, on analogy with other biological abilities. Wexler (1994, 1998), for example, proposes the Unique Checking Constraint (UCC). In this proposal, it is assumed that verbs in the adult language must undergo movement from their base position in the verb phrase to higher positions in the clause, following Chomsky (1995), and come into local (checking) relationships with two syntactic features (D features), sometimes postulated as independent functional projections: tense and agreement, as in Figure 2.

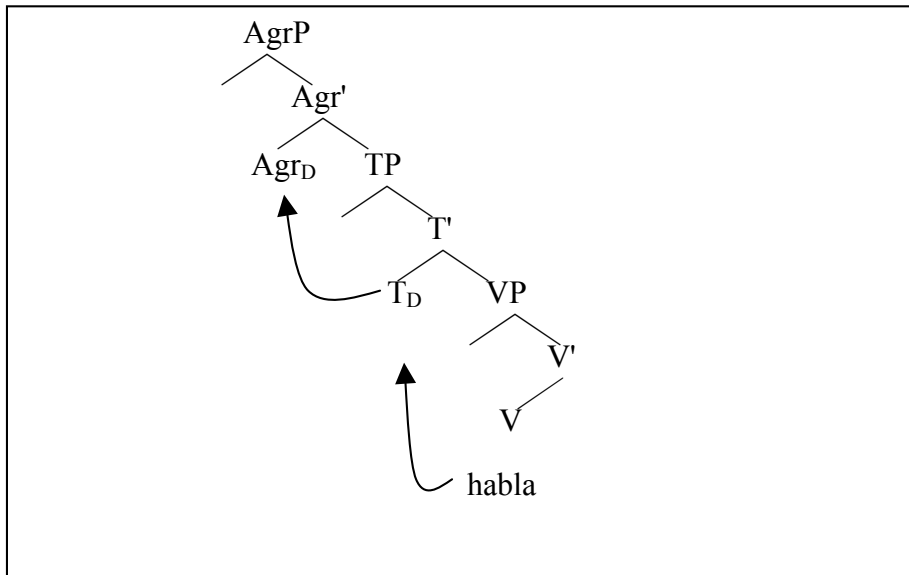


Figure 2 – Verb Movement to Check D Features in Tense and Agreement

This is the case for the adult language at least, in which failure of a verb to move up in the syntactic hierarchy will produce an ungrammatical derivation. In child language, the UCC restricts children to checking only one of the two features which adults must check

(D in tense or D in agreement). However, the result of a derivation which checks only one feature is a nonfinite verb, which accounts for the nonfinite verb forms children produce. The UCC works in concert with another constraint, *Minimize Violations*, which sometimes overrides the UCC and forces children to obey the rules of adult syntax, checking both tense and agreement D features, which accounts for the finite verb forms which children produce at a simultaneous point in development with the production of nonfinite verb forms. The criticism perhaps most frequently leveled at the UCC is its ad hoc nature. That is, it seems to have been created specifically to solve the optional infinitive problem and is not independently motivated. Further, it seems to have little ability to extend its empirical coverage to other constructions (though see Wexler, Gavarró & Torrens 2004 for an account of pronominal clitics in Spanish and Catalan using the UCC). Finally, the long-recognized problem for Wexler's account, as well as other maturational accounts of root infinitives (cf. Hyams 2007, Rizzi 2005ab) and other phenomena (e.g. Borer & Wexler 1987) is that linguistic inquiry halts where one decides that maturation begins. In other words, whatever one cannot explain may simply be attributed to maturation and because little is understood about the biological maturation of linguistic phenomena, there is no way to corroborate or disconfirm the proposal.

The last major approach within generative grammar to the optional infinitive approach is the Structure Building or Lexical Learning approach (e.g. Eisenbeiss 2000; Clahsen, Eisenbeiss & Penke 1995; Clahsen, Eisenbeiss & Vainikka 1994) which posits that children, within a problem space somehow limited by Universal Grammar, induce the clause structures of their particular languages. In this framework, the optional infinitive phenomenon represents an interim phase of clausal development before all of

the functional projections required for finiteness marking, such as Agreement, Tense or Aspectual Phrases (for frameworks that assume them), are fully developed. Such an approach allows for gradual development, which would seem to naturally encompass the fact that children use some verbs with finiteness marking and others without. A potential empirical problem for such approaches is that children have been shown to use the same verb in both finite and nonfinite forms in the same recording session. Depending on how the transition from lexically-based knowledge to grammatically based knowledge is formulated, this fact could be difficult to capture.

