

Title:

The Root Infinitive Stage in Afrikaans: Evidence for Phonologically Neutralized Rich Agreement

Running Head:

The RI-Stage in Afrikaans: Evidence for Null AGR

Abstract:

Corpus data available on the CHILDES database reveal that children acquiring Afrikaans go through an 'Root Infinitive Stage'. The most successful theory of this developmental stage holds it to be the indirect result of a difficulty children have with movement of a subject to a higher, agreeing node in the clause. It follows that presence of the Root Infinitive Stage in child Afrikaans supports an analysis of adult Afrikaans in which subjects in the language agree with verbs, despite their complete lack of agreement morphology. Vindication of this grammatical analysis in turn supports the theory that movement to subject position is always driven by a need to check a higher node's Φ -features, as well as the hypothesis that there exists an independent Agreement node in Afrikaans that is not Fused with Tense.

1. Grammatical Theory and Its Evidential Basis

A hallmark of generative linguistics – indeed, the very property that renders it a science – is its view that the data supporting or challenging a grammatical analysis can be drawn from any source. Generative linguistics does not limit *a priori* the data which can inform our grammatical theory to some specially defined domain of experience. Since the object of our study is a feature of the natural world, any fact about the world could in principle be brought to bear on a particular analysis.

It is for practical reasons that the data overwhelmingly discussed by grammarians are the ‘acceptability judgments’ provided by adult native speakers. Such data are relatively simple to obtain, though they are usually rather poor in information. Grammatical hypotheses have, however, often been inspired, supported and challenged by data taken from child language acquisition studies and so-called ‘psycholinguistic experiments’. If a well-tested, widely-supported theory of a ‘psycholinguistic’ or ‘acquisitional’ phenomenon exists, then a particular grammatical analysis may, in conjunction with that theory, make further predictions one can experimentally test. If the theory of the ‘psycholinguistic’ or ‘acquisitional’ phenomenon is assumed correct, the outcome of such an experiment could challenge or support that grammatical analysis. In some cases, we might even devise a ‘crucial experiment’ deciding between two competing grammatical analyses.

I will argue that one can construct just such a crucial experiment in order to test a fundamental – though otherwise untestable – hypothesis regarding word order in Afrikaans.

The structure of this paper is as follows. In section 2, I introduce and motivate the grammatical analysis to be tested. I discuss how, given our present state of knowledge, adult acceptability judgments are simply not rich enough in information to serve as a test of this analysis. Section 3 introduces the so-called ‘Root Infinitive Stage’ of language acquisition, as well as the ‘Unique Checking Constraint’ account of that developmental stage. I argue that the Unique Checking Constraint account is more viable than its published alternatives. I then show that the truth of

the Unique Checking Constraint account would entail that the existence of a Root Infinitive Stage in child Afrikaans would support the proffered grammatical analysis, while the absence of such a stage would challenge it. In section 4, I explain my method for determining whether child Afrikaans goes through a Root Infinitive Stage, and section 5 presents the results of my study. A discussion of those results follows in section 6.

2. The Puzzle of Afrikaans Morphology and Word Order

Afrikaans is well-known for being the least inflected of the Germanic languages. Not only is there a total absence of nominal case and gender, there exists no marking of agreement in number or person on Afrikaans verbs or adjectives (Donaldson 1993). Whatever number or person the subject of an Afrikaans sentence has, the verb assumes the same, invariant form. This absence in Afrikaans of verbal agreement morphology stands in sharp distinction to the presence of agreement morphology in its parent language, Dutch, and even its very weakly inflected relative, English.

Dutch:	English	Afrikaans
<i>maken</i> ‘to make’	to make	<i>maak</i> ‘to make’
1 st sing: <i>maak</i>	3 rd sing: <i>makes</i>	1 st sing: <i>maak</i>
2 nd sing: <i>maakt</i>	Other: <i>make</i>	2 nd sing: <i>maak</i>
3 rd sing: <i>maakt</i>		3 rd sing: <i>maak</i>
plural: <i>maken</i>		plural: <i>maak</i>

<i>zijn</i> 'to be'	to be	<i>wees</i> 'to be'
1 st sing: <i>ben</i>	1 st sing: <i>am</i>	1 st sing: <i>is</i>
2 nd sing: <i>bent</i>	3 rd sign: <i>is</i>	2 nd sing: <i>is</i>
3 rd sing: <i>is</i>	Other: <i>are</i>	3 rd sing: <i>is</i>
plural: <i>zijn</i>		plural: <i>is</i>

Afrikaans also possesses a relatively reduced system of tense morphology. All main verbs have a past participial form, which is used in conjunction with the past auxiliary *het* 'have' to express past tense.¹ All other non-present tenses and modes are expressed exclusively via auxiliaries. Furthermore, there are only two verbs in Afrikaans that have a distinct form in the infinitive: *wees* 'to be' and *hê* 'to have (main verb)'. All other verbs in Afrikaans possess a single invariant form, used for both non-finite and finite present tense clauses.

	<i>maak</i>	<i>wees</i>	<i>hê</i>
Past Participle:	<i>gemaak</i>	<i>gewees</i>	<i>gehad</i>
Infinitive:	<i>maak</i>	<i>wees</i>	<i>hê</i>
Present Finite:	<i>maak</i>	<i>is</i>	<i>het</i>

Despite this morphological simplicity, the syntax of Afrikaans permits essentially the same range of word orders as its parent language, Dutch. Like Dutch, Afrikaans is V2 with underlying SOV order. Thus, in a finite

matrix clause, the verb is the second constituent in the sentence, while in certain embedded finite clauses or in infinitival clauses, the verb typically appears at the end of the clause.

- (1) a. Ek lees die boek.
I read the book
'I am reading the book.'
- b. Die boek lees ek.
- c. * Ek die boek lees.
- d. Ek wil die boek lees.
I want the book read
'I want to read the book.'
- e. * Ek wil lees die boek.

The existence of V2 structure in morphologically simple Afrikaans presents a *prima facie* challenge to certain theories of constituent movement. One such theory is the widely-held view that the movement of a constituent to subject position is driven by the need for a head at that position to Agree with some constituent in 'Φ' (person and number) features (Chomsky 2000, *inter multa alia*). The V2 structure of Afrikaans – and particularly its absence in certain embedded clauses – demonstrates that subject constituents move outside of the VP in finite clauses. However, if such movement is driven solely by the need for a higher head to Agree in Φ-features, why does this Agreement never seem to manifest itself morphologically?

Another theory that Afrikaans might seem to challenge is the view that head-movement of V to T is cross-linguistically correlated with the existence of a Agreement head which is not 'Fused' with the Tense head of the clause (Bobaljik 1995). Again, its V2 structure demonstrates that main verbs in Afrikaans move at least as high as T in finite matrix clauses. If this movement requires the existence of an Agreement head, why is any expression of these Agreement features systematically absent in Afrikaans?

Of course, a rather simple answer to both these questions seems obvious: the Agreement between the subject and the verb in Afrikaans occurs syntactically, but the various Φ -features on the verb are just never given distinct morphological expression. The verb in (1a) would, for example, be analyzed as appearing in its first person singular form; in Afrikaans, it simply happens that this form is identical to the forms for all the other person and number combinations. Employing Distributed Morphology (Halle & Marantz 1993), we might state this hypothesis by positing the following as the only Vocabulary Entry governing the Spell-Out of Φ -Features.

(2) $\emptyset \leftrightarrow [_{AGR}]$

The idea that Afrikaans verbs vary in person and number but are invariant in their phonological form is in no way implausible. After all, the standard analysis of agreement in English is that main verbs uniformly agree in person and number with their subjects, but that this agreement only has an overt phonological exponent in third person singular forms. It is a small step indeed from the heavily reduced agreement pattern of English to the fully neutralized system hypothesized for Afrikaans.

Nevertheless, the hypothesis that Afrikaans has wholly unexpressed syntactic Agreement would be more interesting were there some means of independently testing it. Certainly, the claim that subject movement co-occurs with Agreement in Φ -features becomes more interesting as we learn more about Φ -Agreement. At some point, we

should be able to apply independent diagnostics to structures with subject promotion to determine whether Φ -Agreement has or has not occurred.

Unfortunately, so little is known at the present date about the grammatical consequences of syntactic Agreement that, were we to confine ourselves solely to facts concerning which sentences are 'acceptable' to adult Afrikaans speakers, no independent diagnostics of the kind imagined could be devised. The theory of Agreement-driven movement has primarily been constructed to elegantly derive the various locality and minimality conditions on movement. Since non-Agreement-based theories have their own well-developed, empirically equivalent accounts of them, the effect of these conditions on subject promotion in Afrikaans is not a viable test of either theory. Since the doctrines of Agreement-driven movement cover little else with respect to adult grammars, one can only decide between this theory and its alternatives (subject movement for the EPP or for Case) by comparing how the resulting systems as a whole illuminate the adult language.

In brief, it is difficult to devise an empirical test of the theory of Agreement-driven movement based on static features of the adult grammar because all the 'grammatical' phenomena that this theory has been constructed to explain have correlate explanations in the prominent theoretical alternatives. There may, of course, be subtle differences a devoted mind can tease out, but this has yet to be definitively established.

