ACCOUNTS OF THE OPTIONAL INFINITIVE STAGE

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[...] I succeeded in making my first drawing [...]:

I showed my masterpiece to the grown-ups, and asked them whether the drawing frightened them. But they answered: 'Frighten? Why should anyone be frightened by a hat?' My drawing was not a picture of a hat. It was a picture of a boa constrictor digesting an elephant. (Antoine de Saint-Exupéry - Le Petit Prince)

KEY POINTS
In this chapter you will find out about:
- cross-linguistic evidence that there is an early (optional) non-finite form stage in child language
- the possible causes of this phenomenon
- possible accounts of the shift from this stage to the adult target grammar

1. The Phenomenon

1.1 Cross-linguistic data

A large number of acquisitionists have established that there is an early stage in language development when child grammar allows two forms of declarative sentences: one with the finite form of the verb (i.e. the adult form) and one (deviating from the target grammar) with a non-finite form:

(1) grass eten (Dutch) (Haegeman 1995)
    grass eat-inf
(2) Michelle dormir (French) (Pierce 1989)
    Michelle sleep-inf
(3) Thorsten das hab'm (German) (Wexler 1994)
    Thorsten that have-inf
(4) He tickle a feet (English) (Brown 1973, CHILDES)
(5) Mama spat'.
(6) Mummy to sleep (Russian) (Brun et al. 1999)

This developmental stage varies from language to language. In languages like English, Dutch, Swedish, Danish, Norwegian, Faroese, Irish, Russian, Czech, Brazilian Portuguese, Icelandic or French the infinitival form of the verb is optionally used instead of the finite form (Wexler 1998). This is why this developmental step has been labelled the optional infinitive (Wexler 1994) or the root infinitive (Rizzi 1993/1994) stage. In
languages like Italian, Spanish, Catalan, Tamil, Turkish, Modern Greek or Romanian, root infinitives are absent or, at the most, extremely rare (as for example in Italian, Guasti 1993/4). This led to the conclusion that early root infinitives exist only in non-pro drop languages. Rhee and Wexler (1995) provide evidence in favour of this generalisation showing that it even holds within one and the same language. In Hebrew, root infinitives do not emerge in that part of the inflectional paradigm which allows null subjects but have been attested in that part which does not.

The existence /lack of root infinitives has also been related to the way in which finiteness is expressed (Hoekstra and Hyams 1998). If a language expresses finiteness exclusively by number morphology (the case of Dutch, for example) we expect to find root infinitives in early grammar. If finiteness is expressed by tense morphology (the case of Japanese) or at least by person morphology (the case of Italian, Spanish or Catalan), root infinitives will not occur in child speech.

Other studies have revealed that there is an equivalent non-finite stage for children acquiring languages which do not have an infinitive construction (Modern Greek, for example). This suggests that the notion of «root infinitive» is too narrow and that a more appropriate term for this phenomenon would be «early non-finite form» (Varlokosta, Vainikka and Rohrbacher 1997).

1.2 Overview of the figures

Root infinitives are used with a relatively high frequency, though the amount of infinitival forms at this stage may vary from language to language as well as from child to child and it obviously decreases with age. In the French production data examined by Pierce (1989), the Nathalie corpus of 291 sentences (gathered between age 1; 9; 3 – 2; 0; 1) contained 70 finite sentences (i.e. 24%) and 221 non-finite sentences (infinitival and participial clauses) (i.e. 76%), the Phillippe corpus of 494 sentences (gathered between age 2; 1; 3 – 2; 2; 2) contained 365 finite sentences (i.e. 74%) and 129 non-finite ones (infinitival and participial forms) (i.e. 26%), while in the Daniel corpus of 247 sentences (gathered between age 1; 8; 1–1; 9; 3) there were 99 finite (i.e. 40%) and 148 non-finite (participial and infinitival forms) sentences (i.e. 60%). It has also been noticed that in the case of the French-speaking children the number of non-finite utterances decreases with age.

Haegeman (1995) examined the distribution of finite and non-finite (root infinitives) clauses in the Hein (a Dutch-speaking child) corpus (gathered between age 2; 4–3.01) and the results showed that out of 14,580 total utterances 84% were finite and 16% were root infinitives.

Platzack (1990) reported that, in the Swedish production data which he examined, 61% of the utterances contained a finite verb and 39% a root infinitive.

Radford (1990) reports that root infinitives are relatively frequent in child English and Boser et al. (1992) and Weissenborn (1990, 1994) reach the same conclusion with regard to child German.

1.3 Root infinitives and early syntax

When used, the infinitival form occurs in the appropriate structural position. Investigations of child Dutch (de Haan 1986, Jordens 1991) and child German (Meisel 1990, Jordens 1991, Weissenborn 1991) have pointed out that root infinitives are
appropriately placed in clause final position. In Scandinavian languages, they correctly occur after the negative adverb and in French to the right of the negative particle pas (Verrips and Weissenborn 1992). It is also worth mentioning that, during this stage, when the child uses the finite form, he/she uses it correctly in terms of morphological markers. These data suggest that the child recognises the infinitive as a grammatical construction different from the finite form of the verb, and places it in the appropriate structural position. What the child does not seem to know yet is that root infinitives are disallowed in those contexts which require a finite form.

The syntax of root infinitives interferes with some systematic properties of child speech at this stage:

(i) in non-null subject languages, null subjects are allowed in both finite and non-finite utterances (Hyams 1996). Data from child English (CHILDES, MacWhinney and Snow 1989; Brown 1973) (6a) and child French (Rasetti 2000) (6b) provide evidence that, during this stage, children acquiring a non null subject language may produce null subject infinitival constructions:

\[(7) \quad \begin{align*}
    a. \ & \text{drop bean/} \text{fix Mommy shoe} \\
    b. \ & \text{est pour Marc}
\end{align*}
\]

The examination of the distribution of overt subjects in child Dutch (the Hein corpus, age 2; 4 – 3; 1) (Haegeman 1996) leads to the conclusion that overt subjects tend to be more frequent in finite clauses (68% of the finite clauses in the corpus had an overt subject). Only 15% of the root infinitives had an overt subject. This points to the fact that during the optional infinitive stage children whose target language does not license null subjects do produce null subject utterances with a clear tendency of dropping the subject more often in non-finite constructions.

(ii) root infinitives are rarely negated (Friedemann 1993/1994, Haegeman 1995, Jonas 1995). In child Dutch, for example, negative root infinitives are not used very frequently. The examination of the Hein corpus (Haegeman 1995) shows that out of 721 root infinitives only 38 are negated. Negated optional infinitives seem to be rare in child French (Friedemann 1993/1994).

(iii) wh-questions are not attested in non-finite utterances in early Dutch (Haegeman 1995), early French (Crisma 1992) or early German (Weissenborn 1992, 1994). Crisma (1992) examined data from child French and found practically no root infinitives in wh-questions. However, they have been attested in child English (Roeper and Rohrbacher 1994, Bromberg and Wexler 1995).

(iv) in languages which allow subject clitics (such as French), these clitics are absent in non-finite structures (Pierce 1989). The findings in Hamann et al. (1996) with respect to child French are extremely telling: out of 278 subject clitics present in the corpus (of a monolingual French-speaking child) which they analysed, only 5 (i.e. 1.8%) occurred in root infinitives.

(v) object clitics are absent in root infinitives in early Dutch but they are present in early French and early Spanish (Torrens and Wexler 1995). Haegeman (1996) found one single object clitic in the Hein corpus, the Niek corpus (CHILDES 1985) and the Thomas corpus (CHILDES 1985). Object clitics are present in finite clauses though. The difference across languages with respect to the presence/absence of object clitics at this stage may be linked to the fact that object clitics occupy different positions in the structure of these languages.
(vi) though auxiliaries may appear in finite clauses they never occur in root infinitives. Haegeman (1996) noticed that in child Dutch all the verbs in root infinitives are lexical verbs. *Modal auxiliaries and aspectual auxiliaries are entirely absent.*

(vii) *Case on the DP subject may be Nominative, Accusative or Genitive.* English-speaking children may produce wrongly cased DP subjects (Accusative or, occasionally, Genitive) at this stage.