### Constructivist Approaches

A popular current empiricist approach to language acquisition follows the work of Michael Tomasello (2000, 2003) is referred to as the Usage Based approach (e.g. Theakston, Lieven, Pine & Rowland 2005). It assumes, following much earlier work (e.g. Bates & MacWhinney 1987), that the logical problem of language acquisition can be solved by assuming that there are powerful, domain-general learning mechanisms that children use to learn language, along with all other cognitive tasks. This contrasts with the assumption in generative approaches that children are endowed with a high degree of domain-specific (i.e. useful for language-learning, not useful for, for example, developing spatial cognition) linguistic knowledge, that is quickly “initialized” by experience into adult grammars.

Recent computational attempts to model properties of the root infinitive phenomena are found in Joseph & Pine (2002), Freudenthal, Pine & Gobet (2006), Freudenthal, Pine, Aguado-Orea & Gobet (2007) and Freudenthal, Pine & Gobet (2010). A central claim in this work is that their computational model, MOSAIC, is capable of

recreating the relative percentages of root infinitive forms in a variety of languages on the basis of “...no domain-specific built-in knowledge...” (Freudenthal et al 2006, p. 280), or more specifically “...no built-in knowledge of syntactic categories or rules...” (Freudenthal et al 2010, p. 647). MOSAIC is designed to produce different percentages of root infinitives, depending on the language being learned, including those with high percentages of RIs, such as English, slightly lower percentages, such as Dutch, followed by lower percentages in German, lower still in French and lowest in Spanish. Earlier versions of the model (e.g. Freudenthal et al 2006) assumed an utterance-final bias in learning, while later versions (e.g. Freudenthal et al 2010) assume that both an utterance-final and an utterance-initial bias are necessary for their distributional learning mechanism to capture the properties of the child language being explained, including some, though by no means all, of the subject-related properties of RIs mentioned above.

The point of the utterance-final bias in earlier work was to capture the fact that many of the nonfinite forms children use appear to be the last part of compound finite tenses. Thus an utterance such as “I want to eat ice cream.” in the child-directed input becomes “Eat ice cream.” in the child’s output. The addition in recent work of the “utterance-initial” bias to complement the utterance-final bias is interesting inasmuch as it mirrors an important dimension of the connectionist-nativist debates in the sense that in order to correctly model Optional Infinitive phenomena, more and more of the properties to be modeled have to be built into the “domain-general” learning mechanism. Because the Usage Based approach is supposed to be based on powerful learning mechanisms and no “built-in knowledge” of language, the addition of biases to the model to capture more and more properties of the phenomenon is a tacit admission that the job cannot be done

without knowledge, in the absence of experience, of what to look for. Beyond that, the input used to train the model with “no domain-specific” or “built-in knowledge of syntactic categories or rules” uses orthographic representations of language that it somehow is able to process without knowledge of language. Again, if there is nothing domain-specific about the model, then it should conclude that visual stimuli, or music, or the noises made by a vacuum cleaner are valid linguistic input.

### The Variational Learning Model

Legate & Yang’s (2007) analysis of the RI phenomenon is framed in the theory of language and language learning, proposed in Yang (2002), following the spirit of Roeper (2000), Kroch (2001) and others. The idea in Yang (2002) is that children simultaneously entertain multiple grammars that are consistent with their input. As a function of this child-directed input, each grammatical option is probabilistically promoted or demoted until the child reaches the adult state. Following the proposal in Yang (2002) to explain null subjects, overgeneralized past tense marking and other constructions in child language, based on the proportions of these constructions found in the adult speech directed to children, Legate & Yang (2007) present a similar analysis of the Root Infinitive phenomenon in child English, French and Spanish. Finding that children learning these languages use a large percentage of optional infinitives in English, fewer in French and even fewer in Spanish, they show that these percentages correspond to proportion of verbs in the adult input that they consider to either punish or reward a [+Tense] grammar. The empirical success of the analysis of course depends on the assumptions one makes regarding the particular morphology of a language that is taken to represent either a [+Tense] grammar or a [-Tense] grammar in the adult language as well



