The Temporal Interpretation of Dutch Children's Root Infinitivals: The Effect of Eventivity

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ABSTRACT

This study concerns the presence and status of Tense in young children's nonfinite main clauses, or *root infinitivals* (RIs). Verb-containing utterances produced by four Dutch-speaking boys (age range 1;9 - 3;2) were classified along the following dimensions: finite - infinitive; temporal reference, as indicated by linguistic and non-linguistic context; and type of verb: eventive vs. non-eventive. The data show that (a) the proportion on non-eventive verbs in RIs is close to zero, whereas they make up approximately half of the finite predicates. (b) RIs are used to refer to present, past as well as (predominantly) future eventualities, while the temporal reference of finite sentences is effectively restricted to 'present'. It is argued that these findings support the assumption that RIs do not contain Tense, and that their temporal refence comes about as a result of the contextual (deictic) interpretation of an event variable, if available. The results of a pilot experiment suggest that the pattern in production is mirrorred in comprehension.

INTRODUCTION

It is a long-standing observation that Dutch-speaking children's early verbs have the morphological (schwa-suffix) and syntactic (clause-final position) properties of infinitives (van Ginneken 1917). Finite verbs, that is, verbs with a suffix indicating tense and agreement, which occur in second position are absent during the first few weeks to months after the emergence of multi-word utterances (Bol 1995, Wijnen 1995a, 1995b; see Wijnen & Verrips 1996, for an overview). Their appearance — usually starting with one or two modal auxiliaries — marks the onset of a period in which *root infinitivals* (RIs), i.e., sentences with infinitival verb predicates (example 1), and those with a finite verbal head (example 2) seem to alternate freely. This *optional infinitive* stage (Wexler 1994), which in Dutch-speaking children may last for several months (Wijnen 1995a, 1995b), has figured quite prominently in the recent literature on the acquisition of syntax. The main controversy concerns the presence and status of functional categories, such as Agr(eement) and Tense in RIs (see Schönenberger, Pierce, Wexler & Wijnen 1995 for a bird's eye's view of the competing hypotheses and their empirical basis).

(1) a. die helemaal kapot maken (Niek 3;1.16)
that+one altogether broke make
'completely break down that one'

b. mama radio aan doen (Peter 2;0.7)
mommy radio on put
'mommy put on radio'

(2) a. auto eet appelsap op (Thomas 2;4.10)
car eat-SG apple juice up
'car is eating apple juice'

b. valt ie om (Thomas 2;4.8)
fall-3S he over
'he is falling over'

c. ik leg hier neer (Niek 3;1.2)
I lay-1S here down
'I put this down'

d. Koekjesmonster eet je op (Niek 3;0.21)
Cookie Monster eat-SG you up
'Cookie Monster is eating you'

In this paper I will explore an issue that has been brought up repeatedly in the discussion on the syntactic analysis of root infinitivals but which has hardly been studied systematically in its own right, viz. their temporal interpretation. The central question of this study is whether young children's RIs and finite sentences differ with respect to temporal reference. An answer to this question is expected to shed light on the question whether RIs, despite their appearance, have Tense, and if so, whether it is specified for a particular value. Tense is generally held to locate the situation denoted by a sentence on the time axis relative to the time of uttering the sentence (and relative to a point of reference, to complete the Reichenbachian [1947] scheme). In Dutch, present tense indicates that the situation denoted overlaps in time with the time of speaking, and simple past indicates that the situation preceded uttering the sentence. It is a matter of dispute whether Dutch has a true Future. Present tense forms are used to refer to future eventualities (*morgen koop ik een fiets* 'tomorrow I buy a bike'). Future readings are also obtained in periphrastic constructions with the auxiliaries *zullen* 'shall' and *gaan* 'to go', which express intentionality, along with other modal auxiliaries.

It is difficult to believe that children in the optional infinitive stage have a predilection to utter generic, non-anchored statements about contingencies in the world. Hence, it is more likely that RIs refer in one way or another point to an interval on the time axis. It seems that the optional infinitive stage overlaps in time with what has been termed the 'event time phase' in the acquisition of tense and temporal reference (Weist 1986), in which children are claimed to be able to refer to not only ongoing situations, but also to eventualities anterior or posterior to the speech time interval. If the human language capacity is governed by a 'principle of contrast' (Clark 1988), it is expected that RIs systematically have a different intended interpretation than finite utterances do, possibly in the temporal domain. In short, it is conceivable that RIs are specifically reserved for references to 'non-present' situations.

The various hypotheses on the presence and status of the Tense category in RIs seem to lead to different predictions with regard to their temporal reference. It seems to me that, by and large, three positions can be discerned in the recent literature. The first, and strictest, proposal is that RIs have a representation identical to that of finite structures. Put simply, RIs are finite utterances, in which the morpho-syntactic features associated with finiteness have not been overtly realized. This position has been sketched in publications by Wexler and his associates (Harris & Wexler 1995, Phillips 1995, Wexler 1992, 1994, 1996), as well as other proponents of a 'strong continuity' approach to syntactic

development, such as Boser, Lust, Santelmann & Whitman (1992), and Hoekstra and Hyams (1996).

There appear to be two varieties of this hypothesis. The first is that the 'invisible' Tense feature has a specific value. As a working assumption, it seems reasonable that this (non-realized) value of Tense ranges over the same set of values that its overtly realized counterpart ranges over. Specifically, if there is a limitation on the range of temporal references of (overtly) finite utterances, the same limitation will hold for RIs. For instance, should we observe that past tense does not occur in finite sentences, it is expected that RIs can't instantiate past tense either.