(8) me go
(9) My can do this.

Interestingly, regardless of the morphological Case assigned to the DP subject, this will always occur in pre-verbal position.

All these properties as well as the fact that the child seems to differentiate between non-finite and finite forms in terms of structural position during the same stage suggest that root infinitives cannot be simply interpreted as the result of lack of knowledge of inflection.

**1.4 Early root infinitives vs. adult root infinitives**

During this stage, child grammar deviates from adult grammar in allowing a non-finite form to be used in those contexts where finite forms are used in adult speech, on the one hand, and in allowing two forms (the finite and the non-finite one) for apparently the same meaning, since children can optionally use one form or the other in matrix sentences. Actually, as will be pointed out immediately, it is not at all clear whether children use the two forms with exactly the same meaning.

Also, it is not clear either whether root infinitives in early grammar are different from the ones which exist in adult speech. In Dutch, for example, they occur with imperative force (9) or in the so-called 'mad magazine sentences' (10) (Haegeman 1995, 1996, Wijnen 1996):

(10) Hier geen fietsen plaatsen!
Here no bicycles place-inf

(11) Jan met mijn zus trouwen?! Dat nooit.
Jan my sister marry-inf?! That never.

In English, root infinitives are used in the so-called mad magazine sentences (Avrutin 1997, Schütze 1997):

    b. *My brother marry John.* Over my dead body!
    c. Herman eat bean sprouts. Why?

Root infinitives are also allowed in Italian adult grammar (Rizzi 1993/1994) in specific contexts:

(12) a. *Io fare questo? Ma!*
    me do-inf that? never!
    b. *Partire immediatamente!*
    leave-inf immediately

In adult German, such constructions are used as answers to an immediately preceding question which contains a modal:
(13) Person A: Was willst du jetzt machen?
what want-2nd pers.sg. you now do-inf

Person B: Kuchen essen.
cake eat-inf (Ingram and Thompson 1996: 114)

Do the empirical data in (9)–(13) provide evidence that early and adult root infinitives have the same feature(s)?

According to Hoekstra and Hyams (1998), they share at least the feature [-realised]:

Jussives are closest to the kinds of RIs used by children. Like most of the children’s RIs, they involve deontic modality. The category of Mad Magazine sentences likewise denotes non-realized eventualities. The possibility of the eventuality is mentioned, which is then commented on in the next statement. So we maintain that the modal interpretation of children’s RIs is determined by the inherent quality of infinitives as being marked [-realized]. And this is a feature of adult RIs as well (Hoekstra and Hyams 1998:103).

But, according to a different trend of analysis, children’s root infinitives seem to be different from the ones used in adult grammar. Firstly, in adult speech they are always associated with a special register, whereas children use root infinitives in those contexts in which a finite form should be used. In adult German, omission of the subject is compulsory in root infinitives. In (13) the presence of the subject in Person’s B answer will result in ungrammaticality. In children’s root infinitives, the subject is not always omitted:

(14) a. Nicole: Nicole wurst haben.
Nicole sausage have-inf
b. Dorothy: Bebi haye machen
baby sleep make-inf
c. Katrin: Katrin machen.
Katrin do-inf

(Ingram and Thompson 1996: 114)

The interpretation of root infinitives is also more generous in child speech. Children seem to interpret these non-finite structures as having both realis, descriptive meanings (usually describing a present ongoing activity, but also past or future events, Behrens 1994, Wexler 1994) and irrealis, modal meanings (often associated with volition)(Hoekstra and Jordens 1994 for Dutch, Plunkett and Strömqvist 1990 for Swedish, Meisel 1990 for French). The prevalent interpretation of optional infinitives seems to differ from one language to another. It has been noticed that in English the use of optional infinitives to describe past situations is quite frequent (Wexler 1997) but modal meanings are also attested. The results of a comprehension experiment (Shönenberger, Pierce, Wexler and Wijnen 1995) proved that English speaking children also tend to interpret root infinitives as describing present on-going activities (see also Hyams 1996 for a similar conclusion with respect to the interpretation of root infinitives in early English). In Dutch, however, the modal interpretation seems to be prevailing (Wijnen 1994, Haegeman 1996); still, the ongoing activity reading has also been attested. It also seems that the descriptive reading is more frequent in earlier parts of the data examined. In German, the meaning is often modal (see Ingram and Thompson 1996). In Russian, root infinitives are used to denote present, past or future events (Brun at al. 1999).

Examination of child corpora also reveals the existence of a certain correlation between finiteness/non-finiteness and the aspectual class to which the verb belongs: root infinitives tend to be mainly associated with non-stative verbs1 (Ferdinand 1996 for

1 For more on possible correlations between aspectual classes of verbs and early temporal-aspectual structures see 5.2.
French, Wijnen 1996 for Dutch, van Gelderen and van der Meulen 1998 for Russian). Such data lead to the conclusion that the interpretation of children’s root infinitives differs cross-linguistically but also from the interpretation of adult root infinitives.

1.5 A few questions

Various theories have been proposed to account for this cluster of properties, often with the aim of finding an answer to the following questions:

(i) why is optionality allowed in child grammar during this stage?
(ii) why is the non-finite form allowed in «finite» contexts in spite of the fact that children know the relevant finite forms which they use in the appropriate structural position?
(iii) why do root infinitives occur in some languages but are absent in others?

Most acquisitions agree that the optional infinitive stage does not reflect lack of knowledge of morphological inflection. Some argue that it reflects a syntactic deficit of some kind, others that it can be explained as a processing failure or as the child’s tendency of using economic forms, which do not require a heavy computational process.

The accounts that have been proposed rely on one model of language development or the other, adopting either the continuity view or a variant of the weak continuity model. However, one can notice that very often (especially within the grammar deficit accounts) the key problem seems to be related to the assumed absence/presence of some functional projections in the child’s phrase marker or to some underspecification of features associated with functional projections. Radford (1990) and Vainikka (1994) among many others analyse root infinitives as bare VPs, i.e. as lacking any functional projection. With Rizzi (1993/1994) and other supporters of the truncation theory only some functional projections are missing, in particular Tense and all the projections higher than TP. With Hyams (1996) some functional projections are underspecified, whereas with Boser et al. (1992) root infinitives are full CPs, containing all the functional projections of adult grammar but also a null auxiliary.

2. Syntactic accounts of the optional infinitive stage

2.1. Tense is optional

Wexler (1990, 1994) was the first to systematise the phenomenon, which he called optional infinitive. He noticed that, at an early stage in their language development, children optionally produce finite and non-finite forms in matrix clauses (phenomenon discussed in detail for the first time in Poeppel and Wexler 1993). Since in English there is no clear difference between the infinitival form and the uninflected present tense form, the status of non-finite utterances in child English seemed a less clear case. Thus, Wexler documented the optional infinitive stage with data from a variety of Romance and Germanic languages, where the infinitive form can be morphologically distinguished from the form used in most of the present-tense paradigms:

(15) a. pas manger la poupée (French)
    not eat-inf the doll
b. Zahne pussen (German)
teeth brush-inf
c. *pappa schoenen wassen* (Dutch)
daddy shoes wash-inf
d. *det ikke vaere* (Danish)
it not be-inf

Such cross-linguistic data provide support that there is a developmental stage during which children use both finite and infinitival forms in matrix clauses in various languages. The attested optionality clearly distinguishes child grammar from adult grammar and points to the fact that the former allows both adult-like and non-adult-like constructions simultaneously.