as on the analysis of what constitutes a root infinitive form in the child language. While Legate & Yang come to sensible conclusions regarding the cross-linguistic nature of the RI phenomenon, they nonetheless fall into a familiar trap that stems from studying the phenomenon using only spontaneous production data. Though there could be other ways of doing it that do not occur to me, it would seem that in order to calculate the rate of [+/- Tense] verb forms in the adult language is necessarily going to have be done using adult spontaneous production data. It is not the case, however, that this is the only way, nor is it the most accurate way to determine the frequency of root infinitives in, most especially, null subject child languages. As Legate & Yang are hardly the only child language investigators to make this erroneous assumption, we now turn to a discussion of why other experimental techniques are called for in the investigation of RIs in null subject languages, such as Spanish.

### **Root Infinitives in Null Subject Languages: Methodological Considerations**

The basic problem with the study of root infinitives in child Spanish, Catalan and Italian has been that researchers in generative linguistics (e.g. Bel 2001, Grinstead 1994, Torrens 1995 and Guasti 1994) and in constructivist approaches (e.g. Freudenthal et al 2010, Freudenthal et al 2006, Aguado-Orea 2004) have approached the problem by searching transcripts of children's spontaneous production data for morphological infinitives (e.g. *Él cantar.* – He sing.), following the pattern from some child Germanic languages in which children use morphological infinitives as their RI form, but have ignored the possibility that, in addition to morphological infinitives, children could also be producing bare stems in Spanish (e.g. *Yo canta.* – I sings.), following the pattern in English. What these researchers find are large percentages of apparently adult-like third

person singular, present indicative forms, occurring with null subjects<sup>5</sup>. Forms such as these (e.g. *Corre.* – Run.) could be adult-like present tense forms, if they have a third person singular subject (e.g. *Canta.* – She/he/it sings.), but since the subject is null and we cannot assume that children have adult-like discourse pragmatics, we do not know with certainty that these are not either 2<sup>nd</sup> person singular imperatives (cf. Salustri & Hyams 2003 - e.g. *Canta.* – Sing [you].) or, more plausibly, verbal bare stems (cf. Grinstead 1998 - *Canta.* – I/you/he/she/we/they/Ø sing.).

All three of these analytical options have been proposed, but only the third has significant empirical support, which we will review directly. Its conceptual plausibility, however, comes from the fact that a bare stem is the minimal verb form that can be produced in Spanish, i.e. it is a morphological root *cant-* and a theme vowel *-a*, which is fundamentally a derivational morpheme in the sense that it can change a category-less root into either a verb, if the verbal *a* is chosen (e.g. *Juan canta.* – Juan sings.), or into a noun if the nominal *o* is chosen (e.g. *Su canto es lindo.* – Her song was beautiful.), as is widely assumed in work on Spanish morphology (e.g. Harris 1991; Oltra-Massuet & Arregi 2005). This minimal form can occur as an imperative, which inherently lacks a temporal specification (i.e. it is nonfinite) and also, with the addition of a clitic, as an impersonal construction (*Se vende auto.* – Car for sale.), which in some dialects may actually lack an agreement marker (*Se vende carros.* – Cars for sale. – cf. Rigau 1991), making it even more likely that this is a form lacking inflection and thus finiteness.

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<sup>5</sup> Adults only produce an overt subject with about 20% of verbs (cf. Silva-Corvalán 1977, Bel 2001), while children produce even fewer (cf. Grinstead 2004; Grinstead & Spinner 2009).

Perhaps most compellingly, for those who assign a sort of primacy to spontaneous production data, children produce bare stem verbs spontaneously with overt subjects that are not third person singulars, as in the following examples from Grinstead, De la Mora, Pratt & Flores (2009, p. 242). These examples strongly suggest that the bare stem is a grammatical option for children learning Southern Romance languages.

#### Bare Stems

35. Carlos - 3;3.28

Yo pone.

I-nom put (root + “e” theme vowel)

"I puts."

36. Eduardo - 2;0.14

Es yo.

Copula 3<sup>rd</sup> stem I-nom

"Is I."

37. Eduardo - 2;2.0

Es tú.

Copula stem you-nom

"Is you."

