Signs of a developing grammar: subject drop and inflection in early child Dutch

Elma Blom and Paul van Geert

Abstract. The objective of this paper is to describe and explain changes over time in young children's dropping of subjects. The empirical basis for this study is provided by longitudinal spontaneous speech data from six monolingual children acquiring Dutch. The samples begin when the children enter the two-word stage, which is generally around their second birthday. The samples end when the children are able to make adult-like multi-word sentences (around their third birthday). The results indicate that children learn in this period of approximately one year the licensing conditions for subjects. In this period, the children go through phases in which they - from an adult perspective - overdrop subjects in finite sentences and overuse subjects in non-finite clauses. The shape of the curves modeling the development of subject drop indicates that at a certain point of time children organize their use of subjects. The moment of reorganization coincides with the acquisition of inflectional morphology. This paper defends the claim that this co-occurrence is not accidental, but that knowledge of verbal inflection is a prerequisite for the acquisition of rule-governed subject use and hence, that the deviating patterns of subject drop in finite and non-finite sentences result from learning inflection.

1 Introduction

Children omit many words. In the literature on child language, various attempts have been made to explain the early omissions in a principled way. One influential example of such an attempt can be found in the work of Radford (1988, 1990) and Lebeaux (1990) who argue that the omissions are caused by the absence of functional categories in the child grammar. In a reaction to this hypothesis, which is known as the Reduced Competence Hypothesis (RCH), Poeppel and Wexler (1993) proposed the Full Competence Hypothesis (FCH). According to Hamann and Plunkett (1998), who evaluated various explanations for subjectless sentences, it is within the framework provided by the FCH that subject drop has been accounted for most successfully. The main empirical advantage of these explanations is that they relate drop of finiteness to subject drop: FCH-explanations correctly predict that children tend to drop the subject in non-finite clauses, while they use overt subjects in finite sentences (Krämer, 1993; Hamann and Plunkett, 1998). In this paper, we reconsider the empirical coverage of the FCH with regard to the development of subject drop. We start by deriving a predicted time series for subject drop in finite and non-finite sentences on the basis of two types of FCH theories (section 2). This is followed by examination of data from six Dutch-speaking children between the ages of two and three in order to test whether the derived predictions are borne out (section 3). Our conclusion is that the FCH theories, in their current form, cannot account for changes over time in child language. Therefore, we use the rest of this contribution to explain the small steps children take in their acquisition of rule-governed subject use.

2 Grammatical models for subject drop

With 'grammatical models' we refer to theories according to which subject drop in early child language is in accordance with UG principles, i.e. FCH accounts. In an early proposal, De Haan and Tuijnman (1988) argued

that the dropped subjects in early child Dutch are dropped *topics*. As Dutch is a language that allows for topic drop, the dropped subjects in Dutch child language are grammatical, according to this view. Given the difference in frequency with which Dutch children and Dutch adults drop subjects, the implication of this proposal is that children *overlicense* subjects-as-topics (Bromberg and Wexler, 1995). Recently, however, De Cat (2002) has shown that it is unlikely that children do this. On the basis of De Cat's observations, we conclude that the topic-drop-account does not give an adequate description of what the children do. Note furthermore that the topic-drop-account does not explain why the proportion of dropped subjects is higher for non-finite clauses than for finite clauses.

Two other kinds of grammatical explanations, i.e. Underspecification and Truncation Accounts, have a larger empirical coverage in this respect, since they do account for the asymmetry between non-finite clauses and finite clauses. The basic difference between Underspecification and Truncation can illustrated with the help of a simple tree diagram, which describes the hierarchical relations between the phrases of a sentence. The skeleton of a sentence exists of three levels: CP, IP and VP. CP is the highest level; words inserted in or moved to this level take scope over the entire proposition. The CP level is the interface between the proposition expressed in a sentence and the superordinate structure of this sentence. Apart from words that need to be in the highest position for reasons of scope (such as sentential mood markers), CP contains the words that connect a sentence to the wider discourse (such as complementizers). IP is the level below CP and above VP. It hosts subject and finite verb. Being the verb's external argument the subject must be outside the VP (Williams, 1980). Hence, IP, more specifically spec IP, provides a legitimate position for the subject. The finite verb, i.e. the assigner of nominative case, has to be adjacent to the subject, which has to receive nominative case. The VP contains the verbal predicate, i.e. the event expressed in the proposition.

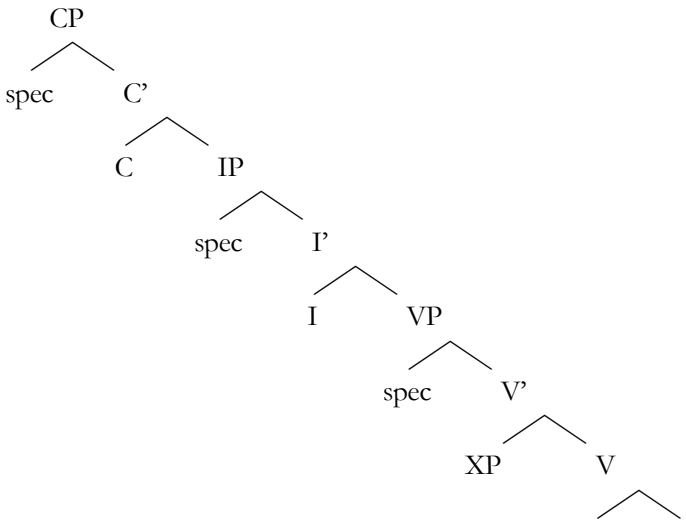


Figure 1: Sentence-representation

The Underspecification Accounts relate subject drop in early child language to underspecification of the I-domain (Wexler, 1994; Sano and Hyams, 1994; Hoekstra and Hyams, 1995; Hyams, 1996; Schütze and Wexler, 1996; Schütze, 1997). According to the Truncation Accounts, subjects are dropped because children do not project the C domain (Rizzi, 1992, 1994; Haegeman, 1994, 1995). In the following sections, Underspecification Accounts (UAs) will be discussed (§ 2.1), Truncation Accounts, or TAs, (§ 2.2) and differences between these two theories (§ 2.3).

2.1 Underspecification of I

UAs transfer the analysis of subject drop in adult infinitival clauses to children's nonfinite clauses (Sano and Hyams, 1994; Wexler, 1994; Schütze and Wexler, 1996; Schütze, 1997). It is argued that the adult example in (2) and the child utterances in (3) are similar with regard to subject drop and hence, that subject drop in child language is in accordance with the adult grammar:

(2) a. Jan$_i$ probeerde [PRO$_i$ de deur open **te maken**]
John tried the door open to make-*inf*
'John tried to unlock the door'

b. [PRO **weggaan**] zou verkeerd zijn
Leave-*inf* would wrong be-*inf*
'To leave would be wrong'

c. Het is slecht [PRO$_{arb}$ te **liegen**]
It is bad to lie-*inf*
'It is bad to lie'

(3) a. choene **kope** (Josse 2;00.21)
shoes buy-*inf*

b. pake foto **maken** (Daan 2;04.14)
daddy picture make-*inf*

c. druk vuilnis **ophalen** (Matthijs 2;11.03)
busy garbage up pick-*inf*

d. Peter apparaat **kijken** (Peter 2;00.28)
Peter machine watch-*inf*

Following Rizzi (1994), we will refer to children's nonfinite clauses, exemplified in (3) as *root infinitives*, abbreviated as RIs. UAs identify the null subject in RIs as PRO ('big pro'), i.e. the same null subject as is proposed for adult infinitival clauses; see (2). In order to clarify the reasoning, we will start with some background information on null subjects and PRO.

Chomsky (1986) argued that UG contains a principle stating that all sentences must have subjects. This principle, known as the Extended Projection Principle or EPP, explains the insertion of the expletive subjects in sentences like (4) (among other things):

(4) a. **There** is a man in the garden
b. **It** is fun for Jane to play badminton

The EPP makes direct predictions for the analysis of subjectless sentences. To obey the EPP it must be assumed that the sentences in (2) as well as (3) contain null subjects: a subject that is structurally present but does not have a phonetic representation, i.e. an empty category. There are different types of empty categories, each with their own licensing conditions. According to Chomsky's theory, there is only one empty category that must remain ungoverned, namely PRO.[1] Infinitival clauses lack a finite verb; I is empty and spec IP (the canonical subject position) ungoverned. Therefore, PRO is licensed in this position.

UAs claim that children have knowledge of the functional category I, but because they do not yet know the

properties of inflection in the language they are aiming to learn, I is underspecified. As an effect, infinitives surface and overt subjects cannot be licensed. As PRO can remain ungoverned, this representation provides a licit environment for PRO. The head I can be split into various heads like Tense and Agreement. Agreement falls apart into specific projections of Person, Number and Gender features. There are a number of variations on the general UA scenario that we explained before, that differ with regard to the 'I-subhead' that is underspecified. Wexler (1994) argues that children underspecify Tense, whereas Hoekstra and Hyams (1995) and Hyams (1996) opt for Number. Schütze and Wexler (1996) and Schütze (1997) argue that underspecification of one inflectional head is insufficient to account for attested patterns.[2] Alternatively, they propose that Tense and Agreement can be independently underspecified; this model is known as the Tense and Agreement Omission Model or ATOM. Rather than discussing all of these proposals in detail, we concentrate on the general claim, which is that an underspecified I head cannot license an overt subject, but does provide a licit environment for PRO. Note, however, that the ATOM makes a weaker claim than the other proposals. Underspecification of either Tense or Agreement leads to the use of RIs. However, only underspecification of Tense licenses PRO. Underspecification of Agreement leads to assignment of the default Case. Thus, overt subjects are allowed in RIs in which Agreement is underspecified.