Wexler accounts for the optional infinitive stage within the Strong Continuity model. The core idea of his hypothesis is that children have a problem with Tense, which can be optionally omitted. Omission of Tense will result in infinitival structures used in contexts requiring finite forms. UG is assumed to be available from the outset of acquisition; consequently, children know the processes of movement at this early stage (before age 2), when they optionally use finite and non-finite forms. Since movement is interwoven with Inflection, the existence of movement at this stage is taken as strong evidence that the full functional structure is in place.

Wexler’s argument that there is movement in child grammar at this stage relies on data from child French. In adult French, finite verbs always move to Inflection, around the negative particle *pas* (as in 16a, where the finite verb occurs to the left of *pas*), whereas non-finite verbs are not required to move and remain in situ (as in 16b, where the non-finite verb occurs to the right of *pas*) (Pollock 1989):

(16) a. *Jean n’aime pas Marie.*
    Jean not loves *pas* Marie
b. *ne pas sembler heureux*
    not *pas* seem happy

data from child French show that children make the distinction finite/non-finite: if the verb is finite, *pas* is always placed in post-verbal position (finite verb + *pas*) (17) whereas it is placed in pre-verbal position if the verb is non-finite (pas + non-finite verb) (18):

(17) a. *marche pas*
    goes *pas*
b. *est pas mort*
    is *pas* dead
c. *trouve pas*
    finds *pas*

(18) a. *pas manger la poupée*
    *pas* eat-inf the doll
b. *pas tomber bébé*
    *pas* fall-inf baby
c. *pas attraper une fleur*
    *pas* take-inf a flower

On the basis of the French data², Wexler reaches the conclusion that there is an

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² Atkinson (1996) points out that the French data are not as compelling as Wexler suggests. All the infinitive examples used to illustrate that non-finite verbs do not move are -er infinitives. Or, this form is homophonous with the French past participle as well as with the 2nd pers.pl.form of the indicative present, which can also be used as an imperative. Less ambivalent examples backing up the quantitative data might
early stage during which:

(i) finite and non-finite forms are in free variation
(ii) the finite forms have moved to Inflection

This conclusion is extended to child language in general and the following theoretical implications are tested cross-linguistically:

(i) at the optional infinitive stage the child knows the possibility of head movement, in particular verb movement;
(ii) the child knows that verb movement is forced in the finite clause;
(iii) the child knows the Principle of Economy which implies that infinitival verbs do not move;
(iv) the child does not know that non-finite verbs cannot appear as main verbs.

The examination of the available data from child German, child Dutch, child Swedish, child Danish and child Norwegian prove, according to Wexler, that (i) – (iv) above are true. By analogy with the Germanic languages that have been examined, it is predicted that the English-speaking children also produce the infinitive when they do not add -s to the verb. This view contradicts the traditional assumption that young children acquiring English alternate between the verb stem and the finite form for 3rd person singular present tense. Certain properties follow:

(i) the non-finite form should be optional;
(ii) non-finite negative sentences should be of the form Negation + non-finite verb:

(19) Mary not play football.

Both properties are found in the available empirical data. English-speaking children use both the finite and the non-finite form in matrix clauses during this stage. The finite form is produced more frequently as they get older. With respect to negation, there is evidence that there is an early stage at which children acquiring English produce sentences in which negation is placed in “medial” position (Klima and Bellugi 1966):

(20) a. He no bite you.
    b. I no want envelope.

The examination of corpora of child English (Harris and Wexler 1994) shows that in these sentences, the 3rd person singular -s appears only rarely. Stromswold’s (cited in Wexler 1994) data prove that there are very few cases when the verb in medial negation sentences is inflected. The data from the domain of negation are taken as evidence that the child distinguishes between finite and non-finite forms. Stromswold’s data also confirm that at this stage children know agreement, since they do not use -s in contexts where the subject is other than 3rd person singular, which leads to the conclusion that their root infinitives cannot be the reflex of their not knowing agreement.

Wexler proposes that Tense is optional at this stage. Children have the concept of time but they do not always make the appropriate grammatical distinction. They use root infinitives in both present and past contexts. The child does not interpret inflection,

\footnote{have included common French verbs such as voir ‘see’, venir ‘come’, dormir ‘sleep’, prendre ‘take’ and faire ‘do’ (Atkinson 1996:460).}

3 In more recent studies, Wexler claims that optional infinitives have AGR or Tense (or both) missing (see, for example, Wexler 1997).
in particular the values of T are not known yet:

\[ \text{the child does not distinguish values of } T. \text{ If values of } T \text{ are not distinguished, then there is no semantic role for } T \text{ to play at LF... The child may not know tense, but that says nothing about the understanding of time. Tense is a formal syntactic notion; time is not.} \text{ (Wexler 1994: 338).} \]

When Tense is present in the phrase marker, the verb raises to Tense. Tense and Agreement are both present. When Tense does not exist in the phrase marker, the verb will be treated like an infinitive, there will be no raising and tense and agreement markers will not appear on the verb. Wexler also argues that the syntactic derivations with/without Tense are equally costly, hence optionality is allowed. Children will stay in the optional infinitive stage as long as they do not use past tense forms. The shift from child grammar to adult grammar (where Tense is not optional) is explained as the result of the maturation of the values of Tense.

Wexler’s optional tense theory can account for many syntactic properties of the optional infinitive stage such as (i) the absence of subject and object clitics in Dutch or the absence of subject clitics in French (which have been analysed as occupying a position higher than Tense); (ii) the absence of non-finite wh-questions in Dutch and German (where, if the verb has to move to C it will first have to move to I, i.e. it results in finiteness) but the possibility of having non-finite wh-questions in English (where the presence of a wh-element in Spec of CP does not require the verb to move to C; English is not V2) and (iii) the presence of null subjects in non null subject languages (if Tense is underspecified or optional null subjects will be allowed).

There are, however, some empirical problems with this account. Thornton (1998) points out that in her Aurora corpus there are 11 instances of medial negation preceding an inflected, i.e. finite, verb (21). Recall that Wexler’s prediction is that such constructions should occur with non-finite verbs.

(21)   a. This not goes here.
       b. This is not goes in trash can.
       c. That not works.

At the core of Wexler’s hypothesis stands the idea of optionality. It is, however, generally accepted that optionality is not allowed in adult grammar. Even if one accepted that child speech differs from the target with respect to optionality, it is difficult to see why optionality of Tense in particular is allowed during early stages of linguistic development. It has already been pointed out that empirical data suggest that root infinitives are associated with certain meanings, different from those of the finite form. This means that it is not at all clear that the child uses finite and non-finite forms in free variation. Moreover, what exactly makes the child finally realise that optionality is disallowed if the child can use the finite forms correctly during the root infinitive stage? In what way can we link maturation of Tense to the concept of optionality? Wexler’s account does not answer these questions. Nor does it specifically say whether optionality of Tense means optional absence of the (whole) Tense projection or optional lack or optional underspecification of Tense features.

### 2.2 The Agreement/Tense Omission Model

Schütze and Wexler (1996) argue that during the optional infinitive stage child
grammar allows either Tense or Agreement or both to be optionally omitted. Wexler’s previous analysis, according to which only Tense is optional during this stage, is modified in order to allow a unifying account of early root infinitives and non-Nominative subjects that have been attested in child English non-finite constructions.

Such an analysis implicitly states that early infinitives are of three kinds:

(i) AGR is present but Tense is missing;
(ii) Tense is present but AGR is missing;
(iii) both Tense and AGR are missing.

Each kind is related to different types of subjects. When AGR is present, the subject is claimed to surface as Nominative. When Tense is present but Agr is missing, the DP subject receives Accusative, taken to be the default Case in English. When both Tense and AGR are missing, the subject surfaces as Genitive.