38. Eduardo - 3;0.28  
Yo quiere hacerlo.  
I want (root + "e" theme vowel) do-inf cl-acc-sg-masc  
"I wants to do it."
39. Carlos - 2;1.08  
Va yo.  
go stem I-nom  
"I goes."
40. Carlos - 3;3.28  
Yo va a buscar.  
I-nom go stem to look for-inf  
"I goes to look for."
41. Graciela - 2;6.5  
Hace esto yo.  
do (root + "e" theme vowel) this I-nom  
"I does this."

42. Graciela - 3;3.26

Este, yo quiere.

this, I-nom want (root + “e” theme vowel)

"This, I wants."

Reflecting awareness of this plausibility, there is a growing number of spontaneous studies of Spanish and Catalan that assume that bare stem forms may constitute RIs in Spanish (Radford & Ploennig-Pacheco 1995; Davidiak & Grinstead 2004; Davidson & Goldrick 2003; Clahsen, Avelado & Roca 2002; Licerias, Bel & Perales 2006; and Buesa 2006). Further, Davidson & Goldrick (2003) demonstrate for child Catalan that bare stem forms decrease in use proportionally as tensed and agreeing forms gradually approach adult-like levels, arguing that it is a kind of default or elsewhere form. The empirical basis of this study shows that children begin by using bare stem and other nonfinite forms and gradually replace them with forms explicitly marked for tense and agreement. This study perhaps best captures the role played by bare stems as RIs and their transition to adult-like inflected forms.

Summarizing, the primary limitation of spontaneous production data for studying RIs in Southern Romance is that it is impossible to clearly determine, for over 80% of all children’s utterances, what the intended subject is. Since tense and subject-verb agreement are often expressed by one morpheme, it is consequently impossible to determine whether a form is finite or nonfinite. That is, a form like “*Canta.*” might be an adult-like present tense verb with a null subject or it might be a bare stem and with an

intended subject that is not third person singular, and it is impossible to definitively settle the question using spontaneous production data alone.

To circumvent this inherent limitation, researchers have used the receptive Grammaticality Choice paradigm (Pratt & Grinstead 2007) to determine whether children would choose bare stem forms with an overt subject (e.g. *Yo canta.* – I sings.) or whether they would choose an adult-like inflected form with an overt subject (e.g. *Yo canto.* – I sing) when presented with both sentences. Grinstead, Vega-Mendoza & Goodall (2010) show that in a sample of 44 monolingual Spanish-speaking children in Mexico City (mean age = 4;9 [57 months], with a range from 3;2 [39 months] – 6;6 [80 months]), illustrated in Figure 3, the children's ages correlate with their scores (mean score = 90%, range = 63% - 100% correct, with  $r^2 = .46$ ,  $p < .001$ ). What this means is that child Spanish speakers think that bare stem and morphological infinitive forms, the plausible root infinitive forms in Southern Romance, are acceptable as frequently as 37% of the time when they are 3 year-olds. As mentioned above (cf. fn 1), this may strike some as an advanced age for the occurrence of RIs, but the best documented studies of RIs in English (Rice, Wexler and Hershberger 1998; Rice, Wexler and Redmond 1999), using multiple methodological techniques, found children using RIs up until 4;6.

