

Where to use a nonfinite clause? An experiment on the use of verb forms in early Dutch and English child language¹

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1. Introduction

In this paper we will concentrate on the semantic properties of root infinitives (RIs) in Dutch and English child language. In (1) and (2) some examples are given:

- (1) a. Peter bal pakken
Peter ball get-*Vinf*
b. vrachtwagen emmer doen
truck basket do-*Vinf*
- (2) a. Cowboy Jesus wear boots
b. Eve sit floor

In the literature on RIs two levels of semantic description are distinguished: meaning and predicate type. Notions like tense, aspect and modality fall under the scope of meaning while eventivity refers to the type of the predicate.

1.1 Meaning of RIs

It is argued that RIs have free temporal reference, though a future interpretation seems to be predominant. This future interpretation is often derived from a modal interpretation that is assigned to the RI². Hoekstra and Hyams (1998) point to a cross-linguistic difference between Dutch and German on the one hand and English on the other: RIs in Dutch/German are modal while RIs in English are nonmodal. To summarize the different opinions:

- RIs have a free temporal reference (Behrens 1993, Lasser 1997, Wijnen 1997)
- Dutch/German RIs are modal: they are not about the here-and-now but about events that will, can or must take place (Ingram and Thompson 1996, Hoekstra and Hyams 1998)
- English RIs are nonmodal (Hoekstra and Hyams 1998)

1.2 Predicate type in RIs

The traditional classification of verbal predicates comes from Vendler (1969): he distinguishes states, activities, achievements and accomplishments. Activities, achievements and accomplishments are all events. Events differ from states with respect to their dynamicity value: states are [-dynamic] while events are [+dynamic]. Examples of states are: *to know*, *to be able to*, *to be pregnant*, etc.. Examples of events are:

to dance, *to do the dishes*, *to draw*, etc. With respect to the type of predicate that is used in RIs, two observations have been made:

- Dutch RIs are eventive (De Haan 1987, Jordens 1990, Wijnen 1997)
- English RIs also contain stative predicates (Hoekstra and Hyams 1998, citing Ud Deen 1997)

1.3 On the Relation between Meaning and Predicate type

Hoekstra and Hyams (1998) propose a close relation between meaning and predicate type: 1) if RIs are modal they are eventive and 2) if they are nonmodal they do not have to be eventive. They argue that Dutch³ child language shows the first pattern while English is an example of the second. These diverging patterns are induced by presence or absence of infinitival morphology as infinitival morphology marks a modal meaning. In Dutch the infinitive has a suffix while in English there is no suffix and RIs contain a bare verb form. Hoekstra and Hyams' analysis is appealing for several reasons: two semantic properties of one construction are brought back to one morphological property and cross-linguistic differences are captured.

Nevertheless, we will take the opposite view as regards the meaning of RIs. We will argue that RIs do not have a specific meaning that is derived from inherent semantic properties of the infinitive and bare verb form. RIs in Dutch and English can be characterized as 'fuzzy sets' with a wide range of meanings. These sets in Dutch and English are only partially equivalent: only modal RIs are similar. In spirit of Hoekstra and Hyams (1998) we propose that a close relation exists between meaning and predicate type. However, the relation that exists is between nonmodality and eventivity. Our claims are substantiated with experimental results on Dutch and English child language, longitudinal corpus data of six Dutch children and examples from adult Dutch.

2. Cross-Linguistic Experiment

To test a) whether RIs are free or restricted in their usage and b) whether there are differences in the usage of RIs in child Dutch and English, we carried out an experiment. We will not go into the details

of this experiment (see Blom, Krikhaar and Wijnen 2001 for more details), but focus on the results. What did we do? We showed Dutch and English speaking children movies that depicted actions in a ongoing and a modal condition.