One of the advantages of this analysis (though only when applied to English) is precisely that it tries to relate the optional infinitive stage to the existence of Nominative and non-Nominative subjects. Also, two of the puzzling questions with respect to the properties of root infinitives (assumed to be more or less truncated structures) are why and where the DP subject moves and from where it receives Case. The present account, by allowing Agr to be present in some cases, can explain why and where the subject moves in those structures which have Agrs, analysed as the projection responsible for Nominative Case assignment: the DP subject moves to the Spec of Agrs in order to receive/check Case, and it is assigned Nominative Case in a Spec-Head configuration with Agrs:

(22) AgrsP
     2
    Spec
     2
  DPi-Subject
     2
   Agrs
     2
      VP
    Spec
      2
     V
      t
     V...

The result is a sentence of the type he play.

But the model is less convincing with respect to Accusative and Genitive DP subjects. In particular, the explanation of why Accusative is assigned is at least vague: [...] if no case feature is specified on the subject (since AGR is not present), then only the ACC form of the pronoun (which has no case features specified on it in English) will be consistent with the representation, and this ACC form will be inserted. (Wexler 1998:49)

One puzzling question is related to the cause of such a generous optionality in early grammar: what exactly makes the child omit Tense at some time, at some other time Agr and at some time both? Also, no explanation of why root infinitives occur in some languages but not in others is offered.

### 2.3 The Unique Checking Constraint

Wexler (1998) revisits the Agreement/Tense omission model from a minimalist perspective (Chomsky 1995) in an attempt at explaining, in a more appropriate way, why
subjects move in early infinitive constructions and why the optional infinitive stage has been attested in some languages but not in others.

One crucial theoretical assumption on which the new analysis relies is that DPs are allowed to move to higher projections even when they do not receive Case there. Movement can be driven by categorial features, such as D (Determiner) features, associated both with the DP and with the functional projection TP. Wexler extends this property to the Agreement projection, such that both TP and AgrP have a D feature:

Both AGRS and TNS have a D feature which must be eliminated by checking against the D-feature of a DP which raises up for checking (Wexler 1998:51).

The D features of Tense and Agr are assumed to be strong and, consequently, must be eliminated by checking. Thus, in a finite clause, where both Tense and Agr have been projected, the D-feature of Tense will attract the subject DP first and then the D feature on Agrs attracts it to the Spec of Agrs:

\[
\begin{align*}
\text{Checking 2 of D} & \quad \downarrow \\
\text{Spec} & \quad \text{Agrs'} \\
\text{Agrs} & \quad \text{TP} \\
\text{Spec} & \quad \text{T'} \\
\text{T} & \quad \text{VP} \\
\text{Spec} & \quad \text{V'} \\
\text{DP} & \quad \text{V} \\
\text{Checking 1 of D} & \quad \downarrow \\
& \text{VP} \\
\end{align*}
\]

In a finite clause, the D feature on a DP is checked twice. Recall that, according to the model proposed in Schütze and Wexler (1996), either Agrs or Tense may be optionally omitted. According to Wexler (1998), when Agrs is present, the subject DP is attracted by the D feature of Agrs and raises to Spec of Agrs (as in 22). When Tense is present but Agrs is missing, as in (24) below, the DP is attracted by the D feature of Tense and raises to the Specifier of TP:

\[
\begin{align*}
\text{Spec} & \quad \text{TP} \\
\text{T'} & \quad \text{VP} \\
\text{T} & \quad \text{VP} \\
\text{Spec} & \quad \text{V'} \\
\text{DP} & \quad \text{V} \\
\text{Checking 1 of D} & \quad \downarrow \\
& \text{VP} \\
\end{align*}
\]

Tense is not a Case assignor and hence default Case (Accusative) is spelled out by the morphology. The result will be an infinitive construction of the type *him play*.

Notice that such derivations depart from the double checking derivation in adult syntax, represented in (23). Why are they allowed in child syntax? Wexler proposes that the child has problems with checking the D feature twice. The claim is that in early grammar, during the optional infinitive stage, a genetically-specified Unique Checking Constraint (UCC) may sometimes disallow the D feature on a DP to be checked more than once.

\[\text{During the optional infinitive stage the Unique Checking Constraint may prevent the system from checking the D feature of the subject DP more than once.}\]

\[\text{In Wexler (1998) the possibility of both Agrs and Tense to be missing is no longer discussed.}\]
than once, i.e. against more than one single functional category. The UCC is taken to be a property of early grammar, whose role is to constrain the computational system of child syntax. Optionality of Tense/Agreement has been now replaced by optionality of the UCC, which sometimes constrains and sometimes does not constrain the derivation. When it does not, it allows for finite clauses (which have been attested) when double-checking is involved.

Properties of the optional infinitive stage are explained as derived from the UCC: whenever the constraint is at work, the D feature on the DP subject can be checked only once, leaving the other functional category with an unchecked [non-interpretable] feature. But a derivation with unchecked strong features cannot converge. In order to save the derivation, the child's computation will attempt a minimal-preserving change of the initial representation (25), which will allow either Agrs (26) or Tense (27):

\[
\text{(25) Agrs [D] T [D] [vp DP V...]
}\]
\[
\text{two D features need checking}
\]
\[
\text{(26) Agrs [D] [vp DP V...]
}\]
\[
\text{(27) T [D] [vp DP V...]
}\]

The child knows that Agrs and T are required in finite clauses, but the UCC leads to the omission of one of them. On this analysis, the mechanism of convergence in child syntax is constrained by the same principles which govern adult grammar; what distinguishes early grammar from adult syntax is precisely the UCC.

This explanation encounters at least one problem. First, it does not take verb movement into account. In many null subject languages the verb is assumed to move to Agrs. In this case, the representation of a sentence in which the DP has moved to check the D feature of Tense could at best be the representation of a sentence with a post-verbal subject. In this case, the analysis fails to explain the movement of pre-verbal subjects.

It is also the UCC which lies at the core of the explanation of why null subject languages do not allow an optional infinitive stage. According to Wexler, the difference between pro- and non pro-drop languages is related to the possibility of the UCC to apply. He argues that in null subject languages, Agrs is pronominal and consequently does not need a D feature (it is D). The representation would be the one in (28):

\[
\text{(28) Agrs T [D] [vp DP V...]
}\]
\[
\text{Only one single D feature needs checking}
\]

The child knows the correct parameter setting for Agrs in his/her language. In a null subject language, with one single D feature to check, the UCC has no reason to apply otherwise but vacuously. This does not imply, however, that the UCC does not apply. It is present and it applies in other areas. For example, the early omission of auxiliaries is explained as deriving from the UCC. Auxiliaries are taken to have a D feature which needs checking, in which case the representation of a sentence containing an auxiliary will be the one below:

\[
\text{(29) Agrs T [D] Aux [D] [vp DP V...]
}\]

The DP will first be attracted by the strong D feature on Aux. Then, by the D feature on Tense, in violation of the UCC. But, if the UCC holds, the strong D feature on Tense will remain unchecked and the derivation will crash. What will the child do in
order to save the derivation? Recall that child syntax is constrained by the same
principles of convergence as the ones at work in adult grammar. Wexler proposes that
when the UCC holds, the auxiliary will be omitted in order to save the derivation.

Notice, however, that Wexler’s account relies on the assumption that in null
subject languages auxiliaries head their own projection (as proposed for Italian in Belletti
1990) lower than Tense. Under other analyses, auxiliaries are taken to occur under
Tense or Agreement, which would pose a serious problem for Wexler’s account.