The second possibility is that Tense is present in RIs, but that for some reason its interpretation cannot take place by means of a grammatical mechanism. A recent proposal by Hoekstra and Hyams (1996) is an example of this solution. Hoekstra and Hyams assume that normally the temporal interpretation of a sentence depends on the existence of a connection between the head of the Tense-projection, which encodes event time, and the Complementizer, which encodes speech time. This connection, the *tense chain*, depends on the specification of intermediary functional categories. Hoekstra and Hyams argue that in nonfinite sentences the link between Complementizer and Tense cannot exist, because one of the intermediary functional heads (viz., Number) does not have a specific value. In such cases, temporal interpretation is not fixed grammatically, but rather in the manner of a deictic pronoun, i.e., Tense is interpreted contextually. This would reflect a general principle of immature grammars, namely that a variable that cannot be bound in the normal way, i.e., by means of an operator, is contextually interpreted. The prediction that seems to follow is that RIs can have any kind of temporal reference, and that the range of possibilities is not necessarily similar to that of the finite structures used during the same period.

A third hypothesis is that there is no Tense in RIs. This is, in effect, what has been proposed by Rizzi (1992, 1994), and recently also by Wexler (1996). Rizzi has argued that RIs (but not finite sentences) have a syntactic representation in which the complementizer phrase, as well as the other functional projections down to and including the phrase headed by Tense, are not projected. Wexler simply states that 'tense is optional', which he does not take to imply that the deletion of tense is part of a 'truncation', which also affects all functional categories dominating Tense, as Rizzi suggests. It is as yet unclear what such proposals predict with regard to temporal reference. Obviously, *deictic* ('pronominal') interpretation of a Tense operator is ruled out.

Few studies have addressed the issue of the temporal interpretation of RIs directly, and the scarce results do not seem to be consistent. Some of the evidence suggests that temporal reference of RIs is identical to that of finite sentences. Lightbown (1977) and Pierce (1989) found that infinitivals in children's French can be used to describe an ongoing activity, along with finite forms. Poeppel and Wexler (1993) report that in their German speaking subject finite and non-finite utterances are

indiscriminable as far as their temporal reference is concerned. Behrens (1993) extensively analyzed the temproral interpretations of various verb forms produced by five German children before the rules of inflection had become productive (ages 1;10 - 2;4). She found that the temporal interpretation of infinitive predicates was essentially free. That is, she found instances of reference to past, present as well as future eventualities. The data of one of Behrens' subjects (Simone) suggest that the use of infinitives for referring to ongoing events ('present') decreased markedly after the inflection system had become productive.

A recently reported analysis of German child language by Ingram and Thompson (1996) however, suggests otherwise. On the basis of contextual analyses of verb-headed utterances in four German children between the ages of 1;5 and 2;5 these authors conclude the meaning of German children's RIs most often corresponds to that of a sentence containing a modal auxiliary such as *möchte* 'want' or *will* 'want'. In effect, this entails reference to a — possible or likely — future event (although, as Weist [1986] points out, the expressed wish is located in the present). For Dutch, anecdotal reports point in the same direction. At the beginning of this century, the Dutch linguist Van Ginneken (1917) noticed that the subject of his diary study would use the infinitive for the expression of wishes and desires whereas the finite form would be used to communicate a momentarily observed situation. The wishes and desires Van Ginneken speaks of would be quite naturally expressed by a more competent speaker with the aid of modal auxiliaries. Several other authors have observed a similar distinction (Schaerlaekens 1973, Krämer 1993, Van Zonneveld 1993, Hoekstra & Jordens 1994). The generalization seems to be that, in contrast to finite utterances, Dutch children's root infinitivals in general terms refer to a (possible) 'future' state of affairs. Thus, example (2.a) above is glossed as 'car *is eating* apple juice', whereas (1.a) would mean something like 'I'm *going to* break this down'.

Ingram and Thompson (1996) propose that the German results can be explained by the assumption that young children 'associate' the infinitive with modal meaning, on the basis of the frequent co-occurrence of modal auxiliaries and infinitive main verbs in the input language. It is uncertain whether this explanation would do for the Dutch child. In Dutch, particularly in informal contexts, infinitives can be used within the frame "*(subject) is aan het V-INF*", which is not unlike the English progressive in that it is used to refer to *ongoing* actions, and thus serves to circumvent the inherent ambiguity of the present tense, which can also denote habituality. We know that young children learning Dutch are familiar with this morphosyntactic context for infinitives. In an experiment that investigated the interplay of morphosyntactic cues and referential meaning in categorizing novel words, it was found that the *is aan het V-INF* frame was a highly reliable cue for 2-year olds to treat the associated novel word as a verb (Krikhaar & Wijnen 1996).

A different, compositional account of the 'modal interpretation' of root infinitivals would be that these structures involve a modal element at some level of representation. Boser et al. (1992) and Ferdinand (1995, 1996) propose that root infinitivals of German and French children are underlyingly finite, and that the tense category is associated with a phonetically non-realized auxiliary. Conceivably, this abstract auxiliary has not only syntactic features but also semantic features, which may correspond to that of a modal or inchoative auxiliary, and thus explain the 'desire' interpretation, or, more generally, the 'future' or 'prospective' reference of infinitivals.