Table 1: Information about the Subjects

	Dutch subjects	English subjects
Number	27	34
Age range	1;11 - 3;11	1;10 - 3;5
Mean age	2;10	2;6
MLU range	1.57 - 4.9	1.75 - 5.28
Mean MLU	2.62	3.27

The ongoing action was acted out by the subject of the movie while the modal action was only wished or required and not acted out. We told the children what happened and made sure that they understood the movie. If the child understood the movie, we asked them to tell us what they saw on the screen (while the movie played). This 'controlled elicitation task' elicited not only RIs but many different constructions with verbs. The figures 1 and 2 show for each construction type that we collected how often it is used in the modal or ongoing condition. We used various abbreviations. "RIs" means root infinitives; "Progr" means progressive constructions; "SF" means simple finite and "CF" complex finite utterances i.e. utterances with (modal) auxiliary and main verb. In Dutch the progressive is the prepositional infinitival complement construction *zijn aan het Vinf* ('be on the Vinf'). The progressive in English is divided in two classes: finite and bare⁴. In Dutch, CF is divided into two classes: AuxV and *gaatV*. We made this distinction in Dutch because the *gaatV* constructions shows a specific non-adult like pattern (see also Zuckerman (2001)). We will not discuss this phenomenon here, because it is besides the purpose of the present paper.⁵

Fig. 1: Dutch

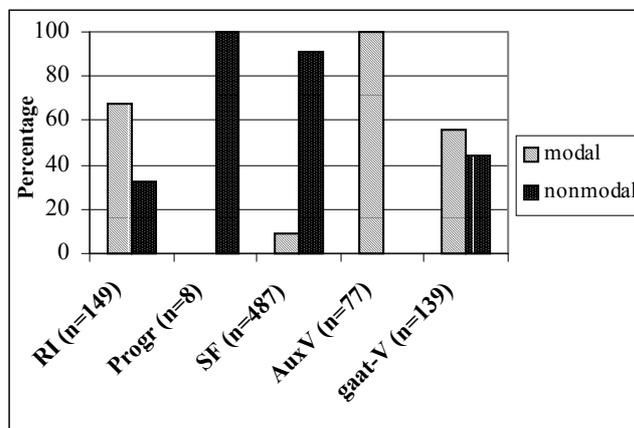
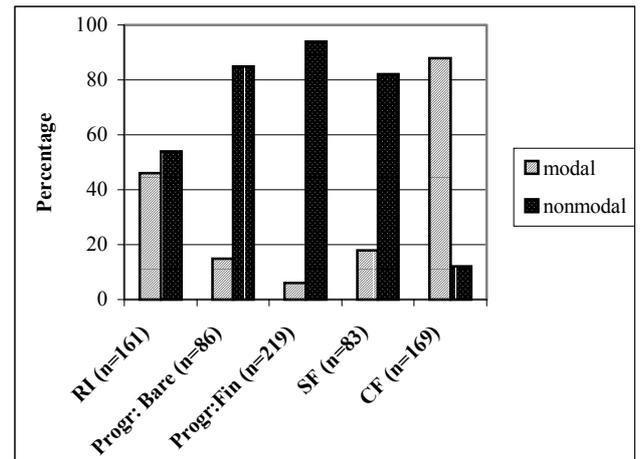


Fig. 2: English



Note that this manner of presentation is the reverse of the method we followed in collecting our data. In the experiment we presented the conditions and counted the forms that appeared in this condition. For the present purpose we are not interested in the forms children prefer to express modal or ongoing actions; we want to know how they use specific forms.

The most important findings in the experiment are:

- RIs in both Dutch and English child language are essentially *free* in their reference: they appear in the modal and ongoing condition.
- As opposed to the RIs, all other constructions with verbs in both languages have a *specific* reference. This shows that children are able to use verbal morphology with a specific meaning.

3. How Differences "Disappear"

How can we explain the clear and unexpected difference between these results and previous corpus studies? Hoekstra and Hyams' (1998) comparison shows a significant difference between Dutch RIs on the one hand and English RIs on the other. Hoekstra and Hyams refer to Wijnen (1997) for Dutch child language: a modal future interpretation is assigned in 86% of all interpretable RIs while 14% receives a nonmodal present or past interpretation. In the English data the modal interpretation covers only around 11% of all usages, while the rest is nonmodal present (around 65%) or past (around 24%).⁶ These are apparently very convincing cross-linguistic differences.

