Nonfinite Clauses in Dutch and English Child Language: An Experimental Approach

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1. Introduction

Children learning Dutch and English as opposed to adult speakers of these languages frequently use nonfinite clauses. In this paper we will focus on children’s usages of a specific set of nonfinite clauses, namely root infinitives. Root infinitives are main clauses in which the verb carries no inflection\(^1\). Our main interest is a cross-linguistic difference in the use of root infinitives. With the help of an experiment, we derive meaning properties of the construction and test whether the interpretation of Dutch and English root infinitives differs.

2. Theoretical and Empirical Background

The data reported in previous corpus studies suggest that Dutch root infinitives are modal while in English they are nonmodal (data on Dutch are described in Wijnen 1997; English data are reported by Hyams 2000, an attempt to compare Dutch and English experimental data can be found in Schöneberger et al. 1995). Hoekstra & Hyams (1998) provided the theoretical arguments to explain this, based on Giorgi & Pianesi (1996). Their explanation follows from a morphological difference between Dutch and English nonfinite verb forms. In Dutch, the verb form used in root infinitives has infinitival morphology (-en) while in English the bare verb form is used. See the examples in (1) and (2):

(1) a. Ien koffie eten
   Ien coffee eat-\textit{Vinf}
   b. Bob op bank liggen
   Bob on couch lie-\textit{Vinf}

(2) a. Eve sit floor
   b. Cowboy Jesus wear boots

According to Hoekstra & Hyams infinitival morphology marks a semantic feature [-realized], which yields a (deontic or bouletic) modal reading. In English, there is no infinitival morphology, which means that there is no potential carrier for [-realized].
Instead, the bare verb form in English is [-perfective], which leads to a nonmodal interpretation. Hoekstra & Hyams' (1998) morphological marking hypothesis makes strong empirical predictions, which we tested in a cross-linguistic experiment. The experiment we carried out is a follow-up of the corpus study reported in Blom & Wijnen (2000). In this corpus study longitudinal data of six Dutch speaking children are interpreted and analyzed to test Hoekstra & Hyams' (1998) claim. The data are divided in four developmental stages, based on the steps children take in the acquisition of finiteness. The third stage is the Optional Infinitive stage (OI stage). Prior to the OI stage, children mainly use nonfinite verb forms and finite verbs forms are not productively used. In the OI stage, finite verb forms come in and start co-occurring with root infinitives. Blom & Wijnen (2000) found that there exists in the stages preceding the OI stage no correlation between modality and root infinitives. Support for Hoekstra & Hyams' claim can only be found in the OI stage and afterwards as from then on, 80% of the interpretable RIs are modal.

However, approximately 30% of all root infinitives are excluded from this analysis as they could not be interpreted. This clearly shows the disadvantage of corpus data for semantic purposes. Because corpora are transcriptions of spontaneous speech, they provide little extra-linguistic information. Particularly this kind of information is necessary to interpret elliptic utterances such as root infinitives. A simple example can illustrate this problem. Assume that a child says _bal gooien_ ('ball throw'). As long as you do not know anything about the state or position of the ball, this utterance can be modal as well as nonmodal: the ball is going to be thrown, has to be thrown or is being thrown². The researcher's interpretation is most often deduced from an adult response on the child's utterance. This response is based on the adult's interpretation and may be incorrect. In general, it is desirable to reduce the number of indirect as well as the number of possible interpretations of an utterance. Therefore, it seemed a good idea to design an experiment, in which the children have to do a controlled elicitation task. In this controlled elicitation task the context is given, which means that the interpretation of an utterance does not have to be assigned afterwards. Note that this experimental situation is the reverse from what happens in a corpus study: in the experiment the context or meaning triggers certain utterances while in a corpus study utterances are assigned a meaning.

3. Experiment

The question we want to answer is twofold:
1. Are root infinitives in Dutch child language modal?
2. Are root infinitives in English child language nonmodal?

To answer these questions, we showed Dutch and English children several actions in a modal and a nonmodal condition. The prediction that follows from Hoekstra & Hyams' theory is that Dutch children exclusively use root infinitives in the modal
condition, while English speaking children use them in the nonmodal condition. We made eight animated movies, concentrating on four actions, to test this. Each action was connected to two movies: in the one movie only the intention or wish to act is shown (the modal condition), in the other the ongoing action is shown (the nonmodal condition). The chosen actions are based on verbs that occur frequently in the speech of young children like washing, running, drinking and calling. We want to stress the fact that we used movies: previous pilot studies taught us that for this subject movies are preferable to pictures, as movies (i) elicit more ‘real’ multi-word utterances with verb forms, and (ii) prevent ‘labelling’ with nouns, which often happens in case picture books are used. In (3) and (4) respectively a modal and nonmodal example are given of the movies on washing:

(3) The Dirty Dog
This is the story of the dirty dog who wants to go into the house. He wants to go into the house, but is much too dirty to go into the house. Look how dirty it is! The dog has to wash himself. Next to the house is a bath tub, where he can go and wash himself.