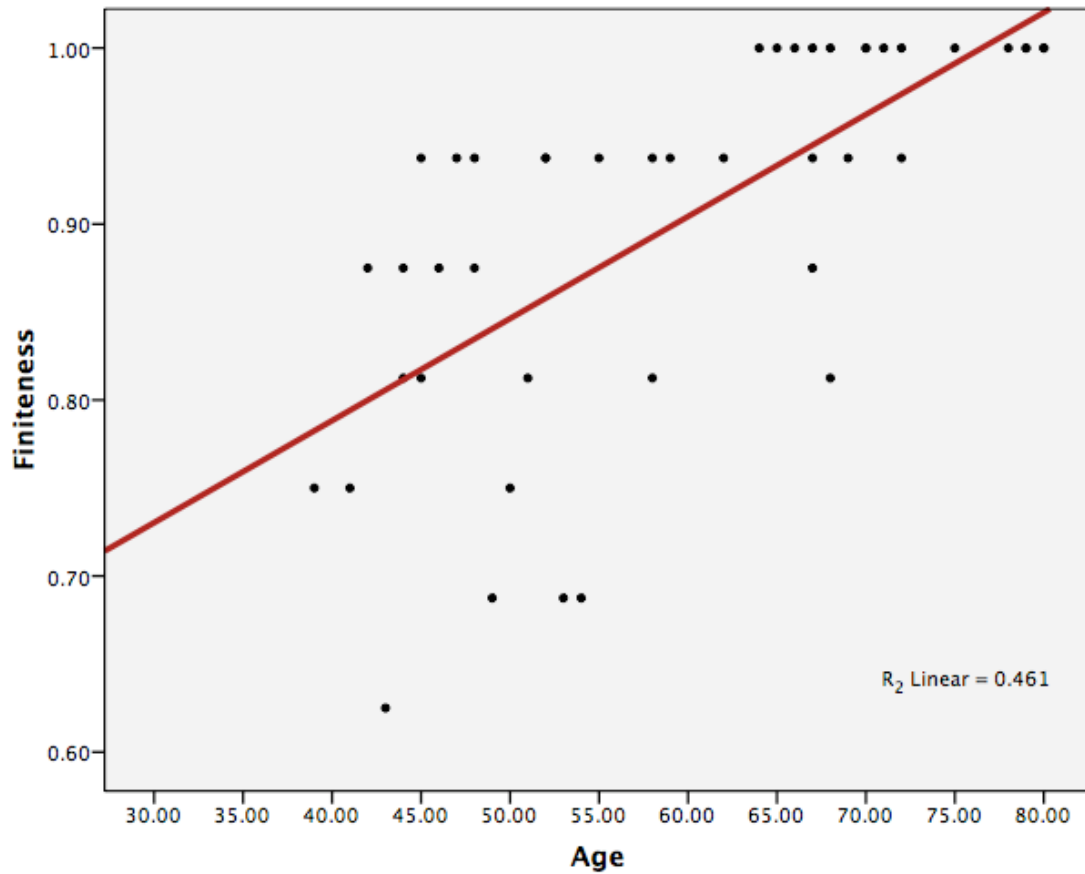


Figure 3 – 44 Monolingual Spanish-speaking Children Accept Non-agreeing Bare Stems Increasingly Less With Age ( $r^2 = .46$ ,  $p < .001$ )

Data supporting RIs as legitimate products of child Spanish-speakers' grammars, however, is not limited to receptive tests, such as the Grammaticality Choice Task. It has been cross-validated in Grinstead, De la Mora, Vega-Mendoza & Flores (2009), using an elicited production technique with 30 monolingual Spanish-speaking children in Mexico City (age range = 3;5 to 6;5, mean age = 5;1). Results of this study showed, again, that age and score correlated ( $r^2 = .285$ ,  $p < .002$ ). Further validation comes from the fact that a subgroup ( $n = 22$ , mean age = 5;2, age range = 3;7 and 6;5) of those who took the

elicited production test also took the Grammaticality Judgment Task used in Grinstead et al (2008) and their scores correlated ( $r^2 = .486$ ). Most importantly, a substantial percentage of the errors (23%) committed by the children in the elicited production study were bare stems. Similar findings have been previously reported for Spanish with both real and nonce verbs (cf. Kernan & Blount 1966; Pérez-Pereira 1989; Bedore & Leonard 2001).

A final cross-validation of the finding that child speakers of Southern Romance languages pass through a significant root infinitive stage comes from studies of specific language impairment (SLI). Rice, Wexler and colleagues have demonstrated for children with SLI learning English, that the Optional Infinitive phenomenon is more severe and more persistent than it is in either samples of children of the same age or in samples of children of the same “language age” (i.e. children with the same mean length of utterance). Rice & Wexler (1996) refer to this as the Extended Optional Infinitive stage, and it has been demonstrated to exist for children with SLI learning English as well as Dutch (Wexler, Schaeffer & Bol 2004), French (Jakubowicz & Roulet 2004) and Hebrew (Leonard, Dromi, Adam & Zadunaisky-Ehrlich 2000). If child Spanish has an optional infinitive stage, then, all else being equal, we would expect child Spanish-speakers with SLI to pass through an Extended Optional Infinitive Stage, which is exactly what we find.