From the above discussion it will permeate that two basic questions for the analysis of the temporal reference of RIs are the following: (1) do RIs have a fixed temporal reference or not; (2) If it is fixed, is it similar to that of finite structures, or different? Answers to these question may help in deciding whether RIs have a specified Tense feature or not. On the working assumption explained above, if the range of temporal reference of RIs is clearly different from that of finite structures, it would seem unlikely that RIs have a specified Tense feature. However, if RIs and finite structures are different in their temporal reference, it may either be the case that Tense is present but underspecified, or that it is completely absent. Would there be a way to discriminate between these two possibilities?

What I have been ignoring so far, and what is, in fact, ignored in almost all of the literature on RIs and their temporal interpretation, is that the way in which Tense functions to determine the temporal reference of a sentence varies over different types of predicates. The distinction that I will focus on here is that between *eventive* and *non-eventive* verbs. In the remainder of this Introduction I will argue that the distinction between eventive and non-eventive verbs and the way they interact with Tense leads to specific predictions with respect to the temporal interpretation of Root Infinitivals — in adult language as well as in child language.

The dividing line between eventive and non-eventive verbs is not completely clear, since, as in many other cases, the categories seem to be structured along the lines of Rosch' (1973) prototype theory. A prototypical eventive verb denotes a dynamic change which takes place within a clearly circumscribed period of time, and which involves several actors. Transitive action verbs, such as *hit*, *kiss* or *eat*, are the prime examples. The subject is strongly agentive, and hence controls the action denoted by the verb. A prototypical non-eventive verb denotes a situation, that is, a state of affairs without a clearly delineated beginning or end point. State verbs such as *know* and *love* are clear examples. The subject of such verbs is an experiencer, rather than an agent. The distinction between eventive and non-eventive verbs is for all intents and purposes similar to Vendler's (1957) distinction between, on the one hand, action, accomplishment and achievement predicates, and, on the other, state verbs. Eventive verbs inherently refere to the time axis, in that they denote eventualities with a specific

onset, and/or a duration, and/or a definite end point. Non-eventive verbs do not. Also, since non-eventive verbs often denote a (transitory) quality of their subject, they can be likened to the *individual-level* predicates of Kratzer (1989), whereas eventive verbs are *stage-level* predicates.

Informally, any verb that can be replaced by 'to do' is eventive. There are some other diagnostics which may serve to discriminate eventive and non-eventive verbs, some of which relate to the interpretation of the tense marking of the sentence they appear in:

(1) The present tense in Dutch may either denote habituality or ongoing-ness. The *is aan het V-INF* construction, which is used to refer to something that is going on, is only available for eventive verbs, as the examples (3) below illustrate. This is understandable since non-eventive verbs (state verbs in particular) express a (transitory) characteristic of their subject. Thus, they denote something that does not correspond to an interval on the time axis.

(3) a. *Koekiemonster is koekjes aan het hebben
Cookie Monster is cookies on the have

b. Koekiemonster is koekjes aan het eten
Cookie Monster is cookies on the eat
Cookie Monster is eating cookies

(2) In non-eventive verbs, the subject generally is not agentive, and hence does not control the situation denoted by the predicate, which is illustrated by their incompatibility with the inchoative auxiliary *gaan* 'to go' (unless the verb is somehow reconstruted as an action verb, as in *hear* → *listen*):

(4) a. *Pino gaat muziek horen
Big Bird goes music hear

b. Pino gaat melk drinken
Big Bird goes milk drink
Big Bird is going to drink milk

(3) Non-eventive verbs cannot occur as the main predicate of small clause complements of verbs of perception, while eventive verbs can:

(5) a. *ik zie hem de weg weten
I see him the way know
b. ik zie hem brood eten
I see him bread eat
I see him eat bread

As Zwarts (1992) points out, this is related to the fact that it is only possible to perceive objects, events and processes, which have a specific location in space and time (i.e., a distinct beginning and ending).

(4) In adult Dutch infinitives are not allowed as independent predicates, with the exception of a small number of marked cases, as illustrated in examples (6) to (8). These examples suggest that constructions without overt tense marking are only allowed with verbs that inherently specify a temporal location, or, in other words, that predicate over an event. Apparently, the temporal location of the event denoted by adult RIs that are acceptable can be inferred on the basis of the discourse context, which is impossible for non-eventive verbs. A formalization of these intuitions can be found in recent semantic accounts of the functioning of tense in relation to eventive and non-eventive predicates.

(6) *jussives*
a. Hier geen fietsen plaatsen!
here no bicycles put
'Don't park your bicycle here'
b. *Dan geen antwoorden weten!
then no answers know

(7) *elliptical answers*
a. Waar ben je mee bezig? Plaatjes draaien.
What are you engaged in? records play. ('playing records')
b. Waar ben je mee bezig *het antwoord weten.
What are you engaged in? know the answer

(8) *'anecdote register'*
a. De conducteur floot al voor het vertrek, dus ik rennen!
the conductor whistled already for the departure, so I run-INF
b. *Ik had hard geleerd, dus ik de antwoorden weten.
I had hard learned, so I the answers know-INF

Several semanticists, Kratzer (1989) and Zwarts (1992) among them, assume that eventive and non-eventive verbs have different argument structures. Eventive verbs are supposed to involve an *event argument*. This is a variable ranging over events (a type of semantic entity, next to, e.g. individuals) in the semantic representation. The verb phrase is a predicate applying to this variable (several additional predicates, e.g. temporal or locative adverbials may simultaneously apply to the same variable as well). In Kratzer's (1989) approach, the event argument ranges over spatio-temporal locations. Semanticists disagree as to the position, status and projection of the event argument, but that need not distract us here. Kratzer (1989) provides several syntactic and semantic arguments which support the differentiation between eventive and non-eventive predicates in terms of an event argument.