On the other hand, there does exist a phenomenon in the domain of language acquisition which could provide the sort of independent test we seek. The most viable account of this phenomenon regards it as correlated with the need for a subject to agree in Φ -features with a node higher in the clause. Since, as I will argue, there are no equally strong alternatives to this account, the presence of this phenomenon in child-Afrikaans would stand as strong evidence in support of Afrikaans possessing morphologically unexpressed syntactic Agreement.

3. The Root Infinitive Stage and the Unique Checking Constraint

3.1. The Root Infinitive Stage

It has been discovered that children acquiring such languages as French, German and Swedish pass through a stage in which they use infinitival clauses as matrix sentences (Pierce 1992, Wexler 1993, Poeppel & Wexler 1993, Rizzi 1994, Schütze & Wexler 1996, Hoekstra & Hyams 1998). To be more precise, children under 4 acquiring these languages systematically use a number of non-adult structures, and the range of these structures, as well as their correlated appearance and disappearance, are best explained by the hypothesis that these non-adult matrix clauses are correctly-formed adult infinitival clauses.

For example, children acquiring German will often produce sentences such as the following.

- (3) a. Thorsten Caesar haben.

Thorsten C.(=doll) have-INF

‘Thorsten have Caesar.’

- b. Du das haben.

you that have-INF

‘You have that.’

(Poeppel & Wexler 1993)

As these examples indicate, children at this stage are not independently putting infinitival morphology erroneously on main verbs and providing matrix clauses with infinitival SOV order. Rather, the presence of infinitival morphology on main verbs and SOV order in matrix clauses are highly correlated. Indeed, all the properties of adult

finite and infinitival clauses are correctly correlated in the language of children at this stage. This strongly suggests that children at this stage know the properties of their languages' finite and infinitival clauses, but mistakenly use infinitival clauses in a non-adult manner as matrix sentences. I direct the reader to the works cited above for further discussion of and argumentation for the existence of this so-called 'Root Infinitive Stage' (h.f. 'RI-Stage').

3.2. Analyses of the Root Infinitive Stage

The existence of an RI-Stage in the acquisition of certain languages is no longer a point of contention in the field of language acquisition. There does remain, however, the unsettled question of why the RI-Stage exists. If children at this stage have acquired the various subtle properties of infinitival clauses in their target language, how could they not have learned the obvious fact that a matrix clause is *never* infinitival? Adding to this mystery is the fact that no language has been discovered in which infinitival clauses may freely stand as matrix sentences; therefore the language of children at the RI-Stage would appear to violate Universal Grammar.² More perplexing still is the result that some languages have been shown *not* to go through an RI-stage (Wexler 1998, 2000); children acquiring such languages as Italian and Polish never make the pattern of errors seen in the languages found to have an RI-Stage.

There have been many published analyses of the RI-Stage. Here, I will discuss four prominent accounts: the Tense-Omission Model (Wexler 1993), the Truncation analysis (Rizzi 1994), the Agreement-Tense Omission Model (Schütze & Wexler 1996), and the Unique Checking Constraint analysis (Wexler 1998, 2000).³ I will describe each analysis in turn, arguing that the Unique Checking Constraint analysis offers the most advanced account of this developmental stage.⁴

The Tense-Omission Model is put forth in Wexler (1993), the first paper to recognize that matrix infinitives signal a developmental stage in the acquisition of many languages. The Tense-Omission Model hypothesizes that children in the RI-Stage have nearly adult levels of competence but retain a non-adult capacity to omit the Tense

projection from the clause. If one assumes that the special morphological and word-order properties of infinitival clauses follow from an absence of 'full' tense, it follows that children at this stage should produce matrix clauses that have all the morphosyntactic characteristics of infinitival CPs. However, a striking inadequacy of the Tense-Omission Model is that it leaves as an unexplained primitive this ability for children to omit matrix tense. To remedy this lacuna, the Truncation analysis put forth in Rizzi (1994) proposes that the presence of the RI-Stage is the result of children not yet knowing the linguistic universal that matrix clauses must be CPs. If one assumes that it is this universal which requires matrix sentences to contain a Tense projection, it follows that children in the RI-Stage will appear to regularly omit tense from their utterances.

Although the Tense-Omission Model and the Truncation analysis succeed in deriving the presence of the RI-Stage from a single non-adult property of the children's grammar, there are a number of puzzles surrounding these 'root-infinitives' that the analyses do not address. A most pressing question is how nominative case comes to be assigned to the overt subjects of matrix infinitives in child English (Schütze & Wexler 1996). It is commonly assumed that nominative case in adult English is assigned/licensed by the Tense projection. If child root infinitives lack a Tense projection, how are children in the RI-Stage able to assign root-infinitival subjects nominative case? One might propose that the nominative case appearing on English root-infinitive subjects is a 'default case', but this now begs the question of how *accusative* case can sometimes appear on English root-infinitival subjects (Schütze & Wexler 1996). A similar difficulty arises from the order of subjects with respect to negation in root-infinitives. Negation is standardly assumed to head a phrase contained within the TP, but containing the VP. Therefore, if a clause lacking a TP but containing a NegP were to surface pronounced, negation in this clause would be expected to *precede* the subject within the VP. However, subjects of root-infinitives by far and away appear preceding negation. It follows that matrix infinitives contain some functional projection to which the subject is promoted, and it would be attractive to identify this functional projection with non-finite Tense.

The Agreement-Tense Omission Model was developed in Schütze & Wexler (1996) primarily to account for the case-properties of matrix infinitival subjects. English has the typologically rare property that accusative is its default case; in most other languages, the default case is nominative. Schütze and Wexler observe that subjects of child-English root-infinitives can bear either accusative or nominative case. However, in languages where the default case is nominative, root-infinitive subjects never appear with accusative case. Thus, it appears that the subjects of root-infinitives can, cross-linguistically, either receive nominative case or a language-specific default case. The Agreement-Tense Omission Model (h.f. 'ATOM') holds that the grammar of children in the RI-Stage has the non-adult property of permitting the matrix clause to lack either Agreement or Tense features. That is, contrary to the Truncation analysis, ATOM hypothesizes that children in the RI-stage know that matrix clauses must be CPs, but don't know that matrix clauses must always bear both Tense and Agreement features. If one assumes the standard analysis of English tense-agreement morphology in Distributed Morphology, it follows that whenever Tense or Agreement features are underspecified in child-English, the resulting clause will appear 'infinitival'. Moreover, if one adopts the plausible hypothesis that nominative case is licensed by the presence of Agreement features, it follows that some matrix infinitives in child-English will be able to assign nominative case to their subjects. In clauses with underspecified Agreement, however, the default accusative case is expected to surface on subjects.

ATOM can, therefore, account for the appearance of nominative and accusative subjects in child-English matrix infinitives. Furthermore, since ATOM holds matrix infinitives to be full CPs in which subjects are promoted, it correctly predicts that the subjects of matrix-infinitives will precede negation. Finally, additional correct predictions have been teased out from the ATOM hypothesis, including the fact that child-Dutch will have a higher percentage of matrix infinitives than child-English (Wexler, Schaeffer & Bol (in press)). Due to this wider empirical coverage, the ATOM analysis is superior to the Truncation and Tense-Omission analyses.

Nevertheless, the Agreement-Tense Omission Model has its own shortcomings. Of course, the analysis leaves as an unexplained primitive the fact that children in the RI-Stage are able to underspecify a clause's Tense or Agreement features. Most importantly, however, the analysis still leaves unexplained why only the learners of *certain* languages go through an RI-Stage. As was mentioned before, children acquiring such languages as Italian and Polish seem not to go through an RI-Stage. Moreover, when one examines the range of languages exhibiting and lacking an RI-Stage, the following generalization comes into view.

(4) The Null-Subject/Root-Infinitive Correlation (Wexler 1998, 2000) ⁵

A language goes through an RI-Stage if and only if that language is *not* a language in which null-subjects are licensed by inflection.

The Null-Subject/Root-Infinitive Correlation (h.f. 'NS/RI') correctly predicts that such richly inflected languages as French and Icelandic should go through an RI-Stage, but not such morphologically similar languages as Italian and Polish. Given the current success of the NS/RI, it would be preferable to have an analysis of the RI-Stage which could derive it, as well as the fact that children in the RI-Stage are able to underspecify the Tense and Agreement features of the clause.⁶

The Unique Checking Constraint analysis (Wexler 1998, 2000) accomplishes exactly these desiderata. Its basic tenets are ones largely familiar to theoretical syntacticians. The Unique Checking Constraint (h.f. 'UCC') analysis holds that matrix clauses universally contain distinct Tense and Agreement heads. Furthermore, it adopts the hypothesis that the EPP feature of a head is an uninterpretable 'D' (Determiner) feature (Chomsky 1995; Chapter 4), and that this feature is found within both Tense and Agreement heads. Most importantly, the UCC analysis assumes that children of all ages in all linguistic environments are aware of these features of UG. On the other hand,

the UCC analysis hypothesizes that the grammars of all young children follow an additional, non-adult constraint, the Unique Checking Constraint.

(5) The Unique Checking Constraint (Wexler 1998, 2000)

The D feature of a DP can only check against one functional category.