2.2 Truncation below C

The original TA proposal comes from Rizzi (1992, 1994) and is adopted in the work of Haegeman (1994, 1995) and Weissenborn (1994). The claim of TAs is that children have the option to project structures without CP, unlike adults. Children have the full set of adult projections available as in (1) but can 'truncate' i.e. take any projection below CP as the root of the sentence. [3] The 'rule' CP = root matures. Only material from the top of the tree is optional.[4] Truncation surfaces in the use of RIs and omission of subjects. If VP is the root, the child produces an RI. If CP is absent, the subject is dropped. Absence of CP provides a licit environment for the null subject (a 'null constant'), which is allowed to be antecedentless by virtue of the absence of an antecedent position. Spec CP is an antecedent position, thus absence of CP leads to absence of an antecedent position. The null constant is allowed in the canonical subject position i.e. spec IP. In adult language, projection of CP is obligatory. Therefore the null subject in spec IP may not remain antecedentless. It follows that children produce finite utterances with and without subject drop and RIs with subject drop. As soon as the ability to truncate has disappeared, the rate of RIs as well as null subjects decreases. Haegeman (1995) shows that both phenomena show a similar decrease. She interprets this similarity as support for truncation in early child language.

2.3 Where predictions diverge

UAs concentrate on the I domain, whereas TAs focus on the C domain. According to UAs, the null subject in RIs is PRO, while TAs claim that it is a null constant that is licensed when there is no possible antecedent. UAs make an opposite prediction for RIs and finite sentences: null subjects appear in RIs, while finite sentences appear with overt subjects.[5] TAs predict that RIs have a null subject, while finite sentences appear with null subjects *and* with overt subjects. Both theories focus on similarities between children and adults and they do not say much on the way in which children develop towards their target language. One could infer a number of developmental predictions for TAs and for one variant of the UA, the ATOM, though. The starting point of our investigations is this set of predictions.

TAs predict a change in subject drop in *finite sentences*. As soon as the children know that CP has to be projected, the relative number of dropped subjects in finite sentences is expected to decrease: because Dutch

is a *pro*-drop language, overt subjects are required. The number of dropped subjects, however, does not have to approach zero in the final developmental stage because subjects can still be legitimately dropped when they are in topic position. The ATOM (Schütze and Wexler, 1996; Schütze, 1997) is able to capture changes over time in the use of overt subjects in *RIs*. According to the ATOM, overt subjects are required as soon as Tense is specified, because PRO is not licensed anymore when Tense is specified. If Tense is specified while Agreement is still unspecified, RIs with overt subjects are expected to appear. By implication, when Tense is specified before Agreement, the prediction is that subject drop in RIs decreases. The ATOM states that the subject is assigned nominative Case under Agreement. Hence, absence of Agreement leads to the assignment of the default Case, which is accusative Case in English. Therefore, in early child English, the expectation is that the [+TNS, -AGR] RIs display Case errors. In a language like Dutch, in which the default Case is nominative, it is expected that non-nominative subjects do not appear. If overt subjects in RIs in early Dutch child language contain many non-nominative subjects, this would plead against the ATOM.

In the literature that is available, the picture of subject Case in Dutch child RIs is heterogeneous. According to Schaerlakens and Gillis (1987), Dutch-speaking children go through a short phase in which they use the accusative form *mij* 'me' instead of nominative *ik* 'I'. Van Ginneken (1917) reported a similar overuse of subjects with accusative Case:

(4) **Mij** moet et hebbe (Keesje 2;7)
me must it have-*inf*

(4) is no RI, though. Boezewinkel (1995) found accusative subjects as well; in her data, the accusative subjects only appear in RIs:

(5) a. **mij** doen (Laura 2;3)
me do-*inf*
b. **mij** zitten (Sarah 2;0)
me sit-*inf*

Kaper (1976), Powers (1994) and Bol & Kuiken (1986) found hardly any examples of accusative subjects in RIs, if any at all. It seems that the use of RIs with accusative subjects is idiosyncretic.

With the help of data from six Dutch children, we will examine in the next section the patterns of subject drop in RIs and finite sentences. It will be tested if subject drop in finite sentences shows a decrease (as predicted by TAs) and/or if subject drop in RIs decreases over time (which is a prediction we inferred from the ATOM). We will test furthermore if the observations reported by Boezewinkel (1995) are indeed as child-specific as suggested by a comparison between findings from various studies.

3 A longitudinal analysis of subject drop in early child Dutch

In (i) and (ii), the developmental predictions from the UAs and TAs are repeated:

(i) TAs predict that the number of dropped subjects in children's finite sentences decreases when the children get older. This decrease is expected to coincide with the vanishing of RIs, as both RIs and subject drop are correlated via absence of the rule 'CP = root'.

(ii) The ATOM predicts that the number of dropped subjects in RIs undergoes an increase when the children get older. It is expected that children acquiring Dutch do not use non-nominative subjects in RIs: in RIs with overt subjects, default Case is expected to surface, which is, in Dutch, nominative.

3.1 Data

Transcriptions of spontaneous speech data from six monolingual Dutch-speaking children are analysed. All analysed data are available through the Child Language Data Exchange System or CHILDES (MacWhinney, 1995). Abel, Daan, Josse, Laura, Peter and Matthijs are part of the Groningen Corpus. Laura is part of the Van Kampen Corpus. The transcriptions in these corpora are based on audiotape recordings made at home, in an unstructured home setting. The children's age ranges are given in Table 1. This table shows furthermore the total number of utterances produced by each child in the selected files to give an idea about the size of the files that were examined.

Table 1: Children's age ranges and the total number of utterances in the selected files that are used for analysis, data from all six children

Child	*Age Range*	*Total Number of Utterances*
Abel	1;10.03 - 2;07.29	2890
Daan	1;08.21 - 2;09.10	4859
Josse	2;00.07 - 2;08.18	3340
Laura	1;09.04 - 3;04.06	4241
Matthijs	1;09.30 - 2;11.19	4624
Peter	1;07.18 - 2;03.21	2349

Laura's sample contains files from an older age (above three) than the samples from the other children (under three). As Laura suffered from recurrent ear-infections, her development is delayed. There are no indications that Laura, apart from a delay, developed atypically.[6]

From each corpus, a number of files were selected that represent prototypical phases in the development of finiteness in early child Dutch (Wijnen, 2000). For each stage, files are selected that correspond roughly with the frequencies of finite sentences in Table 2. Wijnen (2000) defined a number of qualitative properties of the stages I, II and III, such as the appearance of finite forms and emergence of lexical overlap in stage II and the appearance of periphrastic verbs in stage III. As this study is not about the development of finiteness, these qualitative criteria are irrelevant and we will not further discuss them.[7] In sum, we did not consider qualitative properties of verbs other than a simple finite/non-finiteness distinction. This distinction was made on the basis of morphology and verb placement. In the first stage, children use RIs only and no FINs (that is, the few FINs that are found, seem to be accidental). In order to select files that represent stage II, i.e. the stage in which the first FINs appear, we searched the children's corpora for the file in which the first FINs appeared besides RIs, selected this file and the files that immediately followed. Thus, the second stage represents the stage in which the first FINs come in. In the third stage, the number of FINs has reached a frequency that equals the number of RIs, whereas in the fourth stage, FINs are predominant. The right-most column of Table 2 gives the average mean length of utterance (MLU) over the six children per stage.

Table 2: 'Stages' in the development of finiteness based on frequencies of finite sentences

Stage	*Frequency of finite sentences*	*Average MLU*
I	0	1.125

II	< 30 %	1.387
III	50 %	1.972
IV	> 80 %	2.607

Note that children do not jump from 0 to 30 to 50 to 80 % finite sentences. Rather, the increase of finite sentences is gradual. The stages are snapshots out of this gradual development.

3.2 Method

The selected files have been provided with codes about subject use. It is coded if there is a lexical subject or not. Additional codes have been assigned for person and number of the subject (either lexical or dropped). Subjects in all positions are included.[8] Vocative utterances, mentioning the addressee explicitly (*Jakob, eten!* 'Jakob, eat!'), are not counted as utterances with subjects. In the transcripts, these could be recognized by a comma between addressee and rest of the utterance. Imperative, declarative and interrogative sentences are included, but imperatives containing a bare stem (*Kijk!* 'Look!'), are excluded from the analysis as these forms do (usually) not contain a subject in adult Dutch. It is unclear if overt subjects are banned across the board. As different predictions are made for RIs and finite sentences, a division is made between sentences on the basis of presence or absence of finiteness. The set of finite sentences falls apart into simple finite sentences and complex finite sentences (or sentences with a periphrastic verb). Examples of simple finite sentences are given in (6):

(6) a. oh, **valt** bijna om (Abel 2; 07.15)
oh, fall-*fin* almost down
'Oh, it almost falls down'

b. Daan **ligt** in de wieg (Daan 2;04.14)
Daan lie-*fin* in the crib
'Daan is lying in the crib'

c. ik **hoor** paatje niet (Laura 2;04.15)
I hear-*fin* horse-*dim* not
'I do not hear the little horse'

(7) contains some examples of complex finite sentences:

(7) a. **mag** ik grote blok **bouwen**? (Abel 2;07.15)
may-*fin* I big block build-*inf*
'May I build the big block?'

b. Ik **moet** daar **zitten** he (Matthijs 2;10.22)
I must-*fin* there sit-*inf* huh
'I have to sit there, haven't I?

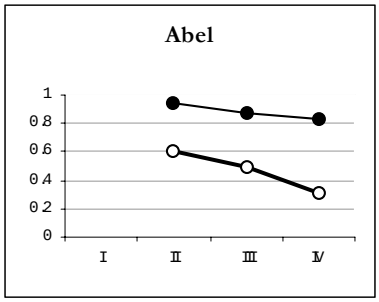
c. kikker **is** aan **lopen** (Peter 2;03.21)
frog is-*fin* on walk-*inf*
'Frog is walking'

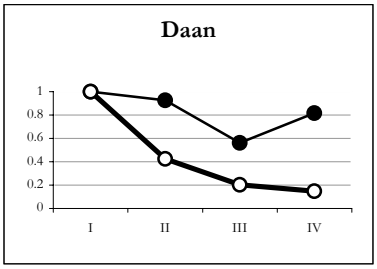
Henceforth, simple finite sentences and complex finite sentences are collapsed in the category FINs. In Dutch, there are various criteria to distinguish between RIs and FINs. First, Dutch is a language with distinct infinitival morphology, i.e. [*-en*]. Second, in Dutch main clauses the infinitive is placed in final position

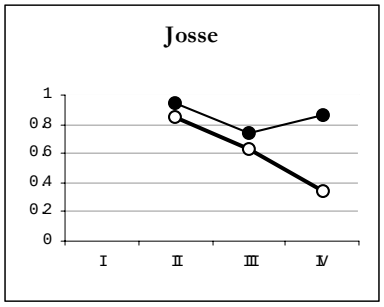
whereas the finite verb is in first or second position. We used these two formal criteria for determining whether or not the verb in a sentence was finite. Because we started with a focus on RIs and aimed to make a comparison between RIs and FINs that differ minimally from RIs, that is, only differ from RIs with regard to the specification of the feature [± finite], we excluded FINs with past participles. The reason for this exclusion is that RIs are restricted to the denotation of incomplete events (Lasser, 1997; Blom, to appear), whereas FINs with past participles denote events that are completed at utterance time. However, the set of children's early nonfinite clauses can be extended by including root participles (RPs), which are the completed nonfinite counterparts of RIs. When this is done, FINs with past participles can be included in the set of FINs. We will not do this. Our expectation, however, is that RPs pattern like RIs, because of their non-finiteness. FINs with past participles are expected to pattern like the other FINs. Apart from this, we do not expect that inclusion of utterances with participles will lead to significantly different results anyway, as both the numbers of RPs and FINs with past participles are small (as compared to RIs and other FINs).