2.4 The truncation theory

Rizzi (1993/1994) explains the optional infinitive stage within the truncation
model, according to which root infinitives are defined as structures projected only as far
as a bare VP or AgroP, i.e. where the Tense and the Agrs projections can be missing:

(30) Root infinitives = VP / AgroP

Child grammar would allow the option (absent in adult grammar) of «stripping
off» clausal projections, i.e. of optionally truncating structure (vs. adult grammar where
every well-formed clause is a CP).

Rizzi’s account predicts a number of generalisations with respect to root
infinitives. For example French subject clitics have been analysed as occupying Agrs.
The fact that these elements are absent in early root infinitives can be related to the
absence of the relevant functional projection which could host them, i.e. Agrs.

Adopting the hypothesis in Zanuttini (1991), according to which there is a
selection relation between Neg and T, and NegP is higher in the phrase marker than TP,
Rizzi assumes that in the absence of Tense, we should expect few negated root
infinitives. This prediction is supported by data from early Dutch (Hoekstra and Jordens
1991), for example. Dutch children tend to use niet (not) with finite verbs and modals,
but nee (no) with the infinitival form of the verb. The latter may be identified as
constituent negation. Data from child French are more contradictory. Pierce (cited in
Wexler 1994) argues that there are many negated root infinitives in early French and
that in this case pas precedes the non-finite verb.

Truncation can also account for the licensing of null subjects. Root infinitives are
likely to occur with null subjects because the infinitive is a non-finite form, which lacks
Tense, and hence it can license null subjects of the type PRO.

The absence of a root infinitive stage (or rarity of root infinitives) in languages
with highly inflected morphology, like Italian, is explained as deriving from properties of
the infinitive in these languages. In Italian, the infinitival form of the verb has been
analysed as raising to Inflection (Belletti 1990). Consequently, truncation to VP would be
impossible in this case.

One can notice that the absence or rarity of negated root infinitives can be
accounted for within Rizzi’s model only provided one also adopts the view that NegP
dominates TP universally. Otherwise, one has to find a different explanation.

Also the explanation with regard to why root infinitives are absent or extremely
rare in child speech whose target language is morphologically rich relies on Belletti’s
analysis of Italian infinitival clauses. Further research is needed either to find supporting
evidence that the infinitive verb raises to Agrs in all pro-drop languages or to find a
different explanation for the generalisation «if non-pro drop then root infinitive». Data
from Romanian, where the infinitive never agrees with either the DP subject or the DP
object, suggest that a different explanation is needed.
2.5. A deficient grammar-discourse relationship

Hyams (1996) explains the optionality of infinitives in early child language as the reflex of a deficient relationship between grammar, on the one hand, and semantics and pragmatics, on the other hand. On this view, child speech and adult speech would differ only with respect to the relationship between grammar and discourse. Children’s grammar does not have to change during the process of acquisition, the phrase marker is assumed to contain all the functional categories which exist in the target grammar from the outset of acquisition. But root infinitives are allowed because some functional projections within Inflection are underspecified at this early stage.

Underspecification of Inflection is discussed by analogy with underspecification in the nominal domain. Finite morphology and determiners are taken to perform similar functions: tense ‘anchors’ the state of affairs denoted by the verb in time (relative to discourse time) and determiners ‘anchor’ discourse referents, marking temporal and, respectively, nominal specificity. At the syntactic level, both finite morphology and specificity trigger movement, which led to parallel analyses of N-to-D and V-to-C movement. Moreover, CPs and DPs have been treated as having similar properties. From the perspective of acquisition, this leads to the assumption that, at the stage when finiteness is absent, the child may also leave nominals unmarked with respect to specificity. Data from child English and child Dutch support this hypothesis:

(31) a. open door/Hayley draw boat (child English)
    b. Niekje ook boot maken (child Dutch)

The similarity between temporal and nominal domains suggests that specificity may play an important part in the emergence of the optional infinitive stage, which Hyams calls ‘the optional specificity stage’, during which specificity may be underspecified.

Temporal underspecification is explained in terms of Tense-chains, defined as containing a Tense –Operator (in C), a Tense projection (in the inflectional domain) and an event-role (provided by the lexical verb) (Guéron and Hoekstra 1995):

(32) T-Operator

\[
\text{T} \quad \text{Lexical verb (event-role)}
\]

The index of the T-Operator and that of the complex V+Inflection may be identical, in which case the temporal interpretation will be ‘present’; when the two links are contra-indexed, a past temporal interpretation results. Indexing is associated with morphological markers of tense, i.e. with finiteness, which makes the T-chain visible.

In child speech, the complex V+Inflection does not bear an index. This is the case of root infinitives, which lack morphological tense markers and hence are not indexed. Tense has the status of a free pronoun and gets interpreted discursively. The V+Inflection complex is interpreted in a pragmatic way, as anchored in the here and the now, i.e. as present. According to this analysis, root infinitives denote present on-going events. Their temporal interpretation is assigned via temporal co-reference, by analogy with nominal co-reference (Reinhart 1983, Grodzinsky and Reinhart 1992). In adult language, nominal co-reference between two nominals is allowed only when the resulting interpretation is different from the one with bound anaphors. For example, (33a) is ruled out because (33b), a case of bound anaphora, means the same thing:

(33) a. *John, likes him.
    b. John, likes himself.
Temporal co-reference is constrained by a similar rule: it is blocked if temporal anaphora leads to the same interpretation. Hence, in adult grammar, root infinitives cannot be interpreted as denoting a present state of affairs because, in this case, their interpretation would not differ from that of the anaphoric present tense. They can only be used with a modal value. But children’s root infinitives can be interpreted as descriptive, with a present tense value, because children do not know the pragmatic rule which blocks temporal or nominal co-reference (Chien and Wexler 1990, Grodzinsky and Reinhart 1992). They allow both root infinitives with a present tense interpretation and sentences like (33a) because they cannot yet access the pragmatic principle which bars co-referentiality.

The old intuition that children’s speech is linked to the here-and-the-now is captured in allowing early Inflection to be underspecified. Once the child has acquired the principle which blocks co-reference, Inflection is indexed and temporal reference is assigned in an adult-like manner.

The predictions which follow from this account are borne out by empirical data. Since Inflection is assumed to be underspecified, i.e. it has no tense or agreement features, it is non-finite and, consequently cannot assign Case. Thus, null subjects should be allowed with root infinitives but not in finite contexts. The examination of the occurrence of null subjects with inflected forms of the verb be in the Eve, Adam and Nina files (CHILDES, MacWhinney and Snow 1989, Brown 1973, Suppes 1973) shows that children tend to use null subjects infrequently with am/are/is. However, null subjects have been found in sentences with the verb morphologically marked for past tense, i.e. in finite contexts. Hyams proposes that, at this stage, the -ed form is ambiguous between a finite and a participial value. By hypothesis, it will co-occur with null subjects only when it is taken to be the past participle of the verb:

(34)  a. goed on that way (the subject = the cow)
     b. dropped a rubber band (the subject = I) (Hyams 1996:102)

Such sentences would be analysed as sentences in which the auxiliary has been dropped.

The account also predicts that modal verbs and be, which are linked to finite Inflection, should be omitted in root infinitives. Child corpora in CHILDES prove that, indeed, be is often omitted in obligatory contexts, and modal verbs usually occur with overt subjects (Valian 1991).

In spite of its explanatory power, Hyams’s (1996) account cannot be extended to other languages since it fails to explain why root infinitives (at least in other languages) can denote not only present, but also past and future situations. The data are also contradictory with respect to the interpretation of root infinitives in child English, where it seems that it is not restricted to present on-going situations.

2.6 What happens at the end of the optional infinitive stage?

Ingham (1998) argues that the route out of the optional infinitive stage goes through a stage when Tense is available but Agreement is still absent. The claim is that the [+Tense, –Agr] option is available to the child and it follows the period when Tense is absent, i.e. the root infinitive stage. The implication for the analysis of root infinitives is that they represent structures in which both Tense and Agreement are missing, with Tense being acquired earlier.