However, the datasets that are used for the comparison between Dutch child language on the one hand and English on the other, are incomparable with respect to the forms that are included in each dataset. We will argue that this methodological point causes the strong modal preference in Dutch child language and the absence of this preference in English child language. In addition, we will show that properties of the English inflectional paradigm may cause a nonmodal bias in the English data. If both effects are taken into account, cross-linguistic differences are not so clear anymore. To illustrate this point, we re-analyse corpus data of six Dutch speaking children. In an earlier study, Blom (to appear) found that these children - like the children in Wijnen's study - predominantly used RIs with a modal meaning. The corpus data we use to substantiate our claims are available via CHILDES (MacWhinney 1995): Abel, Daan, Josse, Laura, Matthijs and Peter. The children's age ranges are given in Table 3:

Table 3: Children's Age Range and Number of Utterances

Child	Age Range	Number of Utterances
Abel	1;10.03 - 2;07.29	2890
Daan	1;08.21 - 2;09.10	4877
Josse	2;00.07 - 2;08.18	3323
Laura	1;09.04 - 3;04.06	4241
Matthijs	1;09.30 - 2;11.19	5260
Peter	1;07.18 - 2;03.21	2576

The selected files are provided with codings for modality according to CHAT conventions. For the interpretation of the utterances we made use of the information available in the transcription. For instance, utterances labelled 'modal' had to meet one of the following criteria:

- preceding or subsequent parental utterances suggest a modal interpretation, or
- the contexts suggests a modal interpretation

The codings we applied are relatively fine-grained: we distinguished different modal and nonmodal meanings. In the modal domain volition (i.e. wishes, prototypically expressed by the verb *want*) are for instance distinguished from deontic utterances (i.e. requirements, *must*). In the nonmodal domain aspectual information about ongoing- or completedness of the event is added. In addition to the modal codings, we coded subject use in RIs. Is there an overt subject, and what are the person and number of the overt or covert subject? It may be clear that many utterances (around one third) were uninterpretable for either modality, subject use or both. We applied a conservative strategy and excluded all utterances to which no unambiguous interpretation could be assigned

3.1 Methodological Artifact: Subjects in RIs

At first sight an asymmetry of subjects in RIs may not seem very relevant for differences in meaning between Dutch and English RIs. We will show, however, that it is an important factor. The crucial observation is that the English RIs that have been studied do not contain 1st and 2nd person subjects as opposed to Dutch RIs. Properties of the inflectional paradigm and the verb form that is used in RIs cause this contrast.

English has a very poor inflectional paradigm: there is only one suffix, namely the third person singular *-s* as in *walks* or *drinks*. All other inflected forms appear as bare verb forms. Except for utterances with third person singular subjects, RIs cannot be distinguished from finite utterances.

- (3) a. Peter **get** ball
b. Peter **gets** ball

In Dutch the inflectional paradigm is not only richer, but the position of finite verb and infinitive is distinct as well. Finite forms are placed in sentence-initial position while infinitives are placed sentence-final. Even if morphology is not sufficient (as in the plural), syntax provides a cue to decide whether an utterance is finite or non-finite:

- (4) a. Peter bal **pakken**
Peter ball get-*Vinf*
b. Peter **pakt** bal
Peter gets-*Vfin-sg* ball
c. Peter en Paul **pakken** de bal
Peter and Paul get-*Vfin-pl*
the ball

At first sight there seems to be no methodological reason to exclude RIs with specific subjects in the Dutch dataset, as long as it is unambiguously clear that the utterance is a RI and no finite utterance.

And, indeed, in all the Dutch data reported so far RIs with different subjects are included while in the English dataset only RIs with third person singular subjects are analyzed. However, if the interpretation of the utterances is involved, especially the modal interpretation, the inclusion or exclusion of subjects plays an important role. The modality that the children use is strongly connected to discourse subjects, that is first and second person subjects: I and you. Their modal RIs predominantly express *I want Vinf* and *You must Vinf*. Exclusion of first and second person subject may lead to a dramatic decrease of the initial rate of modal RIs. Table 4 gives the 'old' and 'new' re-analyzed data:

Table 4: Re-analyzed Dutch Corpus Data

	Old data (incl. 1 st /2 nd pers. Subj.)		New data (only 3 rd pers. Subj.)	
	N	%	N	%
		modal		modal
Abel	120	76	16	44
Daan	162	71	27	48
Josse	206	73	26	69
Laura	304	66	82	34
Matthijs	256	79	76	45
Peter	206	76	93	72

The old data confirm Wijnen's observation that RIs are predominantly modal in Dutch child language. However, the new data show that the number of RIs dramatically decreases when 1st and 2nd person subjects are excluded. And, more important: for four out of six children there is no predominant modal use anymore. Their rate of modal and non-modal RIs is equal or there are more non-modal RIs. Two children still show a preference for modal use. However, for Josse the dataset is relatively small and Peter's dataset contains many repetitions. There is another noteworthy peculiarity in Peter's data. Children tend to use proper names where adults would use discourse pronouns. Peter is an extreme example of this behavior: he uses his own name in 43 of 93 RIs (46%) while all other children do not do this more than 4 times. Peter's data in table 3 contain many 'hidden' 1st person subjects, which explains his high number of modal RIs.