Grinstead, De la Mora, Pratt & Flores (2009) show that in a sample of 27 monolingual Spanish-speaking children, 9 of whom are diagnosed with SLI (mean age = 5;6;  $MLU_w = 3.0$ ), 9 of whom are age matches (mean age = 5;6) and 9 of whom are  $MLU_w$  matches ( $MLU_w = 3.0$ ), the children with SLI were significantly worse than either the age matches ( $p < .001$ ) or the  $MLU$  matches ( $p < .001$ ) at recognizing whether a finite



utterance with an overt subject (e.g. *Yo abro la boca*. I open my mouth.) was more grammatical than either a bare stem (e.g. *Yo abre la boca*. I opens my mouth.) or a morphological infinitive form (e.g. *Yo abrir la boca*. I to open my mouth.), as illustrated in Table 8 and Figure 4.

	Past	Present	Average	SD
SLI	44.44%	50.51%	47.47%	13.85%
MLU	81.82%	69.70%	75.76%	15.08%
Age	80.81%	81.82%	81.31%	8.33%

Table 8 – Grammaticality Judgment Results From SLI, Age Controls and Language Controls From Grinstead, De la Mora, Pratt & Flores (2009, p. 256)

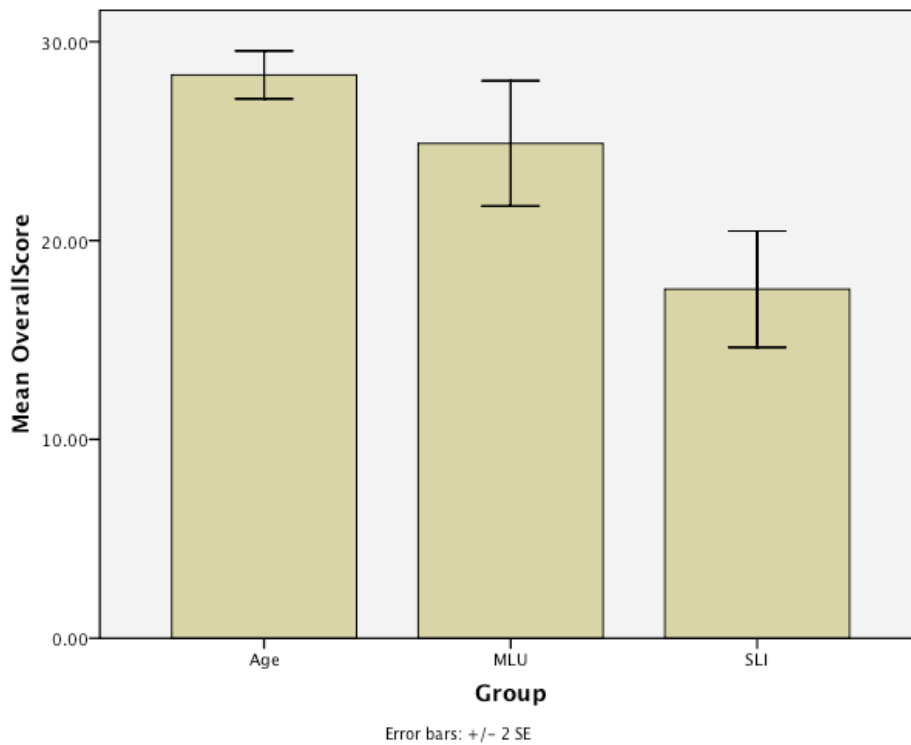


Figure 4 – Significant Differences Among SLI, Age Control and Language Control Groups From Grinstead, De la Mora, Pratt & Flores (2009, p. 256)

Similarly, Grinstead, De la Mora, Vega-Mendoza & Flores (2009) show, using an elicited production test, that 19 monolingual Spanish-speaking children with SLI (mean age = 67 months) perform significantly more poorly than do an age-matched control group of 19 typically-developing children at producing finite verb forms,  $t(36) = 3.392$ ,  $p = .002$ , illustrated in Table 9 and Figure 5.