(4) The Dirty Pig
This is the story about the dirty pig. The pig is hesitating a little bit, but then jumps into the bath tub. In the bath tub he washes himself until he is completely clean. You see?

We always tried to run the experiment with two experimenters. One experimenter talked to the child, and told the story of the movie. The other experimenter observed and took notes. In addition, the sessions were audio-taped and afterwards transcribed in CHAT-format. We used the following protocol. First, the experimenter introduced the characters. The movie was shown while the experimenter told the child what happened. Then, the movie was shown a second time and the child was asked some questions to check whether he or she understood the movie. If so, the experimenter showed the movie again and asked the child to tell what happened. Note that the story telling is especially important in the modal condition, as the intended meaning (i.e. wish or requirement) cannot be derived from the movie alone.

4. Results

In the experiment participated Dutch and English speaking children. Table 1 gives information about the number of subjects that participated, their ages and MLU scores:
Table 1: Information about the Subjects

<table>
<thead>
<tr>
<th></th>
<th>Dutch subjects</th>
<th>English subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>27</td>
<td>34</td>
</tr>
<tr>
<td>Age range</td>
<td>1;11 - 3;11</td>
<td>1;10 - 3;5</td>
</tr>
<tr>
<td>Mean age</td>
<td>2;10</td>
<td>2;6</td>
</tr>
<tr>
<td>MLU range</td>
<td>1.57 - 4.9</td>
<td>1.75 - 5.28</td>
</tr>
<tr>
<td>Mean MLU</td>
<td>2.62</td>
<td>3.27</td>
</tr>
</tbody>
</table>

All subjects were in the Optional Infinitive stage, which means that they used finite and nonfinite verbs in root sentences. In the pilot studies we tried to select subjects in the OI stage with a completion task. The children had to complete a sentence based on a picture showing either an ongoing or an intended action. However, the children's responses on the pictures did not resemble their responses on the movies. Children that according to the pretest were not in the OI stage, sometimes used finite verb forms when they described what they saw in the movies. As we did not succeed in designing a useful pretest, we decided to select afterwards: children that only used nonfinite verb forms, we excluded from the analysis. Furthermore, we decided to interpret all produced verb forms and not only root infinitives as it is very informative whether the infinitive in Dutch and the bare verb form in English contrast with other verb forms. We return to this issue later on. To be included in the analysis, utterances had to meet the following criteria:

- no imperatives, as they are modal 'by default'
- no 'parasitic utterances' (Lass 1997), as their interpretation is dependent on the preceding question. This dependency is illustrated in (5) and (6). In Dutch, the question in (5) would yield a nonmodal use of the infinitive, while in (6) the infinitive would be modal. In English different forms appear: the progressive verb form in nonmodal (5), while in modal (6) the bare verb form is used as a parasitic answer.

(5) Q: Wat ben je aan het doen?
   "What are you doing?"
   A: Fietsen
      "Cycling"

(6) Q: Wat wil je vandaag doen?
   "What do you want to do today?"
   A: Eten
      "Eat"

- in English the subject must be 3rd person singular, which triggers the only finite verb form that is morphologically distinct from the bare verb form because there is either an -s suffix in the present tense, or an -ed suffix in past tense.
Figure 1 illustrates the results; it gives the percentages of modal root infinitives of the Dutch and English children. In Dutch, these are the main clauses with a sentence-final infinitive main verb used to describe actions that are not yet realized (e.g. intended, wished or required). In English, these are the utterances with a bare verb form to describe unrealized actions. Nonmodal root infinitives, on the other hand, refer to ongoing and perfective actions. We did not distinguish between ongoing and perfective. Note that the number of interpretable root infinitives differs in the two languages, though the difference is not very large: 149 versus 161.