With regard to eventive predicates the consensus seems to be that Tense is applied to the event argument. In Higginbotham's (1985) terminology, the event argument is *theta*-bound by Tense (the tense features of Infl). At the same time, Tense acts as an existential quantifier, and thus provides an existential closure for the event argument. (There is an event *e* such that conditions *x*, *y*, and *z* are true). There is some divergence with respect to the non-eventive predicates. Kratzer (1989) argues that Tense binds the external variable of the main predicate, i.e., the subject. For instance, in an individual level predication like *Pope Adrianus was Dutch*, it is the individual denoted by the subject, *Pope Adrianus*, that is located in the past by the tense marking on the copula. This solution may be applicable to predicates that denote a property of an individual, but it is unclear whether it is valid for other non-eventive predicates such as state verbs. According to Zwarts (1992), the Tense-V relation in non-eventive predicates is not an operator-variable relation. "In this case, the TENSE predicate of the I is directly applied to the VP and not to an Event Argument" (Zwarts 1992: 131).

Speculatively, the observed distinction between eventive verbs and non-eventive verbs exemplified in (6)-(8) could be explained in terms of the event variable dicussed above. Extending the proposal of Hoekstra and Hyams (1996), we might assume that in the absence of (specified) Tense, the event variable can be interpreted contextually. Notice that there is an analogy here with the ambiguity inherent to pronominals. Pronouns can be free, and obtain their reference through deixis, or they are variables, and obtain reference through binding to a discourse antecedent. In tensed sentences, the event variable is interpreted through binding by Tense. However, in infinitival contexts, its reference is determined contextually, and hence the event time-utterance time relation is free. The construction in example (8) above testifies to this fact. By contrast, the absence of an event variable prevents deictic interpretation of the temporal reference of non-eventive predicates. In short, adult Dutch disallows non-eventive root infinitives because they cannot be deictically interpreted. Put differently, non-eventive verbs 'need' tense to be referentially bound. Eventive verbs, by contrast,

inherently point to the time axis, and therefore a speech time - event time relation can be established without a grammatical operator.

It is highly likely that children are sensitive to the eventive-non-eventive (action-state) contrast. An argument is provided by the similarity in the grammaticization of this contrast across various creoles, which, as Bickerton (1984) has claimed, indicates it status as part of the human language bioprogram. Consequently, the distinction can be exploited as a window onto the status of Tense in the representation of root infinitivals. Crucially, if the absence of overt Tense marking is only a matter of *not phonetically realizing* a specified feature, it is expected that the distribution of eventive and non-eventive verbs will be similar for finite sentences and root infinitivals. Also, if Tense is represented but unspecified, there is no reason to assume a distributional difference between eventive and non-eventive verbs. According to Hoekstra and Hyams, Tense itself can in such cases be deictically interpreted. However, if Tense is absent, (as we assumed for Dutch adult root infinitivals) a distributional difference between eventive and non-eventive verbs is to be expected. In correspondence to the pattern in adult Dutch, it is expected that non-eventive verbs do not occur in RI contexts. By contrast, eventive verbs can and will occur as bare infinitives.

Indications that there is a difference along these lines in Dutch child language are provided the results of Jordens' (1990) analysis of diary data from his daughter Jasmijn at 2 and 2.5 years of age. Jordens concluded that verb position and morphology were correlated with *Aktionsart*. Finite verbs were predominantly statives (ex. 9), i.e., prototypical non-eventive verbs, or resultatives (ex. 10). Verbs in final utterance position with infinitival morphology were predominantly action verbs (ex. 11), i.e., prototypical eventive predicates. Ferdinand (1995, 1996), in an analysis of the corpora of four French 2-year-olds, observed a strong correlation between eventivity and non-finiteness in the early multi-word stage. The present study will allow us to see whether Jordens' and Ferdinand's observations can be generalized.

Jordens and Ferdinand did not analyse the temporal reference of the eventive root infinitivals. Pursuing the argument constructed so far, it is expected that the temporal reference of root infinitivals involving eventive verbs is essentially free. That is, they may refer to future, past, and crucially also to current eventualities.

(9) poppie heef(t) dorst (Jasmijn, around age 2)
doll-DIM have-3S thirst
'dollie is thirsty'

(10) ik valt (Jasmijn, around age 2)
I fall-3S
'I'm falling'

(11) poppehuis spelen (Jasmijn, around age 2)
doll house play-INF
'(I want to) play with the doll house'

METHOD

Materials

The data for this study were gleaned from four corpora of Dutch child language, obtained from children (all boys) between ages 2 and 3. Particulars of the corpora are given in Table 1. The lower age boundary is determined by the onset of the use of multi-word utterances. The upper age boundary was selected to be the point at which the relative proportion of root infinitivals was equal to that of periphrastic verbal predicates (i.e., auxiliary plus main verb predicates, see Wijnen 1995a, 1995b for details). Put differently, in the first sample after this age, the proportion of root infinitivals would be lower than the proportion of auxiliary-plus-main verb predicates. It was felt that this would be indicative of Dutch children's acquisition of the knowledge that infinitives cannot occur by themselves, but need to be subordinated to an auxiliary.