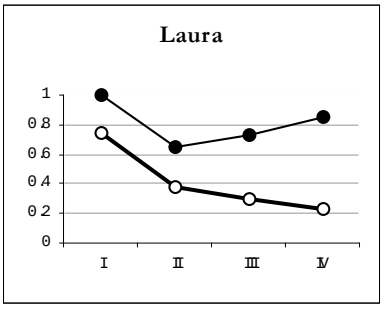
3.3 Results

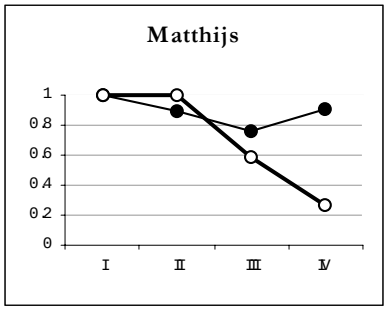
We will start by presenting the patterns of subject drop in RIs and FINs visually by means of graphs. Tables 3 and 4 give the raw numbers that correspond to the graphs:

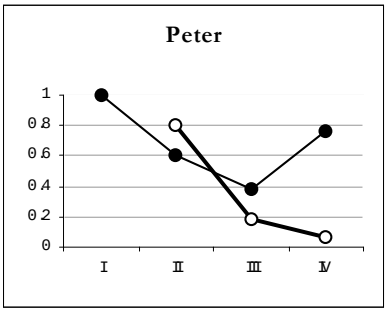












Figures 2 - 7: Percentages of subject drop in RIs and FINs four subsequent developmental stages, data from all six children

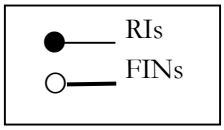


Table 3: Subject drop (null subjects = NS) in RIs, numbers per stage, data from all six children

	Abel		Daan		Josse		Laura		Matthijs		Peter	
	RI	NS	RI	NS	RI	NS	RI	NS	RI	NS	RI	NS
I	n.a.	n.a.	5	5	n.a.	n.a.	18	18	40	40	26	26
II	33	31	54	50	99	94	56	36	127	113	114	69
III	84	73	66	37	76	56	276	201	112	85	57	22
IV	42	35	71	58	64	55	65	55	51	46	29	22

Table 4: Subject drop (null subjects = NS) in FINs, numbers per stage, data from all six children

	Abel		Daan		Josse		Laura		Matthijs		Peter	
	FIN	NS	FIN	NS	FIN	NS	FIN	NS	FIN	NS	FIN	NS
I	n.a.	n.a.	2	2	n.a.	n.a.	4	3	8	8	0	0
II	10	6	47	20	13	11	26	8	6	6	5	4
III	198	97	246	50	98	62	348	103	85	50	95	17
IV	275	85	621	92	437	152	372	87	524	139	627	41

For the most eye-catching developments, we have to divide the curves in two parts. In the *early* development, which continues until stage III, the proportion of subject drop in RIs and FINs decreases. In the *late* development, which starts after stage III, RIs and FINs show deviating patterns: the proportions of subject drop in RIs increase, while the proportions of subject drop in FINs continue their decrease. These deviating developments are most clearly visible in the final stage, i.e. stage IV: more than in any of the preceding stages, the children prefer to drop the subject in RIs and to use an overt subject in FINs. The graphs show that the development of subject drop in RIs can be modeled through a U-shaped curve. Generalizing across the six children, the same developmental pattern occurs in the data from five out of six children. Laura's curve points to some child-specific variation: Laura reaches the lowest point of the U, i.e. the moment at which overt subject use in RIs is at its peak, somewhat earlier than the other children. Given the uniform results of the other five children, it seems plausible that in Abel's case, the increase of subject drop in RIs still has to come and takes place after stage IV.

3.4 Statistical analysis

The decreasing curve of subject drop in FINs does not come out of the blue. Haegeman (1995) reported a similar development, but she did not make the division between RIs and FINs that we made. Therefore, the

U-shaped the curve of subject drop is unexpected. In Haegeman's data, this development is probably obscured by the large number of FINs in the later stages. The question that follows is whether or not the U-shaped development of subject drop in RIs is statistically reliable. From a statistical point of view, testing the hypothesis that subject drop occurs less frequently in the third stage than in the remaining stages poses several problems. First, the number of available data points is small (e.g. two to five measurements for stage III). Second – and as a consequence of the first point – there is hardly any information about the distribution of the data (e.g. normal or not). Thirdly, the statistical properties of subject drop may vary between children, i.e there exists dependence within the children. A technique that enables us to overcome these problems is the permutation test (Good 1999). As the method we use is not commonly used in studies about children's linguistic development, we have chosen to pay considerable attention to the explanation of the statistical procedure. We shall explain the statistical model with the aid of a table of data from one child (Daan).

Table 5: RI, RIs with subject drop and proportion of subject drop in RIs for 10 observations and three stages (there are not enough data available for stage I)

Age (months)	*Total RIs*	*RIs with subject drop*	*Stage*	*subject drop ratio*
20.66	1	1	I	1
21.26	2	2		1
22.59	2	2		1
24.66	5	4	II	0.8
24.56	15	14		0.93
25.62	34	32		0.94
28.39	18	14	III	0.78
28.85	35	18		0.51
29.3	13	5		0.38
32.36	17	11	IV	0.65
32.82	33	28		0.85
33.26	21	19		0.90
	196	*150*		*0.77*

The number of RIs differs quite considerably between the children (see Appendix 1). Therefore, the subject drop data are first transformed into the proportion of subject drop over the total number of RIs for each observation (column subject drop ratio). Through this proportion the amount of subject drop over the children can be compared, irrespective of the absolute amount of RIs. Since the proportions will vary too dramatically if the number of RIs is very small (e.g. if there are only 3 RI's a difference of 1 in the subject drop category will cause a fluctuation of 33%) we decided to disregard the data from the first stage and concentrate on stages II and IV. Recall, our hypothesis is that subject drop occurs less frequently in stage III than in stages II and IV. The associated prediction is that *the average proportion of subject drop in stage III will be statistically significantly smaller than the average proportion subject drop over stages II and IV*. The null hypothesis states the opposite: the stages have equal average proportions of subject drop. More precisely, the *proportions of subject drop*

observed over stages II, III and IV are drawn from a single distribution. The prediction based on this assumption is that the probability that the observed differences between stages III and II/IV are based on chance, is bigger than some arbitrary number (say, bigger than 0.05). Put simply, the aim of the permutation method is to simulate the null hypothesis, or, more precisely, to simulate the drawing of subject drop proportions from a single distribution (instead of drawing from distributions that are different for stages III and II/IV respectively). The distribution under the null hypothesis can be estimated by taking the distribution of the observed proportions across the four stages (in the subject drop ratio column, from stage II on). Realizations of the null hypothesis can be obtained by randomly assigning proportions from the overall distribution to each of the observation occasions. In practice, we randomly shuffle the positions of the subject drop proportions over our observations (9 in the case of subject Daan, see Table 5). Recall that our prediction concerned the difference between the average proportion over stage III and the average proportion over stages II and IV. In Daan's case, the observed difference in proportion is 0.287. For each random shuffle of proportions, the same test statistic can be calculated, namely the difference between the average proportion over stage III and over stages II and IV. The expectation is that this difference varies randomly. The question is: what is the *distribution* of this random variation? This distribution tells us what the probabilities are that the observed differences in proportion are based on mere chance. In principle, the chance distribution can be determined in a precise way by carrying out all possible permutations of 9 elements (nine observations) in a six-by-three way (six observations in stages II and IV, three observations in stage III), which results in 84 possibilities.

However, differences between individual children in terms of proportion of subject drop between stages III and stages II/IV are not the focus of the present study. Rather, the main goal is to find out whether these *stages* are different, i.e. whether the predicted difference holds for the total sample of children (6 subjects). The prediction is that the *average over six children* of the observed differences in subject drop between stages III and II/IV respectively, is not caused by chance. More precisely, it is predicted that the probability that this difference is caused by chance is smaller than some arbitrary number (say 0.05). In order to check this prediction, the proportions of subject drop within each child are randomly shuffled for all six children. Thus, with each random reshuffle an average over six children is obtained for the difference between stage III and stages II/IV. Since the number of all possible permutations and combinations for the six children is very big, we approximated the distribution of the differences based on chance alone by randomly shuffling the observed proportions 10,000 times, which provides 10,000 values for the test statistic (the difference between stage III and stages II/IV) based on chance. By counting the number of chance differences that are equal to or bigger than the observed difference, a very close approximation of the probability – i.e. the p-value – is obtained that the observed values are based on chance (see Table 5).

In principle, the p-value over the six children can be disproportionally affected by a single child with an extreme observed difference between stage III and stages II/IV. In that case, the overall p-value does not give a reliable estimation of the p-value for the population of children. To check for the possibility that the p-value over the group is indeed strongly determined by a single child, a "Jack knife" technique is applied. We calculated the test statistic (the difference between the average proportion of subject drop in stage III and stages II/IV) seven times: once for the group of six children, and six times for a group of five children, leaving out one specific child at a time. If one child indeed determines the p-value over the group, the p-value should increase dramatically if the child is left out of the calculations. Table 6 shows the 7 p-values obtained in this way.