![Figure 1: Modal Root Infinitives in Dutch and English Child Language](image)

The Dutch children that participated in the experiment used more modal than nonmodal root infinitives (68% versus 32%). The difference is statistically significant ($\chi^2 = 12.75$, df=1, $p<0.01$), though the pattern is not as clear as we would expect based on morphological marking. By contrast, the English data do not show a statistical significant difference between modal and nonmodal use of root infinitives (46% versus 54%. $\chi^2 = 0.70$, df=1, $p>0.30$). These data do not show the strong contrast between Dutch and English child root infinitives that is predicted by Hoekstra & Hyams' theory. The question that follows is whether the meaning of Dutch and English child root infinitives differs at all. If we compare the numbers of modally used root infinitives in Dutch and English child language statistically, we find $\chi^2 = 4.17$, which is only significant at df = 1, $p<0.05$ and not at df = 1, $p<0.01$. The experiments show that there may be a contrast between Dutch and English root infinitives, though the data are not very convincing.

5. Discussion

We have seen that 1) the Dutch experimental data show a correlation between modality and root infinitives, 2) the English experimental data do not show a correlation between nonmodal use and root infinitives, and 3) the meaning of Dutch
root infinitives differs slightly from the meaning of English root infinitives. The patterns are not as clear as expected given Hoekstra & Hyams’ theory, though the first finding may be compatible with their proposal. The second and third finding, however, are not compatible. These results point to a number of methodological and theoretical considerations. Why do the experimental results differ from the corpus data, especially in the case of English? What are the consequences for Hoekstra & Hyams’ model?

The relatively low percentage of modal root infinitives in the Dutch data may be caused by the interference of the developmental effect found by Blom & Wijnen (2000). As mentioned before, Blom & Wijnen (2000) found that root infinitives are not yet associated with a specific meaning until the Optional Infinitive stage. As an explanation, Blom & Wijnen (2000) suggested that the use of both finite and nonfinite morphology is a condition for analyzing the infinitive into stem + suffix. A specific meaning can only be attached to the infinitive once this form is analyzed and the infinitival suffix is recognized. This effect, found in the corpus data, can also explain why the Dutch experimental data show a relatively high percentage of nonmodal root infinitives. We tried to exclude children that were not in the OI stage and only used root infinitives, however, it may still be the case that not all of the included children linked infinitival morphology to a specific meaning. The difference between corpus and experimental data in Dutch can also follow from the fact that in the experiment the children are more or less forced to describe nonmodal actions. The corpus data are transcriptions of adult-child interaction, often collected during playing. This kind of interaction prototypically triggers many modal utterances as the child constantly expresses wishes and/or orders the adult to act. The same bias towards modality would be expected to appear in the English corpus data. This, however, is not the case. By contrast, the experimentally collected English root infinitives show a unexpectedly high percentage of modal interpretations: 46% in experimental data versus 13% in corpus data.

In general, the results suggest that the interpretation of nonfinite verb forms in both languages is more flexible than the morphological marking hypothesis predicts. What evidence do Hoekstra & Hyams (1998) give for their proposal? Based on Giorgi & Pianesi (1996), the following contrast between Dutch and English can be observed:

(7) a. Ik zie hem de straat overheen
     I see him the street cross-Vinf

    b. Ik zag hem de straat overheen
     I saw him the street cross-Vinf

(8) a. * I see him cross the street
    b. I saw him cross the street

In Dutch, the infinitival clause can be selected by a finite perception verb in present
tense as well as past tense. The infinitival clause itself receives in (7a) an ongoing interpretation, whereas the interpretation in (7b) is perfective. In English, the bare verb form can only be used in case the finite perception verb has a past tense reference. If the finite verb has a present tense reference, a progressive verb form must be used. This leads to the assumption that the bare verb form in English is [+perfective]. However, if we look at the selection of nonfinite verb by other matrix verbs, this contrast does not emerge. The complement of a deontic or boulemaic modal verb has a [-realized] interpretation. Usually, the fulfilment of a requirement or wish does not take place at the moment the requirement or wish itself is expressed: at the moment John has to marry, he is not married yet. When John shall win, he has not won yet. If the complement of a modal verbs such as must in (10a) is [+perfective], an epistemic reading is expected. The preferred reading of (10a), however, is deontic.