=== TABLE 1 ABOUT HERE ===

The corpora are based on weekly or bi-weekly recordings of spontaneous conversations between the target child and (one of) his parent(s), and, in all cases but one (Niek), an investigator.[1] Utterances of the adults and target children were transcribed in accordance with CHAT guidelines. (MacWhinney 1995). Each transcript was checked by a second listener. Transcriptions on which the first and second listener disagreed, which were very few, were marked in the files, and excluded from further analyses.

Each of the four children regularly produced non-finite matrix verbs. Typically, the percentage of RIs within the set of verb-containing utterances would be rather high, often close to 100%, in the

[1] I am grateful to Gerard Bol and Evelien Krikhaar for sharing the data they collected from Josse and Matthijs, respectively. The Niek corpus can be inspected through CHILDES (MacWhinney & Snow 1990). The other three corpora will be made available through CHILDES shortly.

early files, and gradually diminish over time, complementary to the increase of utterances with single finite verbs and finite periphrastic (aux+v) predicates.

Analysis

All of the children's utterances containing a single (matrix) verb were extracted from the transcriptions. The resulting set comprised one-, two- and multi-word utterances. The verbs could either be finite or infinitive, and could either or not be paired with a subject (recall that RI constructions with subjects in adult Dutch are only allowed in exclamations and 'anecdote register' utterances, see above). Several categories of utterances were discarded. These included (1) unfinished (interrupted) utterances (as indicated in the transcripts); (2) utterances that contained incomprehensible or non-transcribed material (xx[x] and www codes in CHAT); (3) obvious (partial) imitations of directly preceding adults' utterances; (4) imperatives; (5) utterances that could not be unambiguously classified as either finite or nonfinite, due to unclarity of verbal morphology or position.

Each of the selected child utterances was assigned one of three possible interpretations: (1) present (2) future or (3) past. Contextual and discursive information provided by the transcripts was exploited in this classification (see Behrens 1993 for a similar method). An utterance was considered to refer to an ongoing activity or state when the utterance and the eventuality it referred to co-occurred. Sometimes this could be inferred from the flow of events described by the transcript. In other cases, the response of an adult interlocutor provided the clue, as in example (12) below.

(12) *child:* hier rijden (Niek 2;8)
here ride-INF
father: boot rijdt achter de tractor
boat is riding behind the tractor

An utterance was assigned to the category 'future' when there was reason to believe that the eventuality referred to would occur *after* the utterance. In many cases, this was indicated by the sequence of events represented in the transcript. For example, there are instances where a child would cry out *poepen!* ('poop do-INF'), announcing that he needed his potty. Another example is given in (13), in which the father's response indicates that the activity referred to by the child's utterance has not yet started. Utterances assigned to the 'future' category often appear to be expressions of the child's wishes or desires. In many cases, this is reflected by the fact that an adult interlocutor in recasting the utterance adds a modal auxiliary (ex. 14).

(13) *child:* papa bouwen (Niek 2;7)
daddy build-INF
father: geef jij de blokjes maar aan dan
give you the blocks PART on then
'well, hand me the building blocks then'

(14) *child:* drinke(n)! (Niek 2;7)
drink-INF
father: wil je in die kamer drinken?
want you in that room drink
'do you want to have a drink in that room?'

For utterances classified as 'past' the context suggested that the eventuality referred to preceded the utterance. In fact, most instances of this category were found in highly typical conversational sequences where parents would prompt their children to talk about their vicissitudes in the recent past.

Of course, it should be kept in mind that these operationalizations of 'present', 'past' and 'future' hinge on the assumption that utterance-context contingencies validly indicate the intended interpretation. There is no guarantee that this is the case. It is perfectly possible, for instance, that a child's referral to a past activity coincides (either accidentally or not) with performing that same activity. In such cases, the utterance would be misclassified. There does not seem to be an independent way of assessing the validity of the operationalizations. However, all ambiguous cases were kept apart.

The classification of verbs as (non-)eventive was based on diagnostics such as *do*-substitutability and the possibility to use the verb as a complement of a perception verb (cf. above). Since 'non-eventive' presumably is the most elusive category, some examples are given below in (8).

(15) *zijn* ('be', in the locative sense)
a. is ə gogeltje in (Josse 2;2.22)
is bird-DIM in
'there's a birdie in (it)'
hebben ('have', 'possess')
b. heeft ə staart (Matthijs 2;5.1)
have-3S a tail
'(it) has a tail'

zien (‘see’)

c. eendje zien (Matthijs 2;5.1)
duck-DIM see-INF
‘(I want to) see the ducky’

passen (‘fit’)

d. daar pas ie wel (Josse 2;3.28)
there fit-1S he AFF
‘he fits (in) there’

RESULTS

Table 2 gives the numbers of root infinitivals in each of the four corpora that could be assigned to each of three temporal categories. Quite a considerable portion of the material, ranging from 11.6% to 26.3% of all RIs, could not be interpreted. The numbers of unclassifiable utterances are given in the table directly below each of the children’s names.