Table 6: Probabilities that the observed average difference between subject drop in stage III and subject drop in stages II/IV is due to chance. The probabilities are calculated over the entire group of six children and over 6 groups of five children, with one specific child omitted at a time

	p-value
All children	**0.001**
Omitted	
Abel	0.001
Daan	0.013
Josse	0.004
Laura	0.001
Matthijs	0.004
Peter	0.004

The conclusion is clear: the probability that the observed difference in proportion of subject drop between stage III and stages II and IV is due to chance is very small ($p = 0.001$). That is, the difference is highly significant. In addition, the probability is not disproportionately affected by a single child with an extreme difference. That is, we may be confident that the result is characteristic of the sample as a whole and thus, that the p-value applies to the population from which the sample has been drawn.

3.5 Subject Case errors in RIs

The ATOM predicts that subject Case errors in Dutch child RIs do not appear. In the data of Abel, Daan, Josse, Laura, Matthijs and Peter, there is only one child that makes Case errors: Laura uses subjects with accusative case. Recall that Boezewinkel (1995) also observed that Laura uses non-nominative subjects. Laura's behavior is restricted to a short period of time, corresponding to stage III (between the ages of 2;04.01 to 2;06.10). Some examples are given in (8):

(8) a. **mij** leze (Laura 2;04.01)
me read-*inf*

b. **mij** ooke siesuig sitte (Laura 2;04.15)
me also plane sit-*inf*

c. **me** ander kijke, he . (Laura 2;05.17)
me other one look-*inf*, huh

Laura's behavior is not consistent: next to accusative *mij*, the nominative forms *ik/ikke/'k* appear. The number of nominative and accusative subjects in RIs in stage III is almost similar (12 and 10, respectively).[9] Turning to the proportion of non-nominative subjects in Laura's data, we come to a percentage of 10 %. The combination of this small percentage, the inconsistency of Laura's behavior and given that she is the only child using non-nominative subjects in RIs in a sample of six, we conclude that the results confirm the claim that Dutch children rarely use non-nominative subjects. This outcome confirms the prediction from the ATOM.

3.6 Recapitulation

Analysis of spontaneous speech samples of six monolingual Dutch subjects between the 2 and 3 years old show that subject drop in FINs decreases as a function of age. Given the topic drop option in Dutch, it is not expected that subject drop vanishes entirely. The decreasing number of dropped subjects in FINs is a

development towards the target language and the clear predominance of overt subjects in FINs in stage IV is adultlike: the percentage of dropped subject in the final stage could be dropped topics. Subject drop in RIs displays a U-shaped development: a decrease is followed by an increase. The curves that model the developments of subject drop in FINs and RIs are similarly shaped in the early development: both go down. Between the stages III and IV, the similarity stops and the children break with their old 'system'. For a number of children (i.e. Abel, Daan and Laura), the curves of FINs and RIs have in the early development the same shape but the relative number of dropped subjects in FINs and RIs differs, in the sense that FINs contain less dropped subjects than RIs. Non-nominative subjects were only found in Laura's data. In her case, there were only few.

3.7 Conclusion

If we turn to the predictions formulated at the beginning of this section, the conclusion can be drawn that none of the theories can account for all of the results. Different models cover different developmental observations. Predictions from the theories are only partially borne out. As predicted by TAs, subject drop in FINs shows a decrease. This decrease is consistent with decline of RIs (Appendix 1) in the sense that *when* FINs contain more overt subjects than in any of the other stages (i.e. stage IV), RIs are clearly vanishing from the child repertoire. Thus, both the rise of overt subjects in FINs and the decline of RIs could be effects of maturation of the rule that CP heads each sentence. According to TAs, the predicted development of subject drop in RIs is constant, however. This prediction contrasts strongly with the observed U-shaped curve of subject drop in RIs. Thus, TAs do not provide an explanation for the patterns of subject drop in RIs. The ATOM could, theoretically, account for the initial increase of the proportion of dropped subjects in RIs that characterises the early development.[10] This model cannot explain the decrease that follows on this increase, however. Additionally, the ATOM does not say anything about the increasing number of overt subjects in FINs. The patterns of subject Case in early child Dutch are consistent with the ATOM. Although FCH accounts (i.e. TAs and UAs) explain some of the findings reported in this section, they show a lack of explanatory power with regard to developmental patterning: there is more development than was predicted by any of the models so far: both subject drop in RIs and FINs undergo changes over time.

4 From lexicon to grammar

In this section, we concentrate on the developmental factor that accounts for the changes in subject drop. Our claim is that the acquisition of verbal inflection is crucial and has effect on subject drop in both FINs and RIs. Our proposal shares with UAs that the developments in the inflectional domain are crucial (and it contrasts with TAs in this respect). We will explain our approach in § 4.1. In § 4.2, the predictions will be tested with more in-depth analyses of the data from the six Dutch children, while § 4.3 contains some further discussion on the issue.

4.1 Learning rule-governed subject use

In adult Dutch, subject drop in FINs is not allowed (unless the subject is topicalized), apart from a number of constraint colloquial speech settings.[11] The requirement to use lexical subjects makes Dutch a so-called non *pro*-drop language. The generalization that underlies this phenomenon is that when in a language agreement is rich, a lexical subject can be left unrealized. When agreement is poor, lexical subjects are required (cf. Rizzi, 1982). For instance, the agreement paradigm of Italian expresses number as well as various person features. Italian exemplifies a rich paradigm and, therefore, allows for drop of pronominal subjects; see (10):

(10) mangia una mela
eat-*fin* an apple

Dutch is are clearly more restricted in this respect, as shown in (11):

(11) * eet een appel
eat-*fin* an apple

There are various proposals with regard to the relation between drop of subject and richness of agreement. Recently, Koeneman (2000) developed a theory that is empirically well-motivated and that captures a wide range of languages. According to Koeneman, rich agreement must (at least) encode the following three binary features: [αspeaker], [αaddressee] and [αsingular].[12] If there is no evidence for one of these three features in the agreement paradigm of a language, agreement in this language is poor according to Koeneman's proposal. Furthermore, poor agreement is non-argumental, i.e. it cannot be used as the verbs external argument. In other words, it does not have the formal status of a full DP subject. Rather, poor agreement is anaphoric and requires a full DP subject as antecedent.[13] According to this view, agreement in Dutch is poor: there is not enough evidence to postulate the feature [αaddressee]. In Figure 8, Koeneman's hierarchical interpretation of the Dutch regular present tense paradigm is given:

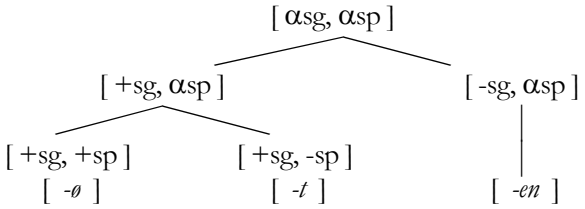


Figure 8: Agreement in the Dutch present tense paradigm, according to Koeneman (2000)

The possibility to make this empirical generalization with regard to richness of inflection and pro-drop has led to the idea that pro-drop is parametricized (Hyams, 1986).[14] Children know on beforehand that sentences must have subjects, but the way in which subjects are expressed is language-specific and must be determined in the course of language development. The pro-drop parameter is binary: the subject can be expressed through agreement features that can be systematically added to the verbal stem or the subject can be lexically expressed by means of an overt DP subject. In order to determine if overt DP subjects are required, children have to know that agreement is poor. Before children have determined the value of agreement inflection in the language they are aiming to learn, it is expected that subjects are randomly dropped. When agreement is acquired, the prediction is that overt subject in FINs are obligatory and optional in RIs.

On the basis of this proposal, we expect that overt subjects become obligatory in early child Dutch as soon as the children have knowledge of the agreement paradigm of the language they are learning. But why are subjects in RIs expected to be optional?[15] Close examination of RIs in adult Dutch shows that there are RIs in which the subject is truly optional, RIs in which subjects must be omitted and RIs with obligatory use of overt subjects. In (12) examples are given in which the subject is optionally present:

(12) **Parel/PRO altijd bij ons blijven?** Dat zie ik al gebeuren!
Pearl/PRO always with us stay-*inf*? That see I already happen!
'Parel forever stay with us? I don't wanna see that happening!' (UTVM)[16]

(13) Zat ik naar 'Het kleine huis op de prairie' te kijken…**Zij/PRO brullen!**
sat I to 'The little house on the prairy' to watch … she/PRO weep-*inf*
'I was watching the 'little house on the prairy', when she suddenly started to weep'
(Magazine)

In (14) an example of obligatory subject use while (15) exemplifies obligatory subject drop in RIs.[17]

(14) **Hij/*PRO achter ons aansjokken**
he/PRO behind us walk-*inf*
he came slouching behind us (UTVM)

(15) Wacht, ***ik/PRO de wekker proberen voor morgenochtend**
wait, I/PRO the alarmclock try-*inf* for tomorrow morning
'Wait, I am going to try the alarmclock for tomorrow morning' (MVH)[18]

The patterns of subject use in adult RIs are tempting. It is beyond the scope of this article to explain these patterns, since there are indications that discourse structure plays a role and our focus here are properties of the grammar. We point out briefly the conclusions regarding subject use in adult RIs relevant for the present purpose though. Infinitives are [-AGR] and, consequently, infinitival morphology is not anaphoric. Hence, lexical subject are not required as antecedents. Therefore, we conclude that, for the grammar, overt subjects are optional in case the verb has an infinitival form. Children can only make the distinction between FINs and RIs when they know about inflection. Thus, apart from the establishment of a relation between inflected agreeing verb and overt subject, the acquisition of inflection has a second effect, namely that inflected [+AGR] verbs will be distinguished from non-inflected [-AGR] infinitives.