	Mean	Standard Deviation
Age Controls (n = 19)	95.44%	6.30%
SLI (n = 19)	82.39%	15.53%

Table 9 – Elicited Production Results from SLI and Age Control Group

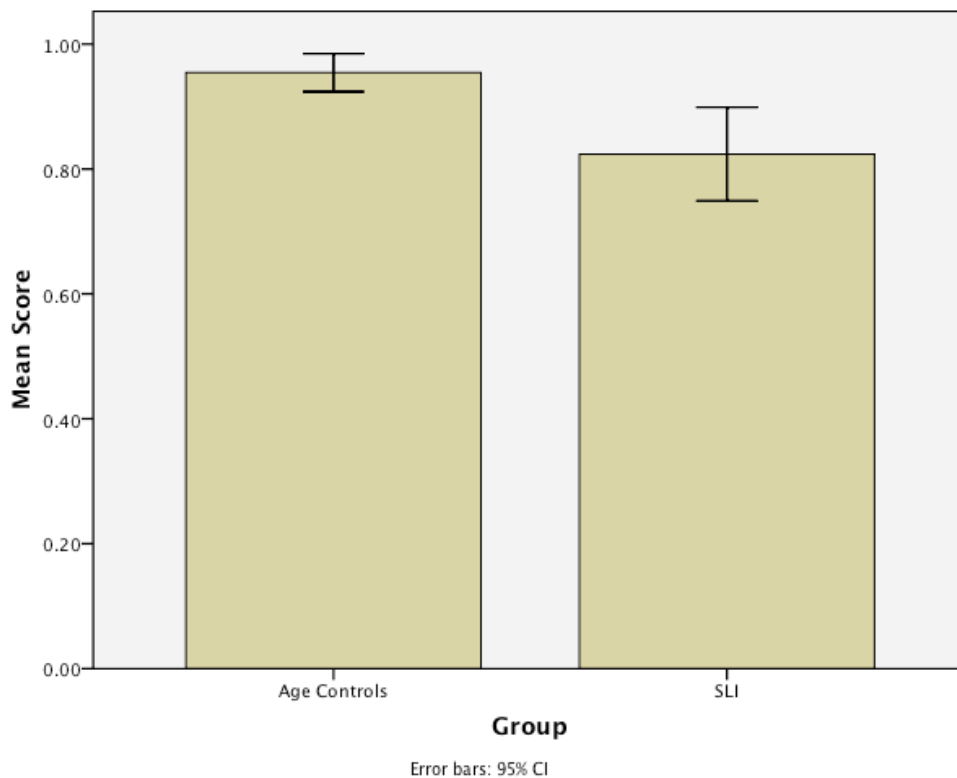


Figure 5 – Significant Differences Between SLI and Age Control Groups On an Elicited Production Test of Verb Finiteness

Again, a substantial percentage of the errors (43%) made by the children diagnosed with SLI were bare stem errors, confirming that this is not only a common RI form for children in the Optional Infinitive stage, it is also a common error for children in the Spanish version of the Extended Optional Infinitive Stage.

Summarizing, though much has been learned about developmental syntax through the study of spontaneous production data, it cannot be the only tool used to determine what children know. In particular, like any experimental technique, it is useful for answering some questions and not others, as a function of the kind of information it can provide. As it is not useful for answering the question of whether root infinitives are widely used in child Southern Romance languages, other experimental tools including Grammaticality Choice and elicited productions tasks must be used. Also, working with a special population, such as children with SLI, who are cross-linguistically likely to have problems with tense and to produce more RIs than typically-developing children, it is possible to adduce further evidence that the RI phenomenon is not marginal in Southern Romance, as widely assumed in much current literature (e.g. Yang 2002; Legate & Yang 2007; Phillips 1995; Freudenthal, Pine & Gobet 2006; Wexler 1998, among others).

### **Challenges for Future Research**

As I have attempted to make clear throughout the article, there are a range of obstacles to a complete understanding of the root infinitive phenomenon. At the theoretical level, there is no obvious, satisfactory account for the existence of it, which is why it is interesting. Successful accounts will have to account for the broad range of phenomena that appear related to nonfiniteness on children's verbs, even if that account consists of showing that related phenomena are only apparently related and are in fact

independent. From a learnability perspective, it would be helpful to have greater clarity regarding why children show the variation they do, within a single language, at marking finiteness, and even more so, at some of the related phenomena, such as non-nominative case marking, for which the spontaneous data suggests that some children do not have the non-nominative grammar at all. Greater contact with other areas of linguistics, including morphological processing could also lead to advances in our understanding of the phenomenon. Though much is understood, there is still plenty of linguistics to be done to have a complete picture of root infinitives in child language.

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