An important theoretical assumption on which Ingham’s study relies is that -s is a
pure agreement marker in English (Kayne 1993, Bobaljik 1997) and hence its presence/absence stands for presence/absence of an agreement projection and not for presence/absence of Tense.

The data come from a case study of a British child, Sophie (age 2; 6 to 2; 9).

The predictions of this hypothesis are that at a stage which immediately follows the optional infinitive stage:

(i) the verbal forms will not show agreement with the subject DP;
(ii) the verbal forms will be used appropriately in terms of Tense and
(iii) unmarked verb forms, i.e. bare verbs, will not be used in past tense contexts.

All these predictions are borne out by the Sophie corpus. The examination of the declarative present sentences in the corpus showed that only four tokens of a verb affixed with -s were obtained. In over 90% of the utterances, the agreement marker was omitted. Negative and interrogative sentences with a 3rd pers.sg. subject and which used do support also showed a complete absence of agreement markers; not one of them contained the correct form doesn’t:

(35) a. My baby don’t feel well. (2; 8)
    b. That don’t go there. (2; 10)
    c. Her don’t feel well. (2; 10) (Ingham 1998: 61)

In wh-questions the agreement marker –s was also absent:

(36) a. Where do that one go? (2; 7)

When Sophie uses the inflected auxiliary forms is, are, has or the copula be agreement contrast is systematically ignored:

(37) a. What are me singing Mummy? (2; 7)
    b. Is me going a bed? (2; 7)
    c. Is our having supper? (2; 7)
    d. What are that called? (2; 8)
    e. Is those men? (2; 7)
    f. What are that man? (2; 9)
    g. You’s not a big girl any more. (2; 7)
    h. Has you got red one? (2; 6)
    i. Have you got some paper? (2; 7) (Ingham 1998: 63-64)

The data in (37) above provide evidence that at this stage agreement features for verbs have not been acquired yet.

One syntactic reflex of the lack of knowledge of agreement and hence of the lack of the agreement projection from the phrase marker should be the lack of Nominative case subjects. According to Chomsky (1993), Tense raises to Agrs for Nominative case assignment; if Agrs is missing we expect the child’s grammar to use non-Nominative subjects since the mechanism for case assignment is not in place yet. An examination of Sophie’s subject pronouns reveals that most of her pronoun subjects are in the Accusative. She used I in subject position once, whereas me was used in subject position in 321 utterances. She appeared in only two sentences while 163 sentences displayed her in subject position. The data is robust enough to support the view that Nominative case and subject position are not associated at this stage.

The Sophie corpus also provides evidence that Tense is in place at this developmental stage. A possible syntactic reflex of the functional category Tense is the presence of syntactic modals. Sophie’s corpus contains a significant number of
modals. By age 2; 8 eight different modals had appeared in the sample at least twice: can, can’t, could, should, shall, will, won’t, must:

(38)  
a. Will you do those letters?  (2; 7) 
b. Shall me finish Sophie? (2; 7) 
c. Jack can’t go upstairs. (2; 7) 
d. Me won’t sit mon your ‘cording machine. (2; 7) (Ingham 1998: 67)

While Sophie’s earlier negative utterances used not in front of the verb (as in 39) by age 2; 8 do support was always used in negative sentences in the absence of a modal (35):

(39)  
a. Her not play piano. (2; 5) 
b. That not live downstairs. (2; 5) (Ingham 1998: 67)

Most importantly, the distribution of do and did points to a clear distinction between past and present temporal reference; the presence of unambiguous past tense forms (went, gave, came, broke, fell) also shows that the verbal forms were used appropriately with respect to their temporal value.

One more important piece of evidence which brings further support that Sophie has knowledge of Tense at this stage comes from the use of root infinitives. At age 2; 7, approximately one third of the verb forms were infinitives. The examination of the data reveals that bare verb forms are almost always used with a present temporal value. For past tense situations morphologically marked past tense forms are systematically used.

The results of the study clearly show that TP is present at this stage. What is still missing is the Agr projection. Such an analysis also shows that the optional infinitive stage is followed by a stage with TP but without agreement, i.e. by a stage during which the child’s phrase marker is still truncated. This time, it is truncated above TP. Theoretically, it supports the view that Tense and Agreement are distinct projections in UG. From the point of view of learnability, it suggests that the structure-building model of language development is a valid hypothesis.

3. Performance/processing accounts

3.1. A competence-performance account

Phillips (1995) puts forward a different account of the optional infinitive stage. The leading idea is that root infinitives are fully represented finite clauses, in which merger of the verb with inflection has been delayed due to processing limitations.
Phillips also challenges the generalisation that the optional infinitive stage emerges only in the child languages whose target is a non-null subject language. Empirical data from Italian seem to suggest that children whose target language is morphologically richer will use fewer root infinitives and will emerge from the optional infinitive stage earlier. The factor which causes the optional infinitive stage is claimed to exist in any language.

Cross-linguistic data also reveal that there is no correlation between proportion of root infinitives and inflection errors, i.e. children who use root infinitives more frequently do not make more inflection errors. The conclusion reached on the basis of these data is that «what is delayed in children learning languages with more impoverished inflectional systems appears to be a factor influencing use of their morphological knowledge, rather than a delay in the knowledge of it.» (Phillips 1995: 337).

To summarise, Phillips starts from the assumption that children have good knowledge of the morphology of their target language at a very early stage. They sometimes fail to use this knowledge because it is not yet «an overlearned, automatic process» (Phillips 1995: 326). The difference between child language and adult language is seen as a difference in their processing abilities.

Revisiting data from the literature on root infinitives (mainly, the interaction of finiteness and wh-questions and null subjects during the optional infinitive stage) Phillips reaches the conclusion that these data actually support the view that root non-finite clauses are not allowed in child speech. All declarative clauses are «finite and contain appropriate tense and agreement features, even when they are Spelled-Out as root infinitive clauses. Root infinitive clauses contain all the elements of an adult finite clause» (p. 346) in which some features are unrealised. When the verb cannot move to Inflection, the features of Inflection cannot be spelled out because there is no verbal host. In this case, the verb is spelled out as a default form, an infinitive. The representation of a root infinitive is the one in (40):

(40)             IP
    3 Subj              I'
    3 Infl                          VP
    3 V                Object
the cat       3rd pers.sg.         like                the fish (Syntax)
the cat       0                        like                    the fish (Spell Out)

Why does child grammar allow two optional forms? In particular, why does it allow root infinitives to be used in finite contexts? Phillips starts from the following theoretical assumption: syntactic derivations can be ruled out when they violate some grammatical requirement or because of competing derivations which are more highly valued and hence preferred. Overt movement of V to I can be avoided by children unless it is forced by some requirement. For example, in languages like German or Dutch, if a wh-element has moved to the Specifier position of CP, the verb will be forced to move to C via I. That can explain why in these languages root infinitives are absent in wh-questions. But, in principle, V to I movement does not seem to be an absolute grammatical requirement. In English subject wh-questions the verb does not have to move, for example. Such a view raises the question of why adults apply V-to-I movement more consistently than young children. Phillips suggests that the derivations
which involve overt V-to-I movement outrank those with delayed V-to-I movement for two reasons:

(i) overt V-to-I movement facilitates more complete spell-out of features (in those languages where inflectional features can only be spelled out when they have a host)

(ii) in English, inflectional features can be realised on the verb or by do insertion; overt merge is more economical than insertion of a dummy element, and hence favoured.