3.2 Fuzzy Set Effect: Inflection drop

However, if the Dutch and English data are made comparable by excluding 1st and 2nd person subjects from the Dutch data, RIs of English children are still more often used nonmodally. There is, however, an additional factor that makes the set of Dutch and English RIs different: inflection drop. This effect adds up to the nonmodal bias we discussed in the previous section. If English children drop inflection, the bare verb form remains: finite utterances with dropped inflection

cannot be distinguished from RIs in English. In Dutch this effect does not play a role as the infinitive is morphologically distinct from bare stems.

Do children drop inflection? The data of the six Dutch children show that Dutch children do not make many errors with inflection. However, if they make an error they most often drop inflection. This is shown in table 5:

Table 5: Inflection 'errors' Dutch children

	N	Error rate	Omission of Infl ⁷	Wrong Infl
Abel	146	16	13	3
Daan	259	19	18	1
Josse	136	21	19	2
Laura	148	26	25	1
Matthijs	155	11	6	5
Peter	431	23	21	2

Based on these findings for Dutch it can be concluded that it is very plausible that the set of English RIs contains finite utterances with dropped inflection. This increases the rate of nonmodal RIs in English child language.

3.3 Summary of results

The major difference between Dutch and English RIs can be explained as (i) a methodological artifact and (ii) a fuzzy set effect. The methodological artifact effect relates to the exclusion of RIs 1st and 2nd person subjects in the English data and inclusion of these RIs in the Dutch data. The fuzzy set effect takes place as a part of the English RIs are (very probably) finite utterances with omitted inflection. This second effect cannot be taken away.

4. How Meaning restricts Predicate type

Hoekstra and Hyams relate the modal meaning of RIs to predicate type restrictions. Their argumentation is as follows. If RIs are modal, the predicate is eventive. Dutch RIs are modal, therefore they are eventive. Absence of a modal meaning does not restrict the predicate type. English RIs are nonmodal, therefore they are not necessarily eventive. Though we found that RIs in Dutch are not restricted to a modal meaning, we want to use the remainder of this paper to show that the underlying idea of Hoekstra and Hyams is still tenable. However, a more fine-grained analysis will show that not the modal meaning but the nonmodal meaning restricts the predicate type. The hypothesis we are going to test is stated in (5)

- (5) *The predicate type in Dutch RIs is restricted by progressive aspect*

The classification modal vs. nonmodal RIs is very rough. A closer look indicates that in the modal domain volitional RIs can be distinguished from deontic RIs. These are respectively the *I want to Vinf* and *You must Vinf* meanings discussed in section 3.1. Nonmodal RIs denote nearly always the here-and-now⁸. Considering the literature on child language, the assumption that RIs lack tense seems uncontroversial (Wexler 1994, Rizzi 1994, Hoekstra and Hyams 1995). So, nonmodal RIs are untensed. Rather, they are deictic and denote an action that is ongoing at the time of utterance. In other words, they are progressive. Dutch has a separate progressive construction, known as prepositional infinitival complements or simply PICS: *zijn aan het + Vinf* ('be on the + Vinf').

The modal meanings used in RIs do not restrict the predicate type. This is illustrated in the examples below. In (6) the modal verb *moeten* 'must' selects respectively an eventive and a stative predicate. Both sentences can have a deontic meaning (which can be paraphrased as 'it is required that')⁹

- (6) a. Je moet rennen
you must run-*Vinf*
b. Je moet het weten
you must know-*Vinf* it

In (7) the verb of volition *willen* 'want to' selects respectively an eventive and stative predicate. Again, both predicates are allowed:

- (7) a. Ik wil op tafel dansen
I want on table dance-*Vinf*
'I want to dance on the table'
b. Ik wil een indiaan zijn
I want an indian be-*Vinf*
'I want to be an indian'

However, the nonmodal progressive meaning in (8) does restrict the predicate type to eventive:

- (8) a. Wij zijn aan het rennen
we are on the run-*Vinf*
'We are running'
b. * Wij zijn aan het weten
we are on the know-*Vinf*
'We are knowing'

From this we can derive the following prediction:

Prediction 1

- Stative predicates are allowed in modal RIs, whereas stative predicates cannot (and therefore do not) appear in nonmodal RIs

In our analysis we excluded stative predicates that

allow for type-shifting from stative to eventive (Dowty 1979, Quirk et al. 1985). A closer look in the class of stative verbs shows that it is a heterogeneous set consisting of perception verbs (*taste, feel, smell*), position verbs (*sit, lie, stand*), verbs of existence (*be, seem, exist*), psych verbs (*fear, like*) and verbs of possession (*have, possess, own*). Wanner (1999) observes that the predicates that can have a human subject, display type shifting: perception and position verbs¹⁰. In particular verbs of position like *zitten* ('to sit') or *liggen* ('to lie') appeared frequently in our data (both in modal as well as nonmodal RIs). However, as there is no way to figure out whether these predicates are stative or eventive, we excluded them. In our data we found one predicate that is unambiguously stative: *hebben* ('to have'). *Hebben* is used in 31 RIs; all volitional hence modal. In (9) some examples are given (resp. Daan 2;09.10, Abel 2;07.15 and Matthijs 2;05.10):

- (9) a. Ik ook een hebben
I also one have-*Vinf*
'I also want to have one'
b. soel [= stoel] hebben .
chair have-*Vinf*
'I want to have the chair'
c. speen en poesje hebben .
pacifier and cat have-*Vinf*
'I want to have my pacifier and cat'

Although infrequent, stative predicates do appear in RIs. However, *if* they appear they are only used in modal contexts.

Recall that we assumed that nonmodal RIs do not have a simple present tense meaning but denote ongoing aspect. Unlike the progressive, simple present tense does not restrict the predicate type:

- (10) a. Wij praten met hem
we talk-*pres* with him
b. Wij houden van hem
we love-*pres* him

The assumption that RIs are untensed but do have an aspectual meaning can be given some empirical support if we find a contrast between RIs and simple present tense utterances in child language similar to the contrast illustrated in (8) vs. (10):

Prediction 2

- Nonmodal RIs cannot be stative whereas children's early simple present tense utterances can be stative.

All six children in our data set use stative predicates in simple present tense utterances. Some

examples are given below (resp. Abel 2;07.29, Josse 2;08.18, Matthijs 2;11.19 and Laura 35):

- (11) a. ik vind nou xx lekker .
I find *PART* xx nice
'I like that'
- b. dat grote zon heef een gezicht .

that big sun has a face
'That big sun has a face'
- c. en die past niet hier !
and that fits not here
'And that doesn't fit here'
- d. ik lus niet de appe
I like not the apple
'I don't like the apple'

We have seen that both our predictions are borne out. In Dutch child language, stative predicates can appear in modal RIs and simple present tense utterances. Nonmodal RIs are progressive, therefore they cannot contain stative predicates.

5. Discussion

Our analyses have shown that cross-linguistic comparisons must be made very carefully. It can be questioned to what extent Dutch and English RIs are similar. Both sets contain utterances with "dropped" modals¹¹, however in the nonmodal domain the sets differ. As children drop inflection now and then, the English set of RIs must contain simple finite tense utterances. This explains why English nonmodal RIs can be stative (Hoekstra and Hyams 1998). The set of Dutch nonmodal RIs cannot contain stative predicates as these RIs are progressive. In terms of dropping: Dutch children drop the frame that marks progressive (*zijn aan het*). English children express progressive aspect with a present participle. This form appears in English child language as another 'root construction': the experimental results in figure 2 show that *be* is often dropped.

Our claim that Dutch children use stative predicates in RIs may seem not very convincing as they only use one predicate that is unambiguously stative. Why do we find only *hebben*? What does it mean that *hebben* only appears in volitional contexts? First of all it may be important to realize that there are much more eventive verbs than there are stative verbs. The set of stative verbs is very limited and we excluded from this limited set the verbs that allow for type shifting. What remains are verbs of existence (*be, seem, exist*), psych verbs (*fear, like*) and verbs of possession (*have, possess, own*). Therefore, we cannot rule out that there is an effect of frequency involved. Wijnen (1997) observes that many stative predicates that appear early and are used frequently are modal. The children we studied