(9) a. Jan moet trouwen
   John must marry-\(\text{Vinf}\)
   b. Jan zal winnen
   John shall win-\(\text{Vinf}\)

(10) a. John must marry
   b. John shall win

The examples in (9) and (10) show that in Dutch as well as in English, nonfinite verb forms are selected by verbs that require a [-realized] complement. When (7) and (8) are put in future tense, the same can be observed:

(11) a. Ik zal hem de straat zien oversteken\(^5\)
   I will him the street see-\(\text{inf}\) cross-\(\text{inf}\)
   b. I will see him cross the street

The clauses in (12) repeat the contrast in (7) and (8): in the English progressive construction the bare verb form cannot be used, while in Dutch the progressive contains an infinitive verb form:

(12) a. Jan is zijn voeten aan het wassen
   John is his feet on the wash-\(\text{Vinf}\)
   b. *John is wash his feet

The examples above point to a difference in the meaning between the infinitive in Dutch and the bare verb form in English. However, it does not seem to be the case that the infinitive in Dutch is inherently [-realized] and the English bare verb form [+perfective]. The suggested pattern is that the infinitive in Dutch has a free reference, while the English bare verb form is [-ongoing]. So far, we have seen that
in embeddings the interpretation of the nonfinite verb forms in Dutch as well as English is highly sensitive to tense, mood and aspect properties of the matrix verb. English, however, shows that the selected nonfinite form does not always simply copy the properties of the selecting verb: an ongoing use of the bare verb form is blocked. Instead, a progressive is used. See the sentences in (13):

(13) a. I see him crossing the street
    b. John is washing his feet

In English, as shown by (13), a morphologically marked progressive form is available. This form is selected if the matrix verb requires an ongoing complement. Use of the default bare verb form is blocked. In Dutch there is no specified progressive form available, which means that the infinitive is selected.

In this section, we have illustrated how nonfinite verb forms in adult Dutch and English behave under embedding. The nonfinite verb forms seem to behave as default forms that can be used if no other appropriate verb form is available. This means that the meaning of the nonfinite verb form is dependent on the availability of other, more specified verb forms. In her dissertation on the acquisition of the subject in French, Ferdinand (1996) makes use of the Elsewhere Condition to explain her data. She formulates it as follows: ‘If a particular form is overgeneralized, it is always used instead of a more specified form. The forms that are overgeneralized are defined as the ‘elsewhere forms’ as opposed to specified forms. The fact that specified forms are never overgeneralized is explained by the elsewhere condition, which states that a specified form is used where appropriate, while a less specified form is used ‘elsewhere’. In cases in which a specified form would be appropriate, but is not available (it cannot be retrieved form the lexicon by the child, for instance), an elsewhere form is used.’ (p. 241) Following Ferdinand (1996), we propose that the infinitive in Dutch and the bare verb form in English are elsewhere forms. What happens if we apply this hypothesis to root infinitives in Dutch and English child language?

6. Back to Child Language

To test whether the Elsewhere Hypothesis explains the use of verb forms by Dutch and English speaking children, a developmental approach would be necessary. According to the Elsewhere Hypothesis, language acquisition (partially) means that features must be specified. Therefore, it is expected that verb forms which are initially underspecified, become more specific later on. In our experiments, we did not focus on development. However, the data may still be useful as we collected the interpretation of a wide range of verb forms and verbal constructions. Our claim is that root infinitives in Dutch and English child language are ‘elsewhere constructions’. They appear in contexts for which the child has no appropriate form available. The more specific forms are used elsewhere. This means that root
infinitives, in principle, can be used modally as well as nonmodally. Other verb forms and verbal constructions that come in later, are more specific and the use of root infinitives is gradually taken over by these other, more specific, forms. Finally, elsewhere constructions are hardly occur as the optimal effect of language acquisition is that an elsewhere form is not needed anymore. Infinitives and bare verb forms appear in adult language only in two cases: (1) as the complements of other verbs where they 'copy' the specification of the matrix verb, and (2) in adult root infinitives, which are only allowed under very specific circumstances (for a detailed study of adult root infinitives in Dutch, see Blom (submitted)). The figures 2 and 3 give the interpretations of the different verbal constructions of respectively Dutch and English speaking children.

![Figure 2: Modality in Constructions with Lexical Verbs (Dutch)](image)

![Figure 3: Modality in Constructions with Lexical Verbs (English)](image)
The figures 2 and 3 show that our first predictions are borne out: nearly all verb forms and verbal constructions other than root infinitives have a specific interpretation. The Dutch progressive *zijn aan het + Vinf* (Progr), which hardly appears as the full construction is acquired relatively late, and simple finite tense (SF) both are nonmodal. Auxiliary verbs with an infinitival complement are used in modal contexts, which is no surprise as the used auxiliary is most often a modal verb. We put *gaat + Vinf* in a separate class as this construction shows an interesting pattern. *Gaat + Vinf* can be used to describe modal as well as nonmodal events. In this respect, the behavior of Dutch children differs from Dutch adult behavior. In adult Dutch, *gaat + Vinf* is used for inchoative or future tense. At this point, we do not have a satisfactory explanation for the use of the *gaat + Vinf* construction in child Dutch. In general, it seems that children initially have a preference for sentence-final main verbs. It may be that in the nonmodal condition, they insert a dummy *gaat* to achieve this. In English all forms, except for the bare verb form, are correlated with a specific meaning. The progressive -bare as well as selected by a finite verb form- (Progr: Bare and Progr: Fin) and simple finite tense (SF) are with overwhelming frequency nonmodal. Complex verb constructions with a finite verb are modal.