Why do we conclude that patterns of subject use in adult RIs obey non-grammatical rules? The examples (16)-(18) illustrate our motivation, since they show that overtness of the subject in RIs is influenced by factors such as (i) the possibility to coindex the null subject of an RI with a DP in the preceding discourse or (ii) the possibility to bind the null subject of an RI to a referee present in the speech situation by means of deictic binding. In (16)-(18), three declarative RIs are given each with the speaker as sentence subject. In (16), the speaker asserts that (s)he is sitting for a while. In (17), (s)he expresses disbelief in the truth of a hypothetical event. In (18), (s)he tells a story about an event that happened in the past:

(16) *Ik/PRO even zitten
I/PRO *particle* sit-*inf*
'I am just sitting here'
(17) Ik zitten! Ben je gek?
I sit-*inf*! Are you mad?
'Me sit? Have you gone mad?'
(18) De leraar kwam binnen. Ik zitten.
the teacher came in. I sit-*inf*
'When the teacher came in, I sat down'

Both the events expressed in (17) and (18) are disjoint from speech time, opposed to the event denoted by (16). In (16), the overt subject is infelicitous, whereas it is used in (17) and (18).[19] In (18), overtness of the subject is required since the preceding sentence provides a possible antecedent, which is not the subject of the RI that follows.

Returning again to the patterns of subject drop in child Dutch, we observe that the shapes of the curves of FINs and RIs in the graphs 2 – 7 are, theoretically speaking, compatible with the claim that rule-governed subject use is dependent on a third factor, which we argue to be verbal inflection. When verbal inflection comes in, the patterns of subject drop in RIs and FINs start to deviate. We expect that in the phase that we characterized as the 'early development' (i.e. subject drop in RIs and FINs develop similarly), the children do not have any knowledge of inflection or agreement. The late development (i.e. the patterns of subject drop in RIs and FINs start to deviate) is induced by the acquisition of agreement. The graphs show a break between stages III and IV and, therefore, we expect that precisely between these stages inflection comes in.[20]

4.2 Learning verbal inflection

Since segmentation of verb forms is a prerequisite of the acquisition of inflection (Peters, 1982), we have to determine when children acquire the ability to segment. In order to discover the segments of a form, children need to be able to compare forms and hence, have to have access to a certain critical mass. This critical mass contains minimally contrasting forms that are partially constant and partially variable. With regard to verbal inflection, there are two types of minimal contrast: *lexical variation* and *paradigmatic variation*. When children know different forms from one and the same paradigm (i.e. paradigmatic variation), for instance *loopt* 'walks' and *lopen* 'walk', the children are, theoretically speaking, able to analyze verb forms through the recognition of stem and suffix, as the stem is constant while the suffix alternates. Likewise, knowledge of finite forms but from different verbs, e.g. *loopt* 'walks' versus *kust* 'kisses', provide the possibility to segment as well, as the suffix is constant while the stem is variable (i.e. lexical variation). A special case of paradigmatic variation is what we will call *lexical overlap*.[21] This is the variation between paradigmatic forms and non-paradigmatic verb forms such as infinitives and participles. In Dutch, infinitives and participles are non-paradigmatic, as they are not inflected for tense and agreement. For reasons mentioned before, we will restrict ourselves in this study to infinitives and exclude participles.

In the following sections, we investigate when the children in our sample meet the prerequisites for using inflection. We determine the point of time at which the children's lexicons have reached the critical mass needed for segmentation. Lexical variation, paradigmatic variation and lexical overlap are used as cues. Inflection errors provide a fourth cue, serving as a test since inflection errors indicates *that* children segment. Especially the overuse of bare stems is informative, because children take off the suffix in cases where adults do not do this. The resulting bare stems cannot be copies of the input, but must be the output of the children's own grammatical systems. Therefore, an error-count and analysis will be performed; they are conclusive evidence for the determination of the moment at which the children start to learn to inflect. Since A. de Haan (1996) focused on inflection errors in the data from four of the children in our sample and looked at more data from these four children than we did, we discuss the findings from A. de Haan's (1996) study as well.

LEXICAL OVERLAP In Table 7, the development of lexical overlap is given. In stage I, no finite forms are used and, therefore, we collapsed data from stages I and II. The first number in each column shows the

growth of overlapping items. For instance, between the stages I/II and III, the acquisition of novel verb forms leads for Abel to three overlapping items in stage III. Between stage III and IV, ten new overlapping items come in (that did not overlap before). In between brackets is the accumulation of finite forms and infinitives in the different stages, respectively.

Table 7: The development (accumulation) of lexical overlap between the verbal predicates in RIs and SFs, data from all six children

	I/II		III		IV	
	$N_{OVERLAP}$ (N_{INF}/N_{FIN})		$N_{OVERLAP}$ (N_{INF}/N_{FIN})		$N_{OVERLAP}$ (N_{INF}/N_{FIN})	
Abel	0	(13/2)	3	(34/15)	10	(46/24)
Daan	2	(24/9)	6	(36/21)	13	(53/35)
Josse	0	(20/5)	1	(38/11)	8	(53/21)
Laura	2	(14/8)	6	(45/17)	8	(55/24)
Matthijs	0	(36/2)	7	(63/14)	16	(73/35)
Peter	1	(21/3)	9	(31/18)	18	(33/33)

Table 7 shows that lexical overlap is nearly absent when the first finite verbs and infinitives are used alongside each other, i.e. in stages I/II. From stage III onwards, lexical overlap undergoes a steady growth.

LEXICAL VARIATION The investigation of the development of lexical variation of finite verbs serves two purposes. It provides further insight in the lexical knowledge that the children have in the four stages (besides lexical overlap and paradigmatic variation). It may also be expected that when the children learn to inflect, a sudden growth is noticeable in the number of different lexical items that carry inflection. In Table 8, we summarized the lexical growth of finite verbs. The table gives the lexical variation of finite forms in the different stages: N_{ACC} gives the accumulation, i.e. the number of new forms from stage to stage, whereas $N_{INCREASE}$ gives the total number of finite verbs in children's productive lexicon in the different stages. Like lexical overlap, lexical variation within the set of finite forms grows steadily from stage to stage. There is no sudden increase that reveals the acquisition of a morphological rule, however:

Table 8: Accumulation of finite verb types (i.e. growth of lexical variation) in the stages I, II, III and IV, data from all six children

	I/II	III	IV
	N_{ACC} ($N_{INCREASE}$)	N_{ACC} ($N_{INCREASE}$)	N_{ACC} ($N_{INCREASE}$)
Abel	2 (2)	13 (15)	9 (24)
Daan	9 (9)	21 (12)	35 (14)
Josse	5 (5)	11 (6)	21 (10)
Laura	8 (8)	17 (9)	23 (6)
Matthijs	2 (2)	14 (12)	35 (21)
Peter	3 (3)	18 (15)	33 (15)

The results in Table 8 show that lexical variation of finite forms undergoes a steady growth from stage to stage. There is no sudden increase pointing to the acquisition of a morphological rule. In § 7, we will come back to this issue.

PARADIGMATIC VARIATION If we collapse the data of the six children, there are a total of 116 finite verbs in stage II. They have either first person singular subjects or third person singular subjects. Only 8 forms carry an inflectional suffix and the rest of the forms are similar to the stem. Thus, the earliest finite verbs that children use hardly carry any overt signs of inflection. One could think that the absence of inflection shows omission of inflection, hence can be interpreted as an error that points to early segmentation. This is *not* the case: the earliest finite forms are predominantly auxiliary-like items with impoverished inflectional paradigms and that often do not have overt inflectional endings. In addition, the items with first person singular subjects are not expected to carry inflectional suffixes. From stage III onwards all children show some paradigmatic variation; they start to use different inflectional endings with the same verbal stem. Now, the lexical growth surfaces: the children do not only use verbs with impoverished inflectional paradigms anymore. From stage III onwards, the children vary number and distinguish between first and second/third person (like Dutch adults). Paradigmatic variation in these stages concerns agreement rather than tense. The (infrequent) past tense forms that are used in the stages III and IV are irregular: they are not formed by suffixation of the past tense suffix but they show vowel change in the stem. The past tense forms we found are highly similar for all children: *wou* 'want-SG-past', *was* 'be-SG-past', *deed* 'do-SG-past', *had* 'have-SG-past', *ging* 'go-SG-past' and *zat* 'sit-SG-past', which are the past tense forms of respectively *willen* 'want', *zijn* 'be', *doen* 'do', *hebben* 'have', *gaan* 'go' and *zitten* 'sit'. These are all highly frequently used verbs.

In stages III and IV, all children show some paradigmatic variation. They use different forms from the agreement paradigm. Tense inflection appears after stage IV. With regard to segmentation, the results suggest that the children are not able to segment verb forms earlier than stage III, simply because they lack the knowledge that enables segmentation: (i) there is no paradigmatic variation (either within finite forms or between finite forms and infinitives), (ii) there is only marginal lexical variation, and (iii) the lexical items that appear as finite forms do not bear inflectional endings.