The final ingredient of the UCC account is a theory of derivational economy whose most important consequence is that, where two universal conditions are in conflict, one may be violated in order to yield a convergent derivation.

The UCC analysis of the RI-Stage claims it to be a consequence of the non-adult constraint in (5), in conjunction with the aforementioned economy metric. Note that the constraint in (5) conflicts with the constraint that a matrix clause must contain both Agreement and Tense projections. If Agreement and Tense both appear in the clause, then constraint (5) entails that at least one of them will not have their D feature checked by the matrix subject. The result, if both conditions are respected, will be a non-convergent derivation. However, a convergent derivation can be constructed if at least one of these conflicting conditions is violated. If the UCC condition in (5) is violated, then the D feature of both the Tense and Agreement heads may be checked by the matrix subject, and the output is a fully adult finite matrix clause. However, if the condition that a matrix clause contain both Tense and Agreement projections is violated, the result is a clause in which either Tense or Agreement is ‘underspecified’. Given the background assumptions of the ATOM analysis, the output is predicted to be a root-infinitive.

The UCC analysis can therefore explain why children in the RI-Stage have the option of underspecifying the Tense and Agreement features of the clause. Adult grammars lack this optionality because they no longer include the constraint in (5); presumably, this constraint disappears in the child as a result of physical maturation. Furthermore, the UCC can explain why children learning languages with inflection-licensed null-subjects fail to go

through an RI-Stage. A common analysis of such languages is that their agreement suffixes are actually, in some sense, ‘pronominals’ discharging the theta-roles of the verb. We might naturally suppose that these pronominal affixes contain their own D-features, which can serve to independently check against the D-feature of the Agreement head. Since the D-feature of the subject needn’t ever check the D-features of two functional heads, there is no conflict between the constraint in (5) and the condition that all clauses contain Tense and Agreement projections.⁷ Since there is nothing in such grammars to motivate the underspecification of Tense and Agreement, such underspecification is a gratuitous and impermissible violation of a universal condition.

It has been shown that the UCC analysis can derive both the NS/RI as well as the fact, crucial to the ATOM analysis of the RI-Stage, that children at that stage can underspecify the Tense and Agreement features of the clause. Furthermore, in recent work (Wexler (to appear), Wexler, Gavarró & Torrens (in press)), it has been argued that the UCC analysis might also explain the phenomenon of ‘Object-Clitic Omission’, as well as the generalization that such omission is only done by children acquiring languages in which object clitics agree with past participles. Given the empirical and conceptual successes of the UCC analysis, there is strong reason to regard it as the most viable analysis of the RI-Stage.

3.3. Using the RI-Stage as a diagnostic for subject agreement

Although the UCC analysis is certainly not the final word on this subject, the basic intuition behind the account seems to be on the right track: the RI-Stage is the result of a difficulty children have with checking the Φ -features of the subject against those of the clause. It follows that children learning a language should only attain the RI-Stage if that language is one in which subjects must check the Φ -features of a higher head. Indeed, it is this prediction which allegedly derives the NS/RI. Note, however, that we might also use the presumed truth of this prediction to test the hypothesis that the subject of a finite clause in Afrikaans agrees with its verb in Φ -features.

If the UCC analysis is correct, as it seems to be, then the presence or absence of an RI-stage in child-Afrikaans would determine whether subjects in adult Afrikaans must check their Φ -features against higher functional heads. If child-Afrikaans progresses through an RI-Stage, it follows that children learning Afrikaans posit the existence of a higher functional head that the subject must agree with in Φ -features. Given the complete absence of any agreement markers in Afrikaans, one can only imagine that Afrikaans children posit such a functional head because it is required by deep, syntactic principles. It would follow, then, that adult Afrikaans also contains such an agreeing functional head. On the other hand, if child-Afrikaans does not progress through an RI-Stage, it could only be that subjects in child-Afrikaans do not have to check their Φ -features against two higher functional heads. Given that Afrikaans is not a null-subject language, it would make the most sense to suppose that children learning Afrikaans don't posit any agreeing functional head in the clause. Since Afrikaans children have no motivation for positing such a functional head, one might naturally suppose that such a head is also absent from adult Afrikaans. In brief, the truth of the UCC analysis entails that an RI-stage in child-Afrikaans is evidence that adult Afrikaans has phonologically unexpressed subject Agreement. Moreover, the UCC analysis also entails that the *absence* of an RI-stage in child-Afrikaans is evidence that in adult Afrikaans there is no Agreement between subjects and any functional heads. Whether or not child-Afrikaans passes through an RI-stage therefore becomes a crucial experiment deciding between two grammatical analyses of adult Afrikaans.

Unfortunately, discovering whether child-Afrikaans passes through an RI-Stage is not trivial. In the next section, I explain my methods for discovering whether the RI-stage is part of the development of Afrikaans.

4. Evidence of Matrix Infinitives in Child Afrikaans

Clearly, to demonstrate that a given language passes through an RI-Stage, one must show that children natively acquiring that language regularly use infinitival clauses as matrix sentences. However, to prove the existence of

such 'root infinitives' in the child language requires careful analysis of the non-adult structures children acquiring the language produce. It is not sufficient to simply show that a matrix sentence in the child language can sometimes have a property that only infinitival clauses in the adult language bear. Errors of that sort might easily be due to a more general difficulty the children are having in acquiring the properties of finite and infinitival clauses. Rather, what one must show is the following.

(6) Evidence Which Collectively Proves the Existence of an RI-Stage

- (i) Matrix clauses in the child language regularly have properties that only infinitival clauses in the adult language bear.
- (ii) Clauses which are subordinate infinitives in the adult language *very rarely* in the child language have properties that only matrix clauses in the adult language bear.
- (iii) If a matrix clause in the child language has some infinitival property, then that clause will have all other (relevant) infinitival properties.
- (iv) If a matrix clause in the child language has some finite property, then that clause will have all other (relevant) finite properties.

By demonstrating (6iii) and (6iv), one thereby shows that the children studied have mastered the internal, structural properties of finite and non-finite clauses in their language. Thus, if the children regularly produce matrix sentences with the properties of infinitives, this cannot be due to their not knowing that finite clauses are disallowed from having certain properties; it cannot be due to some more general ignorance of the properties of finite and infinitival clauses. Furthermore, by demonstrating (6ii), one thereby shows that the children studied have mastered the external, distributional properties of non-finite clauses in their language. That is, if (6ii) holds of the child

language, one must assume that the children studied know that *only* infinitival clauses can appear within certain environments. Thus, if these children regularly produce matrix clauses with infinitival properties, this cannot be due to some more general difficulty they have with the distribution of finite and non-finite clauses. It follows that if (6i) – (6iv) can be shown, one has demonstrated that the child language studied is wholly adult, except for its having the extra, non-adult option of using infinitival clauses as matrix sentences.⁸

Before we can show that (6i) – (6iv) hold of child Afrikaans, we must first enumerate the properties that distinguish matrix and infinitival clauses in adult Afrikaans. Recall that Afrikaans has no regular morphological marking of (non)-finiteness. There are, however, two verbs in the language which assume special forms in infinitival clauses: the verbs *wees* ‘to be’ and *hê* ‘to have’. Thus, one difference between infinitival clauses and matrix clauses in adult Afrikaans is that infinitival clauses may be headed by the verbal forms *wees* and *hê* while matrix clauses may be headed by the verbal forms *is* and *het*.⁹

Another difference we have already seen between matrix and infinitival clauses in adult Afrikaans is that all non-finite clauses must have ‘verb-final’ order, whereas matrix clauses must have ‘verb-second’ order.

- (1) a. Ek lees die boek.
I read the book
‘I am reading the book.’
- b. Die boek lees ek.
- c. * Ek die boek lees.
- d. Ek wil die boek lees.
I want the book read
‘I want to read the book.’
- e. * Ek wil lees die boek.

A final, related difference between matrix and infinitival clauses in adult Afrikaans concerns the order of verbs and ‘preverbal particles’. In matrix clauses, the preverbal particle must follow the verb, appearing alone at the end of the clause. In infinitival clauses, however, the preverbal particle directly precedes the verb, which is now the final constituent in the clause.

(7) a. Ek gooi die boek uit.
I throw the book out
‘I’m throwing the book out.’

b. * Ek uitgooi die boek.

(8) a. Ek wil die boek uitgooi.
I want the book out-throw
‘I want to throw out the book.’

b. * Ek wil die boek gooi uit.

Given these properties of adult Afrikaans, we can restate our criteria in (6) to the following more specific conditions.

(9) Evidence Which Collectively Proves the Existence of an RI-Stage in Child Afrikaans

- (i) Matrix clauses in child Afrikaans regularly have the following properties: (i) they are headed by *hê* and *wees*; (ii) they have verb-final order; (iii) the preverbal particle directly precedes the verb.
- (ii) Clauses which are subordinate infinitives in the adult language *very rarely* in the child language have the following properties: (i) they are headed by *het* and *is*; (ii) they have verb-second order; (iii) the preverbal particle follows the verb.
- (iii) If a matrix clause in the child language has any of the properties in (i), then that clause will have all other (relevant) properties in (i).
- (iv) If a matrix clause in the child language has any of the properties in (ii), then that clause will have all other (relevant) properties in (ii).