=== TABLE 2 ABOUT HERE ===

A first observation is that eventive verbs are predominant in this selection of utterances: 93% or more of the temporally interpretable root infinitivals has an eventive verb. Secondly, it is obvious that the label ‘future’ has been assigned most frequently by far. Taking all four corpora together, 1883 root infinitivals were counted, 1625 (86.3%) of which refer to eventualities that follow the utterance. A third observation is that the future interpretation occurs less often with eventive verbs than with non-eventive verbs. Due to the low number of non-eventive verbs it is difficult to assess the statistical reliability of this trend. In two of the four children the distribution of eventive and non-eventive verbs across future and non-future (i.e., present and past) classes is significantly different by chi-squared test (Matthijs: $\chi^2 = 4.04$, df = 1, $p < .05$; Peter: $\chi^2 = 3.89$, df = 1, $p < .05$). A similar result obtains when the data of the four children are combined ($\chi^2 = 11.04$, df = 1, $p < .001$). What these results suggest is that, although future interpretation is predominant, RIs with eventive verbs can refer to ongoing and past eventualities, but non-eventive RIs cannot.

An similar analysis was done on the subset of finite sentences (i.e., utterances containing a single finite verb). It should be noted that in Dutch, finite modal auxiliaries can be used independently, i.e, without a lexical verb complement. This happens quite frequently in early Dutch child language

(examples 16). Since modals never occurred as root infinitives, they were not included in the analysis of the finite utterances. The same holds for copulas. The auxiliary of the perfective did not occur in this sample. The numbers of utterances containing a single copula, or a modal auxiliary, as well as the remaining number of lexical verbs are summarized in Table 3. The column labeled 'unknown' contains the numbers of utterances that were unclassifiable, for any reason.

(16) a. mag niet (Niek 2;7)
may not
'(it is) not allowed'

b. kan Niekje auto's (Niek 2;8)
can N. cars
'now N. can (play?) with the cars'

c. Peter kan ə bij (Peter 1;11.3)
P. can by
'Peter can reach it'

d. (zo) moet ie (Peter 1;11.3)
(so) must he
'it has to go like that'

=== TABLE 3 ABOUT HERE ===

Table 4 gives the results for the finite sentences. First of all, it is obvious that non-eventive verbs are much better represented here than in the set of root infinitivals. Overall, 51% of the classifiable utterances contain a non-eventive verb, with a range from 36% (Peter) to 57% (Matthijs). Secondly, the predominant temporal interpretation for this set of sentences is 'present', with percentages ranging from 87 (Peter) to 99 (Josse) (Overall: 94%). A considerable portion of the finite utterances in Peter's data had past reference (11, 12.4%), and Matthijs produced a number of utterances with past reference as well. In all of these cases, the children actually used a past tense form of the verb. Thirdly, there appears to be an interaction of verb type (eventive vs. non-eventive) and temporal interpretation. In the cumulated data, future interpretations, though there number seems almost negligible, occur slightly more frequently with eventive verbs than is expected on the assumption of independence of these variables. The proportion of 'present' interpretations is, complementarily, slightly less than expected. For the non-eventive verbs, the pattern is reversed. The differences are large enough to yield a significant result by chi-squared test (χ^2 = 17.8, df = 2, p <

.001). This pattern is not replicated in any of the separate corpora, however.

=== TABLE 4 ABOUT HERE ===

DISCUSSION

The objective of this study was to gain insight into the temporal reference of Dutch children's root infinitivals (RIs). In the light of the various competing hypotheses on the representation of tense in RIs, it appeared important to determine whether their temporal reference is free, i.e., determined by context, or fixed. Additionally, in view of the different interactions of Tense with eventive and non-eventive verbs, it was asked whether both types of verbs can be used as bare infinitives. It was argued that if tense is underlyingly present and specified, eventive as well as non-eventive verbs would occur in root infinitivals. Another possibility would be that Tense is unspecified and interpreted deictically (Hoekstra & Hyams 1996). This would still leave open the possibility of non-eventive RIs. Finally, the assumption that Tense is not represented in RIs lead to the prediction that they cannot involve non-eventive verbs, because these do not involve an element, the event variable, that can be deictically linked to a spatio-temporal location. Also, it was predicted that eventive root infinitives can get any temporal interpretation. That is, they may refer to future, but crucially also ongoing (as well as past) eventualities.

Language production data of four 2-3-year old Dutch children showed that there is a clear distributional distinction between eventive and non-eventive verbs. Eventive verbs predominate in root infinitivals. Clearly, the future interpretation, which is similar to the effect of a modal auxiliary such as *wil* 'want' or the inchoative auxiliary *gaat* 'is going to', is observed most frequently. However, crucially, a significant proportion of the eventive root infinitivals refers to ongoing or past eventualities, which indicates that temporal reference of these constructions is essentially free, although the predominance of future (or 'modal') interpretation is in need of an explanation. Non-eventive verbs are not entirely absent from root infinitivals, though their number is marginal (7% at most). Importantly, the temporal interpretation of these non-eventive root is restricted to future (or 'modal'). Perhaps this observation, and the predominance of future interpretations in eventive RIs can be explained by assuming that non-tense-marked verbs in general have a sort of 'default' interpretation corresponding to 'irrealis'. This might also explain the legitimacy of infinitives in jussives and counterfactual exclamations in the adult language.

Finite sentences (involving lexical verbs) show a completely different picture. Here eventive

and non-eventive verbs are approximately equally represented. Moreover, it appears that temporal reference fully corresponds to the pattern in the target language. Reference to ongoing eventualities (present tense) is predominant by far; some past references occur and are marked by the appropriate morphology.