INFLECTION ERRORS As children do not have any knowledge of inflection prior to stage III, it is not expected that errors with inflection appear prior to this stage. Errors indicate that children segment the unanalyzed chunks they have extracted from the input; they attach inflectional endings in a way that is different from what they could have heard in the input. In particular omissions of inflection, resulting in bare

stems, suggest that the children are segmenting. In Table 9, the errors in the finite verb forms of the six children are summarized. We only included thematic forms as non-thematic verbs are hardly inflected. Note that the errors concern agreement, as there is no tense inflection yet. Nearly all errors are made in stage III and IV. The errors in Table 9 are divided into "bare stems" and "wrong inflection". Items with wrong inflection are errors with person agreement that show overgeneralization of the 2nd/3rd person singular suffix [*-t*] or errors with number agreement that show overgeneralization of the plural ending [*-en*]. Bare stems can be items with dropped inflection or agreement errors (that is, overuse of 1rst person singular forms). As this distinction cannot be made, we listed them simply as "bare forms":[22]

Table 9: Inflection (agreement) errors in the data of six Dutch-speaking children

	N	*Bare stem*[23]	*Wrong Inflection*
Abel	119	11	4
Daan	289	16	2
Josse	137	21	2
Laura	157	28	2
Matthijs	95	9	5
Peter	424	21	2
Total	*1221*	*106*	*17*

Omission of inflection occurs as early as stage II, but the unambiguous errors appear in the stages III and IV. The errors are most frequently examples of overgeneralization of second/third person singular forms. This is illustrated in (19):

(19) a. ik ook ziet ook niet (Abel 2;03.02)
I also see-*2/3SG* also not
'I do not see it either'

b. ik doet weer (Josse 2;03.28)
I do-*2/3SG* again
'I do it again'

c. ik gaat me niet (Laura 3;03)
I go-*2/3SG* me not
'I am not going'

d. is ik weer (Matthijs 2;10.22))
be-*2/3SG* I again
'I am again'

e. ik heeft hem (Peter 2;03.21)
I have-*2/3SG* him
'I have him'

There are a few examples of regularization. In the case of the plural forms *he**vv**en* instead of *he**bb**en 'have'* (Daan 2;09.10) and *k**a**nnen* instead of *k**u**nnen 'can'* (Josse 2;07.20), the children base the plural forms on the singular forms *heeft* and *kan*, segmented the forms and added the plural suffix [*-en*]. In adult Dutch, these forms are irregular. Hence, the children cannot have heard them in the input and the forms must be the result of segmentation of inflecting. The data in Table 10 show that the children make quite a number of agreement errors: if the data of the six children are collapsed, and counting the overuse of bare stems (which is either drop of inflection or incorrect use of first person singular forms) and wrong inflection, the percentage of

errors is approximately 10 %.[24]

In her study on the acquisition of inflection, A. de Haan (1996) focuses on errors that Dutch children make with inflection. She reports data that are invaluable for the present study as they provide extra insight in the acquisition of inflection by Abel, Daan, Josse and Matthijs, more specifically in the errors that these children make. As A. de Haan did not select files out of the entire corpora of these children but examined all files and therefore made use of a data with greater density, she has been able to make more precise longitudinal observations about errors than we did. In addition, she followed these four children until an older age than we did.[25] Similar to what we reported, A. de Haan did not find tense inflection. This agrees with the conclusion that tense inflection is acquired after agreement inflection.[26] With regard to agreement, A. de Haan distinguished between person and number agreement. She observed that number errors start to appear at the age of 2;5 while person errors start to emerge around the age of 2;6. The older the children got, the worse they performed.[27] On the basis of this observation, it can be concluded that verb forms are segmented into stem and suffix around the age of 2;5/2;6.[28] A comparison with our data shows that these ages are exactly between the stages III and IV in the data we examined from these four children: the average age of Abel, Daan, Josse and Matthijs in stage III is 2;4 and in stage IV is 2;9. The conclusion is that the emergence of agreement errors indicates, that agreement inflection comes in between the stages III and IV. This is compatible with the emergence of lexical overlap, lexical variation and paradigmatic variation. On the basis of these three criteria, it was concluded that prior to stage III, the children were unable to inflect verbs, because they lack the knowledge to segment. From stage III onwards, the children have, theoretically, sufficient cues to segment verb forms. The appearance of errors between the stages III and IV shows that segmentation indeed follows rapidly.

4.3 Recapitulation

On the basis of the developmental curves of subject drop in RIs and FINs, our prediction was that children acquire inflection between the stages III and IV. To test this prediction, we look at a number of cues that indicate if the children's lexical knowledge contains the critical mass that is needed for learning to segment (which is, again, required for learning to inflect): paradigmatic variation, lexical variation and lexical overlap. Inflection errors provide test case, since they show when children actually segment. We found that paradigmatic variation and lexical overlap (i.e. paradigmatic and non-paradigmatic forms of one and the same verb) appear around stage III. Lexical variation within the set of finite forms and lexical overlap between finite forms and infinitives increase gradually over time. Taking the emergence of errors with inflection as conclusive evidence for the onset of the acquisition of inflection, we conclude inflection comes in between the stages III and IV. At first sight, the results suggest that the morphological distinction between past and present tense comes in after agreement distinctions are acquired. It must be emphasized, however, that past tense is infrequent in general *and* that many of the finite verbs that children acquire early have an irregular tense paradigm, which makes it difficult to draw any conclusions about the acquisition of tense inflection.

4.4 Conclusion

The predictions derived from our scenario are borne out. When children have collected sufficient lexical knowledge in order to segment forms (in the form of paradigmatic and lexical variation), children indeed segment, as shown by the appearance of inflection errors. This is between stages III and IV. A second effect of the acquisition of inflection is that the children distinguish finite verbs from infinitives. This distinction is

imprinted in the developmental patterns of subjects drop in RIs and FINs: the curves that start to deviate between stages III and IV. Between these stages, the finite [+AGR] verb is identified as being anaphoric (hence, needs an overt subject as antecedent), whereas the infinitive is identified as [-AGR] that has no grammatical relation to an overt subject (in the form of an anaphor-antecedent relation).

5 Very early contrasts between RIs and FINs

Considering the graphs, the children seem to drop subjects more often in FINs than in RIs, even in the earliest stages. This could indicate that children make the grammatical distinction between RIs and FINs earlier than we claimed that is made. Why do the children still show a discrepancy between subject drop in RIs and FINs, even though various other observations indicate that the children do not yet make a formal distinction between finite verbs and infinitives? Examples illustrating the causes for the early asymmetry are given in (20):

(20) a. dies **dieis** gogel (Abel 1;11.26)
that-is that-is bird
'That is a bird'

b. **weejdik**ook (Daan 2;00.22)
want-I-also
'I also want to have that

The sentences in (20) exemplify clitisation between finite verb and subject.[29] This kind of clitisation takes place in FINs but not in RIs because in RIs subjects and verb are not adjacent (due to the fact that Dutch is a SOV language with Verb Second in main clauses). (21) illustrates the contrast with RIs:

(21) a. **Peter** bal **pakken**
Peter ball get-*inf*
'Peter is going to get the ball'

b. **Josse** ook suiker **hebben**
Josse also sugar have-*inf*
'Josse also wants to have sugar'

For the children the adjacency of finite verb and subject poses a segmentation problem: it is not clear where the subject ends and the verb begins. In the very early stages, this adjacency results in early unanalysed forms like *kwil* (*ik wil* 'I want'), the inverted version *willik* (*wil ik* 'want I') or *tis* (*dit is* 'this is'), as illustrated in (18) above.[30] The consequence of the subject-verb adjacency in FINs and the contrast between FINs and RIs in this respect is that finite verbs appear in the early stages more often with overt subjects than infinitives do.

6 The increase of subject drop in RIs

We explained the deviating developments of RIs and FINs from stage III onwards as an effect of the acquisition of inflection. The patterns from stage III onwards give rise to one final question, though: Why does subject drop in RIs *increase*? We argued that children learn between stages III and IV that the infinitive is [-AGR] and hence, that the infinitive has no relation to the subject from now on. By implication, subjects are optional and not excluded, which is suggested by the trends in the graphs 2-7. Under the assumption that in the final stage we examined, the child RIs have gradually evolved into adult-like RIs (which is an effect of the

gradual replacement of RIs by FINs), we could hypothesize that the increase of subject drop in RIs between stages III and IV is the effect of a relative high proportion of RIs that require null subjects. The examples (12)-(18) indicate that adult Dutch RIs vary in this respect. Although the patterns of subject use in adult Dutch RIs are complex, we want to point to two examples of adult Dutch RIs that exclude overt subjects (when there is no contrastive stress): RIs expressing commands and intentions, exemplified in (22) and (23), respectively.

(22) *Jullie/PRO wegrennen![31]
you awayrun-*inf*

(23) *Ik/PRO even wachten
I *particle* wait-*inf*

Both these two RIs are modal, in the sense that they denote an event that possibly or necessarily takes place in the future. Not all adult RIs are modal, however. RIs embedded in a narrative context used to report a past event, as in (13) and (14), are nonmodal. These nonmodal RIs do not require subject drop. Therefore, the observation that subject drop in RIs increases in RIs after stage III may point to a relative increase of modal RIs requiring null subjects as in (22) and (23). This would be consistent with the observation that RIs in early Dutch child language are relatively more often modal when the children grow older (Blom and Wijnen, 2000).

7 The unnoticeable effect of a rule-learning

Earlier in this contribution, we hypothesized that the acquisition of inflection is noticeable in the lexical growth of finite forms. The rationale is that when the children acquire a rule (such as inflection), they are able to generalize. However, there is no sudden lexical growth of finite verbs during the period we examined. In this section, we show that this finding is not surprising, given the language Dutch children hear. This means that the absence of a sudden lexical growth of finite verbs between stages III and IV does not contradict our conclusion that inflection is acquired between these stages.

When we turn to the final stage of Dutch, i.e. adult Dutch, it turns out that the set of verb forms that appear as finite inflected forms is restricted. We investigated the files of Abel, Daan, Josse, Laura, Matthijs and Peter in order to learn more about the lexical variation of finite forms in the speech of the caregivers of the six children and found that 66.4 % of the finite verbs in the caregivers' set of finite verbs belong to the restricted set of modals and copula (5920 copula and modal verbs on a total of 8915 finite verbs) and 22.5 % denote other states like position (*liggen* 'lie', *zitten* 'sit', *zijn* 'be')[32], possession (*hebben* 'have') or mental states *(denken* 'think', *vinden* 'find/think', *weten* 'know', *bedoelen* 'mean', etc.). The rest, which is around 10 %, denote various events. This shows that lexical variation within the set of finite verbs is restricted, even in the case of adult speakers who are by all means able to inflect every possible verb. For our study the important implication of this observation is that the absence of a sudden lexical growth in the set of finite verbs in the child data does not contradict our conclusion that the children acquire a morphological rule. Rather, the absence of a sudden lexical growth is due to another factor that constraints lexical variation in finite verbs in early child Dutch as well as in adult Dutch. To our knowledge, there are no studies addressing the issue of lexical restrictions on finite verbs, or more specifically, on present tense in Dutch - the finite forms in the adult data we examined, denote predominantly present tense -. We do not go into it, but it is certainly an issue that needs to be studied in future research.