The flexible use of root infinitives in Dutch and English child language suggest that they are elsewhere constructions. Additional support for this idea is provided by the contrast with less flexible, hence more specific verb forms and verbal constructions. What does it mean when a study points out that root infinitives are correlated with a specific meaning such as [-realized] or modality? According to the Elsewhere Hypothesis, it means that the child does not have a specific form to express that an event is not yet realized. By contrast, the child has a specific form for realized (nonmodal) events. In Dutch child language this would be at the moment when simple finite verb forms are acquired, whereas complex verb constructions consisting of auxiliary + Vinf still have to be acquired. This is usually the case in the OI stage. A correlation between a [+perfective] or nonmodal interpretation and root infinitives means that a specific modal form is available, as opposed to nonmodal forms. In this perspective, cross-linguistic differences reflect a difference in the order in which specific forms are acquired. This order may be an effect of input properties such as position of the verb or saliency of inflectional morphology.
7. Concluding Remarks

In this paper, we reported new experimental data on the interpretation of root infinitives in Dutch and English child language. Based on a theory developed by Hoekstra & Hyams (1998), we expected to find that Dutch root infinitives are modal, whereas English root infinitives are nonmodal. This expectation is only partially borne out. The Dutch data show a correlation between modality and root infinitives. English root infinitives, on the other hand, are not correlated with a nonmodal meaning. In general, the difference between Dutch and English root infinitives is not very convincing. To explain these results, we proposed - as opposed to Hoekstra & Hyams (1998) - that root infinitives in Dutch and English are unspecified for tense, mood and aspect. In terms of Ferdinand (1996), they are elsewhere forms that are used if the child does not have an appropriate specified form available. Our claim is that this elsewhere form appears very early, namely when children only have few forms that express a wide range of different meanings. Specific forms are acquired later and, finally, the elsewhere form is hardly needed anymore. This idea is supported by the experimental data we collected on the use of other verb forms and verbal constructions. They are acquired later and nearly all of them are used with a much more specific interpretation than the root infinitives are. However, to find out whether the Elsewhere Condition does really apply to the acquisition of the meaning of verb inflections, a developmental study is necessary. We leave this for future research.

Endnotes

1 We are grateful to Nina Hyams who made it possible for us to test children at the UCLA daycare centers, to the daycare centers De Zonnehbloem, Lutje Potje and De Pinksterbloem all located in Groningen, to the students Mouna Mana, Fiona Koster and Lilan van Embden who assisted during the experiments and data-transcriptions, and to Paul van Geert for his help with the preparation of the talk.

2 Note that we do not use the term 'root infinitive' to refer to form characteristics or derivational properties. The term itself may not be appropriate for English. As opposed to Dutch root infinitives, the English variant does not contain infinitival morphology. Furthermore, in English main clauses the main verb does not move from final to first or second position so there is no distinct 'root position' like in Dutch.

3 In paraphrase the modal version could be 'you have to throw the ball' or 'I am going to throw the ball'. The nonmodal version would either be 'You are throwing the ball' or 'I am throwing the ball'.

4 This is especially important for Dutch, because of the possibility to use nominalized verb forms, which look like infinitivals, but are in fact nouns.

5 These data, collected by Ud Deen 1997, are reported by Hoekstra & Hyams 1998, and Hyams 2000.
In Dutch, there is no real future verb form: the future tense is expressed by the modal verb *zullen*. Some linguists have remarked that future tense is modal. Chung and Timberlake (1985): ‘Future is thus not a semantic category where tense and mood merge. In practice many languages do not distinguish morphologically between future tense and potential (irrealis) mood. Where a difference is made, the future tense is used for events that are presumed to be certain to occur, and the irrealis mood for events that are potentially possible but presumed to be certain’ (p. 243).

Though in some Dutch dialects *gaat + Vinf* can also have a present tense or ongoing meaning.

References

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