By and large, the distributional differences between eventive and non-eventive verbs observed in the present data are similar to the observations of Jordens (1990) and Ferdinand (1995, 1996). Also, in correspondence with the anecdotal reports on child Dutch and the data reported by Ingram and Thompson (1996), future, or 'modal' interpretations of root infinitivals predominate, although it should be stressed once again that present reference (and past) do occur. It would be worthwile to complement the observations reported here and in Ingram and Thompson (1996) with a longitudinal analysis. On the basis of Behrens' (1993) data, it is expected that the use of root infinitivals with present reference will dwindle as the present tense becomes more productive.

The claim here is that the observed patterns reveal something about the child's grammatical competence, rather than, e.g. superficial preferences, or confounds of the analytical method. Some indications that what we are dealing with is indeed a grammatical effect are supplied by the results of a pilot experiment on the interpretation of root infinitivals. In this experiment, 13 Dutch children between 1;11 and 3;4 participated. All of them had been established to alternately use finite sentences and root infinitivals. The children were told little stories (6 in all), all of which had the same format. Two protagonists were introduced, one of which expressed a desire for something the other has or does. For example, one of the stories would involve Kermit the frog and Cookie Monster. Ernie has a plate with cookies, and Cookie Monster asks Ernie to share them. Each story was supported by two pictures, the first of which depicted the 'desire' situation (e.g., Cookie Monster looking hungrily at the cookies on Ernie's plate at the breakfast table), and the second depicted the fulfillment of the desire (for a more detailed description, see Schönenberger et al. 1995).

After a story had been told, and the accompanying pictures shown, the subject was asked to select the picture that best fitted a sentence uttered by a hand puppet. The sentence could either be finite or infinitival, or contain a modal auxiliary-main verb predicate. For each story a different verb was used. Probe sentence type was rotated over stories according to a latin square design. As an example, in the Cookie Monster and Ernie story, the verb was *hebben* 'to have', and the three possible sentences were *Koekiemonster heeft de koekjes* 'Cookie Monster have-3S the cookies', *Koekiemonster de koekjes hebben* 'Cookie Monster the cookies have-INF', or *Koekiemonster wil de koekjes hebben* 'Cookie Monster want-SG the cookies have-INF'. Each probe sentence was presented to approximately one third of the subjects. Selection of the first picture was taken to indicate that the child had assigned a future or 'modal' interpretation to the probe sentence, whereas selection of the second picture was

taken as an indication of present tense interpretation.

Six verbs were used, three of which were considered to be non-eventive, and three eventive. The non-eventive verbs were *hebben* 'have', *zien* 'see' and *horen* 'hear'. It is intuitively plausible to interprete 'have' as a state (hence, non-eventive) verb, but this may be less obvious for 'hear' and 'see'. An argument for treating 'see' as a non-eventive verb is that its subject is not agentive, i.e., it is not in control, or, in Gruber's (1967) terms the subject is not the "the willful source or agent of the activity". Hence, in Dutch, 'see' cannot combine with the inchoative auxiliary *gaan* 'going to'. Also, 'see' cannot be replaced by 'to do'. None the less, there may also be an achievement reading of 'see' (Vendler 1957). The same observations appear to hold for Dutch *horen* 'hear' (see also Verkuyl 1972). The eventive verbs in the experiment were *lezen* 'read', *vasthouden* 'hold' and *drinken* 'drink'.

The results that are important in this context are the following. Simple finite probe sentences were interpreted as referring to ongoing eventualities ('present tense') 92% of the time. For root infinitivals, the percentage of present interpretations was 61%, and for probe sentences with a modal-main verb predicate, the percentage was 46. These differences were large enough to yield a significant test result ($\chi^2 = 11.7$, df = 2, $p < .01$). When the results for eventive and non-eventive verbs are split, a small but interesting difference can be witnessed. The overall proportion of 'present' interpretations is lower for the non-eventive verbs (54%) than for the eventive verbs (79%). The proportion of future interpretations of root infinitivals is almost twice as high for non-eventive verbs (50%) than for eventive verbs (27%). Although the number of observations is very small, it is encouraging to see that a difference between eventive and non-eventive verbs, parallel to that in the production data, crops up, despite the fact that on the whole the proportion of present tense interpretations of root infinitivals is much higher than in production. It would seem worthwhile to pursue this matter by means of experimentation.

On the assumption that the difference between eventive and non-eventive verbs in spontaneous production reflects a distinction represented in the child's grammatical system, it is possible to draw a conclusion with regard to the representation of Tense in root infinitivals. The data presented here show that temporal interpretation of root infinitivals is, essentially, free. This seems to rule out the possibility that the representation of RIs contains a specified value of Tense, given the fact that when Tense is overt, i.e., in finite sentences, temporal reference is by and large restricted to present. The possibility that Tense is represented but left unspecified in RIs does not seem compatible with the observed distributional difference between eventive and non-eventive verbs. The assumption that Tense is absent in RIs (Rizzi 1992, Wexler 1996), which allows for deictic interpretation of an event variable (if present) seems to fit the observed production data (as well as the comprehension data) best.