Thus, the conclusion is that overt merger is favoured and hence V-to-I movement is reliably applied in adults. For 2 year olds the same process has not become automatic yet and the cost of accessing the inflectional form is greater. The transition from the root infinitive stage to adult grammar is seen as a gradual shift from «controlled to automatic processing of the task of accessing morphological knowledge» (Phillips 1995: 360).

The advantage of this account is that it can nicely explain why the number of root infinitives decreases gradually; the child’s process of accessing morphological knowledge is gradually becoming automatic, most probably on the basis of frequency in the input. It can also explain why children use inflected forms correctly when they do use them: morphological knowledge is there, but sometimes they fail to access it for processing reasons.

This account can also solve the puzzle of why the optional infinitive stage is so short and «meagre» in rich morphology languages: a child acquiring a highly inflected language will encounter inflected forms in the input very frequently, which may speed up the transition to a non-controlled access to morphological knowledge.

What this account cannot solve, however, is the problem of the optional infinitive stage in languages like Modern Greek or Romanian, where the default form seems to be an inflected form (the -i form in Modern Greek and most probably the past participle form in Romanian), i.e. within the theoretical framework adopted by Phillips, the verb has already moved to one functional projection and merger with the inflectional affix which heads the projection has taken place.

Also, the analysis of root infinitives relies on a Distributed Morphology framework, where the verb comes bare from the lexicon and merges with inflectional affixes via head-to-head movement. Within a minimalist approach, where the verb is assumed to come fully inflected from the lexicon, the delayed-merger-hypothesis can no longer explain the emergence of root infinitives.

3.2. A «limited processing resources» account

Avrutin (1997) explains the emergence of root infinitives in early child speech as the reflex of limited processing resources, a learnability explanation identical to the one put forth in Phillips (1995) but reached via a different route. According to him, root infinitives do not violate any syntactic requirements. They occur cross-linguistically in adult speech, which means that they are a UG compatible option. When the child opts for a root infinitive, he/she does not make a syntactic error.

Avrutin defines root infinitives as representing a non-syntactic presuppositional introduction of an event file card into discourse. The child may opt for a root infinitive because the amount of resources necessary for the introduction of an event file through presupposition is «cheaper».

His analysis of root infinitives in both adult and child grammar adopts Heim’s (1982) file change semantics, according to which (indefinite) DPs are represented in
discourse by file cards. Each file card must have a number, therefore each DP bears an index. He then extends it to events proposing that not only DPs but also eventualities (both states and events) can be represented by file cards. The discourse representation of a sentence like the one in (41) will be as in (42):

(41) John ate an apple.

(42)

<table>
<thead>
<tr>
<th>Event #</th>
</tr>
</thead>
<tbody>
<tr>
<td>/................./ (t #)</td>
</tr>
<tr>
<td>John#</td>
</tr>
<tr>
<td>AGENT</td>
</tr>
</tbody>
</table>

As can be seen in (42), the event file card contains (i) a time interval (t), during which the event holds and (ii) two individual file cards which represent the participants in the event. In order to derive the LF interpretation that an event holds during t, the event variable and Tense must be co-indexed since Tense and the event are links of the same temporal chain (Guéron and Hoekstra 1995). If only one link in the chain bears an index, the absence of an index on the other one will count as contra-indexing. When Tense bears an index it has a «referential potential» in the sense that it is able to denote a time interval. Against this theoretical background, Avrutin also adopts Hyams's (1996) proposal that Tense in an infinitival clause has no index.

Three types of infinitival structures used in adult speech are analysed within this framework: Russian root infinitives, illustrated in (43), English headlines, illustrated in (44) and English mad magazine sentences, illustrated in (45):

(43) Carevna xoxotat
    princess laugh-ing
    ‘the princess started to laugh’

(44) Clinton to visit Russia

(45) John dance ! Never in a million years !

The sentences in (43) – (45) are taken to share the following properties:

(i) their Tense is not indexed
(ii) their event variable is not indexed
(iii) their interpretation is possible by resorting to an element in the discourse.

According to Avrutin, an event file card can be introduced in the discourse (and hence its interpretation is made possible) either through the instantiation of the index of the event or through two other mechanisms: the event file card is projected by another card (and the event is consequently interpreted as the result of the event in the projecting card) – this seems to be the case of the Russian root infinitive constructions- or the new event file card is introduced by a presupposed event. This seems to be the case of the English mad magazine sentences.

Root infinitives in child speech have similar properties to the mad magazine sentences. The only crucial difference between the two is that the range of pragmatic circumstances when this discourse representation is possible in child speech is larger than in adult speech. Root infinitives are taken to represent a special strategy of introducing an event file card into discourse.

Such an analysis of optional infinitives makes several predictions. When Tense must bear an index, root infinitives should be impossible. Auxiliaries are part of the
Tense-chain (Guéron and Hoekstra 1995) and consequently they must bear an index. The prediction is that the auxiliaries which occur in child speech should always be tensed, i.e. they cannot occur in root infinitives. This prediction is supported with data from various child corpora.

Also, recall that Avrutin’s assumption is that root infinitives in child speech are like root infinitives in adult grammar, so we expect them to have the same properties. In adult grammar, root infinitives cannot appear in embedded contexts. By analogy, Avrutin extends this property to child grammar. Though this may be difficult to test (during the optional infinitive stage complex phrases are rare if not absent), Thornton (1998) provides some examples from early child English which cast doubt on this prediction:

(46) a. I want Aurora swing.
    b. I want jump baby.
    c. I want play.

Another prediction is that stative verbs should not occur in root infinitives. The subject of a state predicate is not as prominent as the subject of a non-stative (eventive) predicate and hence it is difficult to access in the discourse. This prediction seems to be borne out by the data, at least for child Dutch. Avrutin invokes the results of an experimental study (Wijnen 1997 cited in Avrutin 1997) which demonstrate that eventive verbs appear in both finite and infinitival clauses at this stage whereas stative verbs appear only in finite contexts.

Optionality during the root infinitive stage is explained in terms of processing resources. The amount of processing required for the introduction of an event file through presupposition (in English) is claimed to be « cheaper » than the amount of processing required for the introduction of the same file card through syntactic operations (a finite sentence implies indexing of Tense, of the event variable and of the participants in the event). The English child may optionally choose the less costly operation because his/her processing resources are still limited.

However, there are a number of questions which cannot be straightforwardly accounted for in terms of the analysis put forth by Avrutin. One of them addresses the assumption that root infinitives evince the same properties in child and adult grammar. Haegeman (1995, 1996), comparing adult Dutch and child Dutch infinitival constructions argues that in adult grammar the root infinitive is a CP, whereas in child grammar it is a truncated structure (Rizzi 1993/4).

Also, one cannot ignore the difference of register which is also discussed in Avrutin’s study. If the only difference between child and adult root infinitives is one of register, should we reach the conclusion that the child could get out of the optional infinitive stage once he/she has acquired register variation?

The explanation in terms of processing resources raises questions with respect to adult grammar. If it is cheaper to introduce an event file card in the discourse through presupposition why do languages choose the more costly mechanism in the end instead of setting for the cheaper mechanism and rely only on pragmatic means of introducing event file cards in the discourse? We would expect languages to (generally) choose cheaper strategies.

### 3.3. The null modal hypothesis

Ingram and Thompson (1996) present data from child German to argue for a modal account of root infinitives in early speech. The framework of their study is
provided by what they call the Lexical/Semantic Hypothesis according to which early syntactic acquisition is lexically and semantically determined. In particular, early inflected forms are claimed to be first acquired as lexical items and not as roots plus affixes. Another important assumption is that the forms which children produce at an early stage cannot represent reliable evidence that they have syntactic knowledge; children produce what they heard in the input.

Within this framework, early root infinitives are argued to be used with a clear modal meaning, which distinguishes them from the finite forms used during the same stage. On this account, choosing the infinitive or a finite form of a verb does not seem to be a matter of optionality at all.