Of course, the criteria in (9) are still incomplete; we have yet to clarify the external distribution of infinitives in adult Afrikaans. The most commonly occurring infinitives are the complements of the modal and auxiliary verbs *kan* 'can', *moet* 'must', *sal* 'will', *gaan* 'will; be going to', *wil* 'want'. Children can be expected to have a significant amount of exposure to such infinitives, which I will call 'modal infinitivals'. There is, moreover, a high probability that modal infinitivals will be encountered in the recorded natural speech of children. Let us therefore augment the criteria in (9ii) to those given below.

(10) Evidence Which Collectively Proves the Existence of an RI-Stage in Child Afrikaans

- (i) Matrix clauses in child Afrikaans regularly have the following properties: (i) they are headed by *hê* and *wees*; (ii) they have verb-final order; (iii) the preverbal particle directly precedes the verb.
- (ii) *Complements of the modal/auxiliary verbs kan, moet, sal, gaan and wil* (h.f. 'modal infinitivals') very rarely in the child language have the following properties: (i) they are headed by *het* and *is*; (ii) they have verb-second order; (iii) the preverbal particle follows the verb.
- (iii) If a matrix clause in the child language has any of the properties in (i), then that clause will have all other (relevant) properties in (i).
- (iv) If a matrix clause in the child language has any of the properties in (ii), then that clause will have all other (relevant) properties in (ii).

However, before we can begin examining child data to establish the generalizations in (10), we must bear in mind some additional complications. The first is that it has been discovered that copulas, modals and auxiliaries never head root infinitives (Wexler 1993). For example, children acquiring English will never produce structures of the kind in (11).

- (11) a. He be a dog.
- b. He do not like it.
- c. He have eaten cake.

Regardless of what explains this generalization,¹⁰ if we wish an accurate indication of the high rate at which children in the RI-Stage produce root infinitives, we must restrict our count so that only those sentences *not* headed by copulas, modals and auxiliaries qualify as either finite or non-finite matrix clauses.

The second complication we must bear in mind is that finite imperatives in adult Afrikaans might sometimes superficially appear to be verb-final structures. That is, ‘OV’ finite imperatives are derivable in adult Afrikaans, as they are derivable in adult English, from an underlying ‘VO’ imperative via topicalization of the internal object.

- (12) a. *English*: The book, read (...the journal, make a copy of).
b. *Afrikaans*: Die boek, lees ...

Thus, ‘verb-final’ (OV) order is not a viable means of distinguishing finite from non-finite imperatives in child Afrikaans. Another complication that arises with imperatives is the fact that children in the RI-Stage most often express imperatives using root infinitives (Blom & Wijnen 2000, Ken Wexler p.c., and my own observations of the CHILDES data). Thus, counting imperative sentences as instances of finite/infinitival matrix clauses tends to drive up the rate of root infinitives in languages with an RI-Stage. For these reasons, it would be best to restrict our count so that only *non*-imperative (interrogative, declarative) sentences qualify as instances of matrix clauses.

In summary, the difficulties surrounding imperative sentences and sentences headed by non-main verbs require that we restate the conditions in (10) to the following.

(13) Evidence Which Collectively Proves the Existence of an RI-Stage in Child Afrikaans

- (i) Matrix clauses in child Afrikaans regularly have the following properties: (i) they are headed by *hê*; (ii) they have verb-final order; (iii) the preverbal particle directly precedes the verb.
- (ii) Modal infinitivals in the child language *very rarely* have the following properties: (i) they are headed by *het*; (ii) they have verb-second order; (iii) the preverbal particle follows the verb.
- (iii) If a matrix clause in the child language has any of the properties in (i), then that clause will have all other (relevant) properties in (i).
- (iv) If a matrix clause in the child language has any of the properties in (ii), then that clause will have all other (relevant) properties in (ii).

where a 'matrix clause' is a root clause that is not imperative and is not headed by a copula, auxiliary or modal.

In the next section, I will carefully describe a study which I carried out in order to establish the truth or the falsity of the generalizations in (13).

5. Establishing an RI-Stage in Child Afrikaans

5.1. Methodological Details

In order to determine the truth of the generalizations in (13), I examined the 64 files of child Afrikaans data available on the CHILDES database (<http://childes.psy.cmu.edu/>). These files record the language of two children,

one girl and one boy, over the course of one and a half years (approx. 1;5 – approx 3;0). The structures produced by the children were sorted into a variety of categories ('matrix OV', 'modal infinitival prefix-verb', etc.), respecting the following conditions.

5.1.1. No repetitions

Utterances by the children which seemed to be mere 'repetitions' of prior utterances either by the child or by others in the discourse were ignored, and did not qualify as an instance of any category of structure. The following is an example of a structure which was discounted for being a 'repetition', though it might otherwise qualify as an example of a verb-final matrix clause.

(14) Ondene (investigator): Kan ek tee kry?

can I tea get

'Can I get some tea?'

Chanel (little girl): Tee kry.

tea get

'Get tea.'

5.1.2. No imperatives

For the reasons discussed above, imperative sentences did not qualify as an instance of any type of matrix clause. The following are examples of structures that were discounted for being 'imperative', though they would otherwise qualify as examples of verb-final matrix clauses.

(15) a. Chanel: Mamma, eers my skoene uittrek.
momma first my shoes out-draw
'Mommy, first take my shoes off.'

b. Ondene: Sal ek hom uithaal?
shall I it out-draw
'Shall I take it out?'

Chanel: Daai een uithaal.
that one out-draw
'Take that one out.'

c. Hendrien (mother): Moet ek hom weggooi?
must I it away-throw
'Should I throw it away?'

Jean (little boy): Skilletjie weggooi.
peel-DIM away-throw
'Throw away peel!'

The following are examples of structures that were considered non-imperative, and so they qualified as instances of verb-final matrix clauses.

(16) a. Chanel: Jy 'n mannetjie skryf?
you a man-DIM draw
'You draw a man?' (matrix question)

b. Hendrien: Trek gou aan jou hemp.
Put your shirt on.

Jean: By tannie Monica kuier!
by aunt Monica visit
'Visit aunt Monica!' (spontaneous matrix infinitive)

Note, again, that our decision not to count imperative matrix sentences should result in our recording a lower rate of root infinitives in child Afrikaans than what might be recorded for other languages in studies which do count imperatives.

5.1.3. Only Main Verbs

For the reasons discussed above, only sentences headed by main verbs could qualify as instances of a type of matrix clause. That is, any sentence headed by a copula, modal or auxiliary couldn't count as an instance of any type of matrix clause.

5.1.4. The Categories

The categories into which the structures produced by the children were sorted are the following:

- Verb Final Matrix
- Verb Second Matrix
- Prefix-Verb Order Matrix
- Verb-Prefix Order Matrix
- Matrix Headed by *hê*
- Matrix Headed by *het*
- Verb Final Modal Infinitival
- Verb Second Modal Infinitival
- Prefix-Verb Modal Infinitival
- Verb-Prefix Modal Infinitival
- Modal Infinitival Headed by *hê*
- Modal Infinitival Headed by *het*

In addition, it was also recorded which sentences contained null subjects. The import of this classification will be discussed later.

5.1.5. ‘Verb-Final’ vs. ‘Verb-Second’

I will clarify here the conditions under which a given clause was classified as either ‘verb-final’ or ‘verb-second’,

since the meaning of these terms can sometimes be relatively abstract. A clause (both matrix and infinitival) was considered ‘verb-final’ if the main verb was preceded by its internal arguments and *not followed* by its subject. If the main verb lacked internal arguments, then the clause was considered ‘verb-final’ if the main verb was preceded by an adverb or prepositional phrase and *not followed* by its subject. A clause (both matrix and infinitival) was considered ‘verb-second’ if the main verb preceded all its internal arguments or its subject. If the main verb lacked internal arguments, then the clause was considered ‘verb-second’ if the main verb preceded all adverbs and prepositional phrases, or its subject.

It follows from these criteria that no simple ‘SV’ sentence could count as either verb-final or verb-second. It also follows from these criteria that a sentence containing a null subject was considered ‘verb-final’ if the main verb followed either all its internal arguments or all the adverbials and PPs in the clause, and was considered ‘verb-second’ if the main verb preceded either all its internal arguments or all the adverbials and PPs in the clause.

5.2 Results of the Study

5.2.1. Jean (male, age 1;6.2 - 2;11.3)

Let us first consider the language of Jean, the little boy. CHILDES offers 32 files containing 2,096 utterances produced by Jean. As the following discussion will reveal, these files cover a period of time in which Jean produces a high percentage of root infinitives. Indeed, the files can be cleanly divided into two stages. In the first stage (Files 01 – 25), which spans ages 1;6.2 to 2;7.2, Jean appears to be at the height of the RI-Stage, producing matrix infinitives over 37% of the time. In the second stage (Files 26 – 32), which spans ages 2;7.3 to 2;11.3, Jean seems to be leaving the RI-Stage; the percentage of root infinitives drops to around 14%.

I will first show that Jean's Afrikaans satisfies criteria (13i) and (13ii). This requires that we compare the rate at which Jean produces matrix clauses with infinitival properties to the rate at which he produces modal infinitivals with matrix properties. The data in (17) establish that Jean produces matrix clauses with verb-final order at an overall rate of about 29%.