8 Discussion

The most successful theories so far that accounted for the patterns of subject drop in early child language, abstract away from developmental patterns within child language, but focus on differences and similarities between child and adult languages. As soon as developmental patterns are taken into account, these theories display a lack of explanatory force. We pointed to the importance of learning morphology and the prerequisites for learning verbal morphology in order to explain the observed developments. First, verbal morphology is a cue for the distinction between [+AGR] and [-AGR] verb forms and hence, for the distinction between finite verb and infinitive. Secondly, richness of the inflectional paradigm is a cue for the distinction between [+anaphoric] and [-anaphoric] inflection. Both specification of [±AGR] and [±anaphoric] are required in order to learn how and where to use a subject, since a [-AGR] verb does not bear a grammatical relation to the subject and [-anaphoric] inflection does not require overtness of the subject. Examination of the data of the six Dutch-speaking children indicates that our emphasis on morphology is justified: subject drop in RIs and FINs starts to deviate when inflection comes in. Like UAs, we claimed that subject drop relates to a lack of knowledge in the I domain (unlike TAs). Unlike UAs, however, we did not transfer the analysis of adult infinitival clauses to children's RIs. RIs - those of children as well as those of adult speakers of Dutch - differ from infinitival clauses with regard to subject use: overt subjects are not excluded, but either optionally present, obligatory present or not allowed in RIs.

Our main claim is that grammatical knowledge comes in gradually. Linguistic knowledge evolves from lexical to morphological to syntactic knowledge. Since an increase of and variation in children's lexical knowledge depends on distributions in the input, there is a step preceding the lexical stage, that is, the input. The outcome of our investigation is that Dutch children acquire inflection fairly late, namely two stages after the emergence of the first finite verbs. There is approximately 6 months between the first appearance of finite forms and the acquisition of inflection. This conclusion is contra claims made by Wexler (1998) who claims that children know inflection around the age of 2, whereas our claim is that it takes the children from this moment on still 6 months to learn inflection. Convincing evidence for our interpretation comes from the observation that children do not even meet the prerequisites for possible knowledge of inflection around the age of 2. How can children already inflect, without being able to segment? Further investigation pointed out that children, as soon as they meet the prerequisites, start to make inflection errors and the patterns of subject drop in RIs and FINs start to diverge. Thus, on the basis of (i) prerequisites for learning inflection, and (ii) tests for the acquisition of inflection, we decided that inflection comes in between stages III and IV, which is approximately a 8 months after the first infinitives appear and a half year after the first finite forms are produced. Given properties and patterns in the input, the late acquisition of inflection by Dutch children does not come as a surprise. On the basis of cross-linguistic comparisons, Slobin (1982) pointed out that rich inflectional paradigms are earlier acquired than poor inflections paradigms. Zero-morphemes and homo-morphemes are known obstacles for children. The Dutch inflectional paradigm contains both. Therefore, it is expected that Dutch children need time to acquire inflection. Furthermore, as has been discussed in the previous section (section 6) only a small set of verbs appears in the input as finite forms. These verbs differ from the verbs that occur as infinitives. Because of the marginal lexical overlap between finite forms and infinitives and the little lexical variation within finite forms in the input, it must take the children time in order to reach the critical mass needed for learning segmentation.

Since data from the earliest phases of grammatical development are sparse, it is not easy to provide a claim like ours with empirical arguments. Therefore, we conclude this section by discussing some methodological aspects of our study. Instead of focusing on differences and similarities between children and adults, we

concentrated on the small steps that children take and investigated differences and similarities between developmental stages. On the basis of theories about the adult system, prerequisites for rule-governed subject use were formulated: lexical variation, paradigmatic variation and lexical overlap. Additionally, predictions for co-occurring changes that are the effect of grammatical acquisition were derived: (i) inflection errors, and (ii) diverging patterns of subject drop in FINs and RIs. These prerequisites enabled us to determine the stage at knowledge of inflection is in reach of the children. The predictions enabled us to test if inflection is indeed acquired when the prerequisites are met. We did not restrict ourselves to a case-study of one child, but looked at data from six different children. This led not only to more data but gave us the possibility to test whether or not the observations could be generalized across children and hence, to be confident that our sample is representative for typically developing Dutch children. Finally, we used a (in the field of language acquisition not commonly-used) statistical method suitable for small datasets and appropriate for the comparison between datasets that differ in size.

9 Concluding remarks

In this contribution, we stressed the importance of longitudinal research for understanding children's grammatical development. Fine-grained analyses of empirical data illustrated this importance and show the success of our method, since they reveal changes that are obscured when data collected over a longer period of time are collapsed. The observed changes indicate that Dutch children acquire verbal inflection when they are between 2 and 3 years old. It takes the children a couple of months, because inflection in Dutch is poor and the cues provided by the input are not particularly overwhelming. When inflection comes in, it triggers syntactic generalizations, more specifically, knowledge of agreement leads to obligatory subjects in finite sentences and optional subjects in RIs. We provided our claims with data from six Dutch children. In spite of some variation with regard to age, the sequence of development is strikingly similar across children.

Acknowledgements

We are grateful to Jacqueline van Kampen, Evelien Krikhaar, Sharon Unsworth, Frank Wijnen and anonymous reviewers who gave helpful comments on earlier versions of this article. The research reported in this paper was supported by grants of the Dutch-Flemish Co-operative Programme on language and culture (VNC, nrs. 200-41.031 and G.2201.96), sponsored by NFWO and the Netherlands Organization for Scientific Research (NWO).

Bibliography

Blom, Elma (in press). *From root infinitive to finite sentence: the acquisition of verbal inflections and auxiliaries*. Doctoral dissertation, Utrecht Institute of Linguistics OTS

Blom, Elma and Frank Wijnen (2000). "How Dutch children's root infinitives become modal." *Proceedings BUCLD 24*. Medford MA: Cascadilla Press.

Boezewinkel, Simone (1995). *Van mij doen tot haar zusje had twee vriendinnetjes te spelen; een onderzoek naar de verwerving van pronomina in de Nederlandse kindertaal*. MA-thesis, Utrecht University.

Bol, Gerard and Folkert Kuiken (1986). "Het gebruik van pronomina bij kinderen van een tot vier." *Psycholinguistiek en stoornissen: toegepaste taalwetenschap in artikelen* 24: 47 - 58.

Bromberg, Hilary and Ken Wexler (1995). "Null subjects in child wh-questions". In: *MIT Working Papers in Linguistics 26*: 221 – 247.

Clahsen, Harald and Martina Penke (1992). "The acquisition of agreement morphology and its syntactic consequences: new evidence on German child language from the Simone-corpus." In: Juergen Meisel (Ed.) *The acquisition of verb placement: functional categories and V2 phenomena in language acquisition*. Dordrecht: Kluwer Academic Publishers.

Chomsky, Noam (1981). *Lectures on government and binding*. Dordrecht: Foris.

Chomsky, Noam (1986). *Knowledge of language: its nature, origin and use*. New York: Praeger.

De Cat, Cecile (2002). *French dislocation*. Dissertation, University of York.

Evers-Vermeul, Jacqueline (1997). *Pronomina en casus*. MA-thesis, Utrecht University.

Ginneken, Jacques van (1917). *De roman van een kleuter*. Nijmegen: Malmberg.

Guasti, Maria-Theresa (1994). "Verb syntax in Italian child language: finite and nonfinite verbs." *Language acquisition* 3: 1 - 40.

Guilfoyle, Eithne and Mairie Noonan (1992). "Functional categories and language acquisition." *Canadian journal of linguistics* 37: 241 - 272.

Haan, Alice de (1996). *De verwerving van morfologische finietheid in het Nederlands*. MA-thesis, Groningen University.

Haan, Ger de and K. Tuijnman (1988). "Missing subjects and objects in child grammar." In: Peter Jordens and Josien Lallemans (Eds.) *Language Development*. Dordrecht: Foris.

Haegeman, Liliane (1994). "Root infinitives, tense and truncated structures." *Language acquisition* 4(3): 205-255.

Haegeman, Liliane (1995). "Root null subjects and root infinitives in early Dutch." In: Frank Wijnen and Charlotte Koster (Eds.) *Groningen Assembly on Language Acquisition (GALA 1995)*. Groningen: Center for Language and Cognition Groningen.

Hamann, Cornelia and Kim Plunkett (1998). "Subjectless sentences in child Danish." *Cognition* 69: 35 - 72.

Hoekstra, Teun and Nina Hyams (1995). "Missing heads in child language." In: Frank Wijnen and Charlotte Koster (Eds.) *Groningen Assembly on Language Acquisition (GALA 1995)*. Groningen: Center for Language and Cognition Groningen.

Hyams, Nina and Ken Wexler (1993). "On the grammatical basis of null subjects in child language." *Linguistic Inquiry* 24: 421-459.

Jaeggli, Osvaldo and Nina Hyams (1988). "Morphological uniformity and the setting of the null subject parameter." *Proceedings of NELS 18*.

Kaper, W. (1976). "Pronominal case-errors." *Journal of child language* 3: 439 - 441.

Koeneman, Olaf (2000). *The flexible nature of verb movement*. Doctoral dissertation. Utrecht Institute of Linguistics OTS, Utrecht University

Krämer, Irene (1993). "The licensing of subjects in early child language." In: Colin Phillips (Ed.) *Papers on case and agreement II: MIT working papers in linguistics 19*.

Lebeaux, David (1988). *Language acquisition and the form of the grammar*. Dissertation, Amherst MA.

MacWhinney, Brian (1995). *The CHILDES project: tools for analyzing talk*. Hillsdale NJ: Lawrence Erlbaum Associates.

Peters, Ann (1982). *The units of language acquisition*. Cambridge UK: Cambridge University Press.

Petter, Marga (1998). *Getting PRO under control*. HIL Dissertations, Leiden University.

Poeppel, David and Ken Wexler (1993). "The full competence hypothesis of clause structure in early German." *Language* 69(1).

Powers, Susan (1994). *The acquisition of case in Dutch*. MA-Thesis. Nijmegen: Max Plank Institute.

Radford, Andrew (1988). "Small children's small clauses." *Transactions of the philological society* 86: 1 - 46.

Radford, Andrew (1990). *Syntactic theory and the acquisition of English syntax: the nature of early child grammars of English*. Oxford UK: Basil Blackwell.

Rizzi, Luigi (1982). *Issues in Italian Syntax*. Dordrecht: Foris.

Rizzi, Luigi (1992). "Early null subjects and root null subjects." *Geneva Generative Papers P* 0(1): 102 - 115.