Several other, distributional characteristics of (Dutch) children's language have been argued

to support the assumption that Tense is not represented in RIs (either along with other functional categories or not). RIs do not have object topicalization in V2-languages like German and Dutch (Poeppel & Wexler 1993, Wijnen 1995a, 1995b); root infinitival WH-question are non-existent (Poeppel & Wexler 1993, Haegeman 1995); neither subject clitics nor object clitics (or, weak pronouns) are found in RIs (Haegeman 1995); auxiliaries do not surface as infinitives (Haegeman 1995, this study). The almost complete absence of non-eventive verbs from Dutch children's root infinitivals thus seems to provide a perfect fit with the syntactic findings. It is interesting to note in this context that Kratzer (1989) suggested a syntactic concomitant of the difference in argument structure between eventive and non-eventive verbs. Subjects of stage level predicates (of which eventive verbs form a subset) originate within the projection of the verbal head, the VP, whereas the deep structure position of subjects of individual level predicates (non-eventive verbs) is the specifier of the IP. This seems to imply that non-eventive verbs simply cannot do without an inflection phrase, hosting, among other things, tense features. For eventive predicates, by contrast, constructing an IP (or TP) can in principle be dispensed with. The Dutch child language data seem to reflect this.

The interpretation of the 'future interpretation' of RIs put forth here has an advantage over explanations in terms of covert modal auxiliaries. Note that invoking the existence of 'covert modals' in infinitival contexts has no firm ground when overt modals are never observed in the same contexts (i.e., modal auxiliary-plus-main verb predicates). In fact, this is precisely what is happening during the early phase of Dutch language development: the RIs are there, and they do have a 'modal' interpretation, but modal plus main verb predicates are not used as yet. The 'deictic interpretation' does not suffer from this drawback. The possible temporal interpretations of root infinitivals are fully predictable on the basis of the the semantics (argument structure) of the main verbs. Consequently, the distributional difference between eventive and non-eventive verbs, which the null auxiliary hypothesis is unable to account for, is explained.

The argument laid out in this paper rests on the assumption that the eventive - noneventive contrast is part and parcel of the human language faculty. Consequently, it is expected that the patterns reported here will recur in the developmental data on other languages. It was already noted that the French corpus data analyzed by Ferdinand (1995, 1996) are highly similar to the Dutch. Otherwise, very little pertinent information appears to be available. The comprehension experiment described above was replicated on a small scale with 5 American English speaking children (Schönenberger et al. 1995). The results provide no hint whatsoever of the eventive - noneventive distinction of Dutch. The production data reported by Harris and Wexler (1995) show that the English verb *to have*, which is most likely to be classified as non-eventive, occurs more often without inflection than as *has* in third person singular contexts. This would go against the hypothesis proposed here. However, due to the

poverty of the English inflectional paradigm, it is impossible to tell whether the preferred form is an infinitive or a wrongly selected finite form. More generally, it is still very much an open question if the 's-drop' phenomenon in children's English is an instance of the optionality of finiteness found in the early developmental phases of quite a varied array of languages. Anyhow, it is worthwhile to initiate further crosslinguistic research into this matter.

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Table 1. The four child language corpora.

Name of child	*Age Range*	*MLU begin* (words)	*MLU end* (words)
Josse	2;0.7 - 2;6.22	1.21	2.15
Matthijs	1;11.10 - 2;8.5	1.52	2.42
Niek	2;7 - 3;2.13	1.44	2.56
Peter	1;9.6 - 2;1.26	1.39	2.38

Table 2. Temporal reference of Root Infinitivals

child	*verb type*	*present*	*future*	*past*	*total*
Josse	Eventive	48 (17.7%)	199 (73.2%)	25 (9.2%)	272 (100%)
?: 102 (26.3%)	Non-eventive	1 (7.1%)	13 (92.9%)	0	14 (100)
Matthijs	Eventive	83 (12.3%)	579 (85.5%)	15 (2.2%)	677 (100%)
?: 196 (21.9%)	Non-eventive	0	24 (100%)	0	24 (100%)
Niek	Eventive	15 (4.3%)	328 (94.3%)	5 (1.4%)	348 (100%)
?:108 (22.9%)	Non-eventive	0	15 (100%)	0	15 (100%)
Peter	Eventive	46 (9.3%)	428 (86.8%)	19 (3.9%)	493 (100%)
?:70 (11.6%)	Non-eventive	1 (2.5%)	39 (97.5%)	0	40 (100%)

Table 3. Finite verbs: distribution across lexical classes

child	*Copulas*	*Modal Aux*	*Main verbs*	*unknown*	*total*
Josse	109 (34.1%)	98 (30.6%)	106 (33.1%)	7 (2.2%)	320 (100%)
Matthijs	250 (33.1%)	196 (26%)	290 (38.4%)	19 (2.5%)	755 (100%)
Niek	51 (11.3%)	149 (33%)	214 (47.5%)	37 (8.2%)	451 (100%)
Peter	20 (12.4%)	33 (20.5%)	89 (55.3%)	19 (11.8%)	161 (100%)

Table 4. Temporal reference of finite utterances (simple predicates).

child	*verb type*	*present*	*future*	*past*	*total*
Josse	Eventive	47 (97.9%)	0	1 (2.1)	48 (100%)
	Non-eventive	58 (100)	0	0	58 (100%)
Matthijs	Eventive	116 (93.6%)	7 (5.7%)	1 (0.8)	124 (100%)
	Non-eventive	158 (95.2%)	0	8 (4.8%)	166 (100%)
Niek	Eventive	108 (90%)	12 (10%)	0	120 (100%)
	Non-eventive	93 (98.9%)	1 (1.1)	0	94 (100)
Peter	Eventive	48 (84.2%)	1 (1.8%)	8 (14.0%)	57 (100%)
	Non-eventive	29 (90.6%)	0	3 (9.4%)	32 (100%)