(17) Verb Final vs. Verb Second Matrix Clauses

	Stage 1	Stage 2	Total
Verb-Final Matrix	53	11	64
Verb-Second Matrix	90	65	155
Percentage Verb-Final Matrix	37.063%	14.474%	29.224%

Furthermore, we can see in (18) that Jean produces matrix clauses with prefix-verb order at an overall rate of about 42%.

(18) Prefix-Verb vs. Verb-Prefix Order Matrix

	Stage 1	Stage 2	Total
Prefix-Verb Order Matrix	13	3	16
Verb-Prefix Order Matrix	10	12	22
Percentage Prefix-Verb Order Matrix	56.522%	20.000%	42.105%

Finally, the data in (19) reveal that the infinitival allomorph of the main verb ‘have’ heads a matrix sentence produced by Jean at a rate of about 73%.

(19) Matrix Headed by *hê* vs. Matrix Headed by *het*

	Stage 1	Stage 2	Total
Matrix Headed by <i>hê</i>	8	0	8
Matrix Headed by <i>het</i>	2	1	3
Percentage Matrix <i>hê</i>	80.000%	0.000%	72.727%

These percentages contrast sharply with the rates at which Jean produces modal infinitivals with finite properties. As shown in (20), the modal infinitivals produced by Jean have verb-second order only about 3% of the time.

(20) Verb Final vs. Verb Second Modal Infinitivals

	Stage 1	Stage 2	Total
Verb-Final Modal Infinitival	47	71	118
Verb-Second Modal Infinitival	3	1	4
Percentage Verb-Second Infinitival	6.000%	1.389%	3.279%

Furthermore, modal infinitivals with verb-prefix order *never* occur in the recorded speech of Jean. This is despite the fact that there are many instances in the data of modal infinitivals containing verbs with separable prefixes.

(21) Prefix-Verb vs. Verb-Prefix Order Modal Infinitival

	Stage 1	Stage 2	Total
Prefix-Verb Order Modal Infinitival	25	12	37
Verb-Prefix Order Modal Infinitival	0	0	0
Percentage Verb-Prefix Order Infinitival	0.000%	0.000%	0.000%

Similarly, Jean seems never to produce any modal infinitivals headed by the allomorph *het*.

(22) Modal Infinitival Headed by *hê* vs. Modal Infinitival Headed by *het*

	Stage 1	Stage 2	Total
Modal Inf. Headed by <i>hê</i>	9	8	17
Modal Inf. Headed by <i>het</i>	0	0	0
Percentage Modal Inf. <i>het</i>	0.000%	0.000%	0.000%

It is quite reasonable to conclude from the data in (17) - (22) that both (13i) and (13ii) are true. Although Jean regularly produces matrix clauses bearing properties that only infinitival clauses in the adult language may have, it is *very rarely* (if ever) the case that Jean produces a sentence in which a clause that may only be infinitival in the adult language bears properties that only finite clauses in the adult language may have.

I now wish to establish that Jean's grammar satisfies criteria (13iii) and (13iv). This requires that we examine how well correlated are the properties of finite and infinitival clauses in Jean's utterances.

The data in (23) show that prefix-verb order in a matrix clause is highly correlated with verb-final order in that clause. Moreover, the data in (23) show that verb-prefix order in a matrix clause is perfectly correlated with verb-second order in that clause.

(23) Correlation Between Prefix-Verb Order Matrix and Verb-Final Order Matrix

	Prefix-Verb Order Matrix	Verb-Prefix Order Matrix
Verb-Final Matrix	4	0
Verb-Second Matrix	1	16

Percentage Verb-Final Matrix of Prefix-Verb Matrix = $4/5 = 80.000\%$

Percentage V-Second Matrix of Verb-Prefix Matrix = $16/16 = 100.000\%$

In (24) we see that there is a perfect correlation between a matrix clause being headed by *hê* and that clause having verb-final order. Furthermore, there is a perfect correlation between a matrix clause being headed by *het* and that clause having verb-second order.

(24) Correlation Between Matrix Headed by *hê* and Verb-Final Order Matrix

	Matrix Headed by <i>hê</i>	Matrix Headed by <i>het</i>
Verb-Final Matrix	8	0
Verb-Second Matrix	0	3

Percentage Verb-Final Matrix of Matrix Headed by *hê* = $8/8$ = 100.000%

Percentage V-Second Matrix of Matrix Headed by *het* = $3/3$ = 100.000%

I conclude from these data that both (13iii) and (13iv) are correct. Whenever a matrix clause produced by Jean has some ‘infinitival property’ it is highly probable that it will have all other (relevant) infinitival properties, and whenever such a matrix clause has some ‘finite property’ it is highly probable that it will have all other (relevant) finite properties.

In connection with these generalizations, note that the data in (17) – (22) also reveal that in Stage 2, the various infinitival properties *all* begin to leave Jean’s matrix clauses. That is, there is a marked decrease in matrix clauses headed by *hê*, in those with verb-final order, and in those with prefix-verb order. That such non-adult

structures all leave Jean’s grammar at the same time supports the view that they have a common grammatical basis, and are not independently occurring word-order errors.

The distribution of null subjects amongst Jean’s sentences also supports the hypothesis that Jean is producing root infinitives. It has been shown that root infinitives have a much higher proportion of null subjects than finite matrix clauses (Bromberg & Wexler 1995). Indeed, it turns out that the properties of having a null subject and being a matrix infinitive are highly correlated. We find the expected correlation in the structures produced by Jean. As (25) – (27) show, if a matrix clause produced by Jean has some infinitival property, there is a comparatively high probability that it will have a null subject.

(25) Correlation Between Null-Subject and Verb-Final Order

	Null Subject	Overt Subject
Verb-Final Order Matrix	60	4
Verb-Second Order Matrix	30	125
Percentage Null Subject of V-Final Matrix	= 60/64 =	93.750%
Percentage Null Subject of V-Second Matrix	= 30/155 =	19.355%

(26) Correlation Between Null-Subject and Prefix-Verb Order

	Null Subject	Overt Subject
Prefix-Verb Order Matrix	13	3
Verb-Prefix Order Matrix	6	16

Percentage Null Subject of Prefix-Verb Matrix = $13/16 = 81.250\%$

Percentage Null Subject of Verb-Prefix Matrix = $6/22 = 27.273\%$

(27) Correlation Between Null-Subject and Headed by *hê*

	Null Subject	Overt Subject
Matrix Headed by <i>hê</i>	8	0
Matrix Headed by <i>het</i>	0	3

Percentage Null Subject of Matrix *hê* = $8/8 = 100.000\%$

Percentage Null Subject of Matrix *het* = $0/3 = 0.000\%$

There is also another fact which suggests that Jean's grammar links the property of having a null subject to that of being a root infinitive. As the data in (28) show, there is a marked decline in the rate of null subjects during Jean's Stage 2. Thus, the disappearance of null subjects from Jean's language is tied with the disappearance of root infinitives.

(28) Null Subject vs. Overt Subject

	Stage 1	Stage 2	Total
Null Subject	80	16	96
Overt Subject	115	74	189
Percentage Null Subject	41.026%	17.778%	33.684%

5.2.2. Chanel (female, age 1;6 – 2;11)

Just as with Jean, CHILDES offers 32 files recording utterances by Chanel. We will see that many of Chanel's 2,035 utterances should be analyzed as matrix infinitives. Moreover, Chanel's files also seem to cover two stages in her linguistic development. During the first stage (Files 01 – 22; age 1;6 – 2;5), Chanel appears to be towards the end of the RI-Stage, and in the second stage (Files 23 – 32; age 2;6 – 2;11), she seems to have essentially eliminated matrix infinitives from her language.

I will first show that Chanel's Afrikaans satisfies criteria (13i) and (13ii). The data in (29) establish that she produces matrix clauses with verb-final order at an overall rate of about 12%.

(29) Verb Final vs. Verb Second Matrix Clauses

	Stage 1	Stage 2	Total
Verb-Final Matrix	21	7	28
Verb-Second Matrix	77	125	202
Percentage Verb-Final Matrix	21.429%	5.303%	12.174%

This is a significantly lower percentage of verb-final matrix clauses than that found in Jean's data. Generally speaking, Chanel's language is more developed than that of Jean's, and this is reflected in her comparative lack of root infinitives. As the data in (30) and (31) reveal, Chanel does produce matrix clauses with prefix-verb order and matrix clauses headed by *hê*, but at a much lower rate than that recorded for Jean.

(30) Prefix-Verb vs. Verb-Prefix Order Matrix

	Stage 1	Stage 2	Total
Prefix-Verb Order Matrix	4	1	5
Verb-Prefix Order Matrix	5	16	21
Percentage Prefix-Verb Order Matrix	44.444%	5.882%	19.231%

(31) Matrix Headed by *hê* vs. Matrix Headed by *het*

	Stage 1	Stage 2	Total
Matrix Headed by <i>hê</i>	4	0	4
Matrix Headed by <i>het</i>	6	7	13
Percentage Matrix <i>hê</i>	40.000%	0.000%	23.529%

Nevertheless, the generalizations in (13i) and (13ii) are established by comparing these rates of error with the rates at which Chanel produces modal infinitivals with properties of finite clauses. As shown in (32), the modal infinitivals produced by Chanel have verb-second order only about 2% of the time.