Rizzi, Luigi (1994). "Some notes on linguistic theory and language development: the case of root infinitives." *Language acquisition* 3(4): 371 - 393.

Sano, Tetsuo and Nina Hyams (1994). "Agreement, finiteness, and the development of null arguments." *Proceedings of NELS 24*.

Schaeffer, Jeanette (1990). *The syntax of the subject in child language*. MA-thesis, Utrecht University.

Schaerlakens, Anne-Marie and Steven Gillis (1987). *De taalverwerving van het kind: een hernieuwde orientatie in het Nederlandstalige onderzoek*. Groningen: Wolters - Noordhoff.

Schütze, Carson and Ken Wexler (1996). Subject case licensing and English root infinitives. *Proceedings of BUCLD 20*. Somerville MA: Cascadilla Press.

Schüzte, Carson (1997). *INFL in child and adult language: agreement, case and licensing*. Dissertation MIT.

Slobin, Dan I. (1982). "Universal and particular in the acquisition of language." In: Eric Wanner and Lila Gleitman (Eds.) *Language acquisition: the state of the art*. Cambridge: Cambridge University Press.

Weissenborn, Juergen (1994). "Constraining the child's grammar: Local Wellformedness in the development of verb movement." In: Barbara Lust, Margarita Suner and John Whitman (Eds.) *Syntactic theory and first language acquisition*. Hillsdale N.J: Lawrence Erlbaum Associates.

Wexler, Ken (1994). "Finiteness and head movement in early child language." In: Norbert Hornstein and David Lightfoot (Eds.) *Verb movement*. Cambridge MA: Cambridge University Press.

Wijnen, Frank (2000). "Input, intake and sequence of syntactic development." In: Mieke Beers, Beppie van den Bogaerde, Gerard Bol, Jan de Jong and Carola Rooijmans (Eds.) *From sound to sentence*. Center for Language and Cognition, Groningen.

Wijnen, Frank and Gerard Bol (1993). "The escape from the optional infinitive stage." In: Ale de Boer, Jan de Jong and Rita Landeweerd (Eds.) *Language and Cognition 3: Yearbook of the research group for theoretical and experimental linguistics of the University of Groningen* .

---

[1] The distribution of PRO has puzzled many researchers over the years and has lead to different proposals. In the original PRO theorem, PRO is a pronominal anaphor (Chomsky, 1981). Alternative accounts have been proposed. It is argued that PRO is a pure anaphor, a pure pronoun or sometimes anaphor/sometimes pronoun. I will not go into the details of this discussion but a recent overview can be found in Petter (1998), for example.

[2] In particular, case errors with subjects in English child RIs.

[3] Rizzi (1994) assumes a split IP into TP (tense) and AgrSP (agreement).

[4] Material from the middle of a syntactic tree cannot be omitted as the structure is ordered by a UG principle. Weissenborn (1994) formulates this as the Local Well-Formedness Constraint stating that the representation of any utterance of the child is locally wellformed with respect to a representation of the adult grammar (p. 216).

[5] The AUX drop Account, Underspecification Account and Truncation Account differ most clearly with respect to their predictions concerning patterns of subject use in RIs and finite sentences. I already mentioned that the AUX drop hypothesis predicts that RIs must contain overt subjects. Hyams and Wexler (1993) pointed out that this prediction is not borne out. Observations from Dutch and German child language reported by Krämer (1993) and from Danish child language reported by Hamann and Plunkett (1998) indicate that RIs show a clear preference for subject drop and do not appear with overt subjects most of the time. Both the Underspecification and the Truncation hypothesis account for this observation and for the observation that finite sentences used alongside RIs do not share the preference for subject drop. Both hypotheses take asymmetries between RIs and finite sentences as their point of departure, as opposed to the AUX drop hypothesis (according to which RIs and finite sentences are structurally identical). According to both hypotheses, RIs are untensed clauses that contain a nonagreeing verb form. In this respect, RIs differ fundamentally from finite clauses. With regard to their specific ideas about subject drop in the OI

stage, the Underspecification and Truncation hypothesis differ, though

[6] See Van Kampen (1997) for detailed information about Laura's linguistic development.

[7] In Blom (in press), a more detailed examination of the stages can be found.

[8] Haegeman (1995) makes a distinction between different subjects: initial null subjects in root clauses (ia), non-initial null subjects in root clauses (ib) and null subjects in embedded clauses (ic):

(i) a. NULL SUBJECT heb 't zo koud (Hein 2;9)
have it so cold
'I am so cold'

b. in de creche # heef NULL SUBJECT dat gezien (Hein 2;9)
in the creche have seen that
'I have seen that in the creche'

c. als NULL SUBJECT niet # bang is (Hein 2;5)
if/when not afraid is
'when it is not afraid'

As I am interested in the correlation between absence of finiteness and subject drop (and not in specific predictions from the truncation hypothesis) I did not make this distinction.

[9] Laura's use of first person singular pronouns in stage III:

File	*Age*	*Subject pronoun*	*Frequency*	*Case*
17	2;04.01	ikke/ik	7	nom
		mij	1	acc
18	2;04.15	Ikke	1	nom
		mij	4	acc
19	2;05.00	Ik	1	nom
20	2;05.17	Ikke	1	nom
		mij/me	2	acc
21	2;06.10	ikke/'k	2	nom
		mij	3	acc

[10] In Blom (in press), additional evidence is given against the ATOM as a developmental model. If the ATOM is used to model changes within RIs, changes in the pattern of subject drop in RIs are inconsistent with changes in the meaning of RIs.

[11] Haegeman (1995) calls this *diary drop*. Van Kampen dubs the phenomenon *confession mode*. Under the analysis of Rizzi (1994) and Haegeman (1995) the examples of subject drop in Dutch exemplify topic drop. Haegeman (1995) gives the following examples to illustrate that the subject can only be dropped when placed in sentence-initial position. It is argued that the subject in this case is placed in the same extraposed position as the object in (ii), that is spec, CP:

(i) NULL SUBJECT heb het al gezien
have it already seen
'I have seen it already'

(ii) NULL OBJECT heb ik al gezien
have I already seen
'I have seen it already'

(iii) * Dat boek ken NULL SUBJECT niet
that book know not

Van Kampen (1997), however, stresses that subject drop in adult Dutch is restricted to first person subject drop, and hence, illustrates not just topic drop (because if it were topic drop such restrictions were not expected) but exemplifies a highly marked register of speech.

[12] The advantage of this system is that the entire paradigm is described with three binary features. When the agreement paradigm is described in terms of person and number, there is a feature that has three values (person) and

a feature with two values (number). The features [αspeaker] and [α addressee] are needed to distinguish both 1rst person and 2nd person from 3rd person forms.

[13] This is *syntactic* anaphoricity and relates to a variable that must be locally bound.

[14] Koeneman's proposal is part of a tradition that contains many proposals with small differences. I have chosen Koeneman's proposal, because it has a large empirical coverage. The proposal, moreover, exemplifies a structure building view and a very close relation is proposed between morphology and syntax. With regard to language development the large influence of learning morphology surfaces directly in a growing phrasal marker. See Blom (in press), for more details on this idea.

[15] The implication of this view is that RIs differ from infinitival complements in which overt subjects are banned. This is contra the UAs that analyze subject drop in RIs along similar lines as subject drop in adult infinitival complements. The examples in (12)-(15) indicate, however, that this simple transfer is incorrect and that child RIs have to be compared to adult RIs and not to adult infinitival complements.

[16] From the Dutch novel *Uit talloos veel miljoenen*, written by W.F. Hermans

[17] In the first optional examples in (12) the subject was present in the original sentence, while in (13) it was absent in the original sentence.

[18] From the Dutch novel *Meneer Visser's hellevaart*, written by S. Vestdijk.

[19] Note that when the subject in (16) is given contrastive focus, overtness of the subject is allowed, pointing again to pragmatic licensing instead of grammatical licensing:

(i) Nu **ik** even zitten
now I particle sit-*inf*
'And now, I am sitting down'

[20] Jaeggli and Hyams (1988) and Guilfoyle and Noonan (1992) have proposed explanations along similar lines.

[21] This term connects to a line of studies in which the lexical overlap between finite forms in early FINs and infinitives in RIs is studied (De Haan, 1987; Ferdinand, 1996; Wijnen, 1997).

[22] I did not include forms like *vin* 'find′ or *lus* 'taste' in which the children have omitted the final [-*t*]. This is no omission of inflection but omission of a part of the stem. In colloquial speech, adult speakers of Dutch omit this ending also quite often and say *lus je geen erwtensoep?* instead of *lust je geen erwtensoep?* 'don't you like peasoup?'.

[23] These do not contain utterances with first person singular subjects as in Dutch these forms cannot be distinguished from bare forms with dropped inflection.

[24] This contrasts with findings reported for German by Clahsen and Penke (1990) and Poeppel and Wexler (1993) and Guasti's (1994) findings for Italian. Both report hardly any agreement errors. They have carried out analyses over time, though.

[25] Data studied by A.de Haan (1996):

Child	*Age range*
Abel	1;10.30 - 3;04.01
Daan	1;08.21 - 3;03.30
Josse	2;00.21 - 3;04.17
Matthijs	1;10.13 - 3;07.02

[26] This does not mean that the children do not have any knowledge of the distinction between present and past. Recall that I found a few lexically marked tensed forms; this suggests that the children know that past tense can be marked with a verb, however, the grammatical means to do this comes in late.

[27] Of course, only up until a certain age. When the children master inflection, the error rate is expected to increase.

[28] I examined data from Laura as well as Peter. These two children may deviate form the other four children in two different ways. Laura has a delayed development, and, therefore may start to acquire inflection relatively late. Peter is a quick learner, hence may be earlier than the other children.

[29] Note that this kind of clitization is difficult to study systematically with corpus data, because there is a strong influence of choices made by the transcribers of the corpus data in this respect.

[30] Van Kampen (2002) also reports early subject-clitics in child Dutch.

[31] As a vocative, this is correct. In this case *jullie* 'you' and *wegrennen* 'run away' is separated by a prosodic break.

[32] I distinguished between the copula *be* ('he is mad') and the verb of location *be* ('he is at home').