indeed use modal verbs very early though not in RIs. However, modal verbs are not expected in RIs for independent reasons: they are not full verbs. Both for Dutch child and adult language, it has been argued that modals do not have the status of a lexical head (V^0). Children analyze them as sentence modifiers (De Haan 1987, Hoekstra and Jordens 1994, Van Kampen 1997). In adult Dutch they appear most often as auxiliaries. If they appear as main verbs there may be a silent infinitive (Van den Wyngaerd 1994: 65-68). Secondly, children's cognitive skills play a role in semantic development. It requires rather advanced knowledge to talk about modal states. Consider a rough distinction between states and events as respectively BE and DO-predicates. Recall that the children use deontic and volitional modality in their RIs. This would mean that if they talk about modal states they express a required or wished state: *you must be* or *I want to be*. Our intuition, strengthened by what we know from studies on Theory of Mind (Wellman, 1990; Leekam 1993) is that this requires more advanced cognitive skills than talking about required and wished events: *you must do* and *I want to do*. *Hebben* takes a special position between the other stative predicates, which is revealed by its exclusive volitional use. Children between 2 and 3,5 years old do express that they want to have something. We do not exclude the possibility that *hebben* in Dutch child RIs undergoes a type shift from stative to eventive as an effect of volition (e.g. volition + have = get).

6. Concluding remarks

In this paper we have shown that RIs in Dutch and English child language do not have an *inherent* different meaning that is directly linked to morphology. The differences in meaning between Dutch and English child RIs are (i) methodological artifacts and (ii) a 'fuzzy set' effect. First, exclusion of 1st and 2nd person subjects in the set of English RIs and inclusion of RIs with these subjects in the Dutch data leads to relatively more nonmodal RIs in English than in Dutch. Second, English nonmodal RIs differ fundamentally from Dutch nonmodal RIs. In English nonmodal RIs are simple finite tense forms with dropped inflection. In Dutch, they are untensed but denote progressive aspect. This approach does not only account for the relatively marginal differences between Dutch and English child RIs, it also accounts for differences in use of predicates in both languages.

Recent studies illustrate that the introduction of semantics in the RI debate leads to many new questions. Children's usage of RIs and restrictions on this usage reveal a lot about the status of the construction in child language. Though we think

that our paper has shown that this line of research is fruitful, we want to stress the limitations of this kind of linguistic research. Children may look adult-like in the structures they produce, their cognitive development is not adult-like. It would be very insightful if, in future research, findings about language acquisition can be related to knowledge about the cognitive development of children.

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² Certain kinds of modality (like deontic modality and volition) are said to be inherently future.

³ Though we refer to Dutch only, German is similar in this respect.

⁴ The English children omitted *be* in a substantial number of cases. We will not discuss this omission of *be* here. It is, however, an interesting observation and in a comparative study between Dutch and English RIs 'root participials' must be taken into account as well.

⁵ In adult Dutch, this construction is used for near future. If Dutch children used this construction like Dutch adults, modal use would be expected. However, figure 1 shows that Dutch children can use it to refer to ongoing actions as well. This is also found by Zuckerman (2001). In an experimental study he found that Dutch children tend to insert a dummy *gaat* or *doet* ('goes/does').

Amongst others, he argues that for children it is 'cheaper' to insert a verb than move a verb. So instead of using a simple finite sentence in which the main verb has moved from final to second position, children insert a light verb to make the sentence finite without having to move the verb. Our findings of the use of the *gaatV* construction seem to support such claims.

⁶ These are averages of the data from Ud Deen (1997) and Madsen and Gilkerson (2000), cited by Hoekstra and Hyams.

⁷ These do not contain utterances with 1st pers. sg. subjects as in Dutch these forms cannot be distinguished from bare forms with dropped inflection.

⁸ A few RIs that could be interpreted as past tense. Past tense is deictic, i.e. relative to utterance time. Some of the past RIs are narrative. In a narration the time of the narration is introduced and used as an anchor. The narrative RI that is anchored to this time is not past. Other past RIs have received their past interpretation based on *following* adult utterances. Thus, it may be that the adults refer to something in the past, while the preceding child RI referred to something that was ongoing at utterance time.

⁹ This contrasts with epistemic modality ('it is the case that'). Epistemic modality selects for stative predicates (e.g. Steedman 1977, McDowell 1987 and Barbiers 1995).

¹⁰ If the stative predicate can appear in a progressive it allows for type shifting e.g. *Harry and Sally are sitting*.

¹¹ By "dropped" modals, we do not intend to make a claim about any structural analysis of RIs, (for instance with Null Modals). The focus of the present paper is on semantic properties of RIs.