(32) Verb Final vs. Verb Second Modal Infinitivals

	Stage 1	Stage 2	Total
Verb-Final Modal Infinitival	22	140	162
Verb-Second Modal Infinitival	3	1	4
Percentage Verb-Second Infinitival	12.000%	0.709%	2.409%

Furthermore, just as with Jean, modal infinitivals with verb-prefix order *never* seem to occur, nor do any modal infinitivals headed by *het*.

(33) Prefix-Verb vs. Verb-Prefix Order Modal Infinitival

	Stage 1	Stage 2	Total
Prefix-Verb Order Modal Infinitival	8	26	34
Verb-Prefix Order Modal Infinitival	0	0	0
Percentage Verb-Prefix Order Infinitival	0.000%	0.000%	0.000%

(34) Modal Infinitival Headed by *hê* vs. Modal Infinitival Headed by *het*

	Stage 1	Stage 2	Total
Modal Inf. Headed by <i>hê</i>	9	13	22
Modal Inf. Headed by <i>het</i>	0	0	0
Percentage Modal Inf. <i>het</i>	0.000%	0.000%	0.000%

The data in (29) – (34) together show that Chanel is much more likely to produce a matrix clause bearing some infinitival property than a modal infinitival bearing a property of matrix clauses. This asymmetry between Chanel’s regularly non-adult matrix clauses and her nearly perfect modal infinitival clauses demonstrates that both (13i) and (13ii) are true of her grammar.

Let us now establish whether Chanel’s grammar satisfies criteria (13iii) and (13iv). The data in (35) show that prefix-verb order in a matrix clause produced by Chanel is perfectly correlated with verb-final order in that clause. These data also show that, again, verb-prefix order in a matrix clause is highly correlated with verb-second order in that clause.

(35) Correlation Between Prefix-Verb Order Matrix and Verb-Final Order Matrix

	Prefix-Verb Order Matrix	Verb-Prefix Order Matrix
Verb-Final Matrix	3	1
Verb-Second Matrix	0	15

Percentage Verb-Final Matrix of Prefix-Verb Matrix = $3/3 = 100.000\%$

Percentage V-Second Matrix of Verb-Prefix Matrix = $15/16 = 93.750\%$

In (36), we see that the matrix clauses headed by *hê* that Chanel produces all have verb-final order. Moreover, we see that all the matrix clauses headed by *het* have verb-second order.

(36) Correlation Between Matrix Headed by *hê* and Verb-Final Order Matrix

	Matrix Headed by <i>hê</i>	Matrix Headed by <i>het</i>
Verb-Final Matrix	4	0
Verb-Second Matrix	0	13

Percentage Verb-Final Matrix of Matrix Headed by *hê* = $4/4 = 100.000\%$

Percentage V-Second Matrix of Matrix Headed by *het* = $13/13 = 100.000\%$

We can safely conclude from (35) and (36) that properties (13iii) and (13iv) hold of Chanel's grammar. Furthermore, we can again find additional support for these generalizations in the changes that occur between Chanel's Stage 1 and Stage 2. The data in (29) – (34) show that in Stage 2, the various infinitival properties have *all* essentially left Chanel's matrix clauses, supporting the view that these non-adult structures have a common grammatical basis, that they are all, in effect, due to infinitives being used as matrix clauses.

As with Jean, the distribution of null subjects amongst the sentences produced by Chanel also supports the hypothesis that she is producing root infinitives. The data in (37) – (39) show the predicted correlation between a matrix clause having some infinitival property and its having a null subject.

(37) Correlation Between Null-Subject and Verb-Final Order

	Null Subject	Overt Subject
Verb-Final Order Matrix	20	6
Verb-Second Order Matrix	31	171

Percentage Null Subject of V-Final Matrix = $20/26 = 76.923\%$

Percentage Null Subject of V-Second Matrix = $31/202 = 15.347\%$

(38) Correlation Between Null-Subject and Prefix-Verb Order

	Null Subject	Overt Subject
Prefix-Verb Order Matrix	4	1
Verb-Prefix Order Matrix	3	18

Percentage Null Subject of Prefix-Verb Matrix = $4/5 = 80.000\%$

Percentage Null Subject of Verb-Prefix Matrix = $3/21 = 14.286\%$

(39) Correlation Between Null-Subject and Headed by *hê*

	Null Subject	Overt Subject
Matrix Headed by <i>hê</i>	4	0
Matrix Headed by <i>het</i>	3	10

Percentage Null Subject of Matrix *hê* = $4/4$ = 100.000%

Percentage Null Subject of Matrix *het* = $3/13$ = 23.077%

Finally, we find in (40) that there is a marked decline in the rate of null subjects during Chanel's Stage 2. This supports the hypothesis that null subjects in Chanel's language are correlated with the clause having an infinitival property, which in turn supports the hypothesis that Chanel is producing root infinitives.

(40) Null Subject vs. Overt Subject

	Stage 1	Stage 2	Total
Null Subject	40	14	54
Overt Subject	80	138	218
Percentage Null Subject	33.333%	9.211%	19.853%

6. Discussion

Given the discussion in Section 4, the data in Section 5 clearly demonstrate that children learning Afrikaans progress through an RI-Stage. Assuming that the UCC analysis is correct in its claim that the RI-Stage is due to a difficulty children have in checking the Φ -features of a subject against those of a higher functional projection, it follows that Afrikaans children represent their language as having subject-agreement, though this agreement is systematically neutralized in the phonological realization of the clause. Since there is no morphological motivation for the hypothesis that Afrikaans has phonologically null subject-verb agreement, one can only surmise that children learning Afrikaans make this assumption because of deep principles connecting subject-verb agreement to certain *syntactic* properties of their target language. Presumably, then, these principles require the existence of this phonologically neutralized subject-verb agreement even in adult Afrikaans.

We conclude, then, that the existence of the RI-Stage in child Afrikaans supports the view that adult Afrikaans contains phonologically null subject-verb agreement. Moreover, we find support for the view that certain

syntactic properties of a language require the presence of subject-agreement. That Afrikaans passes through an RI-Stage therefore vindicates the view that syntactic phenomena such as subject promotion are the result of a constituent having to check its Φ -features against a higher functional head. Furthermore, recall that the UCC analysis as stated in Wexler (1998) and Wexler (2000) entails that languages passing through an RI-Stage have a distinct Agreement projection in their clause. The existence of an Afrikaans RI-Stage therefore demonstrates that Afrikaans must have an Agreement projection, which supports the theory stating that V-to-T movement is driven by the existence of an Agreement projection ‘un-Fused’ with Tense (Bobaljik 1995).

Although it is always of interest when a newly discovered phenomenon can be shown to have relevance to a prior discussion, the special interest of these conclusions lies in the fact that the Agreement-based theory of the RI-Stage (the UCC analysis) has no correlate in any theory where Agreement and the ‘checking’ of features do not play a prominent syntactic role. That is, there is one domain in which the theory of Agreement-driven movement and its alternatives differ empirically: the NS/RI. Only the theory of Agreement-driven movement provides an explanation of the NS/RI. We’ve seen in Section 2 that this syntactic theory requires that Afrikaans possesses phonologically neutralized subject-agreement. Since Afrikaans is not a pro-drop language, the Agreement-based theory of the RI-Stage therefore predicts that child Afrikaans passes through an RI-Stage. We saw in section 5 that this prediction was exactly correct. The Agreement-based theory of syntax can therefore link together syntactic properties of Afrikaans with a feature of its acquisition within a much broader logical network. Since no alternative syntactic theory – neither classical GB nor any unification based framework – can even approach such results, this stands as strong confirmation of these newer doctrines regarding the general phenomenon of ‘displacement’.

At a more basic level, the existence of the RI-Stage in child Afrikaans solidifies the general conclusion that the RI-Stage is rooted in abstract, syntactic properties of a language, and not in its superficial morphological details. For example, one simple-minded theory of the RI-Stage might be that it is due to children somehow having problems ‘remembering’ to put the right, finite suffix on the end of a main verb. Another such theory might be that

children produce matrix infinitives because it's 'computationally difficult' to compare the Φ -features of a subject to those of a given affix; to avoid doing all this work, children simply use the non-agreeing, default infinitival suffix. In Afrikaans, however, there is essentially no morphological distinction between finite and non-finite verbs. Indeed, in the two cases in which there is such a distinction, the infinitival forms are arguably *more* computationally complex than the finite forms.¹¹ In brief, given the robust absence of morphology in Afrikaans, the existence of an RI-Stage in this language demonstrates that the RI-Stage cannot have a morphological basis.

The simple fact that Afrikaans progresses through an RI-Stage also emphasizes the importance of abstract grammatical concepts in understanding the behavior of children acquiring language. It is a rather concrete fact – perhaps a 'behavioral' fact – that children 'learning Italian' or 'learning Polish' *never* make the same range of errors that children 'learning Afrikaans' or 'learning French' do. But, what 'concrete' property of the child's input/environment could possibly group children learning Afrikaans and French, and exclude those learning Polish and Italian? It is only when one looks to abstract properties of the linguistic systems being acquired that sensible, testable hypotheses begin to come into view.