The Modal Hypothesis states that: «German children in their early stages of acquisition use infinitives as main verbs in sentences that contain a modal interpretation, i.e. that some activity will, can or should occur.» (p.102).

In order to test this hypothesis, they examined the data from four German subjects. The infinitive form was analysed as having a modal interpretation if one or more of the following criteria was/were met:

(i) a modal appeared in the infinitival construction
(ii) parental input showed a modal:
(47) Mother: Was möchtest du haben?
    what want-2nd pers.sg. you have-inf
    Child: Steft haben?
    crayon have-inf (Ingram and Thompson 1996: 106)
(iii) if the transcription gave a modal expansion or interpretation to the child’s utterance, as for example in (44):
(48) Katrin: Haben?
    have-inf
    (willst du die Stifte haben?)
    want you the crayon have (Ingram and Thompson 1996: 106)
(iv) if a modal was present in the parent’s response:
(49) Katrin: Stift haben?
    crayon have-inf
    Mother: Ach, du mochtest einen Stift haben.
    yes, you want-2nd pers.sg. a crayon have-inf

The results of the analysis strongly support the Modal Hypothesis. Most of the time, when children use a root infinitive, they use it with a modal interpretation. The assumption is that these constructions contain a null modal.

The same criteria were applied to the analysis of the finite forms in the four samples. The results point that the finite verbs are used significantly less frequently with modal interpretation, which suggests that children use finite and non-finite forms with different meanings, i.e. root infinitives with a modal interpretation and finite forms with a non-modal, descriptive interpretation. The choice between the two is not optional. Such linguistic

Root infinitives represent structures with a missing modal.

5 For a similar proposal, see, among many others, Aldridge (1989) where it is argued that children take a verb plus its inflectional affixes as an unanalyzed whole.
6 Further evidence in favour of the modal account comes from the history of German. The German infinitive was first a case marker for verbal nouns which then evolved into a purposive marker and then into the present-day infinitive. It seems that the infinitive itself may create a modal interpretation, rendering the German children’s root infinitives irrealis.
behaviour observes the Principle of Contrast (Clark 1987) according to which every two forms contrast in meaning, i.e. different forms are associated with different meanings.

Children use root infinitives, it is argued, because they tend to simplify structure. There are performance limitations on sentence production at this stage. Their use of root infinitives will decrease in time, as the production and processing capacities of the child improve.

The idea that an auxiliary is missing in root infinitives is also defended in Boser et al. (1992) and Whitman (1994). In spite of the different assumptions and in spite of the different arguments presented in the two studies, they share the key idea: root infinitives represent structures containing a null auxiliary. Boser et al. (1992) explain the emergence of root infinitives in child German within the Strong Continuity Model. Since in child German whenever a non-finite form is used it occurs in sentence final position, just like in adult structures with auxiliaries, we can say, by analogy, that the auxiliary is absent or null in the child’s infinitival construction. Crucially, child grammar is assumed to license an empty auxiliary in subject-initial sentences. Their hypothesis is interesting because they extend the null auxiliary analysis (where the term auxiliary is a cover term for modals and other «dummy» auxiliaries) from infinitival to other non-finite constructions, such as participial constructions. They argue that children ‘know’ that auxiliaries select different forms of non-finite verbs and that «different auxiliaries have distinct lexical content» (p. 89). This means that when they use a certain non-finite construction, which is the complement of one particular auxiliary, they use it with a particular meaning. And this is exactly what Ingram and Thompson propose: children use the infinitive with modal meaning because it is the complement of a null modal.

The account in Boser et al. (1992) could provide a unifying frame of analysis for all the non-finite forms which are attested in early child language, both in null subject languages and in non null subject languages. Since it is assumed that children have to learn the overt realisation of Aux, i.e. the elements which exhibit cross-linguistic variation, one may expect non-finite forms in child speech to be subject to language variation (infinitives in some languages, participle in others). Also, if in non-finite constructions an auxiliary (whose lexical content is known to the child) is missing, the only possible conclusion is that finite and non-finite forms are not optionally chosen. Again, this is the conclusion which Ingram and Thompson reach in their study.

Speculating in guise of conclusions, one may say that these two studies which argue for a null or missing element in root infinitives may open a new track of inquiry which may reach the conclusion that, on the one hand, one cannot speak of an «infinitive» stage (the default may differ from one language to another) and, on the other hand, regardless of the name of the stage (infinitive, non-finite, participial, etc.) choosing between the finite and non-finite form may not be optional after all. Such a conclusion would be in line with assumptions about our linguistic computational system, which is defined as avoiding optionality, as well as with the continuity hypothesis: the child’s grammatical system is in place but, either for processing reasons or for gaps in his/her lexicon some elements are still omitted.

Unfortunately, in spite of its explanatory power, such a view raises, however, many questions, the most important of which is linked to an account for the cluster of the properties which are analysed as going hand in hand with the emergence of early root infinitives.

Equally important, the account fails to answer the old question of why auxiliaries or/and modals are the ones which are systematically omitted at this stage.
SUMMARY

In this chapter cross-linguistic data have been discussed with a view to showing that there is a stage in language development when non-finite forms are used in contexts which require the use of finite forms in the target grammar. These non-finite forms, which seem to be, in many languages, the infinitive, evince a number of characteristic properties (both structural and interpretative) which distinguish them from the root infinitives which occur in adult speech:

- child root infinitives do not require a special context
- the interpretation of child root infinitives is more ‘generous’ than the one of the root infinitives used in adult speech
- there is a link between early root infinitives and the aspectual class the predicate belongs to, link which is absent in adult grammar.

Various answers to the question with respect to the possibility, available in child speech but absent from adult grammar, of optionally using the finite and the non-finite form of the verb in root contexts have been presented. Children use root infinitives at this stage because of:

A. a competence deficit:
- early representations are purely lexical, functional categories (Tense and Agr in particular) are not yet available (Radford 1990).
- the child cannot distinguish the values of (syntactic) Tense, which is optional at this stage (Wexler 1994).
- Agrs, Tense or both are optionally omitted (Schütze and Wexler 1996)
- the so-called Unique Checking Constraint prevents the computational system from checking the D feature of a DP more than once; in order to save the derivation, the child chooses to omit either Tense or Agrs (Wexler 1998)
- early grammar lacks both Tense and Agreement (Ingham 1998)
- the child does not know that every clause must be a CP and may project truncated structures (VPs or Agr,Ps), which lack Tense and all the projections above Tense (Rizzi 1993/1994).
- the child does not know the (pragmatic) rule which blocks co-reference when the temporal interpretation reached via co-reference is the same as the one reached via bound anaphora.

B. processing limitations
- root infinitives occur in early speech because merger of the verb with inflection can be delayed for processing reasons (Phillips 1995).
- root infinitives represent a ‘cheaper’ strategy of introducing an event file card into discourse (Avrutin 1997).
- root infinitives are structures that contain a null modal, omitted because of processing limitations (Ingram and Thompson 1996).

Cross-linguistic empirical data provide evidence that root infinitives do not exist in all languages. Several explanations are available:

- root infinitives can only occur in non-null subject languages (Rhee and Wexler 1995).
- root infinitives can only occur in those languages in which the UCC applies non-vacuously with respect to the checking of the Agrs feature (Wexler 1998)
• root infinitives occur in languages in which finiteness is expressed exclusively by number (Hoekstra and Hyams 1998).

**Further reading**

*Advanced:* Most of the papers briefly presented in this chapter require some background in generative syntax. But you will certainly benefit by going to these papers yourself and get your own picture of the various analyses. If you want to read a more general paper, Schönenberger, Pierce, Wexler and Wijnen (1995) offers a good introduction to the accounts of root infinitives.