Finally, the data presented in section 5 demonstrates that children as young as two years of age are highly attuned to the syntactic distinction between finite and non-finite clauses. Again, there is no regular morphological 'signal' that a given clause in Afrikaans is non-finite. Nevertheless, children as young as two¹² know that the complements of verbs such as *wil* are morphosyntactically distinct from finite clauses. In particular, consider the fact that children acquiring Afrikaans *never* seem to allow such verbs to take complements headed by the finite main verb *het*. Since the infinitival allomorph *hê* is separated from the verb introducing its clause by an arbitrary number of constituents, these children must be employing a system in which modal verbs *select* for a particular kind of phrase, one which can *only* be headed by *hê*. However, aside from the allomorphic alternation between *het* - *hê* (and *is* - *wees*), there are no other facts internal to Afrikaans that motivate this distinction between clausal types; embedded finite clauses in Afrikaans can also have verb-final and prefix-verb order. One might, therefore, naturally

expect there to be some developmental stage at which children acquiring Afrikaans have not yet developed the subtle distributional difference between clauses headed by *hê* and those headed by *het*. Such a stage, however, has not been found to exist. This is, again, despite the incredibly weak evidential basis for a distinction between finite and non-finite clauses in the language. Indeed, for one of the children, there was a much greater evidential basis for a distinction among verbs with respect to the separable prefixes they can appear with.¹³ Nevertheless, the lexical distribution of verbal particles can be seen to consistently trouble the children studied, while the distribution of infinitival clauses is apparently mastered instantaneously. One can only conclude that the distinction between finite and non-finite clauses is not something acquired on the basis of experience, and neither are the special selectional properties of modal verbs and auxiliaries.

References

Blom, E., M. Kempen, S. Gillis, F. Wijnen (2000) "What They Hear is What You Get?: Infinitives and Modality in Child Language and Child Directed Speech," in M. Perkins and S. Howard, eds., *New Directions in Language Development and Disorders*, Kluwer/Plenum, New York.

Blom, E. and F. Wijnen (2000) "How Dutch Children's Root Infinitives Become Modal," in *Proceedings of the 24th Boston University Conference on Language Development*, Cascadilla Press.

Bobaljik, J. (1995) *The Morphosyntax of Verbal Inflection*, Doctoral Dissertation, MIT.

Bromberg, H. S. and K. Wexler (1995) "Null Subjects in Child Wh-Questions," in *MIT Working Papers in Linguistics* 26, 221-247.

Brun, D., S. Avrutin, M. Babyonyshev (1999) "Aspect and its Temporal Interpretation During the Optional Infinitive Stage in Russian," in *Proceedings of the 23rd Boston University Conference on Language Development*, Cascadilla Press.

Brun, D. and M. Babyonyshev (2003) "On the Acquisition of Statives in Child Russian," in D. Bittner and N. Gagarina, eds., *Acquisition of Aspect*, ZAS Working Papers in Linguistics Volume 29.

Chomsky, N. (1995) *The Minimalist Program*, MIT Press, Cambridge, MA.

Chomsky, N. (2000) "Minimalist Inquiries: The Framework," in R. Martin, D. Michaels and J. Uriagereka, eds., *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, MIT Press, Cambridge, MA.

Donaldson, B. C. (1993) *A Grammar of Afrikaans*, Mouton de Gruyter, New York.

Gavruseva, E. (2003) "Aktionsart, Aspect, and the Acquisition of Finiteness in Early Grammar," *Linguistics* 41-4, 723-755.

Halle, M. and A. Marantz (1993) "Distributed Morphology and the Pieces of Inflection," in K. Hale and S. J. Keyser, eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, MIT Press, Cambridge, MA.

Hoekstra, T. and N. Hyams (1998) "Aspects of Root Infinitives," *Lingua* 106, 81-112.

Hyams, N. (2002) "Clausal Structure in Child Greek: a Reply to Varlokosta, Vainikka and Rohrbacher and a Reanalysis," *The Linguistic Review* 19, 257-300.

Hyams, N. (to appear) "Child Non-Finite Clauses and the Mood-Aspect Connection: Evidence from Child Greek," in R. Slabakova and P. Kempchinsky, eds., *The Syntax, Semantics and Acquisition of Aspect*, Kluwer, Dordrecht.

Lasser, I. (1998) "Getting Rid of Root Infinitives," in *Proceedings of the 22nd Boston University Conference on Language Development*, Cascadilla Press.

Pierce, A. (1992) *Language Acquisition and Linguistic Theory: A Comparative Analysis of French and English Child Grammars*, Kluwer Academic Publishers, Boston.

Poepfel, D. and K. Wexler (1993) "The Full Competence Hypothesis of Clause Structure in Early German," *Language* 69:1.

Rhee J. and K. Wexler (1995) "Optional Infinitives in Hebrew," in C. Schütze, J. B. Ganger and K. Broihier, eds., *Papers on Language Processing and Acquisition*, MIT Working Papers in Linguistics 26.

Rizzi, L. (1994) "Some Notes on Linguistic Theory and Language Development: The Case of Root Infinitives," *Language Acquisition* 3, 371-393.

Salustri, M. and N. Hyams (to appear) "Is There an Analogue to the RI Stage in Null Subject Languages?," in *Proceedings of the 27th Boston University Conference on Language Development*, Cascadilla Press.

Saville-Troike, M. (1996) "Development of the Inflected Verb in Navajo Child Language," in E. Jelenik, S. Midgette, K. Rice, L. Saxon, eds., *Athabaskan Language Studies: Essays in Honor of Robert W. Young*, University of Mexico Press.

Schütze, C. and K. Wexler (1996) "Subject Case Licensing and English Root Infinitives," in *Proceedings of the 20th Boston University Conference on Language Development*, Cascadilla Press.

Wexler, K. (1993) "Optional Infinitives, Head Movement and the Economy of Derivations," in D. Lightfoot and N. Hornstein, eds., *Verb Movement*, Cambridge University Press, Cambridge, UK.

Wexler, K. (1998) "Very Early Parameter Setting and the Unique Checking Constraint: A New Explanation of the Optional Infinitive Stage," *Lingua* 106, 23-79.

Wexler, K. (2000) "Three Problems in the Theory of the Optional Infinitive Stage: Stage/Individual Predicates, Eventive Verbs and Finite Null-Subjects," in *WCCFL 19 Proceedings*.

Wexler, K. (to appear) "The Unique Checking Constraint as the Explanation of Clitic Omission in SLI and Normal Development," in L. Jakubowicz, L. Nash and K. Wexler, eds., *Specific Language Impairment and Linguistic Theory*, MIT Press., Cambridge, MA.

Wexler, K., A. Gavarró, V. Torrens (in press) "Feature Checking and Object Clitic Omission in Child Catalan and Spanish," in *Going Romance*.

Wexler, K., J. Schaeffer, G. Bol (in press) "Verbal Syntax and Morphology in Dutch Normal and SLI Children: How Developmental Data Can Play an Important Role in Morphological Theory," *Syntax*.

7. Appendix

7.1 Modality and Aspect in Child Afrikaans Matrix Infinitives

There is a growing literature on the semantic properties of matrix infinitives in child language.¹⁴ Although there is substantial debate within this literature, a consensus has developed supporting two broad generalizations.

(41) The Modality Generalization (Hoekstra & Hyams 1998; Gavruseva 2003)¹⁵

Matrix infinitives generally have a future or modal interpretation, and tend not to refer to past or ongoing events.

(42) The Eventivity Generalization (Hoekstra & Hyams 1998; Gavruseva 2003)

Matrix infinitives are generally headed by eventive (non-stative) verbs. Stative verbs *very rarely* head matrix infinitives. An exception to this generalization are the stative verbs for “have” and “see”, which can be induced to have an eventive interpretation.

Note that individual researchers disagree on the source of these generalizations, and whether either is strong enough to be considered an absolute condition (Gavruseva 2003). Given the widespread interest these questions presently receive, we would be remiss not to discuss whether the generalizations in (41) and (42) are supported by the child Afrikaans data we have examined.

Let us first consider the interpretation matrix infinitives receive in the language of Jean. In his 32 files, Jean produces a total of 75 matrix infinitives. From these, 67 have tense/mood interpretations that may be

reasonably inferred from the context. The following chart illustrates the range of interpretations born by Jean's root infinitives.¹⁶

(43) Interpretation of Matrix Infinitives (Jean)

	Number		Percentage
Future / Desired Event:	49	=	73.134%
Present / Ongoing Event:	15	=	22.388%
Past Event:	3	=	4.478%

A substantial majority of Jean's matrix infinitives have 'modal' interpretations; they describe events which the context clearly indicates have not occurred. The Modality Generalization in (41) is therefore supported by the data contained in Jean's CHILDES files.

Let us now examine whether that data supports the Eventivity Generalization in (42). The following chart illustrates the range of verbs heading matrix infinitives produced by Jean.

(44) Aspectual Class of Matrix Infinitives (Jean)

	Number		Percentage
State:	10	=	13.333%
Activity:	25	=	33.333%
Accomplishment:	11	=	14.667%
Achievement:	29	=	38.667%

Only 13% of the verbs heading a matrix infinitive produced by Jean are stative verbs; the remaining 87% are eventive verbs. Furthermore, of the 10 stative verbs, 8 are *hê* 'have' and 2 are *sien* 'see'. The Eventivity Generalization is therefore supported by Jean's CHILDES data.

Now we shall see whether the language of Chanel supports the generalizations in (41) and (42). In her 32 files, Chanel produces just 29 matrix infinitives. From these, 25 have tense/mood interpretations that may be reasonably inferred from the context. The following chart illustrates the range of interpretations born by Chanel's root infinitives.

(45) Interpretation of Matrix Infinitives (Chanel)

	Number		Percentage
Future / Desired Event:	17	=	68.000%
Present / Ongoing Event:	8	=	32.000%
Past Event:	0	=	0.000%

Again, a substantial majority of the matrix infinitives have modal interpretations. The Modality Generalization is therefore supported by the data contained in Chanel's CHILDES files. As the following chart indicates, the same may be said for the Eventivity Generalization.

(46) Aspectual Class of Matrix Infinitives (Chanel)

	Number		Percentage
State:	6	=	20.690%
Activity:	7	=	24.138%
Accomplishment:	10	=	34.483%
Achievement:	6	=	20.690%

Only 20% of the verbs heading a matrix infinitive produced by Chanel are stative verbs. Furthermore, of these 6 stative verbs, 4 are *hê* 'have' and 2 are *sien* 'see'. The Eventivity Generalization is therefore also supported by Chanel's CHILDES data.

We may safely conclude that the child Afrikaans data available on CHILDES support both the Modality Generalization and the Eventivity Generalization. Let us also note that the data provisionally support the observation made in Gavrusseva 2003 that there exists a significant number of *non*-modal uses of matrix infinitives. By our present count, both Jean and Chanel assign a non-modal interpretation to a matrix infinitive over a quarter of the time. However, the reader must also bear in mind that our present count does not include utterances which receive a clear imperative semantics. Perhaps when such utterances are included into the count, the percentage of non-modal matrix infinitives will decline sharply. I leave this as a matter for future research.

7.2 The Number Underspecification analysis (Hoekstra & Hyams 1998)

My argument that children acquiring Afrikaans pass through an RI-Stage rests on the fact that their matrix sentences often possess the morphosyntactic properties of infinitival clauses in adult Afrikaans. However, Hoekstra & Hyams (1998) argues that such evidence is not sufficient for establishing that children acquiring a language pass through an RI-Stage. Rather, they argue that the RI-Stage – as it occurs for children acquiring languages like Dutch, French and Swedish – possesses other essential properties. These properties distinguish the ‘true’ RI-Stage from superficially similar stages of development that occur for languages, such as English, in which the infinitival clause is headed by a bare form of the verb. In short, Hoekstra & Hyams (1998) argues that child English does not pass through an RI-Stage, despite the fact that children acquiring English often produce matrix sentences having the morphosyntactic appearance of infinitival clauses (Wexler 1993).

More recently, Gavrusseva (2003) has cast serious doubt upon this dichotomy between ‘true’ matrix infinitives and those appearing in child English. Nevertheless, one may reasonably ask whether the more stringent criteria put forth in Hoekstra & Hyams (1998) would still recognize child Afrikaans as possessing an RI-Stage. Hoekstra & Hyams (1998) argues that ‘true’ matrix infinitives possess the following properties.

(47) Properties of True Root Infinitives (Hoekstra & Hyams 1998)

- (i) True root infinitives obey the Modality Generalization.
- (ii) True root infinitives obey the Eventivity Generalization.
- (iii) True root infinitives occur predominately with null subjects.
- (iv) True root infinitives do not occur in *wh*-questions.
- (v) True root infinitives occur at a rate comparable to that found in child German, Dutch, French and Swedish (~40%), and not at the very high rate found in child English (~80%).

It was established in the previous section that matrix infinitives in child Afrikaans possess properties (i) and (ii). Furthermore, it can be seen from charts (25) – (27) and (37) – (39) that root infinitives in child Afrikaans occur almost exclusively with null subjects. Regarding property (iv), no matrix infinitive produced by Jean is a *wh*-question, and Chanel produces only one *wh*-question headed by a matrix infinitive. Finally, the charts in (17) – (19) and (29) – (31) demonstrate that the rate of root infinitives in child Afrikaans coincides with that recorded for child German, Dutch, French and Swedish.

It follows that even the more demanding criteria of Hoekstra & Hyams (1998) classify child Afrikaans as possessing a ‘true’ RI-Stage. This spells problems for the syntactic analysis of child matrix infinitives put forth in Hoekstra & Hyams (1998). Hoekstra and Hyams propose that child matrix infinitives are clauses in which the functional head *Number* is underspecified. The authors frequently point out that this *Number* Underspecification analysis makes the following typological prediction.¹⁷

(48) The Number-as-Finiteness / Root-Infinitive Correlation

A child learning a language should pass through an RI-Stage *only if* that language exclusively uses Number morphology to distinguish finite from non-finite clauses.

As was discussed in section 2, Afrikaans does not employ *any* morphology to distinguish finite from non-finite forms of the verb. More specifically, Afrikaans verbs possess no Number morphology, and thus Number morphology cannot be used to distinguish finite from non-finite clauses in Afrikaans. The Number Underspecification analysis therefore incorrectly predicts that child Afrikaans should *not* possess an RI-Stage. However, recall that the NS/RI correctly predicts the RI-Stage should be found in children acquiring Afrikaans. On these grounds, the UCC analysis of Wexler (1998, 2000) is to be preferred to the Number Underspecification analysis of Hoekstra & Hyams (1998).

Footnotes:

¹ Modal verbs, however, express past tense through an otherwise extinct “imperfective” allomorph (Donaldson 1993).

² There is an ongoing debate concerning the extent to which children’s matrix infinitives resemble the matrix infinitives permitted by certain adult grammars in an extremely limited range of contexts. Lasser (1998) catalogues a number of alleged adult matrix infinitives, and Hoekstra & Hyams (1998) draw an explicit parallel between child matrix infinitives and so-called ‘jussive imperatives’ in adult Dutch. However, see Gavrusseva (2003, 732) for some important differences between matrix infinitives in child and adult language. Furthermore, Blom et al. (2000) demonstrate that matrix infinitives are virtually absent from the adult speech that the child is exposed to.

³ See the Appendix for a discussion of the Number Underspecification analysis put forth in Hoekstra & Hyams (1998).

⁴ The arguments that follow are ... (omitted to obscure identity).

⁵ Note that this *interlinguistic* statement of the generalization is slightly too weak. Rhee & Wexler (1995) demonstrate that, in child Hebrew, matrix infinitives only occur for those tense/person combinations which *don’t* license null subjects in adult Hebrew. This suggests that a more nuanced generalization permitting *intralinguistic* variation is required.

⁶ The Tense-Omission and Truncation analyses are also unable to explain the NS/RI.

⁷ Another, somewhat equivalent implementation of this general idea would be to hypothesize that the Agreement head in these languages contains an interpretable D-feature, and therefore does not require its D-feature to be ‘checked’ by the subject (see Wexler 2000).

⁸ There is an important ongoing debate regarding the interpretation of matrix infinitives in child language (Hoekstra & Hyams 1998, Blom & Wijnen 2000, Brun & Babyonyshev 2003, Gavruseva 2003). In particular, the aspectual and modal properties of child matrix infinitives have received special scrutiny. See the Appendix for a quantitative analysis of these properties in child Afrikaans matrix infinitives.

⁹ Note that the *auxiliary* verb *het*, unlike the main verb *het*, does not take a special form in the infinitive. Throughout this paper, the phrase “the verb *het*” refers to the main verb and not the auxiliary.

¹⁰ The best account of this phenomenon remains some version of the hypothesis put forth in Wexler (1993). In this paper, it is hypothesized that copulas and auxiliaries are realizations of Tense, and so should be absent whenever Tense is omitted. Of course, it is not trivial to update this idea into the UCC model, in which root infinitives may be derived by underspecification of Agreement alone. Furthermore, in my studies, the modal verb *wil* was never found to head a root infinitive, despite the fact that it is unlikely to be generated within Tense.

¹¹ Note that the infinitival allomorphs *hê* and *wees* appear to be instances of root suppletion.

¹² Two is the approximate age at which the children studied began producing modal infinitival clauses.

¹³ Jean's mother consistently corrected his non-adult usages of verbal prefixes, such as using *uitklim* 'climb out' to mean *afklim* 'climb off'.

¹⁴ See Gavrusseva (2003) for a competent review.

¹⁵ To be precise, Hoekstra & Hyams (1998) claims that child matrix infinitives *always* have a future/modal interpretation. Subsequent research has cast doubt on this original, very strong statement of the correlation (see Blom & Wijnen 2000, Brun & Babyonyshev 2003, Gavrusseva 2003).

¹⁶ When interpreting this and the corresponding chart for Chanel in (45), the reader should bear in mind that my count of child Afrikaans matrix infinitives ignores all structures with a clear imperative semantics. Thus, the percentage of matrix infinitives I record as having a modal interpretation is lower than the actual one.

¹⁷ See, for example, Hoekstra & Hyams (1998, 87 – 88).